DEVELOPMENT OF A NORTH AMERICAN SURVEY FOR MONITORING SHOREBIRD POPULATIONS

Report to:
U.S. Fish and Wildlife Service
Patuxent Wildlife Research Center
Laurel, MD 20708

Prepared by:

Brian A. Harrington
Manomet Bird Observatory
P.O. Box 1770
Manomet MA 02345

Gary W. Page
Point Reyes Bird Observatory
4990 Shoreline Highway
Stinson Beach CA 94970

Assisted by;

James E. Lyons &
U. Cartar

Manomet Bird Observatory

Janet E. Kjelmyr &
W. David Shuford

Point Reyes Bird Observatory

September 1991

SYNOPSIS

Tasks

The purpose of this report is to investigate the feasibility of a survey for North American shorebird populations that will provide reliable annual indices to population sizes of as many species as possible and allow analysis of long-term population changes to be conducted. Specific tasks were:

1. To identify all known spring and fall migration stopovers in North America for which a typical migration peak is at least 5000 shorebirds and to provide information on ownership, accessibility, special logistical considerations and habitat stability. (We added to this the identification of all sites likely to hold 5000 or more shorebirds during winter.)

2. To propose a sampling protocol that focuses on the identified sites and considers census frequency, best time of year for counts, effect of migration timing on counts, and need for team census approach. The potential effectiveness of the sampling protocol must be analyzed for all species of North American shorebirds. The sampling protocol must include a rational for omitting any significant sites from the survey network.

Methods

We solicited information on sites likely to hold peak numbers of at least 5000 shorebirds through: advertisements in the Western Hemisphere Shorebird Research Network newsletter; questionnaires sent to wildlife refuges, bird watchers and employees of government agencies involved in non-game management; examination of American Birds migration season accounts; examination of Audubon Society Christmas Bird Counts; and examination of data from Manomet Bird Observatory's International Shorebird Survey and Point Reyes Bird Observatory's Pacific Flyway Project. After their initial response to requests for information many people were telephoned to get more precise data on shorebird numbers and physical characteristic of wetlands. The results of this effort are presented in Appendices 1-4 and 6-9. Analysis of data from The International Shorebird Survey provided the bulk of the information on the timing of shorebird migration east of the 105th Meridian (summarized in Appendix 5). Comparable information is not available for the region west of the 105th Meridian. For the western region we had to rely on published literature, anecdotal information, and the authors' knowledge of migration timing.

We identified 11 counting methods that could be employed to monitor shorebirds, assuming counting techniques should be considered separately if they involved coverage of different habitat types. These methods are described on pages 10 to 13. Also identified were existing census programs that could be suitable for monitoring shorebird populations. The abundance, distribution, preferred habitats, migration routes, and location of breeding and wintering grounds were then considered to identify the best counting method for each species.

Results

We identified 53 species of North American shorebirds that might occur with sufficient regularity that they should be considered for monitoring. South of Alaska there are at least 149 U.S. sites supporting 5000 or more of these shorebirds in spring, winter or fall. Of those 15 are in region 1, 15 in region 2, 12 in region 3, 21 in region 4, 35 in region 5, and 51 in region 6 (Fig. 1). In Alaska there are an additional 57 sites holding thousands to hundreds of thousands of shorebirds. There were 59 Canadian sites with the potential of attracting 5000 or more shorebirds. The composition of species in each site is presented in Appendices 3 and 6. More sites supporting 5000 or more shorebirds are likely to be found in the future, especially in the Sacramento Valley of California and the prairie provinces of Canada where we felt information on important shorebird habitats was incomplete.

The best method(s) for monitoring each species are summarized in Table 4. Table 4 also indicates the best season, the best dates and the most important regions for surveying.

Four species, Common Ringed Plover, Eskimo Curlew, Curlew Sandpiper, and Sharp-tailed Sandpiper, breed too rarely in North America to warrant a monitoring program. The status of the Northern Jacana as a U.S. breeder was not well enough known to us that we felt qualified to recommend a monitoring scheme.

Government agencies and private organizations currently are monitoring breeding populations of the Snowy Plover, Piping Plover and American Woodcock or have baseline information suitable for future monitoring of American Black Oystercatchers, Bristle-thighed Curlews, Bar-tailed Godwits and Black Turnstones. Similar projects, focused on the accessible and restricted breeding populations Wilson's Plover and American Oystercatcher would be desirable.

Two existing census programs provide useful information for monitoring shorebird populations. The U.S. Fish and Wildlife Service's Breeding Bird Survey (BBS) is likely the best method of monitoring the Killdeer and Upland Sandpiper (Table 1). The BBS may be useful, if not the best method, for monitoring seven additional species (Table 1). The Christmas Bird Counts (CBC) of the National Audubon Society are probably the most practical method for monitoring Black Turnstones, Purple Sandpipers, Rock Sandpipers and Common Snipes. CBC's are suitable but not the best method for two additional species (Table 1).

A census program focused on counts in wetlands during migration and winter is necessary for monitoring most shorebirds. This requires

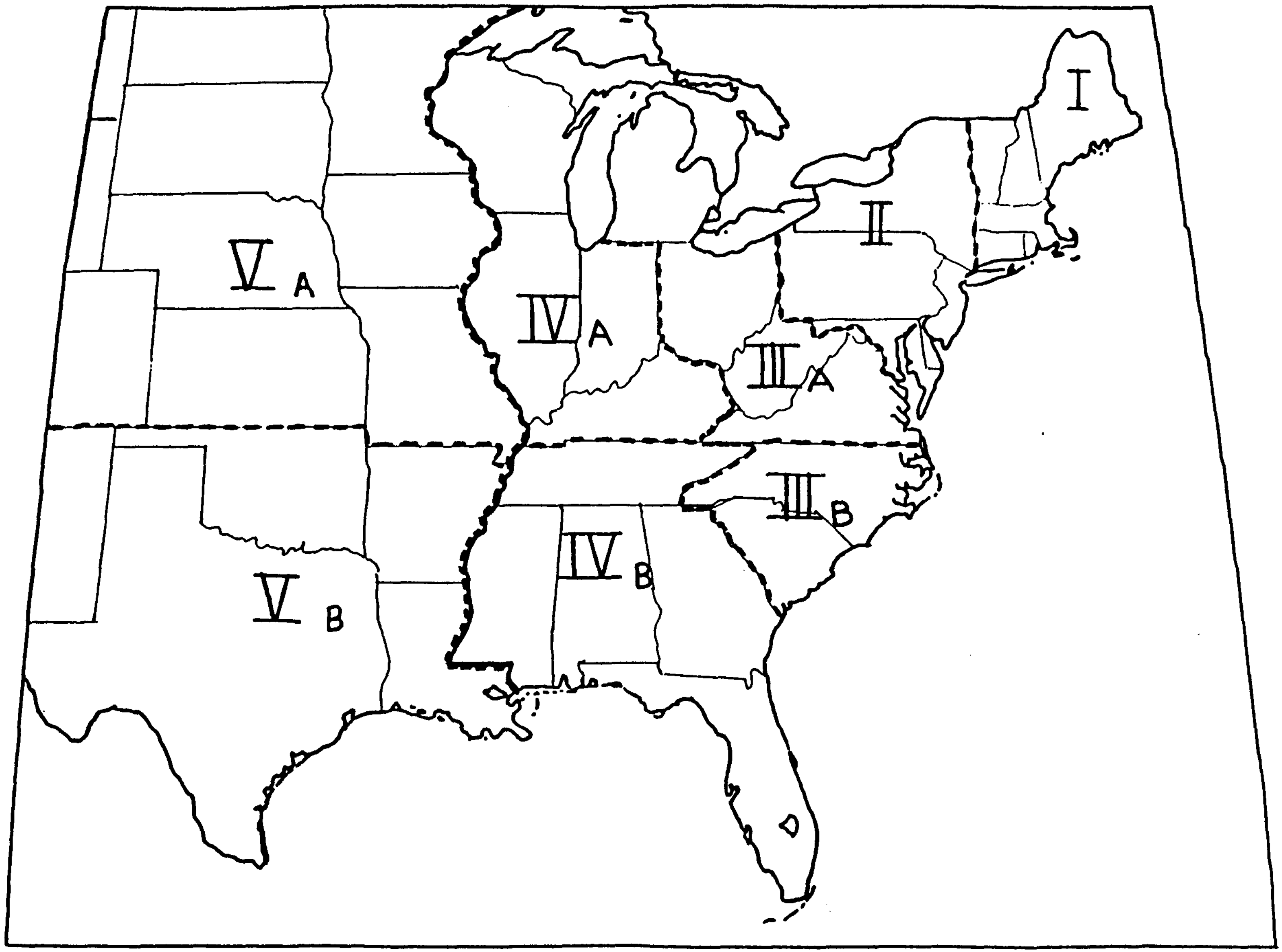


Figure 1. Boundaries of regions used for analysis of ISS data east of the 105th Meridian. Region VI is the area of the U. S. and Canada west of the Rocky Mountains and south of Alaska.

an organized network of wildlife biologists and birders that can count shorebirds during peak periods of migration or in winter. The effectiveness of the census program will vary among species and be most effective for those that are concentrated on the coast, show a preference for the most limited range of habitats, and assemble in accessible locations with other shorebirds that we wish to monitor simultaneously. We also believe that winter is a more suitable time for monitoring than spring or fall migration. If monitoring must occur during migration then spring is preferable to fall.

The criteria noted above were used to rank the value of winter-time and migration-time counts for shorebirds into six groups (Table 1). Top ranked is a winter count which provides the best source of information for four species: American Oystercatcher, American Avocet, Marbled Godwit and Dunlin. During winter counts of these species useful information could also be gathered for four additional species listed under the third rank. Winter counts would need to extend into Mexico but this would be possible if shorebirds could be counted during the annual FWS waterfowl survey in Mexico. The Mountain Plover could also be counted in winter. A winter count for Mountain Plovers is not ranked higher because the necessary focus on agricultural habitat for this species would not provide useful information for any other species.

Second in importance is a spring count which would provide the best source of information for nine species (second rank, Table 1) the second best source of information for the Marbled Godwit, and partial information for five species which are forth-ranked. The value of a spring count is lower (forth-ranked) for Lesser Yellowlegs, Willet and Short-billed Dowitchers because it would only be useful in the eastern or western region of the country. It is also ranked lower for the Whimbrel and Sanderling because extensive coverage of non-wetland habitat would be required for spring counts of these species to be as complete as those for higher-ranked shorebirds that are more concentrated in wetland habitats. There are an additional 11 shorebirds for which a spring census is ranked low (sixth rank) because it would only provide information from a small portion of the population (Black-necked Stilt) or require counting in so many different sites from those chosen for the second- and forth-ranked species that the feasibility of monitoring would be low. In this category are species such as Hudsonian Godwit, Baird's Sandpiper and Pectoral Sandpiper which may stage in substantial numbers at unidentified Canadian prairie sites.

Fall counts do not have nearly the utility of winter or spring counts. We only identified six species for which a fall count either provided information that would not be obtained by another method or information of higher quality than in another method. The value of a fall count for five of the six species was limited by its applicability to only a portion of the species' range. Fall would be the best time to monitor Wilson's Phalaropes. This would require counts dedicated solely to the Wilson's Phalarope since this species migrates earlier and uses highly saline habitats avoided by most other species.

We identified two approaches to monitoring during migration. Trend Analysis I uses peak annual counts of migrating shorebirds from ISS-monitored sites to examine population trends of target species (Howe et al. 1989). Annual population indices for target species are calculated as the geometric mean of the peak annual counts. Population trends representing the average proportional increase or decrease of the population over the range of time examined are computed independently of the annual indices. For population trends peak counts are regressed on year for each site and averaged over all sites, each weighted according to the magnitude of the population. By calculating and averaging site-specific trends, the influence on the overall trend estimate of declining numbers at one major site because of habitat deterioration or other factors is minimized.

Trend Analysis I has the following advantages:

1. The sample of sites need not include all key sites used by the target species.

2. Regressions can be calculated even if there are years with missing data.

3. It uses the least labor intensive methods of acquiring data.

It has two disadvantages:

1. The sample of wetlands used for the analysis must be representative of the entire wetland system used by the target species if the estimated trend is to accurately reflect population change. The representativeness of the wetland sample cannot be demonstrated without data from all key wetlands in the system.

3. The inability of volunteer observers to count some key areas on dates other than weekends, and our inability to predict, a priori, the peak date of a species' occurrence at a site adds variance to the estimate of the peak count.

There is an alternative sampling method that eliminates the main weaknesses inherent in the former method. The modified method (Trend Analysis II) requires a total count and a measure of the relative daily abundance for each target species from all key sites in a sampling space. Step 1 is the selection of the sampling space and the key sites. Step 2 is to obtain the total counts and relative abundance curves. Step 3 is the construction of a population curve for each site from the total count and the relative abundance curve for each target species. As step 4 population curves for each site are summed to establish a single population curve for the entire sampling space for each target species. As a final step regression is applied to the annual peak of the population curve for the sampling space. The method is outlined in more detail on pages 14 to 19.

This method eliminates the problem of a potential lack of representativeness of sampling sites by selecting all sites that are likely to be important to target species in the sampling space. The variance from counting outside the dates of peak occurrence is eliminated because there is an estimate of abundance for every day of a species' occurrence.

One disadvantage is that all wetlands potentially receiving significant use by a target species must be surveyed annually. Data collection for Trend Analysis II is also more labor intensive than for Trend Analysis I.

The decision on which sampling method to select for monitoring shorebirds during migration depends on the willingness of volunteer observers to participate in counts and the funds available to supplement their efforts. Shorebird numbers are generally stable during winter when the time window available for counts is wide (1 December to 15 February). Since stability of numbers during winter eliminates the need for estimates of daily relative abundance (the most costly data collection element of Trend Analysis II), the ease and cost of collecting data for Trend Analyses I and II are fairly comparable for winter-time counts. The big discrepancy will be in spring when the relative abundance curves are indispensable for the Trend II analysis. The decision as to which method to use for spring counts must await Phase II of this project when an analysis of the willingness of qualified volunteer observers to participate in the surveys will become known and the funds needed to support and supplement their efforts can be estimated.

The sampling space (regions) selected for monitoring target species during winter or spring are indicated in Table 2. The decision on which sites to select for counting within each region must be based on economic and logistical considerations and on the method selected for monitoring. We recommend counts at all sites with 5000 or more total shorebirds in each region selected for each target species (Table 2) until phase two of this project has been completed. Only then will we know the feasibility of making counts at each key site.

Table 1. Allocation of species by the most promising monitoring technique. In the top block BBS is Breeding Bird Survey; CBC is Christmas Bird Count; DBS is Dedicated Breeding Survey; and None is No Method. In the bottom block we rank shorebirds by the likelihood that their populations can be monitored through counts during the non-breeding season. The seasons are Wint = winter; Spr = spring; and fall. In parentheses W indicates only in the west and E only in the east; H indicates counts are required in a non-wetland habitat; and I indicates the species could be difficult to accurately identify on counts because of a similar-appearing species.

BBS	BBS	CBC	CBC	DBS	DBS	NONE
1	2	1	2	1	2	
KILL	AMAV	BLTU	KILL	SNPL	WIPL	CRPL
UPSA	WILL	PUSA	ABOY	PIPL	AMOY	ESCU
	SPSA	ROSA	COSN	AMWO	ABOY	CUSA
	LBCU	COSN			BLTU	SHSA
	MAGO				BTCU	
	COSN				BTGO	
	WIPH					

RANK 1	RANK 2	RANK 3	RANK 4	RANK 5	RANK 6
WINT 1	SPR 1	WINT 1	SPR 2	FALL 1	SPR 3
AMOY	BBPL	BBPL (W)	LEYE (E)	BNST (W)	LGPL (H)
AMAV	SEPL	MTPL (H)	WILL (E)	GRYE (E)	BNST (E)
MAGO	MAGO	WILL (W)	WHIM (H)	WILL (W)	SOSA
DUNL	RUTU	LBCU (H)	SAND (H)	SBDO (E)	SPSA
	REKN	LBDO (1)	SBDO (W)	RNPH (H/W)	HUGO
	SESA			WIPH	SURF (H)
	WESA				BASA
	LESA				PESA
	WRSA				BBSA (H)
	STSA				RNPH (H)
					REPH (H)

Table 2a. Key regions for winter surveys of shorebirds. For regions see Figure 1. Region 6 is the U.S. west of the Rocky Mountains and south of Alaska. Mex is Mexico.

	1	2	3A	3B	4A	4B	5A	5B	6	MEX
AMOY				X				X		
AMAV									X	X
MAGO								X	X	X
DUNL		X	X					X	X	
BBPL								X	X	X
MTPL									X	X
WILL								X	X	X
LBCU									X	X
LBDO								X	X	X

Table 2b. Key regions for spring surveys of shorebirds. For regions see Figure 1. Region 6 is the U.S. west of the Rocky Mountains and south of Alaska. Mex is Mexico.

	1	2	3A	3B	4A	4B	5A	5B	6	MEX
BBPL	X	X	X					X	X	
SEPL		X	X				X	X	X	
MAGO								X	X	
RUTU		X	X					X		
REKN		X	X						X	
SESA		X	X				X			
WESA									X	
LESA		X	X				X		X	
WRSA			X				X			
STSA			X				X			
LEYE						X		X		
WILL			X	X				X		
WHIM		X	X						X	
SAND		X	X					X	X	
SBDO		X	X						X	

MONITORING POPULATION TRENDS OF NORTH AMERICAN SHOREBIRDS

Considerations

Changes in size of a shorebird population occur when the equilibrium between fecundity and survivorship is altered. Survivorship can be altered by changing conditions at the breeding grounds, migratory staging areas, or wintering grounds. Fecundity is likely to be effected more by changes on the breeding grounds than by changes in migration or wintering areas. Changed conditions could occur over a wide or a narrow portion of the breeding, migratory or wintering grounds. While a monitoring program should detect changes in shorebird population size, it may not identify the factors underlying population change.

Two existing projects, the Audubon Society Christmas Bird Counts and the U. S. Fish and Wildlife Service Breeding Bird Counts provide data of importance for monitoring some shorebird species. For species such as the Snowy Plover, Piping Plover and Bristle-thighed Curlew the basis for monitoring projects have been established through special projects of government agencies or private organizations. We examine the applicability of such projects for every species to determine whether an additional monitoring effort is necessary.

Our ability to monitor trends in shorebird populations is controlled by the degree of change that is desirable to detect and the economic constraints imposed on data collection and analysis. The value of any technique is determined by the precision of the result obtained and by the number of species that can be monitored simultaneously through its employment.

In order to economically and satisfactorily implement monitoring programs for North American shorebirds we assume that it is not feasible to extend the monitoring projects beyond the boundaries of Canada, the conterminous United States and Mexico. We also assume that the bulk of the data will be collected by volunteers because the region that shorebirds occupy is too large to be collected by salaried employees of state and federal wildlife agencies. We also would expect that employees of state and federal agencies would contribute data from wildlife refuges, parks, wildlife management areas, etc.

Ground based counts of shorebirds will be the main technique for monitoring populations. Counts from planes or boats are a last resort because of the high costs and difficulty of identifying shorebirds from moving census platforms. Because shorebird banding programs in North America are few, they will not provide sufficient information on age and sex ratios of shorebird populations to be a component of any monitoring program at this time. The most important sites for monitoring shorebirds are those that include many target species because the amount of information from counts is directly correlated to the number of species that can be monitored at a site.

List of species for consideration.

Species considered for monitoring are those reported by the American Ornithologists' Union (1983) to occur regularly in either Canada or the United States.

Species	**Code**	**Species**	**Code**
Black-bellied Plover	BBPL	Marbled Godwit	MAGO
Lesser Golden Plover	LGPL	Ruddy Turnstone	RUTU
Snowy Plover	SNPL	Black Turnstone	BLTU
Wilson's Plover	WIPL	Surfbird	SURF
Common Ringed Plover	CRPL	Red Knot	REKN
Semipalmated Plover	SEPL	Sanderling	SAND
Piping Plover	PIPL	Semipalmated Sandpiper	SESA
Killdeer	KILL	Western Sandpiper	WESA
Mountain Plover	MOPL	Least Sandpiper	LESA
American Oystercatcher	AMOY	White-rumped Sandpiper	WRSA
Am. Black Oystercatcher	ABOY	Baird's Sandpiper	BASA
Black-necked Stilt	BNST	Pectoral Sandpiper	PESA
American Avocet	AMAV	Sharp-tailed Sandpiper	SHSA
Northern Jacana	NOJA	Purple Sandpiper	PUSA
Greater Yellowlegs	GRYE	Rock Sandpiper	ROSA
Lesser Yellowlegs	LEYE	Dunlin	DUNL
Solitary Sandpiper	SOSA	Curlew Sandpiper	CUSA
Willet	WILL	Stilt Sandpiper	STSA
Wandering Tattler	WATA	Buff-breasted Sandpiper	BBSA
Spotted Sandpiper	SPSA	Short-billed Dowitcher	SBDO
Upland Sandpiper	UPSA	Long-billed Dowitcher	LBDO
Eskimo Curlew	ESCU	Common Snipe	COSN
Whimbrel	WHIM	American Woodcock	AMWO
Bristle-thighed Curlew	BTCU	Wilson's Phalarope	WIPH
Long-billed Curlew	LBCU	Red-necked Phalarope	RNPH
Hudsonian Godwit	HUGO	Red Phalarope	REPH
Bar-tailed Godwit	BTGO		

Counting Techniques

A variety of counting methods could form the basis of monitoring programs. These are described below.

Roadside Breeding Bird Surveys (BBS)

The U.S. Fish and Wildlife Service has mobilized volunteers to conduct roadside counts of birds throughout the U.S. and Canada annually since 1965. The survey is designed to monitor a large and diverse array of breeding birds throughout the U.S. and Canada. It is based on randomly distributed road-side routes established within each 1 degree block of latitude and longitude. Each route, consisting of 50 three-minute stops 0.8 km apart, is run once a year in June (or exceptionally in late May or early July).

Starting time is set at 0.5 hours before sunrise. The observer counts all birds seen and heard during the three-minute interval at each stop. Data recorded by the observer include name of route, name of observer, start time, end time, date, weather codes, species name, totals for each species for each set of 10 stops, a total for all 50 stops, and the number of stops at which each species was recorded. Each state or province has a coordinator to select qualified observers to run routes in their jurisdiction. The coordinator endeavors to obtain coverage for all established routes in his or her jurisdiction each year. If a route is destroyed by development or some other circumstance, a new route is established to replace it (Marshall Howe pers. comm.). More information on the BBS is available in (Robbins et al. 1986).

Audubon Christmas Bird Counts (CBC)

The Audubon Society's Christmas Bird Counts occur throughout Canada and the U. S. during a two-week period in December and January. Anyone can establish a count circle with a 30-mile diameter. One or two people agree to coordinate the count in each circle. Circles are divided into sub-areas, the size and number determined mainly by the number of people available to count. Each sub-area is counted by one or more parties of observers during a 24-hour period. The coordinator for each circle tabulates the totals for all species in the count circle and sends them to the Audubon Society. Census effort is recorded as number of party hours by foot, car, or other form of transport. The usefulness of CBC data are likely to be limited for several reasons: 1. All count circles are not covered annually. 2. The position of a count circle can be changed. 3. Observers are not trained in counting methods and some are not able to accurately identify similar-appearing <u>Calidridine</u> sandpipers. 4. Count conditions for a circle vary among years. For example, the timing of CBC's are usually chosen by date rather than tidal regime which can be the most important factor determining the number of shorebirds at coastal sites.

Wetland Counts (WC)

Many shorebirds concentrate in wetlands. Two projects, the International Shorebird Survey (ISS) of Manomet Bird Observatory and the Pacific Flyway Project (PFP) of Point Reyes Bird Observatory, have focused their efforts on counting shorebirds in this environment. The ISS has focused on multiple counts during spring and fall migration in wetlands east of the 105th Meridian. Volunteers select sites that they agree to cover up to every five days during migration. Many sites are sub-areas of larger wetlands. Counters covering different wetlands or sub-areas within one wetland are not coordinated in the timing of their counts. The PFP project focuses on wetlands west of the Rocky Mountains and attempts one census of all shorebirds in every wetland during the peak period of spring migration, the peak period of fall migration, and the winter period. The timing of counts are highly coordinated so that all sub-areas of each wetland are being covered as much as possible at the same time. There is also a high degree of regional coordination: all wetlands within broad regions are counted on the same weekend.

Small wetlands can be covered by one person using binoculars and a telescope on the periphery but larger ones must be broken into sub-areas, each covered by a team of observers. The largest censuses have been attempted on San Francisco Bay where over 100 observers are employed to count on two consecutive days. When areas are inaccessible, it may be necessary to count from a plane or a boat. Counts may be made when the birds are feeding or roosting and are more complicated to conduct in tidal than in non-tidal areas because tides cause considerable movement of feeding birds. The decision whether to count feeding or roosting birds and whether to count birds on a rising or a falling tide must be made for each wetland separately depending on the behavior of the birds and the accessibility of feeding and roosting areas.

Beach Counts (BC)

The ISS and PFP do not sample shorebirds extensively outside wetland habitats. New surveys would have to be implemented for species in non-wetland habitats. For shorebirds that occur primarily on sandy beaches, walking observers could count shorebirds. Care must be taken to insure that birds are not double-counted when flying ahead of the observer, or under-counted when flying past the observer before being tabulated. Beach counts have been used by various organizations to count Sanderlings, Snowy Plovers and Piping Plovers but to our knowledge no group has organized multi-species shorebird counts on beaches.

Wetland & Beach Counts (WBC)

Some shorebirds, such as the Willet, and Marbled Godwit, make heavy use of wetlands and sandy beaches. In order to monitor these species, counts in both habitats are desirable so that significant portions of their populations will not be missed.

Rocky Shoreline Counts (RSC)

South of Alaska, some species are found only on rocky coastline, one of the most difficult shorebird habitats to survey because of its inaccessibility and non-visibility: the grey to black shorebirds that prefer rocky substrates are difficult to see on the dark rock background. We would expect a tendency for observers to under-count all rocky coast species. In addition, rocky shoreline can be hazardous to traverse or view from cliffs. Caution is needed establishing volunteer surveys in this habitat.

Ocean Transects By Boat Or Plane (OT)

Phalaropes, which migrate and spend the winter on the open ocean, can only be counted from a boat or plane. Given the size of the ocean area occupied and the lack of distinctive features on the ocean surface, it is necessary to use transects to count these species. Since it is not possible to separate Red from Red-necked phalaropes on aerial surveys (Briggs et al. 1987), boat surveys must be used to augment plane surveys if aerial surveys are chosen as the primary survey method.

Wetland Counts & Ocean Transects (WOT)

Since the Red-necked Phalarope occurs in wetlands and on the open ocean during migration, surveys of wetlands and transects of ocean waters would be necessary to cover all the habitat used by this species during migration.

Roadside Transects (RT)

Roadside transects could be used to count shorebirds that are confined primarily to grasslands or occur in relatively small and widely dispersed wetlands not likely to be included in multi-species wetland surveys. Roadside transects are the underlying methodology employed by the Breeding Bird Counts to monitor a wide range of bird species. For a roadside survey, the following should be considered: the extent and boundaries of the breeding range; the distribution of suitable breeding habitat within the breeding range; the accessibility of the breeding habitat by road; the selection of sampling points in the breeding habitat; and the method of counting birds at sample points. Landsat imagery, soil conservation maps, and vegetation maps are possible sources of information for determining the areas of suitable habitat within a species' range. Attempts could be made to obtain a density of breeding birds by habitat type and extrapolate to make a population estimate; or counts from sample points could be used as an index of population trends. Mark Ryan (pers. comm) has employed this method to determine Marbled Godwit breeding densities in some regions of the U.S.

Wetland Counts, Beach Counts & Roadside Transects (WBR)

Some species such as Long-billed Curlew and Black-bellied Plover use grasslands in addition to beaches and wetlands during migration. To cover these habitats, three different counting methods could be employed to monitor these species successfully.

Pedestrian Transects (PT)

In arctic regions, where shorebirds are widely dispersed, counts can be made along transects traversed by pedestrians. It is necessary to define the extent of the breeding area and define the habitats used by the breeding birds. Landsat imagery, soil conservation maps, and vegetation maps are potential ways of distinguishing the extent and distribution of different habitats. Transects should be stratified by habitat type, and walked by observers who record all birds observed within a predefined distance of the observer. See the Black Turnstone account below to see how this technique has been used in Alaska.

Selecting the Most Appropriate Season and Counting Method for Monitoring Trends in North American Shorebird Populations

When there is a choice, the best time to count shorebirds is during the breeding season, but for many species that nest in remote arctic regions this is not feasible because of the high costs of making such counts. The Breeding Bird Survey is an existing project that can be useful for monitoring breeding populations of some species that breed in the more accessible regions of North America. If adequate resources were available, breeding bird surveys designed specifically for target species could be an improvement over the BBS. Such surveys (see Marbled Godwit account for an example) would be labor intensive and costly. They could be designed to function with volunteer labor but only if they did not draw on the existing volunteer labor force so heavily that they effected the Breeding Bird Survey.

For a few species such as the Piping Plover, Snowy Plover and American Woodcock breeding ground surveys that monitor population trends have been put in place by government or private agencies. These could be expanded to include other species such as Wilson's Plovers. In a few other cases baseline surveys have been conducted to determine the size of breeding populations in recent years. Surveys that the FWS has conducted for Black Oystercatchers, and that Bob Gill and Colleen Handel have conducted for Black Turnstones and Bristle-thighed Curlews (see species accounts below) could be repeated in the future to look for evidence of population change.

Next to the breeding season winter is the best time to monitor populations. It is important that a substantial proportion of the North American population of a species be present within the U.S. in winter for counts during that period to be a useful index of population size. Christmas Bird Counts offer the only potential for a population trend analysis for a few wintering species that are so dispersed that they would be costly to survey by other methods.

Monitoring Population Trends Through Counts of Migratory Birds

It will be clear from reviewing the following species accounts that many shorebirds can only be monitored during migration because of the remoteness of their breeding and wintering populations. We have identified two methods that could be useful for monitoring shorebird populations through counts of migratory birds. These we label as Trend Analyses I and II.

Trend Analysis I

Trend Analysis I uses peak annual counts of migrating shorebirds from ISS-monitored sites to examine population trends of target species (Howe et al. 1989). Annual population indices for target species are calculated as the geometric mean of the peak annual counts. Population trends representing the average proportional increase or decrease of the population over the range of time examined are computed independently of the annual indices. The peak counts are regressed on year for each site and averaged over all sites, each weighted according to the magnitude of the population. By calculating and averaging site-specific trends, the influence on the overall trend estimate of declining numbers at one major site because of habitat deterioration or other factors is minimized.

Trend Analysis I has advantages and disadvantages compared to Trend Analysis II.

Advantages

1. The sample of sites need not include all key sites used by the species being considered.

2. Regressions can be calculated even if there are years with missing data.

3. It requires less labor intensive methods to acquire data than Trend Analysis II.

Disadvantages

1. The sample of wetlands used for the analysis must be representative of the entire wetland system used by the target species if the estimated trend is to accurately reflect population change. The representativeness of the wetland sample cannot be demonstrated without data from all key wetlands in the system.

2. The inability of volunteer observers to count some key areas on dates other than weekends and our inability to predict, a priori, the peak date of a species' occurrence at a site, adds variance to the estimate of the peak count.

Trend Analysis II

Trend Analysis II eliminates some disadvantages associated with the former method. It has not been applied to existing data.

Trend Analysis II requires one total count and a measure of the relative daily abundance for each target species from all key sites in a sampling space. Step 1 is the selection of the sampling space and the key sites. Step 2 is obtaining total counts and relative abundance curves. Step 3 is the construction of a population curve for each site from the total count and the relative abundance curve for each target species. As step 4 population curves for each site are then summed to establish a single population curve for the entire sampling space for each target species. As a final step regression is applied to the annual peak of the population curve for the sampling space. The reasoning for suggesting this method is outlined below.

A shorebird population (N) occupies a geographic space (A_g) where it occurs when breeding, migrating or wintering. Among species the sub-areas of A_g used during breeding, migration, and winter vary in degree of overlap. For those, occupying space inaccessible to observers during breeding and wintering seasons, monitoring must occur during migration. Monitoring can occur in a sub-area of the space used during migration which we define as the sampling space (A_s).

There is a date(s) during migration when the total number of individuals from a population reaches a peak in the sample space. Let this number be n. The proportion of the population (P) in the sample space at the peak date is P = n/N.

Our best possible index for population size, n, should vary directly with N. However, even if N is constant, n and P certainly will vary annually, producing an error factor; n and P have a distribution with a mean and standard error that we are unable to measure.

The potential for error in n can be minimized by selecting as large a sampling space as possible. Shorebirds are not randomly distributed over the entire sampling space but are concentrated in wetlands. Therefore sampling will be limited to wetlands (and other habitats when applicable). The wetlands chosen for sampling should represent the wetland system of the sample space to the extent that the proportion of birds sampled will not be affected by annual shifts of birds from monitored to non-monitored wetlands or visa versa.

The number of birds in the sampling space has a distribution that is a function of date. During a typical migration we expect numbers to gradually increase from a nadir, reach a peak and then gradually decline to another nadir. Similarly there are distributions for each sampled wetland, but the degree to which wetland distributions are synchronized with each other and with the distribution for the entire sampling space could be quite variable. For example, the timing of distributional peaks and the curvature of the distributions in wetlands can be expected to vary with the latitude of the wetland. In order to monitor the population we need to determine the peak of the distribution for the sample space from distributions in each sampled wetland.

If we knew the relative number of shorebirds at a site during the peak period of its migration and the total number of individuals on at least one date during the peak period of migration at each sampled wetland, we could determine the number of shorebirds at each wetland on any date and from this determine the date and peak number (n) in the entire sample of wetlands.

In summary, there are four key elements for monitoring shorebirds during migration for Trend Analysis II:

1. Choosing the sample space.

2. Selecting wetlands (and other habitats when applicable) for shorebird counts.
3. Determining the relative abundance of the target shorebird in each wetland during the peak period of migration in the sampling space.
4. Obtaining one estimate of the total number of each target species in each sampling site during migration.

Choice Of Sampling Space

The sampling space should be as large as can be monitored economically to reduce potential variation in **n** related to annual differences in the proportion of the shorebird population settling inside the sample area during migration.

Selecting Wetlands For Shorebird Counts

The wetlands chosen for sampling should represent the wetland system of the sample space so that the proportion of birds sampled will not be affected by annual shifts of birds from monitored to non-monitored wetlands or vice versa. This could be difficult since it requires the ability to foresee changes in the capacity of wetlands to support shorebirds and the ability to identify wetlands that may only occasionally receive heavy shorebird use. Lack of stability in water levels and variation in vegetative cover causes interior wetlands to experience quite variable levels of shorebird use which could be reflected by pronounced shifts in shorebird abundance in the sample space over time.

The difficulty of predicting variability in the wetland system over the duration of time desirable to monitor shorebird populations will make selection of wetlands for monitoring so complicated that it would be advisable to monitor all wetlands in the sample space that have the potential of holding many shorebirds. Wetlands that currently hold few shorebirds but could at a future date hold many because of habitat manipulations (State Waterfowl Management Areas & Federal Wildlife Refuges) should also be monitored. It should be noted that WHSRN is currently promoting habitat management for shorebirds at private and publicly owned wetlands.

Obtain One Census Of Total Individuals Of Each Target Species In Each Monitored Wetland

This should be feasible for most wetlands as has been demonstrated by the International Shorebird Survey and the Pacific Flyway Project. Large wetlands can be divided into sub-areas each covered by a team of observers at the same time. Timing of censuses in tidal areas is more critical than in non-tidal areas. In tidal areas censuses can be taken on rising or falling tides or at high tide roosts. The best conditions for counting should be worked out for each wetland based on the physical characteristics of the area and the behavior of the shorebirds. The basic problem in designing the technique is to devise a system that minimizes the possibility of double-counting or missing birds. In remote areas aerial flights supplemented with ground truthing will be necessary for making counts.

Much caution is necessary when surveying closely-associated wetlands to insure that some birds are not double-counted. For example, at Point Reyes some shorebirds feed in an estero and fly a few miles to a lagoon to roost at high tide. The lagoon is counted at low tide when the feeding birds are at the estero; the estero is counted on a moderately rising tide before birds have left for the lagoon. Thus double-counting of birds is avoided.

Variation in the ability of observers to identify and count birds is most critical in this phase of data collection and must be minimized. This is particularly true when a new team of observers takes over an area from an old team. If the initial team tended to consistently underestimate numbers and the new team consistently overestimates numbers, there could be an apparent change in the peak number of birds using an area although none really existed. There should be a training program for prospective counters.

Construct A Temporal Abundance Pattern For Each Species & Wetland

This is the most difficult task to accomplish because it requires regular counts of shorebirds throughout wetlands or at representative sites in each wetland for the duration of the period that the peak number of shorebirds for the sampling space could occur. These counts must also encompass the date of the count for the entire wetland any time a subset of the count areas are used to construct a temporal abundance pattern.

It is doubtful that a sufficient force of volunteers could be mobilized to conduct this activity in every monitored wetland every year. Consequently it is necessary to know the degree to which seasonal abundance patterns vary from wetland to wetland and from year to year. Where variability could be shown to be slight or predictable, empirical data from a subset of wetlands or years could be used to approximate seasonal abundance patterns for locations where it is not possible to obtain data annually.

Advantages

1. Trend Analysis II eliminates the problem of sample site representation by selecting all sites that are potentially important within the sampling space.

2. The variance from counting outside the dates of peak occurrence is eliminated because there is an estimate of abundance for every day of a species occurrence.

Disadvantages

1. All wetlands that could receive significant use by target species must be surveyed annually.

2. This method is more labor intensive than Trend Analysis I.

Application of Monitoring Techniques to Species

The most useful counting method for each species depends primarily on the location of breeding, migrating and wintering areas; habitat preferences; behavior; time of year; and survey costs. Potential survey methods for each species follow.

Black-bellied Plover (BBPL)

Black-bellied Plovers breed in arctic regions of Alaska and Canada. They winter in substantial numbers along the Pacific, Gulf and Atlantic coasts of the United States, and in countries of Central and South America (Morrison and Ross 1989). During migration and in winter they occur commonly in wetlands, on sandy beaches and in agricultural fields. East of the 105th Meridian they tend to be more numerous in marine than in non-marine habitats (Appendix 5; also Harrington et al. 1989). In the west, Black-bellied Plovers are most abundant in marine wetlands but they also occur in large numbers on agricultural land in the Central Valley during migration. The extent to which Black-bellied Plovers use beaches in the west has not been adequately documented.

In International Shorebird Surveys, Black-bellied Plover numbers per site were highest in Region 1 (Appendix 5) with highest annual numbers occurring during the last 10 days of May. The highest single count of Black-bellied Plovers east of the 105th Meridian was 10,000 in Quebec during fall migration (Appendix 6). Unconfirmed numbers of 30,000 were reported at Devil's Lake and 8000 at Monomoy Island, MA (WHSRN unpubl. data). In western North America by far the largest concentration of this species occurs on San Francisco Bay. Numbers on agricultural land in the Central Valley of California have not yet been adequately documented but are at least in the thousands during spring migration (Tim Poole pers. comm).

Monitoring of Black-bellied Plovers during migration in the eastern U.S. would be best undertaken at Atlantic coastal wetlands. During spring censuses, sites would best be located north of Chesapeake Bay with censusing focused on the last 10 days of May. During fall censuses, sites in Quebec and the northeastern and mid-Atlantic U.S. would be most useful (Regions 1 & 2 in Figure 1. Monitoring during migration in the west could be done in either spring or fall and would have to include at minimum coastal wetlands and agricultural land in the Central Valley.

Population monitoring during winter may be useful since there is evidence that a substantial portion of the North American Black-bellied Plover population(s) may winter in the U.S. Information gathered for this project indicates as many Black-bellied Plovers wintering in the western U.S. (Table 3) as Morrison and Ross (1989) found on a winter aerial survey of the entire South American coast. The value of winter surveys would be improved by

Table 3. Number of thousands of shorebirds at major wetlands at the coast (C), Central Valley (CV), and interior (except Central Valley) of the Pacific Flyway south of Alaska.

	FALL				WINTER				SPRING			
	C	CV	INT	ALL	C	CV	INT	ALL	C	CV	INT	ALL
BBPL	29	2.4	0.4	32	24	0.8		25	20	3.9	2.6	27
SEPL	5.2	0.3	0.1	6	2.9	-		3	4.3	0.3	3.1	8
KILL	0.9	0.9	5.7	8	2.5	0.4		3	0.3	0.6	0.9	2
BNST	8.2	19.5	39	67	7.7	4.5		12	3.2	5.7	19.8	29
AMAV	26	12.6	172	211	30	1.8		32	7.4	5.1	48	61
GRYE	1.0	2.0	0.7	4	0.6	0.4		1	2.1	0.4	0.4	3
LEYE	0.6	+	1.0	2	0.1	+		+	0.1	+	1.3	1
WILL	36	+	4.2	40	30	+		30	10.1	+	2.1	12
WHIM	1.0	+	+	1	0.1	-		+	1.4	3.8	9.8	15
LBCU	3.9	3.7	4.1	12	2.8	0.1		3	0.4	0.6	0.4	1
MAGO	47	0.1	6.4	54	40	0.1		40	49	0.2	3.9	53
RUTU	0.3	+	0.9	1	0.3	-		+	0.8	-	+	1
BLTU	0.5	-	-	1	1.8	-		2	0.9	-	-	1
PEEP		(1.0)	(16.4)			(0.8)				(22)	(50)	
REKN	2.9	-	+	3	1.0	-		1	8.4	-	0.6	9
SAND	13.5	-	+	14	18.5	-		19	6.7	-	0.8	8
WESA	470	19.0	113	602	201	4.7		206	1626	147	100	1873
LESA	86	15.1	12.2	113	45	8.0		53	51	12	78	141
BASA	0.3	+	1.5	2	-	-		-	+	+	0.2	+
PESA	0.5	-	0.6	1	-	-		-	+	-	+	+
DUNL	1.1	0.8	0.1	2	418	23.9		442	367	50	22	439
DOWI	38	26	87	151	34	25.1		59	137	62	125	324
COSN	0.4	+	+	+	0.1	0.1		+	0.2	0.1	+	+
WIPH	1.7	12.3	852	866	-	-		-	0.3	+	2.0	2
RNPH	31	11.1	390	433	+	-		+	8.2	+	22	30

Note. Fall numbers missing for two coastal Washington sites which could hold thousands of Western and Least sandpipers. Winter numbers missing for the Salton Sea and some of the Central Valley. This would primarily affect numbers of Black-necked Stilts, American Avocets, Western Sandpipers, Least Sandpipers, Dunlins, and dowitchers.

extending censuses into Mexico. Since wintering Black-bellied Plovers in North America may be from a different population than those in South America (Harrington, in litt.), migration and winter season censuses may be needed.

Lesser Golden Plover (LGPL)

The Lesser Golden Plover breeds on tundra in Alaska and Canada, and winters in South America, Eurasia, and Pacific Ocean Islands. During migration and winter Lesser Golden Plovers occur principally in grasslands and to a lesser extent in coastal marine wetlands of Patagonia.

The Lesser Golden Plover is an uncommon migrant in the west. East of the 105th Meridian the south migration of adults principally follows an over-ocean route from eastern Canada to the northeastern coast of South America. No major migration staging areas are described from fall. During spring Lesser Golden Plovers migrate principally through a corridor roughly 300 miles on either side of the Mississippi River. As indicated in Appendix 5, the northward passage tends to be rapid. However, the data do not portray information before 1 April. Lesser Golden Plovers may arrive in Texas in substantial numbers during March.

Our data for this grassland shorebird are sketchy because the principal focus of the ISS census program has been on wetlands. Migration season accounts in American Birds' show no counts greater than 1000 individuals in fall, and a maximum spring count of 25,000 from Illinois. Although no data are available, lore tells of sporadic "flight years" of Lesser Golden Plovers in the midwest when large numbers can be seen "streaming across practically every field." Evidently this is not an annual occurrence.

The sporadic nature of flight years in combination with an absence of documented staging sites during spring suggests that a census program for this species would have only low chances of success during north migration. During autumn, the species does not occur predictably in the U.S. We were unable to identify consistently-used suitable fall sites (if they exist) in eastern Canada.

Snowy Plover (SNPL)

Snowy Plovers breed on sandy coastal beaches and the margins of alkaline lakes in the U.S. and Mexico. Breeding numbers are declining on the Pacific coast because of human encroachment and high levels of clutch and chick predation. Beach and wetland sites can be surveyed for nesting birds in May or June, the peak of the breeding season. Breeding season surveys conducted by Point Reyes Bird Observatory, The Nature Conservancy, U.S. Fish and Wildlife Service, and State Wildlife Agencies in Washington, Oregon, Nevada, and Utah have identified most Snowy Plover breeding sites west of the Rocky Mountains (Page et al. 1991). Survey data from at least one breeding season are available from most sites for the period between 1977 and 1980, and from 1988 or 1989. Breeding season surveys in 1988 and 1989 that were coordinated among all western states indicated about 9600 Snowy Plovers breeding in the U.S. west of the Rocky Mountains (Page et al 1991). Future breeding season surveys coordinated to cover all breeding sites in the western states should be conducted at regular intervals. The recovery plan for Piping Plovers calls for comprehensive surveys of the breeding population at five-year intervals. A similar frequency might be suitable for the Snowy Plover. While volunteers could conduct these counts, they should be well trained to be comparable to past censuses made by experienced observers. Cryptic plumage, furtive behavior, and scattered nesting make breeding Snowy Plovers difficult to count.

Most Snowy Plovers migrate from the interior of the U.S. to the coasts of the U.S. and Mexico where they join flocks of coastal breeders at predictable locations for the winter, which extends from the beginning of November until the end of February. Wintering Snowy Plovers feed and roost on beaches and, when the tide is out, on sand and mud flats. Winter counts of birds should be made on beaches during high tide when plovers are unable to feed on tidal flats. At high tide plovers usually roost in flocks that are easily counted. PRBO has a network of volunteers who have made monthly counts during winter at many roosting sites on the California coast since 1979 (Page et. al. 1986).

Since it is not possible to distinguish between coastal and interior birds on winter counts, and since a significant proportion of the breeding Snowy Plovers from the western United States winter south of the United States, winter counts provide less information than counts on the breeding grounds.

Wilson's Plover (WIPL)

In the U.S., Wilson's Plovers nest principally on Gulf of Mexico beaches from Texas to Florida, and Atlantic coast beaches from Florida to Virginia, and, rarely, to New Jersey. Little is known of their population size, but being beach nesters it is likely that local populations are declining like those of the Piping Plover and Snowy Plover. There are no inland-nesting populations of Wilson's Plover. Breeding season surveys of beaches for this species could be conducted like those for the Snowy Plover or Piping Plover.

Wilson's Plovers from the Atlantic coast may largely migrate south of the U.S. for the winter. The highest numbers of Wilson's Plovers of which we are aware come from Laguna Atascosa National Wildlife Refuge where biologist Steve Thompson estimates that more than 1000 are present during winter and spring. It is not known if these numbers occur annually. The next highest counts of the species that were found (55) were also from the Texas coast. If it is proven that this species shows a high degree of fidelity to wintering sites, the possibility exists of using winter counts for monitoring at least the Gulf Coast population. Perhaps such winter surveys could coincide with those of Piping Plovers.

Common Ringed Plover (CRPL)

Ringed Plovers nest in arctic regions of Alaska and Canada. The wintering grounds are in Asia and Europe. Migrants are not encountered with any frequency except on the Aleutian Islands and on the mainland of western Alaska. Because of the inaccessibility of these regions there is little opportunity for surveying this species.

Semipalmated Plover (SEPL)

The Semipalmated Plover is another arctic breeder with a coastal wintering range that extends well beyond the U.S. into South America. We suspect that the proportion of the population wintering south of the U.S. is so great that this species is best monitored in wetlands during migration. East of the 105th Meridian, ISS data suggest that Semipalmated Plovers are classic elliptical migrants, with the majority of birds moving north through central parts of the continent and south through northeastern U.S. coastal sites (Appendix 5). Numbers in eastern Canada also are high during autumn.

Based on the ISS, Semipalmated Plovers east of the 105th Meridian are found almost as frequently in marine as in non-marine habitats (Harrington et al. 1989) indicating that they occur broadly. Especially during autumn, the sites having highest numbers of individuals are marine wetlands (Appendix 5). For example, 88% of the individuals comprising a national baseline number (Harrington et al. 1989) during autumn were at marine sites. The comparable value from spring was 69%.

Trend censusing of Semipalmated Plovers east of the 105th Meridian could be accomplished at mid- and northeast Atlantic coast wetlands during mid-August, before appreciable numbers of juveniles have migrated to U.S./Canadian coastal sites. Alternatively, population trend censuses in mid-western states, especially non-marine habitats, could be accomplished during the last third of May, but annually variable water conditions might increase variance of counts. West of the Rocky Mountains monitoring could occur during either spring or fall migration. The period of peak passage in spring is probably between late April and early May south of Alaska. The timing of adult passage in fall is probably similar to the timing east of the 105th Meridian.

Piping Plover (PIPL)

Piping Plovers breed in Great Plains and Great Lakes regions of the U.S. and Canada and along the Atlantic and Gulf coasts of the U.S. Since their populations have been classified as either threatened (Great Plains population) or endangered (coastal population), state and federal agencies have made considerable efforts to monitor their numbers. The breeding sites have been well documented (Haig and Oring 1988) and have been monitored at varying intervals. The breeding population has been estimated at about 4300 birds (derived from Nicholls and Baldassarre 1990). Wintering sites along the Atlantic and Gulf coasts of the U.S. have been documented by Nicholls and Baldassarre (1990). Complete counts of plovers both at breeding sites and on the wintering grounds are planned for five-year intervals as part of the Piping Plover Recovery Plan.

Mark Ryan has studied nesting Piping Plovers extensively in the interior of the U.S. and Canada. He reports that currently inland sites are being monitored at varying frequencies. At some sites, in addition to counts, information is available on productivity and survivorship. Mark (in litt.) argues that survival and productivity information from the interior predicts a population decline similar to that indicated by survey data and suggests that it might be as profitable to monitor reproductive success as to count birds on their breeding grounds. Banding data suggest that approximately 85% of the plovers that nest on the Great Plains spend the winter in Texas. Some go south into Mexico and a few go eastward to North Carolina, Alabama, Florida, and Louisiana.

Anne Hecht reports that the Atlantic coast Piping Plover population is more intensively monitored than the interior population. Comprehensive information on population size is available for the past three years. Furthermore these annual censuses are expected to continue indefinitely. She noted that coverage in the maritime provinces of Canada is not as complete as that on the Atlantic coast of the U.S. Breeding birds are monitored largely by volunteers (who may receive small stipends). Surveys are organized at the state level and the level of monitoring varies by state. At some sites there are only one or two counts per breeding season; at others productivity is monitored. In 1990, productivity data were collected from 68% of the breeding pairs on the Atlantic coast. The data for each state are collected by a state coordinator, checked for errors, and then transmitted to the U. S. Fish and Wildlife Service for compilation and interpretation.

Killdeer (KILL)

Killdeers breed widely in Canada and the U.S. southward into South America. They winter along the U.S. Pacific coast and through the southern U.S. into South America. Although they occur around wetlands at all times of the year, they also make heavy use of agricultural fields, particularly during the non-breeding season. They do not form flocks in wetland habitats as frequently as other shorebirds.

In an analysis of the first 15 years of the Breeding Bird Survey, from 1965 to 1979, Robbins et al. (1986) report that Killdeer represented 54% of all the shorebirds on the survey. During the survey period, Killdeer showed strong increases in the eastern and central regions of North America, which was subdivided into 94 strata (sub-areas) based on Aldrich's (1963) life zone map. There were no significant decreases of Killdeer in any strata.

Our analysis of ISS data indicates Killdeer become relatively scarce at wetland survey sites after March (Appendix 5), presumably because they scatter on nesting territories throughout most of their range. During fall they tend to be more scattered among sites than in winter (Appendix 5).

Little is known of the annual regularity of Killdeer concentrations during migration, except that a build-up observed at Cheyenne Bottoms during one year was extraordinary. Unless it is proven that Killdeers regularly concentrate in large numbers at some sites, population trend censusing during migration is not recommended. Killdeers are best monitored through the Breeding Bird Survey and Christmas Bird Count. Trends obtained from analysis of the two data sets could be examined to see how well they compared.

Mountain Plover (MOPL)

Mountain Plovers breed on the short-grass prairies east of the Rocky Mountains and winter on pastures, coastal plains, plowed fields, and alkaline flats from California and Texas to northern Mexico. There is evidence suggesting that the breeding range and population size of this species is shrinking (Graul and Webster 1976, Leachman and Osmundson 1990). Graul and Webster (1976) estimated the breeding population of a 3470 ha area in Colorado. At randomly selected points along a road transect, they classified habitat as good, marginal, or highly doubtful to impossible for breeding based on vegetative characteristics and slope. From the sample points, they directly determined the relative amounts of the three types of habitat in the study area. By combining these figures with known nest densities for each habitat ranking, they estimated the number of plovers nesting on the area. This method could potentially be used throughout the breeding range. Care would be needed to obtain accurate habitat rankings, to ensure that the selected transects adequately sampled available habitat types, and that figures used for nesting densities were current. It would be an improvement over Graul and Webster's (1976) methodology if Landsat imagery could be used to determine the acreage of each habitat ranking in the study area.

Mountain Plovers tend to flock in fields during the winter and roadside transects could be established throughout the winter range. Observers would count the birds in every field that appeared to be suitable for the species along the transect. The same transects could be run yearly to provide an index of winter population size. Prior to instituting such a program considerable preliminary work would be necessary to determine if the existing road system was adequate to sample the species on its wintering range.

American Oystercatcher (AMOY)

The Atlantic and Gulf coasts of the U.S. are at the northern end of the American Oystercatcher's breeding range which extends into South America. The American Oystercatcher is considered resident in most of its U.S. range along the Atlantic and Gulf coasts. However, data from the ISS (Appendix 5), indicate northeastern and mid-Atlantic populations are migratory. During the breeding season, the highest proportion of the Atlantic population occurs on the coasts of New Jersey, Virginia, North and South Carolina. Numbers on the Georgia coast are unknown. Gulf coast numbers tend to be lower than numbers on the Atlantic coast (Appendix 5), possibly excepting the western Mississippi Delta regions and the Candeleur Islands where numbers have been poorly described.

Available information indicates that population trend censuses of American Oystercatchers east of the 105th Meridian would best be accomplished through censuses of breeding birds. However, large winter concentrations of American Oystercatchers recently have been documented by Chris Marsh along bays and coastal waterways of South Carolina. These concentrations, which may comprise the bulk of the northeast and mid-Atlantic populations (something that needs confirmation through banding), may offer an economic opportunity for winter population trend censuses. Similarly, more needs to be learned about a fall build-up of American Oystercatchers on the Texas/Louisiana Gulf coasts (Appendix 5, Region 4B) to determine if counts there during migration offer a more economic potential of monitoring Gulf populations than breeding surveys.

American Black Oystercatcher (ABOY)

The American Black Oystercatcher is a resident of the rocky shoreline along the Pacific coast from the Aleutian Islands in Alaska to Baja, California. Segments of rocky shoreline could be selected throughout the oystercatcher's range and surveyed for birds annually in fall, summer or spring. Summer, when oystercatchers are most vocal, would be the best survey period.

The Fish and Wildlife Service has funded two surveys of colonial seabirds, including American Black Oystercatchers, along the California coast. On the initial survey from 1974 to 1980 a total of 704 breeding oystercatchers were counted from boats (Sowls et al. 1980). It was difficult for observers to determine whether some birds were breeders or non-breeders resulting in some non-breeders being included in the counts (Sowls et al. 1980). Sowls et al. (1980) noted that sections of shoreline with poor habitat for other seabirds but a potential for oystercatchers were frequently bypassed on the surveys, and that oystercatchers could be difficult to see among the confusion of the reefs and rocks where they did search the coast. Consequently, Sowls et al. (1980) estimate the population for the state at about 1000 breeders rather than the 700 detected on their counts. The survey was repeated by the Fish and Wildlife Service between 1989 and 1991 but the results have yet to be tabulated for the entire coast (Harry Carter pers. comm.). According to Harry Carter (pers. comm.), numbers during the latter survey are likely to be higher than on the initial survey primarily because the later observers used smaller boats and were able to approach closer to shore.

Similar surveys have been conducted on the Oregon and Washington coasts. Speich and Wahl (1989) estimated 334 Black Oystercatchers along the Oregon coast in the late 1970's. In 1988 a total of 358 Black Oystercatchers were counted along the Oregon coast (Roy Lowe pers. comm.). Surveys along the Washington coast between 1979 and 1983 detected a total of 315 oystercatchers (Roy Lowe pers. comm.).

The results of these surveys and others from British Columbia and Alaska have been combined into a mapping analysis system by the FWS and NOAA. The system, "The West Coast of North America Colonial Seabird Information System," provides quick and easy access to data from all surveys.

These surveys are mentioned because they provide estimates of the size of the breeding population in part of the oystercatcher's range. Similar surveys in the future could provide valuable information on the stability of a significant component of the oystercatcher breeding population.

Black-necked Stilt (BNST)

Black-necked Stilts breed in interior and coastal wetlands in the western half of the U.S. and in coastal wetlands on the Atlantic and Gulf coasts of the U.S. The population ranges through Central America into South America. In the U.S., stilts migrate from most interior wetlands to the coast for winter. The proportion of the North American stilt population that spends the winter south of the U.S. is unknown but probably is substantial (Table 3).

International Shorebird Surveys east of the 105th Meridian found Black-necked Stilts using marine sites more in spring than in fall. At eastern sites (Regions 1, 2, 3A, and 3B), the species was predominately at marine sites (Appendix 5), possibly because of the use of local impoundments at coastal wildlife refuges. The brief period of sightings (typically less than 30 days) in these regions indicates transient rather than breeding birds. In Regions 4 and 5, Black-necked Stilts were found principally in non-marine habitats during summer and fall, but at marine habitats during spring (Appendix 5).

Stilts breed in low densities east of the 105th Meridian and are widespread but local breeders in the interior of the western U.S. On the Pacific coast, breeding is from San Francisco Bay south. Because of high migration-count variance, population trend censuses would likely be most successful in major breeding areas. It should be possible to identify most wetlands where stilts breed, at least in the west. If this were done, periodic comprehensive counts of the breeding population could be conducted as has been done for Piping and Snowy plovers.

East of the 105th Meridian, Black-necked Stilts rarely gather in large flocks during migration except in a few ephemeral and unpredictable situations such as water draw-downs for agricultural functions on the Gulf Coast plain and at Belle Glade, Florida. In the west, sizable concentrations of stilts occur in interior and coastal wetlands (Appendix 3). Should monitoring during the breeding season prove economically impractical, censuses during August-September in Regions 4B and 5B, and in coastal and interior wetlands of the west might prove useful. In the west, in particular, fall appears to be a better time to survey than either spring or winter because the total number of stilts at key fall staging areas is at least twice the total for spring and four times the total for winter (Table 3).

American Avocet (AMAV)

American Avocets breed in wetlands from the prairie provinces of Canada south through the western U.S. to southern California, southern New Mexico, coastal Texas and into northern Mexico. They spend the winter in coastal wetlands, primarily from northern California and southern Texas to southern Mexico, and, casually, into Central America and also locally in Florida (AOU 1983). Data from American Birds' migration season accounts show highest counts of American Avocets from states west of the 105th Meridian, with very high counts frequently coming from Great Salt Lake, Utah during the breeding season (Appendix 5). East of the 105th Meridian, American Avocet were found most abundantly during the breeding season in non-marine wetlands of Region 5A (Appendix 5). In all other regions they were most abundant in marine habitats, especially during the three months following the breeding season. An exception to this was in Texas where they were most common during spring.

Because American Avocets tend to aggregate during the breeding season (Sordahl 1982, 1990), censuses of the species in strategic breeding zones may be the most cost effective and accurate method for population trend censuses. Breeding season counts of avocets could be combined with those for Black-necked Stilts in Colorado, New Mexico, and California, and in the inter-mountain region of the western U.S. In these areas breeding sites would be identified and a comprehensive survey of all sites completed periodically. A similar survey method would not be feasible on the prairie portion of the breeding range where avocets are scattered at many pothole breeding sites. Breeding numbers in this part of the range could be sampled along roadside transects (Mark Ryan pers. comm., see Marbled Godwit account).

Winter surveys of wetlands might be easier than breeding season surveys because avocets are more concentrated on the coast during winter than during summer. Data collected from west of the Rocky Mountains suggest a large proportion of the breeding population moves south of the U.S. for the winter (Table 3). Since this movement is probably mostly to Mexico, extending winter surveys to include Mexico would make winter monitoring of this a better indicator of population trends than limiting it to the U.S.

Fall migration, when many avocets concentrate in western wetlands (Table 3), also is a potential period for monitoring. Particularly large concentrations occur at Great Salt Lake, in Utah in fall.

Northern Jacana (NOJA)

Northern Jacana are reported to be resident in wetlands of southern Texas by the American Ornithologist's Union (AOU 1983). Other references describe them as a Mexican and Central American species that occurs accidentally in southern Texas (for example National Geographic Field Guide to North American Birds). If the species is regularly resident in wetlands of southern Texas, all wetlands with the potential for jacanas could be identified and covered during the breeding season at some prescribed interval of years.

Greater Yellowlegs (GRYE)

The Greater Yellowlegs' breeding range extends across tundra and muskeg from Alaska to Labrador and Newfoundland. The winter range extends from the Pacific, Gulf, and Atlantic coasts of the U.S. through Central America and South America to Tierra del Fuego. The species also winters in interior regions of the southern U.S.

East of the 105th Meridian, Greater Yellowlegs were found in highest numbers at marine habitats in Regions 1, 2, and 3, but were primarily in non-marine habitats in the remaining regions. During spring migration, Greater Yellowlegs were less numerous than during fall migration in Regions 1, 2, and 3A, whereas the reverse was true in remaining areas. The species was broadly distributed during migration, occurring at a high proportion of the census areas. Migrating Greater Yellowlegs occur in smaller numbers than other species, but are widespread in interior and coastal wetlands in western North America.

If population trend censuses were attempted east of the 105th Meridian during migration, the focus should be on coastal sites in Regions 2 and 3A during mid-August (prior to the major juvenile migration period) supplemented by non-marine sites in Regions 4A and 5A during early August. The flooded rice fields in central-southern Louisiana and Texas are a prospect for spring monitoring. The later timing of the Greater Yellowlegs' spring migration in all regions north of here (Appendix 5) raises the possibility that the majority of spring migrants east of the 105th Meridian pass through Texas and Louisiana. If this turns out be true the rice fields offer an opportunity for monitoring. Given current information, perhaps the best alternative would be to conduct population trend censuses during both north and south migration periods, hoping that the north migration censuses would prove reliable and that the fall censuses could then be dropped.

Although Greater Yellowlegs could be counted in wetlands west of the Rocky Mountains during migration, their numbers are generally small compared to other species that might be monitored at the same time. Additionally, migrating yellowlegs frequently occur at small ponds with a paucity of other species. Consequently, a monitoring program, focusing on multi-species counts of migrating shorebirds, runs a risk of sampling yellowlegs poorly relative to the more abundant species upon which the selection of wetlands for monitoring will be based.

Lesser Yellowlegs (LEYE)

Lesser Yellowlegs nest in northern boreal and sub-arctic areas from Alaska and British Columbia to Prince Edward Island. Although small numbers winter in the southern United States, the main wintering areas are between northern and austral South America.

According to ISS results, Lesser Yellowlegs are widely dispersed during spring and fall migration. In Atlantic coastal regions, more Lesser Yellowlegs were counted at marine than non-marine sites (Appendix 5). The converse was true in Regions 4 and 5. Except in Region 3B (where average numbers per site were relatively low), the species was less abundant during spring than autumn (Appendix 5). According to Harrington et al. (1989), most ISS sites with relatively high numbers of Lesser Yellowlegs were non-marine habitats during spring, and to a lesser extend during fall. Highest site concentrations were in Region 5A during spring, a result caused by extremely high counts in some, but not all, years at Cheyenne Bottoms.

The International Shorebird Surveys include relatively few census sites in the rice-growing areas of Louisiana and Texas where Lesser Yellowlegs are apparently abundant during spring migration (Appendix 6). These areas could be important to include in a spring monitoring program. Lesser Yellowlegs in the rice growing areas would have to be counted through a standardized roadside survey of fields between mid- and late April (Appendix 5). The sampling design would need to contend with the extremely patchy distribution of shorebirds in rice fields and annual differences in the acreage planted to rice. The Canadian prairie provinces should also be covered in spring for a population trend census.

West of the Rocky Mountains, migrating yellowlegs are generally scarce in wetlands compared to other species that we might wish to monitor at the same time. Yellowlegs also occur often at small ponds that have a paucity of other species. A monitoring program focusing on multi-species counts of migrating shorebirds runs a high risk of poor sampling of yellowlegs relative to the more abundant species for which wetlands selection will be based. Thus we see limited opportunities for monitoring yellowlegs in western North America.

Solitary Sandpiper (SOSA)

The Solitary Sandpiper nests in taiga habitat from Alaska eastward across Canada to Labrador. The winter range is primarily south of the U.S. in Central and South America.

West of the Rocky Mountains migrant Solitary Sandpipers are too scarce to be a focal species for monitoring. Solitary Sandpipers are very dispersed during migration east of the 105th Meridian where ISS counters rarely encountered ten individuals on a census of any site. These sandpipers were found more frequently in non-marine than marine habitats and occurred mostly at small, scattered temporary ponds and pools which were not well represented in International Shorebird Surveys.

Data from east of the 105th Meridian point to a highly synchronized spring migration and suggest that any census effort for this species should focus on the first ten days of May, and concentrate on Regions 3B (North and South Carolina) and 4A (states north of Tennessee). Numbers are on average higher during fall migration in Region 4A but monitoring in fall would be complicated by the presence of juveniles.

The Solitary Sandpiper cannot be monitored efficiently during migration through multi-species counts in wetlands because it is not as concentrated at the larger wetlands as are other shorebirds. A special counting effort incorporating large numbers of small seasonal wetlands into a sampling program would be required to monitor this species effectively.

Willet (WILL)

A western population of Willets breeds at non-marine wetlands in the inter-mountain and prairie regions of the U.S. and Canada; an eastern population breeds in salt marshes along the Atlantic and Gulf coasts from Massachusetts to Texas; a disjunct group breeds principally on the Bay of Fundy and Atlantic coast of Nova Scotia. The winter range extends along the Pacific coast from northern California to northern Chile; along the Gulf coast; and along the Atlantic coast from Virginia through the West Indies to northern Brazil (AOU 1983).

During migration east of the 105th Meridian, Willets tend to be dispersed along ocean beaches in densities similar to those encountered during the breeding season (Appendix 5) instead of being concentrated at migratory staging areas. Exceptions may occur at Laguna Atascosa National Wildlife Refuge where a questionnaire response indicated Willets exceeded 10,000 individuals on autumn and winter counts. Likewise the files of the Western Hemisphere Shorebird Reserve Network indicate the occurrence of 40,000 Willets at Devils Lake Management District (North Dakota) but no season is indicated.

Unlike the situation in eastern North America, Willets in the west tend to concentrate in coastal wetlands during fall, winter and spring. During these periods they also are common on coastal beaches.

The Breeding Bird Survey provides information on numbers of breeding Willets. Robbins et al. (1986) report that Breeding Bird Surveys from 1965 to 1979 show rising numbers of Willets in the eastern, central and western regions of North America and a significant increase at the continental level. Since the Breeding Bird Survey was designed to monitor a broad range of species, it probably does not sample Willets as well as do roadside transects specifically designed for this species. For a roadside survey of this species, the following should be considered: the extent and boundaries of the breeding range; the distribution of suitable breeding habitat within the breeding range; the accessibility of the breeding habitat by road; the selection of sampling points in the breeding habitat; and the method of counting birds at sample points. An attempt could be made to obtain a density of breeding birds by habitat type and extrapolate to make a population estimate; or counts could be used from sample points simply as an index of population trends. It would be worth investigating the possibility of combining such a survey with those for the Marbled Godwit, Long-billed Curlew, Wilson's Phalarope and American Avocet in regions where nesting distributions overlap.

A breeding season survey based on roadside transects is probably not as effective for monitoring the eastern breeding population as for the western population. For the eastern population a census effort in coastal wetlands could be coordinated to include Willets and Black Oystercatchers. The method would need modification for the Nova Scotia population because of its different habitat.

Data gathered for this study indicate that Willets could be monitored in western coastal wetlands during fall migration and in winter (Table 3). Numbers of Willets using beaches during both periods appear sufficiently large, so beach habitat should also be included in surveys to avoid excluding significant numbers of migratory or wintering birds. Since the winter range of the Willet extends well beyond the U.S., winter surveys in the U.S. would exclude an unknown but potentially significant portion of the North American population.

Wandering Tattler (WATA)

The Wandering Tattler breeds along streams and around lakes in Alaska and northwestern Canada. It winters along rocky shoreline of the Pacific coast from central California south to Peru and on islands of the central Pacific Ocean, such as the Hawaiian and Tuamotu islands. Counts of this species could be made along segments of rocky shoreline during migration. The winter range is largely outside the U.S. making winter counts of little value.

Spotted Sandpiper (SPSA)

The breeding range of the Spotted Sandpiper covers a large portion of Canada and the U.S. The winter range extends from the southern U.S. through Central America into southern South America. The Breeding Bird Survey provides an annual index of breeding numbers across North America; the Christmas Bird Counts provide information on relative annual abundance at the northern limits of the species wintering range. The winter range extends so far beyond the U.S. that we expect the CBC sample to be too small a segment of the

North American population to provide a reliable picture of fluctuations in population size. Although the species is associated with wetlands during migration, it is very solitary and does not concentrate at large wetlands to the same degree as many other shorebirds. A high proportion of the migrating Spotted Sandpipers probably occur in small wetlands that would be excluded from a multi-species survey. Consequently, counts in wetlands selected for more abundant shorebirds might not be very effective for monitoring Spotted Sandpipers.

Upland Sandpiper (UPSA)

Upland Sandpipers breed primarily east of the Rocky Mountains, in Canada, and the U.S., and winter primarily in Patagonia. They are relatively uncommon as migrants or breeders in the northeast parts of the U.S., are most common in mid-continental grasslands and are relatively rare west of the 105th Meridian. Upland Sandpipers use primarily grassland habitats at all times of the year.

During migration Upland Sandpipers rarely gather in large flocks. At times a few hundred have been reported from a habitat island such as an airport or sod field. During spring migration Wetmore (1926) observed that migrating Upland Sandpipers in Paraguay were solitary or were in small loose flocks. An absence of sightings of flying flocks suggests that birds do not flock to migrate in North America.

Upland Sandpipers were not effectively sampled in International Shorebird Surveys because effort is concentrated in wetlands. The species' broad dispersal and tendency not to concentrate at traditional staging sites make monitoring during migration unfeasible.

Monitoring by the Breeding Bird Survey indicated that breeding populations increased in the eastern and central regions of North America between 1965 and 1979 (Robbins et al. 1986). Since the BBS was designed to monitor a broad range of species, it probably does not sample Upland Sandpipers as well as roadside transects specifically designed for this species, which should consider the extent and boundaries of the breeding range; the distribution of suitable breeding habitat within the breeding range; the accessibility of breeding habitat by road; the selection of sampling points in the breeding habitat; and the method of counting birds at sample points. An attempt could be made to obtain a density of breeding birds by habitat type and extrapolate to make a population estimate; or counts could be used from sample points simply as an index of population trends. It is unlikely that a roadside survey for Upland Sandpipers would overlap with other shorebirds because breeding Upland Sandpipers are not linked to wetlands as much as other shorebirds.

Eskimo Curlew (ESCU)

The Eskimo Curlew breeds on arctic tundra and winters in South

America. Since the species is almost extinct, it is not likely to be monitored by any of the survey methods we are summarizing. If the current breeding range of the species were identified, Eskimo Curlews would best be monitored on the breeding grounds by professional biologists.

Whimbrel (WHIM)

Whimbrels have a disjunct arctic breeding distribution with one major North American breeding zone located in the northern Alaskan and western Canadian Arctic, and another zone located on the southwest coast of Hudson's Bay. The winter range of Whimbrels extends principally from Central America and northeastern South America south to northeastern Brazil on the Atlantic coast, and south to Patagonia on the Pacific coast. Their extensive winter use of mangroves and their remote distribution makes population trend censuses impractical at that time of year.

During migration in eastern North America, Whimbrels are found principally in marine habitats. In fall, Whimbrels tend to concentrate at specific marine sites, especially those with extensive salt marshes (Harrington et al. 1989). They also concentrate at marine sites during spring except in Region 1 (Appendix 5). The highest concentrations of Whimbrel east of the 105th Meridian are on the Virginia coast (Region 3A) from early to mid-May.

Based on the flight direction of numerous flocks seen migrating along the Delaware Bay shore during late May, it appears that Whimbrel travelling north in the U.S. mid-Atlantic region are headed for the Hudson's Bay breeding zone. At about the same time large flocks also are reported at a number of locations around the Great Lakes (American Birds, migration season accounts) where large counts have been reported to occur between 22 and 27 May. These dates are later than reported egg-laying dates of Whimbrel in Alaska (Irving 1960; Kessel & Gibson 1979). Presumably the Great Lakes migrants are also heading for the Hudson's Bay nesting areas, where laying is in early June. The high counts from the Great Lakes Region are sporadic, perhaps a consequence of interrupted migration flights because of inclement weather.

During aerial and ground surveys of the Louisiana and Texas Coast plain (Harrington, unpubl. data), Whimbrel were found during mid-April (1983) in recently plowed agricultural fields and in recently drained crawfish growing fields. In one crawfish field 90 Whimbrel had disappeared within two days of first being sighted (Harrington, unpubl. data). Whimbrel were not commonly found in other coastal plain habitats.

Whimbrels also occur in large numbers in the Central Valley of California. Records in American Birds' migration season accounts show about 1000 birds during the third and fourth weeks of April. Tim Poole (pers. comm.) expects that over 10,000 may occur in the southern San Joaquin Valley during the peak of spring migration.

Palmer (1967) noted that the Central Valley migrants, as well as those on the Pacific coast, fly north to southern Alaska, and then overland to the interior and north of Alaska and Western Canada.

Population trend censuses of Whimbrels should include counts of birds from the Alaska breeding group and the Hudson's Bay group. Since Whimbrels make heavy use of coastal beaches during migration, beach and wetland habitats should be covered for effective monitoring along the Pacific coast. More information is needed on Whimbrel distribution from the California Central Valley to determine the best method of counting that portion of the Alaskan group. Aerial flights supplemented by roadside transects are worth trying. No matter what method is chosen spring is clearly the best season to count Whimbrels in coastal and interior habitats west of the Rocky Mountains (Table 3). The Hudson's Bay group would best be censused during the northward migration at representative sites in Region 3A and/or 3B (Appendix 5). Censuses during south migration might be impractical because most birds of the Manitoba group pass through remote areas of eastern Canada and then out to sea (Palmer, 1967).

Bristle-thighed Curlew (BTCU)

The breeding range of the Bristle-thighed Curlew is restricted to a relatively small region of western Alaska. It winters in the Pacific from the Hawaiian and Marshall islands south to the Fiji, Tonga, Samoa, Marquesas and Tuamota islands. During fall migration, Bristle-thighed Curlews are known to stage at two locations in Alaska, the Yukon-Kuskokwim Delta, where thousands are estimated, and coastal lowlands of the Seward Peninsula where numbers are much smaller (Handel and Dau 1988).

Bob Gill (pers. comm.) estimates 2400 to 4400 Bristle-thighed Curlews breeding in Alaska based on surveys on the breeding grounds. He used Landsat imagery, infra-red photography, and soil service maps to classify the potential breeding habitat of the nesting curlews. A stratified sample using point counts 500 m apart on transects distributed through habitat and elevation gradients was used to obtain density estimates for habitat types so that population size could be extrapolated from the amount of available habitat. Survey costs were expensive because people had to be transported to sampling sites by plane and helicopter. Gill believes it would be adequate to repeat the survey every five years to monitor population trends since there are no serious threats to the population.

Gill believes that the population could also be monitored by flying fixed transects over staging areas that he and his colleagues have identified in the Yukon-Kuskokwim Delta over the past four years. Since it is not possible to separate Whimbrels from Bristle-thighed Curlews from a plane, ground surveys would be needed to interpret the results of the aerial survey.

Long-billed Curlew (LBCU)

The Long-billed Curlew breeds primarily in the Inter-mountain and Prairie regions of the western U.S. and Canada. It winters from California, extreme northern Texas, southern Louisiana and coastal South Carolina to southern Mexico and southern Florida. The only part of the ISS region where there were more than sporadic sightings of Long-billed Curlews was at breeding latitudes in Region 5A and at marine coastal sites in Louisiana and Texas during late summer and fall (Appendix 5). In western North America during fall migration Long-billed Curlews occur at marine and non-marine wetlands, on sandy beaches, and on agricultural land. They are primarily confined to California in winter where they concentrate at coastal wetlands, on sandy beaches, and on Central Valley agricultural land.

Long-billed Curlews are monitored by the Breeding Bird Survey. Because this was designed to monitor a broad range of species, it probably does not sample Long-billed Curlews as well as do roadside transects specifically designed for this species. For a roadside survey of this species the following should be considered: the extent and boundaries of the breeding range; the distribution of suitable breeding habitat within the breeding range; the accessibility of the breeding habitat by road; the selection of sampling points in the breeding habitat; and the method of counting birds at sample points. An attempt could be made to obtain a density of breeding birds by habitat type and extrapolate to make a population estimate; or counts could be used from sample points simply as an index of population trends. It would be worth investigating the possibility of combining such a survey with those for the Marbled Godwit, Willet, Wilson's Phalarope and American Avocet in regions where nesting distributions overlap.

The Christmas Bird Counts might provide useful information on the part of the population wintering in the U.S. However, as with other species whose wintering range extends beyond the U.S., an unknown portion of the North American population would be excluded from the sample.

Long-billed Curlews also could be surveyed in wetlands during fall migration and in the winter, but the unknown proportion of the population using beaches and agricultural lands would be missed if these habitats were not also covered. The value of winter counts decreases because an unknown portion of the wintering population resides south of the U.S. This problem could be largely rectified if the survey area were extended to include Mexico.

Hudsonian Godwit (HUGO)

The Hudsonian Godwit breeds on tundra in Alaska and Canada, and winters in South America.

East of the 105th Meridian Hudsonian Godwits are uncommon and scattered during spring migration and relatively common during fall when they concentrate principally in marine habitats. In Regions 1 and 3A, and less clearly in Region 2, peak numbers are seen during the first third of August, which is earlier than adults are reported to leave breeding areas on Hudson's Bay. It is possible that these are birds of non-breeding age, or that they come from the disjunct Alaskan group that breeds earlier. In any case, the numbers rarely exceed 200 individuals at any one site, and if turnover is low, as seems evident from the gradual build-up of numbers (Appendix 5, Region 1), there probably are fewer than 1000 birds on the entire Atlantic seaboard. Cooke Inlet in Alaska is the only known spring and fall migratory staging site of this species in western North America (Bob Gill pers. comm.)

The largest number of Hudsonian Godwits ever reported in North America was 10,000 birds seen at the mouth of the Albany River by Guy Morrison during an August aerial survey of James Bay. This number corresponds to the size of the population surveyed on southern South American coasts (Morrison and Ross 1989).

During spring migration in the U.S., Hudsonian Godwits are most common in the flooded rice fields of Louisiana and Texas, at Cheyenne Bottoms in Kansas, and at Canadian prairie biome wetlands. At Cheyenne Bottoms the numbers fluctuate substantially from day to day, indicating that turnover rates are high. If correct, this would suggest that count variation would be high, a problem for population trend censusing. Although large numbers of Hudsonian Godwits sometimes are reported from wetlands in the Canadian prairie provinces during spring migration, especially during early and mid May, there was not enough information to determine whether these were traditionally used staging sites. If so, they are potentially good for population trend censusing.

Since there is insufficient information to determine if annual counts from the Albany River site in Canada during August, or the Texas Coast plain or the Canadian prairie provinces during spring are comparable, population monitoring of Hudsonian Godwits in the U.S. is not currently very practical.

Bar-tailed Godwit (BTGO)

Bar-tailed Godwits breed in western Alaska and migrate to southeastern China, Formosa, and the Philippines and southward for the winter. Gill (pers. comm.) has some information from western Alaska on breeding numbers, collected in conjunction with studies on Bristle-thighed Curlews. Gill (pers. comm.) believes it would be possible to use aerial surveys and ground truthing to estimate the size of the Alaskan population in fall when the entire population probably stages on one or two estuaries on the Alaskan Peninsula during a two-week interval.

Marbled Godwit (MAGO)

There are three disjunct breeding populations of Marbled Godwits in North America. One is restricted to southwestern Alaska, one to the west coast and islands of James Bay (Morrison et al. 1976), and the third and largest population to the prairie region of Canada and the U.S. Marbled Godwits winter along the Pacific, Gulf, and Atlantic coasts of the U.S. and the coasts of Mexico. South of Mexico they are irregular or local along both coasts of Central America and along the Pacific coast of South America to Chile (AOU 1983). Godwit numbers are relatively low on the Atlantic coast, with the exception of a concentration of birds in the Bulls Bay region of South Carolina where Cris Marsh (pers. comm.) found about 1000 in winter. This seems to be a virtually disjunct wintering concentration, and may be comprised of birds from the recently discovered James Bay breeding group. In winter the species is relatively uncommon on the Florida coasts, increasingly common on the Gulf coast west of the Mississippi River Delta, and most common on the Pacific coast.

In areas east of the 105th Meridian, Marbled Godwits are relatively more common during fall than spring (Appendix 5) except in breeding areas of Region 5A. Average numbers per site during fall increase steadily from northeastern to southwestern locations (Appendix 5). West of the Rocky Mountains the Marbled Godwit is relatively scarce at inland compared to coastal sites. At coastal sites fall numbers appear to be similar to spring numbers (Table 3).

The Breeding Bird Survey has collected information on breeding numbers of Marbled Godwits since 1965 (Robbins et al 1986). Since the Breeding Bird Survey was designed to monitor a broad range of species, it probably does not sample Marbled Godwits as well as roadside transects specifically designed for this species. For a roadside survey of this species, consideration should be made of the following: the extent and boundaries of the breeding range; the distribution of suitable breeding habitat within the breeding range; the accessibility of the breeding habitat by road; the selection of sampling points in the breeding habitat; and the method of counting birds at sample points. An attempt should be made to obtain a density of breeding birds by habitat type and extrapolate to make a population estimate; or counts could be used from sample points simply as an index of population trends. Ryan et al. (1984) describe how they drove transects and searched all wetlands encountered on transects to determine densities of breeding godwits in prairie regions. It would be worth investigating the possibility of combining such a survey with those for the Willet, Long-billed Curlew, Wilson's Phalarope, and American Avocet in regions where nesting distributions overlap. Road systems are probably only sufficiently developed in the breeding range of the prairie populations for roadside surveys. A different method would be necessary for monitoring breeding populations in Alaska and at James Bay.

In western North America Marbled Godwits could be surveyed in wetlands during spring or fall migration and in the winter. During all seasons the unknown proportion using beaches would be missed if this habitat were not covered. The value of winter counts is reduced because an unknown portion of the winter population resides south of the U.S. This problem could be largely rectified if the survey area were extended to include Mexico.

Ruddy Turnstone (RUTU)

Ruddy Turnstones nest in Middle and High Arctic regions of Alaska and Canada. Breeding populations from eastern Canada migrate to Old World wintering grounds and Alaskan/Siberian populations to Pacific Oceania and the Australasian region. Others migrate to wintering sites in the New World. Those that migrate to New World wintering areas travel as far south as Patagonia; others winter as far north as New England. Major wintering zones are coastal habitats in the Caribbean Basin and the Brazilian north coast south and east of the Amazon River mouth (Morrison & Ross 1989).

Ruddy Turnstones are well known long-distance, non-stop migrants (Thompson 1973). During migration, they are a highly marine shorebird (Harrington et al. 1989) that tends to concentrate at traditional staging sites. During spring, tens of thousands can be found on Delaware Bay (Region 2, Appendix 5). Except in Region 1, Ruddy Turnstones are substantially more numerous during spring than fall (Appendix 5). The discrepancy between spring and fall numbers suggests that many are using undiscovered staging sites, or that they are overflying populated parts of the U.S. and Canada during south migration. Thus, population trend censuses of Ruddy Turnstones at sites east of the 105th Meridian should be done during spring migration at sites in Regions 2, 3A, and 5B.

Ruddy Turnstones are relatively uncommon in the western U.S. south of Alaska during winter or migration (Table 3). Bob Gill (pers. comm.) reports that up to 40,000 Ruddy Turnstones concentrate on the Pribilof Islands to feed on maggots in carcasses during the native fur seal harvest. He believes that a large proportion of the Alaskan-breeding population concentrates here in spring and fall. The Pribilofs could provide a key monitoring site for the Alaskan population of this species.

Black Turnstone (BLTU)

Black Turnstones nest in western Alaska and winter along rocky shoreline on the Pacific coast from southern Alaska to central Sonora, Mexico. Handel and Gill (in press) used published and unpublished information on nesting and an aerial survey along 556 km of the Yukon-Kuskokwim Delta to delimit the breeding range of the Black Turnstone. They walked 25 randomly-spaced transects perpendicular to the coast and counted all turnstones flushed or flying within a 15 m distance on either side of their path. Turnstone density was calculated for 80-m long blocks along transects and the predominant habitat recorded for each block. Handel and Gill used an electronic digitalizing planimeter to measure the area of different habitats in the study area as classified on Landsat vegetation maps and color infra-red aerial photographs. The density of nesting plovers from two 20-ha study plots was used to calculate the ratio between known breeding density and the density recorded on transects. Data were stratified by habitat and produced an estimated breeding population of about 80,000 birds (95% confidence interval 61,000 to 99,000) for the central Yukon-Kuskokwim Delta. Handel and Gill (in press) estimate that about 15,000 Black Turnstones breed elsewhere in Alaska bringing the total population up to about 95,000 birds. These surveys could be replicated in the future.

Christmas Bird Counts might provide useful data on the portion of the population wintering north of Mexico. Counts of this species, American Black Oystercatchers, and Surfbirds, could also be made along segments of rocky shoreline during migration or in the winter. While these counts would miss the segment of the wintering population south of the U.S., this problem could be alleviated if Mexico were incorporated into the survey.

Surfbird (SURF)

Surfbirds nest in Alaska and northwestern Canada. Their winter range extends along rocky, Pacific coast shoreline from southern Alaska to the Straits of Magellan in South America (AOU 1983). Counts of this species, American Black Oystercatchers, and Black Turnstones, could be made along segments of rocky shoreline during migration. Winter surveys would likely miss a substantial portion of the North American population because it winters south of the U.S. Bob Gill (pers. comm.) reports that Surfbirds concentrate in large numbers at the north end of Montague Island, in the western part of the Copper River Delta, in spring to feed on herring roe. Since they use discrete areas in a predictable manner, Bob believes it is possible to survey them at this location through a combination of aerial surveys and ground counts.

Red Knot (REKN)

Red Knots breed in the middle and high arctic latitudes of Canada and on the North Slope of Alaska. Three subspecies breed in the new world: <u>C. c. rogersii</u> on the North Slope; <u>C. c. rufa</u> in the central Canadian Arctic; and <u>C. c. canutus</u> (also known as a subspecies <u>icelandica</u>) in the eastern Canadian arctic and Greenland. The latter group migrates to Europe for winter and is not discussed further here. The Alaskan group represents an extension of Siberian-breeding knots which winter principally in the Australasian region. It is not known where the Alaska breeders spend the winter. They may be the small group that winters on Florida's west coast (see below), or the knots that winter on the Pacific coast of North and South America. Apparently knots from the Alaskan population stage in large numbers in spring at the deltas of the Copper and Bering rivers (Kessel and Gibson 1978), where possibly they could be monitored during migration.

New World wintering areas of knots fall into two major zones: a small group of about 10,000 on the Florida west coast between Saint Petersburg and the Everglades; and a much larger group (perhaps 100,000) that winters principally in Patagonia (Harrington 1986). These two groups do not mix freely during migration (Harrington et al. 1989). As mentioned previously, small numbers of knots also winter on the Pacific coasts of North and South America.

Knots are essentially a marine shorebird during migration and wintering seasons. Relatively few are found on the Pacific coast of California, Oregon, or Washington at any time. According to Harrington (1986), the bulk of the Patagonian-wintering knots migrate north through the U.S. from mid- to late May. In most years up to 100,000 gather at staging areas along the shore of Delaware Bay where they fatten before continuing to central Canadian breeding areas. During the south migration, knots are found in relatively small numbers (< 3000) at a half dozen sites in the northeastern U.S. (New Jersey and Massachusetts), in New Brunswick, and on the southwest James Bay coast (Morrison and Harrington, 1979; Hicklin 1987). The numbers known from fall migration staging sites do not come near spring numbers (Appendix 5), raising the question of whether there are undiscovered staging sites during fall and/or that there are overflights of populated parts of Canada and the U.S.

Counts at Delaware Bay during spring offer an economic way of routinely censusing knots during migration east of the 105th Meridian. Spring would also be the best time for counts in western North America (Table 3). The population on the Florida coast could easily be monitored in winter.

Sanderling (SAND)

Sanderlings nest in northern Alaska; in Greenland; on Ellesmere, Devon and north Baffin islands; and on other central Canadian arctic islands. Sanderlings from the first two areas winter in the Old World. Those from the third area winter primarily on coastal sandy beaches from southern Alaska and Massachusetts south to Tierra del Fuego (AOU 1983, Myers et al. 1990). Although broadly distributed in winter, most Sanderlings occur in three regions: 1) a few discrete concentrations in the U. S. northwest; 2) southeast Brazil; and 3) especially the coasts of Peru and northern Chile (Myers et al. 1990). Myers et al. (1990) identify three migration routes through North America: the Atlantic coast; the Gulf coast of Texas and the central corridor of North America; and the Pacific coast. Wintering Sanderlings from the Atlantic coast of South America move to and from arctic breeding sites exclusively on the Atlantic coast; Sanderlings wintering on the North American Pacific coast move exclusively on the Pacific coast. Those from the Pacific coast of South America migrate northward along all three migration corridors, with emphasis on the central route and to a lesser extent on the Pacific route. Southbound, their migration is further east, largely on the Atlantic coast. Some individuals use the Pacific coast northbound and the Atlantic coast southbound (Myers et al. 1990).

Although Sanderlings could be counted at high tides on beaches during winter, the fraction of the population residing outside North America is so large that it would be difficult to gain adequate information on trends of the North American population without extending winter surveys into South America. Peter Connors (pers. comm.), Pete Myers, Gonzalo Castro, and John Maron are aware of this and have initiated a study to monitor winter numbers of Sanderlings in three regions of North and South America. They have selected the north coast of California and the east and west coasts of South America as monitoring regions. Each region contains a number of monitoring sites. For northern California these are the north and south spits of Humboldt Bay, the beaches of the Bodega/Point Reyes area, and the sandy shoreline of Monterey Bay. Their monitoring plan calls for four censuses at each site between 1 December and 15 February annually. At each site the four annual counts will be broken into two sets of two censuses with a set of two censuses being conducted during a three-day period.

During migration counts on beaches at high tide might provide useful information. Some Sanderlings use estuarine tidal flats at low tide and move to beaches at high tide (Myers et al. 1979). We recommend beach counts at high tide as the most efficient method of counting Sanderlings during migration.

Semipalmated Sandpiper (SESA)

Semipalmated Sandpipers nest in arctic regions of Alaska and Canada and migrate primarily east of the Rocky Mountains to wintering grounds mostly along the coasts of Central and South America.

Birds from different portions of the breeding range have been shown to have different migration routes (Harrington and Morrison 1979). Alaskan breeders use essentially the same route through Kansas and Oklahoma during spring and fall. Thus peak numbers are equivalent at both seasons in Region 5 (Appendix 5). Eastern Canadian-breeding birds migrate north via the Atlantic coasts of the Carolinas and Virginia, stage in very high numbers on Delaware Bay, and then fly overland to the breeding grounds. The phenology patterns in Regions 2, 3A, 3B, and to a lesser extent Region 4, reflect this movement. During south migration, these populations principally use coastal staging areas in New Brunswick and New England, as reflected in the phenology pattern in Region 1. Central Canadian breeding groups migrate north via mid-continent routes, and then travel south via Atlantic coast routes. They contribute to the fall phenology peaks in Regions 1-3B, and probably in Regions 4A and B.

Population trend censuses of the Semipalmated Sandpiper should take the disjunct breeding distribution into account. The wintering distribution of the three groups is poorly known, and breeding areas are too inaccessible for efficient assessment. During fall there is more mixing of the three groups than in spring when there is a greater likelihood of numbers of Alaskan and middle Canadian breeders fluctuating because of water conditions at midwestern staging sites. Considering all of this, a combination of efforts is needed. Spring censusing at Delaware Bay could track eastern-breeding groups, fall censusing at mid-Atlantic coastal sites could track middle northern Canadian populations, and fall censusing at migration staging sites in Region 5A could track the Alaskan/western Canadian group.

Western Sandpiper (WESA)

Western Sandpipers breed in arctic Alaska and eastern Siberia. They winter on the Pacific, Gulf, and Atlantic coasts of the U.S. and the coasts of Central and South America to Peru and Chile.

Rob Butler (pers. comm.) reports that about 2,000,000 Western Sandpipers winter in Panama alone. We know of no comparable winter concentrations in the U.S. Since the majority of the Western Sandpiper population probably winters south of the U.S., winter counts from the U.S. alone are of limited value for monitoring the North American population.

The timing of Western Sandpiper migration in the U.S. east of the 105th Meridian is summarized in Appendix 5. The species is relatively uncommon in Regions 1 & 2 at any season, relatively common in fall in Region 3A, 3B and 4A & 4B, and most common, in fall in Region 5A.

During migration, Western Sandpipers gather in extraordinary numbers at staging areas on the Alaskan coast (Appendix 2). However, logistical problems in Alaska make population trend censusing difficult there.

In the west, south of Alaska, peak numbers of Western Sandpipers during spring migration total many more birds than during winter and fall (Table 3). Since Western Sandpipers are relatively uncommon east of the Rocky Mountains during late April and early May when the peak of migration occurs in western North America, numbers could be monitored most easily through counts in coastal and interior wetlands south of Alaska and west of the Rocky Mountains in spring. Counts during fall migration would pose greater logistical problems of coordination because of the species broader distribution, and would be more difficult to interpret because of the potentially confounding effect of the differing migrations of adults and immatures.

Least Sandpiper (LESA)

Least Sandpipers breed over a broad and continuous band of the subarctic from Prince Edward Island and Cape Sable Island, Nova Scotia on the Canadian Atlantic coast to the Alexander Archipelago and Kenai Peninsula on the Pacific coast. They also winter over a broad range extending from the southern U.S. to eastern Brazil on the Atlantic coast, and from California and Oregon to Ecuador and Peru on the Pacific coast. Large numbers of Least Sandpipers migrate east of the 105th Meridian during spring and fall (Appendix 5). High numbers also occur in the western U.S. during spring, fall and winter seasons (Table 3). During migration and winter seasons, Least Sandpipers are common in both marine and non-marine wetlands.

ISS data suggest that east of the 105th Meridian, Least Sandpipers are "<u>reverse</u> elliptical migrants." They tend to be more common at

Atlantic marine habitats during spring than fall, especially in Regions 2 and 3A. The reverse occurs at midwestern sites.

In a 1984 evaluation of the ISS, Harrington noted that Least Sandpipers were widely dispersed, having been reported from 65% of the census areas. They were more broadly dispersed during fall than during spring migration, and the duration of the fall migration was substantially longer. The timing of migration during fall also was more variable between regions than in spring (Appendix 5). Highest average numbers in spring were during the first third of May at marine sites in Region 3A and at non-marine sites in Region 5A (Appendix 5).

The species' broad distribution requires that monitoring be coordinated broadly. Spring would be better than fall for censusing in both the east and west, because of the narrower migration window and the lack of complications caused when juveniles are present. For areas east of the 105th Meridian, it is recommended that Least Sandpiper population trend censuses be done in Regions 2 and 3A. Counts should also be made at Clear Spring Phosphate in Florida (Region 4B) and at Cheyenne Bottoms in Region 5A. In the west, spring counts for Least Sandpipers at interior and coastal wetlands could be conducted at the same time as those for other species.

Winter counts in wetlands would provide an index of winter numbers in the U.S. However, since a substantial proportion of the Least Sandpiper population probably winters south of the U.S., winter counts from the U.S. alone are of limited value for monitoring the North American population.

White-rumped Sandpiper (WRSA)

White-rumped Sandpipers breed in middle nearctic latitudes from southwest Baffin Island east to northeastern Alaska. The major wintering grounds are coastal beaches, estuaries, and wetlands of southern Argentina (Morrison & Ross, 1989; Myers & Myers 1979).

During spring, White-rumped Sandpipers migrate principally through the midwestern U.S. and Canadian prairie provinces (Harrington et al., in press) and are concentrated primarily in Region 5A (Appendix 5). The peak of migration is from the third to the fourth weeks of May (Appendix 5). At the heavily-used Cheyenne Bottoms site, numbers vary from year to year, presumably because of fluctuating water levels. Numbers also vary considerably at other midwestern sites such as the Salt Plains National Wildlife Refuge where up to 16,500 were counted once (Appendix 6).

During fall, White-rumped Sandpipers are scarce in most of the U.S. and in most of the interior of Canada. They are common but not abundant on the James Bay west coast. Relatively few are found in Nova Scotia, New Brunswick, or Prince Edward Island (Maritime Shorebird Surveys; Morrison, unpubl. data). Fall staging areas exist at the mouth of the Saint Lawrence Estuary where thousands occur on the Magdalen Islands (McNeil and Burton 1973). They also occur on the Labrador coast and probably in Newfoundland (Todd 1963).

Population trend censuses of White-rumped Sandpipers should focus on spring migration. During fall they migrate through areas of eastern Canada that for the most part are not well studied for shorebird migration. Because of the effects of varying water levels on numbers during spring (see above), sampling of several locations is required. Relationships between numbers of White-rumped Sandpiper at sites in Oklahoma and Kansas to numbers in the Canadian prairie provinces are not known. It is clear that White-rumped Sandpipers need to gain considerable weight before they complete migration into arctic breeding areas (Harrington et al., in press), therefore it is likely that they stage at sites north of Kansas and Oklahoma in years when sufficient suitable food is not available in those states. Population trend census design should include sites covering both possibilities.

Baird's Sandpiper (BASA)

Baird's Sandpipers breed in arctic regions of Alaska and Canada and winter in South America. They occur in largest numbers during migration along the fringes of wetlands.

In fall, adult Baird's Sandpipers primarily use staging areas in the high plains east of the Rocky Mountain cordillera in preparation for long nonstop flights to South America (Jehl 1979). ISS data confirm that the Baird's Sandpipers' south migration is concentrated in those states closest to the high plains region, especially at Cheyenne Bottoms in Kansas (Region 5A, Appendix 5). Counts from all other regions of the U.S. were inconsequential by comparison. Fall numbers at Cheyenne Bottoms were highly variable, evidently a consequence of variable habitat availability resulting from differing water levels from year to year.

Spring migration counts also were much greater in Region 5A than in any other regions covered by the International Shorebird Surveys (Appendix 5), indicating that the spring route through the U.S. retraces the fall route. At Cheyenne Bottoms peak spring numbers vary enormously each year, depending on the amount of suitable habitat. Highest numbers were counted in years when marsh vegetation had been burned the preceding fall. Peak spring numbers of Baird's Sandpipers occurred at Cheyenne Bottoms during the first week of April. Other data, from the Canadian Wildlife Service or American Birds, show very high numbers of Baird's Sandpipers in the prairie provinces during the third week of May, 7-8 weeks following the peak at Cheyenne Bottoms (for example 10,000 at Netiscow Lake, Alberta; about 17,000 at Chaplin Lake, Saskatchewan; and 5000 at Fairy Hills, Saskatchewan). Evidently Baird's Sandpipers are present for two months at sites between Kansas and the Canadian prairie provinces.

More information is needed to determine where and when Baird's

Sandpipers might best be monitored. Population trend censuses are not practical at Cheyenne Bottoms (and High Plains sites in Colorado) because of the annual variability in peak numbers. Little is known of the annual numerical variation during spring migration at the Canadian sites. Until better information can be provided, the best possibility for monitoring is in spring in the Canadian prairie provinces.

Pectoral Sandpiper (PESA)

In North America, Pectoral Sandpipers breed on the west side of Hudson's Bay, including Southampton Island, and along the arctic coast of Canada and Alaska from King William Island roughly to Point Barrow. Principal wintering areas are in austral latitudes of South America. Migration is primarily east of the 105th Meridian.

During migration, Pectoral Sandpipers were found in all five ISS regions, especially at non-marine sites in the midwestern and western regions (Appendix 5). Although it was found in all regions it appeared to be highly concentrated in some years at certain sites, like Cheyenne Bottoms. The overall pattern of occurrence suggests that the species uses similar northward and southward migration routes. In virtually all regions east of the 105th Meridian, Pectoral Sandpipers were substantially more common in fall than spring. One cause might be the lack of data from March.

During both spring and fall, the counts of Pectoral Sandpipers were highly variable from year to year. For example, at Cheyenne Bottoms the maximum counts from spring were: 16,500, 301, 311, 815, and 1700; and from fall they were: 1705, 6151, 28,811, 6750, 18,942, 12,482, 581, 8900, and 3200. One spring dozens were found at sites in the mid-Atlantic states and southern New England, but in most springs the species was scarce there. Evidently the migration routes of Pectoral Sandpiper are strongly influenced by weather, or some other factor, resulting in different dispersions among years.

During spring, Pectoral Sandpipers were found at more than 40% of the census sites in the International Shorebird Surveys. However, they were found on only 12% of the censuses between 1 April and 10 June, a low value caused by their scarcity at marine sites (except in Region 2) and by their tendency to favor certain non-marine sites over others. The timing of spring migration (Appendix 5) suggests that Pectoral Sandpipers tend to arrive at U.S. sites during March, and that a secondary peak of migration occurs in early to mid-May. This pattern was not obvious in Region 5A. During spring, Pectoral Sandpipers are found commonly in agricultural fields of the Gulf coastal plain of the U.S. During mid-April, Harrington (unpubl. data) commonly found groups of 50-350 Pectoral Sandpipers in rice fields of southwest Louisiana and eastern Texas. Little data exist to evaluate annual variation of numbers in this region, but among birdwatchers the spring shorebird spectacle here is considered dependable and worth witnessing.

Because of the highly variable numbers at most locations during migration, the only region where a population trend census could be attempted is the Gulf coastal plain. Counts here would have to be made during March and April along transects designed to take the species' patchy distribution into account.

Sharp-tailed Sandpiper (SHSA)

The Sharp-tailed Sandpiper breeds in northern Siberia and is, rarely, recorded as a possible breeder in summer in western Alaska (AOU 1983). It winters in the Old World. Bob Gill (pers. comm.) reports that up to 50% of the juvenile population from northern Siberia stages at Norton Sound and the Yukon River delta in Alaska in the fall, and surveys of numbers could be accomplished through a combination of aerial surveys and ground counts.

Purple Sandpiper (PUPS)

Purple Sandpipers nest in the eastern Canadian arctic, Greenland, and the Palearctic. In North America they winter on rocky shoreline of the Atlantic coast primarily from the Canadian Maritime Provinces to Maryland, and, rarely, south to Florida.

Purple Sandpipers occur in a habitat not currently covered by the ISS or the PFP. Christmas Bird Counts provide the best way of defining the winter distribution and looking for population trends. Many of the problems associated with using CBC data for analysis of annual population trends are not applicable to this species because of its distinct appearance and choice of habitat.

If Christmas Bird Counts are determined to be unreliable for monitoring winter population size, a special survey for Purple Sandpipers along segments of rocky Atlantic coast shoreline could be mounted.

Rock Sandpiper (ROSA)

Rock Sandpipers breed on tundra in western Alaska and winter along rocky coastline from southern Alaska to central California, and in eastern Siberia (AOU 1983).

According to Bob Gill (pers. comm.) it would be possible to survey breeding populations on the Bering Sea using methods similar to those employed for the Black Turnstone. Populations nesting on the Aleutian Islands would be much more difficult to monitor. Breeding populations there are cyclic and tied into fox populations. Bob sees an opportunity to monitor fall numbers at staging areas on the Yukon-Kuskokwim delta where Rock Sandpipers concentrate before moving south to the Alaska Peninsula.

Christmas Bird Counts or special surveys along segments of rocky coastline during winter are the only other feasible methods for surveying Rock Sandpiper numbers.

Dunlin (DUNL)

Dunlins breed in arctic Alaska and Canada. They also breed in Greenland but these migrate to the Old World for winter. Dunlins from northern Alaska winter in the Old world; those from southern and western Alaska winter in the western United states. The North American wintering range extends from the coast of southern Alaska to Baja and Sonora, and from the coast of Massachusetts south to Florida, west to Texas, and south to the Yucatan Peninsula. Fall migration of Dunlins is later than that of most other shorebirds. East of the 105th Meridian peak numbers of Dunlins did not occur until after 31 October. In western North America peak numbers are not reached until November. Spring migration is characterized by the gradual disappearance of birds from many sites in the west.

Since two races of North American Dunlins winter primarily in the U.S., surveys at wetlands in winter would be the best method of monitoring this species. East of the 105th Meridian, the highest winter counts of Dunlin are from the mid-Atlantic states (New Jersey, Delaware, Virginia) and from Gulf Coast plain sites west of the Mississippi Delta. Substantial numbers of Dunlin also winter along the Pacific coast from southern British Columbia to the Mexican border and in the Central Valley of California. All of these areas would have to be covered for a winter survey.

We are skeptical that Christmas Bird Counts could provide useful information on winter numbers because of the weaknesses in CBC methodology described above.

Useful information on Dunlin numbers in western North America could also be obtained during multi-species surveys of shorebirds in coastal and interior wetlands during spring migration (Table 3).

Curlew Sandpiper (CUSA)

The Curlew Sandpiper nests, rarely, in northern Alaska. The main population breeds and winters in the Old World. The species is too rare in North America to consider monitoring.

Stilt Sandpiper (STSA)

Stilt Sandpipers breed in a continuous narrow band of the subarctic stretching from Cape Henrietta Maria (southern Hudson's Bay) to the eastern portion of the Alaskan North Slope. The rather poorly documented winter range lies principally south of the U.S. (Jehl, 1973).

East of the 105th Meridian, migrant Stilt Sandpipers are patchily distributed and usually in relatively small numbers except at a few sites where very high numbers can be found. They are decidedly less common in the Atlantic coastal region of the U.S. than in midwestern states. Although of regular occurrence, they are very uncommon west of the 105th Meridian.

Population trend censuses during migration may prove difficult because of the Stilt Sandpiper's patchy and sometimes unpredictable occurrence in high numbers at ephemeral habitats. According to ISS data, Stilt Sandpipers occur at a small proportion of the available wetlands during migration. Tens of thousands have sometimes been reported at Cheyenne Bottoms in Kansas, with almost twice as many reported in spring as in fall. However, the annual occurrence in such large numbers is sporadic. High numbers (10,000) also are reported from Gillespie Lake in Alberta, Canada, but little is known of annual variation. An estimated 30,000 were reported by an unknown source at Chautauqua National Wildlife Refuge (Illinois) during fall migration (WHSRN unpubl. data), but once again nothing is known of annual variation.

Perhaps the most consistent and substantial occurrence of migrant Stilt Sandpipers is on rice fields in Louisiana and eastern Texas during mid-April. Few systematic surveys of shorebirds have been reported from this region. During aerial and ground surveys in 1983, Harrington (unpubl. data) commonly found Stilt Sandpipers with Lesser Yellowlegs and Long-billed Dowitchers, especially between Lafayette (LA) and Port Lavaca (TX). This area may offer the best possibility for population trend censuses for this species.

Buff-breasted Sandpipers (BBSA)

Buff-breasted Sandpiper breed at disjunct nearctic sites between King William Island, Canada, and the Canadian/Alaskan boundary. Wintering areas are principally in the pampas region of Argentina. During migration they occur on dry grasslands, pastures, plowed fields, and, rarely, wetlands (AOU 1983). Consequently, they would have to be surveyed separately from the majority of shorebirds that concentrate in wetlands during migration. Roadside transects through grasslands during migration could be used for Buff-breasted Sandpipers.

Large aggregations of Buff-breasted Sandpiper are rarely encountered at any season in North America. The highest single count from the International Shorebird Surveys is of 182 birds at Cheyenne Bottoms during fall. Seven hundred were recorded by the Canadian Wildlife Service during spring at Beaverhill Lake (Appendix 5).

In his unpublished survey of records in American Birds' migration season accounts between 1974 and 1984 (Appendix 5), Joseph Strauch found that highest numbers of Buff-breasted Sandpipers were reported during spring in a narrow zone through the Great Plains of the U.S. and the Canadian prairie provinces. Strauch observed as many as 2000 at one site in southeast Nebraska. A count of 2000 also was reported (American Birds, migration season accounts) during May 1985 near Saskatoon.

Buff-breasted Sandpipers are much more dispersed during fall than spring. ISS data show adult Buff-breasted Sandpipers occurring during late July/early August only at non-marine sites in Region 5B (Appendix 5). Juveniles appeared in all regions beginning in late August. The highest count was of 340 at Chincoteague National Wildlife Refuge in Virginia (Appendix 6).

Based on Strauch's evaluation and on the phenology of migration from the ISS (Appendix 5), it appears that the first northbound Buff-breasted Sandpipers arrive on the Gulf Coast plain from mid- to late April. During surveys of farmland there in the second and third weeks of April, Harrington (unpubl. data) found several groups of 25-50 Buff-breasted Sandpipers, especially in rice fields that were being flooded. These special conditions resulted in a distribution that was more patchy than that of most other shorebirds. Highest spring numbers on the Gulf Coastal plain are during late April (1000 at Anahuac National Wildlife Refuge on 24 April [American Birds, migration season accounts]), and early May when a second peak of migrants is evident (Appendix 5).

Because of their small world population size, monitoring of Buff-breasted Sandpipers should be a priority. Population trend censuses of this species could focus on southwest Louisiana and eastern Texas during the first week of May, in southeast Nebraska a week later, and in favorable habitats of the Canadian prairie provinces (near Saskatoon and at Beaver Hill Lake, for example) during the third week of May.

Short-billed Dowitcher (SBDO)

Short-billed Dowitchers have a disjunct breeding distribution in North America. Three breeding groups are considered to be separate subspecies: <u>Limnodromus griseus carinus</u> from Alaska; <u>L. g. hendersoni</u> from sub-arctic central Canada; and <u>L. g. griseus</u> from the Ungava Peninsula. They winter along the Pacific, Gulf, and Atlantic coasts of the U.S. south to Peru and Brazil in South America.

Current understanding of the migrations of the three subspecies of Short-billed Dowitchers are sketchy. Jehl (1963) points out that the ratios found in museum collections may reflect sampling biases as much as the relative occurrence of the three groups in different parts of the country. Field identification is difficult, but possible, for adults in breeding plumage. There are too few data available to present an accurate determination of subspecies ratios from different migration or wintering areas.

It is clear from the work of Jehl and others before him that Short-billed Dowitchers in the northeastern U.S. during fall are mostly <u>L. g. griseus</u>, and that the ratio of <u>griseus</u> to <u>hendersoni</u> drops with decreasing latitude on the U.S. Atlantic coast. Evidently the migration pattern is analogous to the fall pattern of the Semipalmated Sandpiper (Harrington & Morrison 1979) from comparable breeding areas of Canada. In Massachusetts the ratio of <u>griseus</u> to <u>hendersoni</u> was approximately 95:5 in 1972 and 1973 (Harrington, unpubl. data). Jehl (1963) believed the ratio of these subspecies in New Jersey was close to 85:15.

The south passage of Short-billed Dowitchers through the northeastern U.S. (and presumably eastern Canada) is rapid (Appendix 5) with peak numbers during late July (Region 1) and early August (Regions 2 & 3A). The presumed winter destination of most birds is the Surinam coast (Morrison & Ross 1989). Substantial numbers of Short-billed Dowitchers also winter in the Bulls Bay region of South Carolina (Cris Marsh, unpubl. data). Since the race(s) of these birds have not been determined, it is not known whether the Bulls Bay region offers a useful potential for population trend censuses. Marking programs could provide an answer.

<u>L. g. carinus</u> winters in wetlands along the Pacific coast from central California to northern Peru (Pitelka 1950). They are common spring and fall migrants along the Pacific coast where they mix with Long-billed Dowitchers. Although these species are usually not separated on censuses, it is clear that the majority of Short-billed Dowitchers migrate along the coast whereas Long-billed Dowitchers occur more inland (Pitelka 1950). Peak dowitcher numbers at west coast staging sites are substantially higher during spring than fall (Table 3). The timing of the spring peak along much of the coast south of Alaska is likely between the fourth week of April and early May.

Monitoring Short-billed Dowitchers east of the 105th Meridian would be best accomplished by censuses during July in the Atlantic states (New Jersey, Delaware, Virginia) at sites like the Forsythe National Wildlife Refuge (formerly Brigantine National Wildlife Refuge), Prime Hook National Wildlife Refuge, and Monomoy Island National Wildlife Refuge. Counts should also be made during July at the Magdalen Islands, and at midwestern sites where counts would not be complicated by the presence of Long-billed Dowitchers or by extreme annual variations of water levels. One possibility is Agassiz National Wildlife Refuge in Minnesota (Appendix 7). Whenever possible, ratios of <u>griseus</u> to <u>hendersoni</u> should be collected during censuses.

In western North America, Short-billed Dowitchers would be best monitored during spring when peak numbers at staging areas are highest. Counts will be more difficult to interpret than for other species because of the difficulty observers have separating Long-billed from Short-billed dowitchers on censuses.

Long-billed Dowitchers (LBDO)

Long-billed Dowitchers breed in northwestern Canada, northern Alaska, and Siberia. They winter along the south Atlantic, Gulf, and Pacific coasts of the United States; in the Central and Colorado valleys of California; through Mexico to Guatemala; and, casually, south to Panama (AOU 1983).

East of the 105th Meridian, Long-billed Dowitchers are relatively uncommon during migration except in Region 5A where they are abundant at some sites during the first ten days of May. They are also abundant in fall in Region 5A, but less so than in spring. During winter, Long-billed Dowitchers are abundant on the Louisiana and Texas coastal plain.

In western North America, Long-billed Dowitchers are common in interior and coastal wetlands in winter and spring. However, the numbers of Long-billed Dowitchers in coastal wetlands in spring are swamped by the numbers of Short-billed Dowitchers moving into the area.

Dowitchers can be monitored at wetlands in winter or during migration. Counts will be more difficult to interpret than for other species because of the difficulty observers have separating Long-billed from Short-billed dowitchers on censuses. If possible, sites selected for monitoring Long-billed Dowitchers should be those least likely to have Short-billed Dowitchers.

The best time for monitoring this species may be early winter. Since the winter population of this species may shift further south during cold winters than mild winters, an early winter survey may be preferable to a late winter one. A winter survey would need to include interior and coastal wetlands west of the Rocky Mountains and the Gulf coastal plain of Louisiana and Texas. Aerial counts supplemented with ground truthing would be necessary for this region. The winter survey would be improved if Mexico could be included in the survey area.

Monitoring in the spring could also be attempted in the same areas. More wetlands in the interior of western North America would need to be covered in the spring than in the winter. In wetlands along the west coast, it would be very difficult if not impossible to make an accurate count of the Long-billed Dowitchers in spring because they are much less abundant than Short-billed Dowitchers there at that time of year, and because the two species are too difficult for most observers to identify correctly at any time of year.

Common Snipe (COSN)

Common Snipes breed widely in Alaska, Canada, and the north and western regions of the U.S. They winter along the Pacific coast of the U.S. and across the southern U.S. through Central and South America to Ecuador and Surinam (AOU 1983). The Breeding Bird Survey provides information on snipe numbers. Between 1965 and 1979 there were parallel significant increases in Common Snipe numbers for the Eastern and Central regions of North America, but a decreasing tendency in the Western region kept the trend from being significant for the continent as a whole (Robbins et al. 1986). Information on wintering snipe in the U.S. is also available from the Christmas Bird Counts. Since a substantial portion of the Common Snipe population probably winters south of the U.S., CBC's are of limited value for monitoring the North

American population. Snipes do not lend themselves well to being counted in wetlands because they prefer vegetated areas where they are hidden from observers, and because they do not flush without being closely approached. They also do not concentrate in larger wetlands to the same degree as other shorebirds. Consequently we do not feel the Common Snipe is a good candidate for monitoring through counts in wetlands.

American Woodcock (AMWO)

American Woodcocks nest in southeastern Canada and throughout much of the eastern half of the U.S. They winter in the southeastern U.S. Woodcock tend to be solitary, have a preference for moist woodland along streams or in boggy areas, and usually are not seen until flushed. These characteristics make woodcock a difficult species to survey.

The U.S. Fish and Wildlife Service manage woodcock populations with a harvest survey and a singing ground survey. A trend analysis, similar to that used for BBS surveys, has been used on singing ground surveys to describe changes in woodcock numbers for the period 1970 to 1988 (Sauer and Bortner 1991). This indicates population declines throughout the breeding range of the species from 1970 to 1988.

Wilson's Phalarope (WIPH)

The Wilson's Phalarope's main breeding areas are the prairie marshes of the northern U.S. and southwestern Canada. Recently its range has expanded to include small and isolated breeding localities from the southern Yukon and Vancouver Island to central Arizona in the west and from James Bay, Quebec and Nova Scotia to Massachusetts in the east (Jehl 1988). It winters primarily in South America.

Data from east of the 105th Meridian indicate that Wilson's Phalaropes are relatively uncommon except in states closest to the high plains (Appendix 5), for example, Kansas and Colorado. Large numbers sometimes occur in spring at Cheyenne Bottoms in Kansas (Appendix 6) where E. Martinez estimated as many as 140,000 during one spring. Other sites where 8000 or more individuals have been estimated or counted are listed in Appendix 6. In cases where sufficient data exist (e.g., Cheyenne Bottoms or Salt Plains National Wildlife refuges) we find that numbers of Wilson's Phalarope vary substantially from year to year.

In western North America Wilson's Phalaropes are much more abundant at staging sites in fall than spring (Table 3). Jehl (1988) identifies 30 sites with the potential of holding 1000 or more Wilson's Phalaropes during fall. The saline habitats favored by adults at this season are subject to rapid annual change so the phalarope's abundance at staging areas can be expected to vary from year to year. Jehl (1988) also found evidence that juvenile phalaropes concentrated in less saline habitats than adults in fall. Consequently, adults and juveniles should be sampled at separate staging areas.

Information on Wilson's Phalarope numbers during the breeding season are available from the Breeding Bird Survey. Robbins et al. (1979) report on trends for this species for the period 1965 to 1979. See the section on Marbled Godwits for a discussion of how roadside surveys might be modified to obtain more accurate data on breeding Wilson's Phalaropes.

The fall migratory period might also be a suitable time to monitor this species. However, the Wilson's Phalarope migrates earlier than other species that might be best sampled in fall. Therefore fall counts would be impossible to coordinate with those for other species.

Red-necked Phalarope (RNPH)

Red-necked Phalaropes breed widely in Alaska and northern Canada. They winter at sea in the Pacific Ocean from about the latitude of California to southern South America and in the Atlantic Ocean off South America and Africa. This species can be counted in wetlands during migration. While birds are staging in wetlands an unknown proportion of the population is at sea. Perhaps boat or plane transects on ocean waters could supplement surveys in wetlands during migration, but we suspect the costs and the complexity of such a sampling scheme would preclude its implementation.

Red Phalarope (REPH)

The Red Phalarope breeds in arctic Alaska and Canada and winters at sea on the Pacific and Atlantic oceans. It migrates along both coasts of North America where it could only be monitored at sea using plane or boat transects.

Our assessment of the likelihood of successfully monitoring each species is summarized in Table 4.

Table 4. Assessment of likelihood of successful population monitoring.

Species	Recommended season/method	Best period[a]	Best habitat	Best regions[b]	Alternate season/method (lower precision)
A. Highest likelihood of success with best precision.					
SNPL	Dedicated breeding season survey	A May-D Jun	Breeding	4B,5A,5B,6	None
WIPL	Dedicated breeding season survey	B May ?	Breeding	3A,3B,4B,5B	none
PIPL	Dedicated breeding season survey	C Apr-B May	Breeding	see Haig	Winter survey in southern US and Mexico
KILL	Breeding Bird Survey		Agricult.	all	Christmas Bird Counts
AMOY	Dedicated winter survey of strategic sites	B Dec-B Jan	Wetlands, marine	3B,5B	Dedicated breeding census
AMAV	Dedicated winter survey, including Mexico	B Dec-B Jan	Wetlands, marine and nonmarine	6	Breeding Bird Survey (low precision)
MAGO	Dedicated winter survey of strategic sites	B Dec-B Jan	Wetlands, marine	6, 5B	Breeding Bird Survey (low precision)
DUNL	Winter counts at strategic sites	B Dec-B Jan B Dec-B Jan	Wetlands, marine Wetlands, nonmar.	2,3A,5B,6 6	Spring migration survey
B. Likely success with moderate precision.					
BBPL	Spring migration survey	D May A May D Apr	Wetlands, marine Agricult. & wetl. Agricult. & wetl.	1,2,3A 5B, CPP 6	Dedicated winter counts (will not cover populations [forms?] wintering in South America.) Fall migration counts offer a third and least desirable possibility.
SEPL	Spring migration survey	B-D May D Apr-A May	Mixed Mixed	2,3A, 5A,5B,6	Fall migration survey
MOPL	Dedicated winter roadside survey in SW USA and Mexico	C Nov-B Feb	Agricult.	6, Mex.	Dedicated breeding survey
ABOY	Dedicated breeding survey	May-Jun	Rocky coastline	6, BC-Canad	Christmas Bird Counts
GRYE	Fall migration survey	A-B Aug	Wetlands, marine	1,2,3A	Spring migration survey, TX/LA coastal plain in late Mar/early Apr.

Notes: [a] A, B, C, D refer to first, second, third and fourth weeks of the month, respectively
[b] See Fig. 1 for locations of regions 1-5. Region 6 = sites west of the 105th Meridian; CPP = Canadian Prairie Provinces.

Table 4. Part B (cont.)

Species	Recommended season/method	Best period[a]	Best habitat	Best regions[b]	Alternate season/method (lower precision)
LEYE	Spring migration & aerial survey	B-C Apr	flooded fields	4B,5B	Fall migration survey
WILL	Spring migration survey (east)	A-D Apr	mar. wetl & bchs	3A,3B,5B	Breeding Bird Survey or Christmas Bird Counts [latter will miss the major South American wintering group.]
	Dedicated winter survey	C Nov-B Feb	Marine wetlands	6	
UPSA	Breeding Bird Survey	A-D May	grassy fields	CPP,4A,5A	None
WHIM	Spring migration survey	B-D May	Salt marsh	2,3A	Fall migration survey
		D Apr-A May	agric.,bchs.,wetl.	6	
LBCU	Dedicated winter counts	C Nov-B Feb	agric. fields	6	Fall migration survey
RUTU	Spring migration survey	C May-A Jun	Marine wetlands	2,3A,5B	None
BLTU	Dedicated winter survey	C Nov-B Feb	Rocky coast	6,BC-Canada	Christmas Bird Counts
REKN	Spring migration survey + winter survey of Fla. west coast	C May; A-D Jan	Marine wetl & bchs	2,3A; 4B	None
SAND	Spring migration survey	C May-A Jun	Beaches	2,3A,CPR	Fall migration survey
		D Apr-A May	Beaches	5B	
		B Apr-A May	Beaches	6	
SESA	Spring migration survey	B-D May	Marine wetlands	2,3A	Fall migration survey
		A-B May	Nonmarine wetlands	5A	
WESA	Spring migration survey	C Apr-A May	Marine/nonm. wetl	6	None
LESA	Spring migration survey	A-B May	Marine/nonm. wetl	2,3A,5A	Fall migration survey
		C Apr-A May	Marine/nonm. wetl	6	
WRSA	Spring migration survey	C-D May	Nonmarine wetlands	3A,5A,CPP?	None
PUSA	Dedicated winter counts	A Dec-D Jan	Marine rocky coast		Christmas Bird Counts
ROSA	Dedicated winter counts	A Dec-D Jan	Marine rocky coast		Christmas Bird Counts
STSA	Spring migration survey	A-B May	Nonmarine wetlands & flooded rice flds	3A,5A	Fall migration, probably with lower precision
SBDO	Fall migration survey (east)	C Jul-B Aug	Marine wetlands	2,3A	None
	Spring migration survey (west)	C Apr-A May	Marine wetlands	6	

Notes: [a] A, B, C, D refer to first, second, third and fourth weeks of the month, respectively

[b] See Fig. 1 for locations of regions 1-5. Region 6 = sites west of the 105th Meridian; CPP = Canadian Prairie Provinces.

Species	Best season/method	Best period[a]	Best habitat	Best region[b]	Alternate season/method (lower precision)
LBDO	Dedicated survey of strategic sites	B Dec-B Jan B Dec-B Jan	Wetlands, nonmar. Wetlands, marine	5B,6 6	Spring migration survey
COSN	Christmas Bird Counts		Nonmarine wetlands & flooded fields		None
C. Success of trend monitoring questionable, precision low.					
LGPL	Spring migration, dedicated survey in Texas coastal plain	B Mar-B Apr	Agric. fields	5B	Spring migration survey, CPR, 4A & 5A
BNST	Dedicated spring survey Dedicated fall survey	A-C Apr A Aug-D Sep	Gulf coastal plain Marine/nonmar wetl	5B 6	Spring migration survey (east) None (west)
SOSA	Spring migration survey	D Apr-B May	Nonmarine wetlands	3B,4A,5A	Fall migration survey ?
SPSA	Spring migration survey	A-B May	Nonmarine wetlands	3A,3B,4A,5A	Fall migration survey ?
ESCU	None				None
BTCU	Dedicated breeding survey	B May-C Jun	Nonmarine uplands	Alaska	None
HUGO	Spring migration survey	D Apr-B May	Nonmarine wetlands & flooded rice flds	5B,5A,CPP	Dedicated August aerial survey of west James Bay coast.
SURF	Dedicated spring survey	C Apr-A May	Rocky coast		Dedicated Spring survey in Prince William Sound
BASA	Spring migration survey	A-D May ?	Nonmarine wetlands & agric. fields	CPP	Fall migration survey
PESA	Spring migration survey	B-D Mar ?	Nonmarine wetlands & agric. fields	4A,4B,5A, & CPP ?	Fall migration survey
SHSA	None				None
BBSA	Spring migration survey	D Apr-B May	Agricult.& sod fields	5B,5A, CPP	Fall migration survey
AMWO	Dedicated breeding sing-survey				See species account
WIPH	Fall migration survey	B Jul-A Aug	Saline wetlands	6	Spring migration survey ? Breeding Bird Survey ?
RNPH	Spring migration survey		Nonmarine wetlands	CPP,5A	None
REPH	Dedicated pelagic surveys (probably futile)	Dec	Oceanic		None

Notes: [a] A, B, C, D refer to first, second, third and fourth weeks of the month, respectively
[b] See Fig. 1 for locations of regions 1-5. Region 6 = sites west of the 105th Meridian; CPP = Canadian Prairie Provinces.

Literature Cited

Aldrich, J. W. 1963. Life areas of North America. J. Wildl. Manage. 27:530-531.

American Ornithologist Union. 1983. Check-list of North American Birds. Published by the American Ornithologists' Union.

Bousfield, M. A., I. R. Kirkham, & R. D. McRae. 1986. Breeding of the Wilson's Phalarope Phalaropus tricolor, at Churchill, Manitoba. Can. Field Nat. 100:292-393.

Briggs, K. T., W. B. Tyler, D. B. Lewis, and D. R. Carlson. 1987 Bird communities at sea off California: 1975 to 1983. Studies in Avian Biology 11:1-74.

Butler, R. W. and R. W. Campbell. 1987. The birds of the Fraser River delta: populations, ecology, and international significance. Canadian Wildl. Service Occas. Paper 65. Ottawa, Ontario.

Campbell, R. W., N. K. Dawe, I. McTaggart-Cowan, J. M. Cooper, G. W. Kaiser, and M. C. E McNall. 1990. The birds of British Columbia. Vol. II. Non-passerines; diurnal birds of prey through woodpeckers. Royal British Columbia Museum.

Graul, W. B. and L. E. Webster. 1976. Breeding status of the Mountain Plover. Condor 78:265-267.

Haig, S. M. and L. W. Oring. 1988. Distribution and dispersal in the Piping Plover. Auk 105:630-638.

Handel, C. M. and R. E. Gill, Jr. 1992. Breeding distribution of the Black Turnstone. Wilson Bull. in press.

Handel, C. M. and C. P. Dau. 1988. Seasonal occurrence of migrant Whimbrels and Bristle-thighed Curlews on the Yukon-Kuskokwim Delta, Alaska. Condor 90:782-790.

Harrington, B. A. 1984. Arctic shorebird migration: a study of distribution and conservation of North American shorebirds i. unpublished report to The Richard King Mellon Foundation, Pittsburgh, PA. 254 pp + appendices.

Harrington, B. A. 1986. Red Knot. Audubon Wildlife Report 1986, 871-886.

Harrington, B. A., F. J. Leeuwenberg, S. Lara Resende, R. McNeil, et al. 199? Migration and mass change of White-rumped Sandpipers in North and South America. in press: Wilson Bull.

Harrington, B. A., J. P. Myers, and J. S. Grear. 1989. Coastal refueling sites for global bird migrants. Coastal Zone89: Proc. of the sixth symp. on Coastal and Ocean Manag., v. 5: 4293-4307. Am. Soc. of Civil Eng., New York.

Harrington, B. A. and R. I. G. Morrison. 1979. Semipalmated Sandpiper migration in North America. In Shorebirds in marine environments. (ed. F. A. Pitelka). Studies in Avian Biology 2:83-100.

Hicklin, P. W. 1987. The migration of shorebirds in the Bay of Fundy. Wilson Bull., 99: 540-570.

Howe, M. A., P. H. Geissler, and B. A. Harrington. 1989. Population trends of North American shorebirds based on the international shorebird survey. Biological Conservation 49:185-199.

Irving, L. 1960. Birds of Anaktuvuk Pass, Kobuk, and Old Crow. U.S. Ntl. Mus. Bull. 217:409pp.

Jehl, J. R. 1973. Breeding biology and systematic relationships of the Stilt Sandpiper. Wilson Bull. 85:115-147.

Jehl, J. R. 1979. The autumnal migration of Baird's Sandpiper. Studies in avian biology 2:55-68.

Jehl, J. R., Jr. 1963. An investigation of fall-migrating dowitchers in New Jersey. Wilson Bull. 75:250-261.

Jehl, J. R., Jr. 1988. Biology of the Eared Grebe and Wilson's Phalarope in the non-breeding season: a study of adaptations to saline lakes. Studies in Avian Biology 12:74pp.

Kessel, B., and D. D. Gibson. 1978. Status and distribution of Alaska birds. Studies in Avian Biol. 1:1-100.

Kessel, B. and D. D. Gibson. 1979. Status and distribution of Alaska birds. Studies in Avian Biology 1:100pp.

Leachman, B., and B. Osmundson. 1990. Status of the Mountain Plover: a literature review. Report of U. S. Fish and Wildlife Service. Fish and Wildlife Enhancement, Golden, Colorado.

Littlefield, C. D. 1990. Birds of Malheur National Wildlife Refuge, Oregon. Oregon State University Press.

Maisonneuve, C., P. Brousseau, and D. Lehoux. 1990. Critical fall staging sites for shorebirds migrating through the St. Lawrence System, Quebec. Can. Field Nat. 104:372-378.

Manning, T. H. 1952. Birds of the west James Bay and southern Hudson Bay coasts. Ministry of Nat. Resources and Development, Ottawa. Biol. Ser. 43, no. 125:114pp.

McNeil, R., and J. Burton. 1973. Dispersal of some southbound migrating North American shorebirds away from the Magdalen Islands, Gulf of Saint Lawrence, and Sable Island, Nova Scotia. Caribbean J. Sci. 13:257-267.

Morrison, R. I. G., T. H. Manning, and J. A. Hagar. 1976. Breeding of the Marbled Godwit, Limosa fedoa, in James Bay, Canada. Can. Field Nat. 90:487-490.

Morrison, R. I. G., and B. A. Harrington. 1979. Critical shorebird resources in James Bay and eastern North America. Trans. of the 44th No. Am. Wildl. and Nat. Res. Conf., Wildl. Management Inst., Wash., D. C.

Morrison, R. I. G., and R. K. Ross. 1989. Atlas of nearctic shorebirds on the coast of South America. Can. Wildl. Serv. Spec. Public., v. 1:128pp.

Myers, J. P., and L. P. Myers. 1979. Shorebirds of coastal Buenos Aires Province, Argentina. Ibis, 121:186-200.

Myers, J. P., P. G. Connors, and F. A. Pitelka. 1979. Territoriality in non-breeding shorebirds. _In_ Shorebirds in marine environments. (_ed_. F. A. Pitelka). Studies in Avian Biology 2:231-246.

Myers, J. P., M. Sallaberry A., E. Ortiz, G. Castro, L. M. Gordon, J. L. Maron, C. T. Schick, E. Tabilo, P. Anata, and T. Below. 1990. Migration routes of New World Sanderlings (_Calidris alba_). Auk 107:172-180.

Nicholls, J. L. and G. A. Baldassarre. 1990. Winter distribution of Piping Plovers along the Atlantic and Gulf coasts of the United States. Wilson Bull. 102:400-412.

Page, G. W., F. C. Bidstrup, R. J. Ramer, and L. E. Stenzel. 1986. Distribution of wintering Snowy Plovers in California and adjacent states. Western Birds 17:145-170.

Page, G. W., L. E. Stenzel, W. D. Shuford, and C. R. Bruce. 1991. Distribution and abundance of the Snowy Plover on its North American wintering grounds. J. Field Ornithol. 62:245-255.

Palmer, R. S. 1967. Plumage Descriptions [of shorebirds]. in The shorebirds of North America, G. D. Stout, Ed., Viking Press, New York.

Pitelka, F. A. 1950. Geographic variation and the species problem in the shorebird genus Limnodromous. Univ. of California Publ. in Zoology 50:1-108.

Robbins, C. S., D. Bystrack, and P. H. Geissler. 1986. The breeding bird survey: Its first fifteen years, 1965-1979. Resource Publication 157, U. S. Fish & Wildlife Service, Washington, D, C.

Ryan, M. A., R. B. Renken, and J. J. Dinsmore. 1984. Marbled Godwit habitat selection in the northern prairie region. J. Wildl. Manage. 48:1206-1218.

Sauer, J. R. and J. Bradley Bortner. 1991. Population trends from the American Woodcock sing-ground survey. J. Wild. Manage. 55:300-312.

Senner, S. E., G. C. West, and D. W. Norton. 1981. The spring migration of Western Sandpipers and Dunlins in southcentral Alaska: numbers, timing, and sex ratios. J. Field Orn. 52: 271-284.

Sordahl, T. A. 1982. Antipredator behavior of American Avocet and Black-necked Stilt chicks. J. Field Ornithol. 53:315-325.

Sordahl, T. A. 1990. Sexual differences in antipredator behavior of breeding American Avocets and Black-necked Stilts. Condor 92: 530-532.

Sowls, A. L., A. R. DeGange, J. W. Nelson, and G. S. Lester. 1980. Catalog of California seabird colonies. Report of Office of Biological Services, U. S. Fish and Wildlife Service, Washington, D.C.

Speich, S. M. and T. R. Wahl. 1989. Catalog of Washington seabird colonies. Biological Report 80. U.S. Fish and Wildlife and Minerals Management services, U.S. Department of the Interior, Arlington Square Building, Washington, DC.

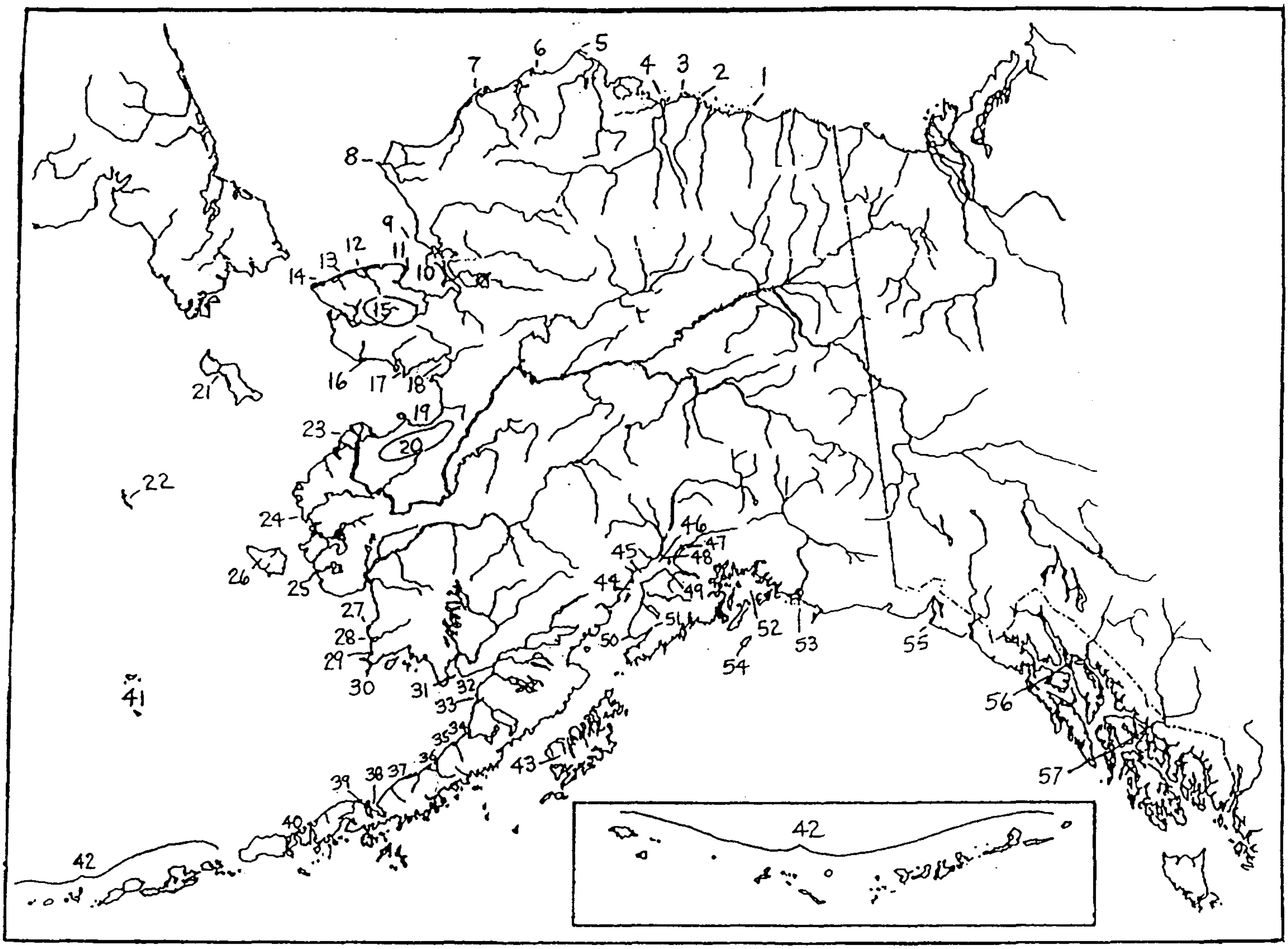
Thompson, M. C. 1973. Migratory patterns of Ruddy Turnstones in the central Pacific region. Living Bird 12:5-23.

Todd, W. E. C. 1963. Birds of the Labrador Peninsula. U. Toronto Press. 819pp.

Wetmore, A. 1926. Observations on the birds of Argentina, Paraguay, Uruguay, and Chile. U. S. Nat. Mus. Bull. 133.

Widrig, R. S. 1979. The shorebirds of Leadbetter Point: a twelve month census with notes on other records from Willapa Bay, Washington. Published by the author.

Appendix 1.



Appendix 1. Map of sites with concentrations of shorebirds in Alaska. See Appendix 2 for location names, ownership, key species and shorebird numbers.

Appendix 2. Sites in Alaska that are key shorebird areas (prepared by R.E. Gill, Jr. 1991)

Region/Site	Ownership[1]	Key Species[2]	Numbers[3]	Season[4]
N Alaska				
1. Canning R. Delta	FWS, N, AK	REPH, DUNL	f 10,000's	S, F
2. Sagavanirktok Delta	N, AK	REPH, DUNL	f 10,000's	S, F
3. Simpson Lagoon	N, AK	REPH, DUNL	f 10,000's	S, F
4. Collvile R. Delta	AK, N, BLM	DUNL, SESA, WESA, RNPH	f 10,000's	S, F
5. Elson Lagoon	N, AK	DUNL, SESA, REPH	f 10,000's	S, F
NW Alaska				
6. Peard Bay	N, AK	REPH	f 10,000's	S, F
7. Kasegaluk Lagoon	N, AK, BLM	DUNL, REPH	f 10,000's	S, F
8. Pt. Hope	N, AK	WESA, SESA, REPH	f 10,000's	S, F
9. Cape Krusenstern	N, AK, NPS	WESA, SESA, DUNL, LBDO	s 10,000's	S, F
10. Noatak R. Delta	N, AK	WESA, SESA, DUNL, LBDO	s 10,000's	S, F
WC Alaska				
11. Cape Espenberg	NPS	WESA, SESA, DUNL, PESA	f 10,000's	S, F
12. Shishmaref Inlet	N, AK	WESA, DUNL, SESA, BLTU	s 10,000's	S, F
13. Arctic Lagoon	NPS	WESA, DUNL, SESA, BLTU	s 10,000's	S, F
14. Lopp Lagoon	N, BLM, NPS	WESA, DUNL, SESA	s 10,000's	S, F
15. Central Seward Pen.	AK, NPS, BLM	BTCU, WHIM, LGPL	s 1,000's	SP, S
16. Safety Sound	N, AK	DUNL, SESA, WESA, RNPH	f 10,000's	S, F
17. Golovin Lagoon	N, AK	DUNL, SESA, WESA, RNPH	f 10,000's	S, F
18. Norton Bay	N, BLM	DUNL, SESA, WESA, RNPH	f 10,000's	S, F
19. Stebbins-St. Michael	N, FWS, BLM	DUNL, SESA, WESA, RNPH	f 10,000's	S, F
20. Andreafsky Wildn.	N, FWS, BLM	BTCU, WHIM, LGPL	s 1,000's	SP, S
21. St. Lawrence Island	N	ROSA	s 1,000's	SP, S, F

Appendix 2. (continued)

Region/Site	Ownership[1]	Key Species[2]	Numbers[3]	Season[5]
W Alaska				
22. St. Matthew Island	N, FWS	ROSA	s 1,000's	SP, S, F
23. N. Yukon R. Delta[5]	N, FWS, AK	DUNL, LBDO, RNPH	f 10,000's	S, F
24. C. Yukon R. Delta[5]	N, FWS, AK	DUNL, WESA, BTGO, BLTU BTCU, WHIM, REKN, RNPH	s 100,000's	F
25. S. Yukon R. Delta[5]	N, FWS, AK	DUNL, WESA, BTGO, BLTU BTCU, WHIM, RNPH	s 100,000's	F
26. Nunivak Island	N, FWS	ROSA, DUNL, WESA	f 10,000's	F
SW Alaska				
27. Carter Spit	N, AK	DUNL, WESA	f 10,000's	S, F
28. Goodnews Bay	N, AK	DUNL, WESA	f 10,000's	S, F
29. Chagvan Bay	N, FWS, AK	DUNL, WESA, ROSA, BTGO	f 10,000's	S, F
30. Nanvak Bay	N, FWS, AK	DUNL, WESA, ROSA, BTGO	f 10,000's	S, F
31. Nushagak Bay	N, AK	DUNL, WESA	s 10,000's	S, F
32. Kvichak Bay	N, AK	DUNL, WESA	s 10,000's	S, F
33. Egegik Bay	N, AK	DUNL, WESA, BTGO	s 10,000's	S, F
34. Ugashik Bay	N, AK	DUNL, WESA, LBDO, MAGO	f 10,000's	S, F
35. Cinder Lagoon	N, AK	DUNL, WESA, BTGO, MAGO	f 10,000's	S, F
36. Port Heiden	N, AK	DUNL, WESA, BTGO, ROSA	f 100,000's	S, F
37. Seal Islands	N, AK	DUNL, WESA, BTGO, ROSA	f 10,000's	S, F
38. Port Moller	N, AK	DUNL, WESA, ROSA		
39. Nelson Lagoon	N, AK	DUNL, WESA, BTGO, SBDO ROSA	s 100,000's	S, F
40. Izembek Lagoon	FWS, N	ROSA, BTGO, DUNL	f 100,000's	S, F
41. Pribilof Island	N	RUTU, ROSA	f 10,000's	S, F
42. Aleutian Island	FWS, N, AK	ROSA, BLOY, RUTU	s 10,000's	SP, S, F, W

Appendix 2. (continued)

Region/Site	Ownership[1]	Key Species[2]	Numbers[3]	Season[5]
SC Alaska				
43. Kodiak I.[5]	AK, N, FWS, FS	DUNL, WESA, SBDO, ROSA	f 10,000's	SP, S, F, W
44. Redoubt Bay	AK, N	WESA, SBDO, HUGO, LESA	f 10,000's	SP, S, F
45. Trading Bay	AK, N	WESA, SBDO, HUGO, LESA	f 10,000's	SP, S, F
46. Susitna R. Flats	AK	SBDO, WESA, LESA	s 10,000's	SP, S, F
47. Knik R. Flats	AK	LESA, SBDO, GRYL	f 10,000's	SP, S, F
48. Eagle R. Flats	AK, USA	GRYL, LESA, SBDO	f 10,000's	SP, S, F
49. Chickaloon Flats	FWS, AK	SBDO, LESA	f 10,000's	SP, S, F
50. Mud Bay	AK	WESA, SURF, ROSA	s 10,000's	SP, S, W
51. Fox R. Flats	AK	WESA	f 100,000's	SP
52. Prince William Sound	FS, N	SURF, BLTU, RNPH, ROSA	s 10,000's	SP, W
53. Copper R. Delta	AK, FS, N	WESA, DUNL, REKN, SBDO	s 100,000's	SP
54. Middleton Island	AK, N, FWS	WESA, BLTU, SURF, LESA LGPL, PESA	s 1,000's	SP, S, F, W
SE Alaska				
55. Yakutat Forelands	FS, N, AK	WESA	f 10,000's	SP
56. Mendenhall Wetlands	N, AK	WESA, SBDO	f 10,000's	SP, S, F, W
57. Stikine R. Delta	FS, N	WESA	s 100,000's	SP

1. N = Alaska Native Regional or Village Corporation; FS = U.S. Forest Service; FWS = U.S. Fish and Wildlife Service; USA = U.S. Army; BLM = Bureau of Land Management; AK = State of Alaska.
2. Species that are numerially dominant on an area during an annual cycle. LGPL = Lesser Golden-Plover; BLOY = Black Oystercatcher; GRYL = Greater Yellowlegs; WHIM = Whimbrel; BTCU = Bristle-thighed Curlew; HUGO = Hudsonian Godwit; BTGO = Bar-tailed Godwit; MAGO = Marbled Godwit; RUTU = Ruddy Turnstone; BLTU = Black Turnstone; SURF = Surfbird; REKN = Red Knot; SEPA = Semipalmated Sandpiper; WESA = Western Sandpiper; LESA = Least Sandpiper; PESA = Pectoral Sandpiper; ROSA = Rock Sandpiper; DUNL = Dunlin; SBDO = Short-billed Dowitcher; LBDO = Long-billed Dowitcher; RNPH = Red-necked Phalarope; REPH = Red Phalarope.
3. Total number of all species of shorebirds likely to use a particular area during an annual cycle: f = few; ≤ 3; s = several; ≥ 4.
4. Season when used: SP = Spring; S = Summer; F = Fall; W = Winter.
5. Indicates an area having several discrete sites.

Appendix 3. Numbers of thousands of shorebirds in U.S. and Canadian wetlands west of the Rocky Mountains. The index to sites is as follows:

COASTAL SITES

BC	BOLSA CHICA
BH	BODEGA HARBOR
BL	BOLINAS LAGOON
CB	COOS BAY
CRD	COLUMBIA RIVER DELTA
DE	DRAKES ESTERO
ES	ELKHORN SLOUGH
FRD	FRASER RIVER DELTA
GH	GRAYS HARBOR
HB	HUMBOLDT BAY
LE	LIMANTOUR ESTERO
LTE	LAKES TALAWA AND EARL
MOB	MORRO BAY
MBY	MISSION BAY
ML	MUGU LAGOON
PS	PUGET SOUND
SDB	SAN DIEGO BAY
SFB	SAN FRANCISCO BAY
TIL	TILLAMOOK BAY
TM	TOFINO MUDFALTS
TOB	TOMALES BAY
UNB	UPPER NEWPORT BAY
WB	WILLAPA BAY

INTERIOR SITES

ABLA	LAKE ABERT
AFRE	AMERICAN FALLS RESERVOIR
BFEP	BARBIZON FARMS EVAPORATION PONDS
CALA	CARSON LAKE
CONW	COLUSA NWR
COSP	CORCORAN SEWAGE PONDS
DENW	DELEVAN NWR
EAGR	EAST GRASSLANDS
GOLA	GOOSE LAKE
GRAS	GREATER GRASSLANDS
GSLA	GREAT SALT LAKE
HOLA	HONEY LAKE
HREP	HACIENDA RANCH EVAPORATION PONDS
HTLA	HART LAKE
HUWA	HUMBOLDT WMA
JWEP	J & W FARMS EVAPORATION PONDS
LALO	LAKE LOWELL
LOKL	LOWER KLAMATH NWR
MALA	MALHEUR LAKE
MNWA	MENDOTA WILDLIFE AREA
MOLA	MONO LAKE
MRNW	MERCED NWR
NOGR	NORTH GRASSLANDS
OWLA	OWENS LAKE
PIPO	PIUTE PONDS, EDWARDS AIRFORCE BASE
SANW	SACRAMENTO NWR
SASE	SALTON SEA
SOGR	SOUTH GRASSLANDS
STLA	STINKING LAKE
STWA	STILLWATER WMA
SULA	SUMMER LAKE
SUNW	SUTTER NWR
TSEP	TULARE LAKE SOUTH EVAPORATION PONDS
VISP	VISALIA SEWAGE PONDS
VOWA	VOLTA WILDLIFE AREA
WSEP	WESTLAKE FARMS EVAPORATION PONDS

Table 1. Number of thousands of shorebirds at wetlands from San Diego Bay (SDB) north to Drakes Estero (DE) on the California coast during peak periods of autumn migration. Only locations with 5000 or more shorebirds in either spring, fall or winter are included. A plus sign indicates < 50 birds.

Site>	SDB	MBY	UNB	BC	ML	MOB	ES	SFB	BL	LE	DE
BBPL	.6	.3	.4	.5	.2	.3	.4	14	.3	1	.2
SEPL	.1	.1	+	.1	.1	.1	.2	2.4	+	.1	.1
KILL	+	+	+	+	+	+	.1	.5	+	+	+
BNST	.3	+	+	.1	.1		.1	7.6			
AMAV	.1	+		+	+		.5	25			
GRYE	+	+	+	+	+	.1	+	.6	+	+	+
LEYE	+	+		+	+	+	+	.1		+	+
WILL	.9	.4	.5	.2	.6	2.9	1.2	24	1.3	.4	.6
WHIM	+	+	+	+	+	+	+	.3	+		+
LBCU	.1	+	+	+	.1	.6	.1	2.3	.1	+	+
MAGO	1.4	.6	.4	.1	.8	2.5	1.2	29	.6	.1	.8
RUTU	.1	+	+	+	+	+	.1	.1	+	+	+
BLTU	+					+	+	.1	.1	+	.1
REKN	.6	.1	+	+	+	+	+	2.1	+	+	+
SAND	.3	.1		.3	.7	.1	.4	2.2	.5	.1	+
WESA	5.5	1.7	3.9	3.1	3.7	1.8	19	221	4.0	1.3	5.2
LESA	.1	+	.2	.1	.8	3.4	12	48	3.7	1.1	.9
BASA	+			+	+		+	+	+		+
PESA						+		+			
DUNL				+	+	+	+	+			
DOWI	1.1	1.0	.7	1.0	1.1	1.0	2.1	24	.1	.3	.2
COSN						+	+	+			
WIPH	.1	+		+	+		+	1.6			+
RNPH	7.4	+		.1	.7		.9	21	+	+	.5
ALL	18	4.5	5.6	5.4	9.8	13	32	396	9.7	3.0	7.8

Table 2. Number of thousands of shorebirds at wetlands from Tomales Bay (TB) California north to the Tofino Mudflats (TM) British Columbia during peak periods of autumn migration. Only locations with 5000 or more shorebirds in either spring, fall or winter are included. A plus sign indicates < 50 birds.

Site>	TB	BH	HB	LTE	CB	TIL	CRD[1]	WB[2]	GH	PS	FRD[3]	TM[4]
BBPL	.1	.1	1.5	+	.4		+	1.4			7	.5
SEPL	+	.1	.3	.1	.1		+	.5			.3	.5
KILL	+	+	+	+	.1		+	+			.2	+
BNST												
AMAV			.6	+								
GRYE	+	+	.1	+	.1			+			.1	+
LEYE	+		+	+			+	+			.5	+
WILL	.6	.3	2.1	+	+			+			+	
WHIM	+	+	+	+	+		+	.4			.1	.2
LBCU	+	+	.6					+			+	+
MAGO	1.7	1.1	6.9	+	+			+			+	+
RUTU	+	+	+	+	+			+			+	+
BLTU	+	.1	+	+	+		+	+			.1	
REKN	+	+	.1	+				+			+	+
SAND	1.1	.2	2.5		.2			4.2			.1	.5
WESA	5.0	.4	30	13	4.7		.3	3.6			100	43
LESA	2.0	.2	3.3	.2	1.8		+	.6			3	5
BASA			+	+			+	+			.3	+
PESA			+	+	+		+	.1			.4	+
DUNL	+		.5	+	.1		+	.4			+	.1
DOWI	.4	.2	2.2	+	.1		+	1.3			1.2	.1
COSN			+	+			+				.4	+
WIPH			+								+	
RNPH	+		.1	+				+			+	
ALL	9.9	2.5	45	13	7.5		.4	8.3			109	43

[1] Partial coverage
[2] From Widrig 1979; numbers are minimums
[3] From Butler and Campbell 1987
[4] From Campbell et al. 1990

Table 3. Number of thousands of shorebirds at wetlands from San Diego Bay (SDB) north to Drakes Estero (DE) on the California coast during peak periods of spring migration. Only locations with 5000 or more shorebirds in either spring, fall or winter are included. A plus sign indicates < 50 birds.

Site>	SDB	MBY	UNB	BC	ML	MOB	ES	SFB	BL	LE	DE
BBPL	.2	.1	+	.1	+	.1	.4	11	.4	.1	.4
SEPL	.2	.1	.1	.1	.2	+	.1	2.0	+	.1	+
KILL	+	+	+	+	+	+	+	.3	+	+	+
BNST	.2	+	+	.4	.1		+	2.5			+
AMAV	.1	.1	.2	.1	.2		+	6.2			
GRYE	+	+	+	+	+	+	+	.6	+	+	+
LEYE	+			+	+		+	.1	+		+
WILL	.3	.2	.1	.1	.2	.8	.4	5.1	.4	.2	.4
WHIM	+	+	+	+	+	+	+	.2	+	+	+
LBCU	+	+	+	+	+	.1	+	.3	+		+
MAGO	.7	.3	.2	.1	.6	1.5	1.0	32	.6	+	.8
RUTU	.1	+	+	+			.1	.1	+	+	+
BLTU	.1	+					+	.2	.1	+	.1
REKN	.6	+		.1		+	+	1.6			+
SAND	.5	.1		+	2.3		+	.9	.2	.3	.5
WESA	6.6	3.1	5.5	2.2	24	.5	11	717	10	.6	2.3
LESA	+	.1	.1	+	.4	1.9	3.9	29	.8	.5	.8
BASA								+			+
PESA					+			+			
DUNL	.2	.1		.1	.4	+	.3	140	.8	.4	2.8
DOWI	1.9	.8	.6	.6	5.9	.3	1.8	62	.3	.3	.2
COSN						+	+	+	+		+
WIPH	.1			+	+		+	.2			
RNPH				+	+		+	8.2			
ALL	12	5.2	6.7	3.8	33	5.0	19	932	12	2.4	8.3

Table 4. Number of thousands of shorebirds at wetlands from Tomales Bay (TB) California north to the Tofino Mudflats (TM) British Columbia during peak periods of spring migration. Only locations with 5000 or more shorebirds in either spring, fall or winter are included. A plus sign indicates < 50 birds.

Site>	TB	BH	HB	LTE	CB	TIL	CRD[1]	WB[1]	GH[1]	PS	FRD[2]	TM[3]
BBPL	.2	.1	1.4	+	+	+	+	.1	1.1	.2	3.5	.5
SEPL	.1	.1	+	+	+	+	+	+	.8	+	+	.4
KILL	+	+	+	+	+	+	+	+	+	+	+	+
BNST												
AMAV	+		.5									
GRYE	+		+		.1	.1	+	+	.4	.1	+	+
LEYE	+					+	+		+	+	+	+
WILL	.3	.2	.9						+	+	+	
WHIM	+	+	.1	+	+	.1	+	.1	.1	+	.1	.7
LBCU	+		+						+		+	
MAGO	2.0	1.2	8.1				+		.1		+	
RUTU	+	+	+			+			.5		+	+
BLTU	.2	+	.1		+	.1		+	+		+	+
REKN	+		+		+	+			6.1		+	
SAND	.4	+	.8				+		.1	+	.1	5
WESA	2.6	.8	18	.5	1.2	3.9	26	100	520	55	100	15
LESA	.8	.1	1.5		.4	.1	5.1	+	+	+	.1	5
BASA											+	
PESA											+	
DUNL	4.3	1.6	6.5	+	.4	.1	35	21	64	63	21	5
DOWI	.3	+	2.2		.3	.1	.7	21	34	.1	.2	3.6
COSN	+		+			+			+		.2	
WIPH											+	
RNPH									+		+	
ALL	11	4.1	31	.5	2.6	4.6	68	142	627	152	100	30

[1] Numbers are rough estimates
[2] Butler and Campbell 1987
[3] Campbell et al. 1990

Table 5. Number of thousands of shorebirds at wetlands from San Diego Bay (SDB) north to Drakes Estero (DE) on the California coast during the winter. Only locations with 5000 or more shorebirds in either spring, fall or winter are included. A plus sign indicates < 50 birds.

Site>	SDB	MBY	UNB	BC	ML	MOB	ES	SFB	BL	LE	DE
BBPL	.6	.3	.3		.2	.3	.3	13	.5	.1	.3
SEPL	.1	.1	.1		.2	+	.1	1.4	+	.1	+
KILL	.1	.1	+		+	+	+	.4	+	+	.1
BNST	.2	+	+		.1		.1	7.3		+	
AMAV	+	.1	.4		1.2	.1	.3	27	+		+
GRYE	+	+	+		+	+	+	.3	+		+
LEYE	+				+		+	.1			
WILL	.7	.4	.3		.5	2.2	.8	19	.5	.3	.7
WHIM	+	+			+	+	+	.1	+		
LBCU	+	+	+		.1	.7	+	1.6	.1	+	+
MAGO	1.6	.5	.3		.8	2.2	.7	20	.5	.1	.7
RUTU	.1	.1	+		+	+	+	.1			+
BLTU	+					+		.1	+	+	.1
REKN	.5	.3	+		+	+		.2			+
SAND	.3	.2	+		.2	+	.2	.7	.2	.2	.1
WESA	3.5	1.6	10		5.6	2.4	17	132	.9	1.5	1.6
LESA	.1	.1	.2		1.3	4.6	4.6	18	1.9	.6	2.9
BASA											
PESA		+									
DUNL	.3	.1	1.3		1.7	.5	5.9	110	3.7	4.0	4.6
DOWI	1.1	.8	1.4		2.0	.7	2.0	22	.1	+	.2
COSN						+		+	+	+	+
WIPH											
RNPH								+			
ALL	9.4	4.6	15		12	13	31	358	7.4	5.5	10

Table 6. Number of thousands of shorebirds at wetlands from Tomales Bay (TB) California north to the Tofino Mudflats (TM) British Columbia during the winter. Only locations with 5000 or more shorebirds in either spring, fall or winter are included. A plus sign indicates < 50 birds.

Site>	TB	BH	HB	LTE	CB[1]	TIL	CRD	WB[1]	GH[1]	PS	FRD[2]	TM[3]
BBPL	.2	.2	3.3		.6	.4		.9	.5	1.2	.7	.5
SEPL	.1	.2	.4		.1	+		+	+			
KILL	.1	+	.4	+	.2	.6		+	.1	+	.4	+
BNST												
AMAV			.9									
GRYE	+		.2		+	+		+	+	.1	+	
LEYE			+		+							
WILL	.4	.3	3.5		+			+				
WHIM	+	+	+									
LBCU			.3									
MAGO	1.0	2.7	9.0		+							
RUTU	+	+	+								+	
BLTU	.1	.2	+		.1	.3		.1	+	.7	.1	
REKN			+									
SAND	.4	.7	1.1		5.2	1.8		1.2	3.8	1.3	.4	.5
WESA	.5	1.3	19		1.3	.2		1.0	.7	1.0	+	
LESA	4.1	.2	5.0		.4	.1		.2	.2	.1	+	
BASA												
PESA												
DUNL	11	7.0	36		3.0	9.5		16	38	56	109	.5
DOWI	.1	+	1.6	+	.1	.1		.1	+	.5	.7	
COSN	+		+	+	+	+		+	+	+	.1	+
WIPH												
RNPH												
ALL	15	13	79	+	10	13		21	40	59	111	1.5

[1] From Christmas Bird Counts; numbers probably low for some species; WB data also includes information from Widrig 1979

[2] From Butler and Campbell 1987

[3] From Campbell et al. 1990

Table 7. Number of thousands of shorebirds at wetlands in the Sacramento Valley and northern San Joaquin Valley during peak periods of autumn migration. Only locations with 5000 or more shorebirds in either spring, fall, or winter are included. A plus sign indicates < 50 birds.

Site>	GRAS[1]	NOGR	SOGR	EAGR	VOWA	MNWA	SANW	CONW	DENW
BBPL	.5		.5			+			
SEPL	.2			+	+	.2			
KILL	.5	.1	.1		+		+	+	+
BNST	6	1.8	1.5	.3	1.1	1.2	.7	.7	.6
AMAV	.7	.3	.3	+	+	+		+	+
GRYE	.8	.1	.3	.1	.1	.2	.1	.2	+
LEYE	+		+		+	+	+	+	+
WILL	+	+							
WHIM								+	
LBCU	2.2	.6	.6		+	1.1	.6	.1	.1
MAGO	+					+			
RUTU	+		+						
REKN									
SAND									
WESA	2.7	.1	.1		2.2	.2			
LESA	3.0	.1	1.4		.2	1.0			
BASA									
PESA									
DUNL	.1		.1	+					.6
PEEP				.3			.5	.1	.1
DOWI	12	2.6	2.6	1.3	1.5	3.9	4.5	.6	
COSN	+	+							
WIPH	+		+	+			.1	.1	+
RNPH	.5	+	.4						
ALL	29	5.8	8.0	2.1	5.1	8.0	6.6	1.7	1.4

[1] GRAS numbers are the sum of those for NOGR, SOGR, EAGR, VOWA, MRNW, MNWA, and other associated wetlands (holding < 5000 shorebirds) that are not listed here.

Table 8. Number of thousands of shorebirds at wetlands in the Sacramento Valley and northern San Joaquin Valley during peak periods of spring migration. Only locations with 5000 or more shorebirds in either spring, fall, or winter are included. A plus sign indicates <50 birds.

Site>	GRAS[1]	NOGR	SOGR	EAGR	VOWA	MRNW	MNWA	SUNW	SANW	CONW	DENW
BBPL	3.2	.2	.6	.1	+	.5	1.8		+	+	+
SEPL	.3	.1	+			+	.2				+
KILL	.6	.3	.1	+	+	+	.2	+	+	+	+
BNST	3.4	2	.7	.6	.1	.4	.4	.2	.3	.3	.4
AMAV	2.1	1.1	1.1	.1	.2	.1	.3	.1	.3	.3	.2
GRYE	.3	.1	+	.2	+	+	+	+	+	.1	+
LEYE	+	+	+				+	+	+	+	
WILL	+				+	+					
WHIM	.6	.1	.4	+	+		.2			+	
LBCU	.2	+	.2	+	+	+	+	+		+	+
MAGO	.1	+	.1		+		+				
RUTU											
REKN											
SAND											
WESA	121	52	33		5.7	3.2	21				
LESA	9.0	6.3	1.6		1.0	.4	.8				
BASA											
PESA											
DUNL	34	21	7.4	.7	2.3	2.9	3.4	1.4	2.4	3.9	5.7
PEEP				4.3				2.4	4.9	3.5	7.2
DOWI	39	19	13	1.4	1.8	1.6	3.4	3	2.6	4.6	2.7
COSN	.1	+	+	+	+	+	+	+		+	+
WIPH											
RNPH	+		+								
ALL	216	100	59	7.4	11	8.9	31	7.2	11	13	16

[1] GRAS numbers are the sum of those for NOGR, SOGR, EAGR, VOWA, MRNW, MNWA, and other associated wetlands (holding < 5000 shorebirds) that are not listed here.

Table 9. Number of thousands of shorebirds at wetlands in the Sacramento Valley and northern San Joaquin Valley during winter. Only locations with 5000 or more shorebirds in either spring, fall, or winter are included. A plus sign indicates <50 birds.

Site>	GRAS[1]	NOGR	SOGR	EAGR	VOWA	MRNW	MNWA
BBPL	.7	.3	.2	+	.1		.1
SEPL							
KILL	.4	.2	.1	+	+	+	+
BNST	4.4	1.7	1.4	+	.2	.1	.6
AMAV	1.1	.6	.4	.1	+	+	+
GRYE	.4	.1	.1	+	+	+	+
LEYE	+	+					+
WILL							
WHIM							
LBCU	.1	+	+	+	+	+	
MAGO	.1	+	.1				
RUTU							
REKN							
SAND							
WESA	3.8	1.6	.8		+		1.3
LESA	6.7	2.6	3.1		.3		.5
BASA							
PESA							
DUNL	23	9.7	8.8		.1	+	4.0
PEEP				.8		+	
DOWI	25	12	7.1	.1	.6	+	4.3
COSN	.1	.1	+		+		+
WIPH							
RNPH							
ALL	68	29	22	1.0	4.0	.2	11

[1] GRAS numbers are the sum of those for NOGR, SOGR, EAGR, VOWA, MRNW, MNWA, and other associated wetlands (holding < 5000 shorebirds) that are not listed here.

Table 10. Number of thousands of shorebirds at agricultural evaporation ponds and sewage ponds in the southern San Joaquin Valley during autumn migration. Only locations with 5000 or more shorebirds in either spring, fall, or winter are included. A plus sign indicates <50 birds.

Site>	COSP	VISP	BFEP	JWEP	WSEP	HREP	TSEP
BBPL			.1	.4	.9	.2	.3
SEPL			+	+	+	+	.1
KILL	+	+	+	.1	+	+	.3
BNST	.1	+	.1	.3	.8	6.7	3.5
AMAV	.6			.7	.3	4.7	5.6
GRYE	+		+	.1	.2	+	.6
LEYE			+	+	+	+	+
WILL					+	+	+
WHIM				+			
LBCU				.1	+	+	+
MAGO	+			+		.1	+
RUTU							
REKN							+
SAND						+	+
WESA	.1	.1	2.9	1.4	1.0	4.9	5.9
LESA	.1	.2	2.5	.9	2.6	2.5	3.3
BASA					+	+	
PESA							
DUNL							.1
DOWI	2.1		.4	1.3	+	3.9	1.2
COSN							
WIPH	+		.1	.8	1.3	7.7	2.2
RNPH	.2		+	+	.6	3.0	6.8
ALL	2.5	.2	6.2	6.2	6.4	33	30

Table 11. Number of thousands of shorebirds at agricultural evaporation ponds and sewage ponds in the southern San Joaquin Valley during spring migration. Only locations with 5000 or more shorebirds in either spring, fall, or winter are included. A plus sign indicates <50 birds.

Site>	COSP	VISP	BFEP	JWEP	WSEP	HREP	TSEP
BBPL	+	.1		.2	.1	.2	.1
SEPL	+		+	+	+	+	
KILL	+	+	+	+	+	+	+
BNST	.2	+	.1	.3	.3	.2	+
AMAV	.4		+	.8	.2	.7	+
GRYE		+	+		+	+	+
LEYE				+	+		
WILL					+	+	+
WHIM	+		+	.1	1.1	2.0	+
LBCU					.2	.2	+
MAGO	.1				+		
RUTU							
REKN							
SAND						+	
WESA	2.2	5.5	2.6	2.5	5.2	6.6	1.5
LESA	+	.6		.1	.1	+	2.2
BASA							+
PESA							
DUNL	1.0	+	.4	.1	.3	.5	+
DOWI	8.0		.1	1.1	+	.6	+
COSN							
WIPH		+	+		+	+	+
RNPH	+					+	+
ALL	12	6.2	3.4	5.2	7.4	11	2.0

Table 12. Number of thousands of shorebirds at agricultural evaporation ponds and sewage ponds in the southern San Joaquin Valley during winter. Only locations with 5000 or more shorebirds in either spring, fall, or winter are included. A plus sign indicates <50 birds.

Site>	COSP	VISP	WSEP	HREP
BBPL	.1			
SEPL				
KILL			+	
BNST			.1	+
AMAV			.3	.4
GRYE	+		+	+
LEYE	+			
WILL			+	+
WHIM				
LBCU				+
MAGO				
RUTU				
REKN				
SAND				+
WESA		+	.4	.5
LESA		1.0	.3	+
BASA				
PESA				
DUNL	+		.5	.4
DOWI	+			.1
COSN				
WIPH				
RNPH				
ALL	.2	1.0	1.6	1.5

Table 13. Number of thousands of shorebirds at interior wetlands in Idaho, Utah, Oregon, and Nevada during peak periods of autumn migration. Only locations with 5000 or more shorebirds in either spring, fall, or winter are included. A plus sign indicates <50 birds.

Site>	LALO	AFRE	GSLA	MALA	SULA	ABLA	HTLA	STLA[1]	STWA	CALA	HUWA
BBPL	+	.1	.2	+	+	+			+	+	
SEPL	+	+	+	+	+	+	+		+	+	
KILL	.6	1.3	.7	.4	.6	.1	.6		.2	+	.1
BNST	+	.1	21	+	1.0				5.9	.8	.2
AMAV	+	2	51	.6	20	5	1.1	15	31	13	4.2
GRYE	+	+	.1	+	.1	+	+		.1	.3	
LEYE	+	.4	.2	+	.1	+	+		.1	+	
WILL	+	.1	+		+	+		3			
WHIM		+									
LBCU		+	+		+				.1	.2	
MAGO	+	.6	1.7	+	+	+	+		.3	.1	.4
RUTU		+	+	+	+					.9	
REKN		+	+								
SAND	+	+	+	+	+						+
WESA	11.2	15	3.9	3.7	6.5+	6.1	1.5		.9		3.3
LESA	.1	.1	.7	.6	2+	.3	4.1		.1		.3
BASA	.3	1.2	+	+	+	+	+				
PESA	+	.2	+	+	+			.4	+		
DUNL	.1	+					+			+	
PEEP					22				11	5.4	
DOWI	.1	1	13	1.1	5	+		.1	28	12	15
COSN	+	+	+	+	+						+
WIPH	.1	1.5	600		2.4	70	.1	10-15	54	10	.1
RNPH	.2	.3	300	+	18	15.6	.5		1.5	+	+
ALL	13	24	990+	6.6	59	70+	8		62	20	24

1. From Littlefield 1990; data not available for all species.

Table 14. Number of thousands of shorebirds at interior wetlands in Idaho, Utah, Oregon, and Nevada during peak periods of spring migration. Only locations with 5000 or more shorebirds in either spring, fall, or winter are included. A plus sign indicates <50 birds.

Site>	LALO	AFRE	GSLA	MALA	SULA	ABLA	HTLA	STWA	CALA	HUWA
BBPL			1.4	+	+			+	.3	
SEPL		+	+		1.0			.6	.1	+
KILL	+	+	.2	.1	+	+	+	.1	+	
BNST	+	+	4.6	.2	.3	+		2	.8	.2
AMAV	+	+	13	.5	4.2	1.4		7.4	6.4	1.8
GRYE	+	+	$.3^{+}$	+	+			.1	+	+
LEYE	+	+	1.3^{+}	+	+			+	+	
WILL		+	.7	.4	.1	.1	+	+	+	+
WHIM										
LBCU		+	.2	+	+	+	+	+	+	
MAGO	.5		2.1	+	+			$.3^{+}$	.2	+
RUTU			+							
REKN			.1							
SAND			.5					+		
WESA	+	+	$.4^{+}$	$.2^{+}$	1.6^{+}	$.1^{+}$		11	45	5
LESA	+	+	$.2^{+}$	$.1^{+}$	23			25	2.8	.3
BASA			.2	+	+					+
PESA									+	+
DUNL			+	+	1.7	.2		9.8	6	.1
PEEP				1.7		4.6			50	
DOWI	+	+	1.5	.3	.8	.1		27	80^{+}	.9
COSN	+	+	+	+	+			+	+	
WIPH	+	+	.5		.5	+		.1	.3	+
RNPH			20		+			+	+	
ALL	<1	<1	47	2.9	29	6.4	+	78	82	8.3

Table 15. Number of thousands of shorebirds at wetlands in the interior of California east of the Cascade-Sierra crest during peak periods of autumn migration. Only locations with 5000 or more shorebirds in either spring, fall, or winter are included. A plus sign indicates <50 birds.

Site>	SASE	PIPO	OWLA	MOLA	HOLA	GOLA	LOKL
BBPL	.1	+		+	+		+
SEPL	.1	+	+	+	+		
KILL	.3	+	.1	.2	.4		.1
BNST	10	.1	+	.1	.1		+
AMAV	19	.2	1	8.5	.3		
GRYE	.1	+	+	+	+		+
LEYE	.2	+	+	+	+		+
WILL	1.1	+	+	+			
WHIM	+						
LBCU	3.8	+	+	+	+		+
MAGO	3.2	+	+	.1	+		+
RUTU	+		+	+			
REKN	+			+			
SAND	+			+	+		
WESA	54	.8	2.3	4	.1		.1
LESA	1.1	.1	.7	1.4	.6		+
BASA	+	+	+	+	+		
PESA							+
DUNL	+				+		
DOWI	11	.1	.1	+	.3		.6
COSN				+	+		
WIPH	7.6	.1	.2	93	+		+
RNPH	12	.1	.1	40	1.7		.2
ALL	106	1.2	4	148	3.2		1.0

Table 16. Number of thousands of shorebirds at wetlands in the interior of California east of the Cascade-Sierra crest during peak periods of spring migration. Only locations with 5000 or more shorebirds in either spring, fall, or winter are included. A plus sign indicates <50 birds.

Site>	SASE	PIPO	OWLA	MOLA	HOLA	GOLA	LOKL
BBPL	.6	+	+	+	.2	+	.1
SEPL	.8	+	+	.3	.2	.1	+
KILL	.2	+	+	.1	.1	.1	+
BNST	3.1	.3	+	+	.1	+	1
AMAV	5.9	.5	.9	1.6	3.3	.4	.7
GRYE	+	+	+	+	+	+	+
LEYE	+	+	+		+		+
WILL	.3	+	+	+	.1	.3	.1
WHIM	9.8	+	+	+			
LBCU	.1	+	+	+	+	.1	+
MAGO	.6	+	+	+	+	.1	.1
RUTU	+						
REKN	.5						
SAND	.3						
WESA	38	6	5	19	1.7	2.3	5.2
LESA	.8	.8	2.6	4.8	12	5.1	.9
BASA					+	+	
PESA							
DUNL	.2	.3	+	.4	.2	.6	2.3
DOWI	12	1.1	+	.3	.1	.2	1
COSN	+	+	+	+	+	+	+
WIPH	.4	+	+	.1	+	.1	+
RNPH	.7	.1	+	.9	+		
ALL	68	9.0	8.5	26	18	9.4	11

Appendix 4. Descriptions of U.S. and Canadian sites holding significant concentrations of shorebirds west of the Rocky Mountains.

SITE INFORMATION: Tofino Mudflats CODE: TM

LOCATION: West coast of Vancouver Island
Province: British Columbia

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach (), coastal lagoon (), coastal bay (X), river estuary (), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (), brackish marsh (), salt marsh (), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ().

Other: ____.

Browning Passage, near the town of Tofino, has six major mudflat areas known locally as Arakan Flats, Ducking Flats, Doug Banks Flats, Maltly Slough, South Bay, and Grice Bay; Chesterman Beach is a 3km-long beach S of Tofino.

SIZE: 16km^2 of exposed mudflats

OWNERS:
Public: British Columbia Ministry of Crown Lands (provincial), Parks Canada (federal)

ACCESSIBILITY: Access to most areas by boat or plane.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Being a tidal area, habitat is fairly stable.

SEASONS OF SHOREBIRD OCCURRENCE: Used primarily during spring and autumn migration, mostly by Western Sandpipers which have peaked at 43,000 birds in fall and 13,000 in spring.

METHOD OF CENSUSING: Past censuses conducted by a combination of air, boat, and ground counts.

NUMBER OF OBSERVERS: Dependent on method.

COMMENTS:

SITE INFORMATION: Fraser River delta/Boundary Bay CODE: FRD

LOCATION: Province: British Columbia

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach (), coastal lagoon (), coastal bay (), river estuary (X), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ().

Other: ______________________________.

The Fraser River delta is the largest estuary on the Pacific coast of Canada. It includes the area bounded by the Canada-US border in the south, Burrard Peninsula in the north, Surrey uplands in the east, and the Strait of Georgia on the west. In historical times 75% of the flooded portion of the delta has been diked and drained. The area enclosed by dikes is cultivated and contains residential and urban developments, woodlots, and bogs. Sturgeon and Roberts banks and Boundary Bay are the primary areas of intertidal mudflats. The Fraser River once flowed south into Boundary Bay, but today two smaller rivers -- the Serpentine and Nicomekl -- are the main sources of fresh water in the bay.

SIZE: 260 km^2

OWNERS:
Private: There are numerous private holdings.

Public: British Columbia Ministry of Crown Lands.

ACCESSIBILITY: Because of difficulty of access shorebird surveys have been conducted from an a airplane.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Being largley a tidal area, habitat is fairly stable.

SEASONS OF SHOREBIRD OCCURRENCE: Main use is during spring and fall when about 100,000 Western Sandpipers have been counted. Dunlin have also peaked at over 100,000 in late fall; about 40,000 occur in winter, when the site supports the highest densities of shorebirds in Canada.

METHOD OF CENSUSING: Recent shorebird surveys of the entire delta system have been conducted from an airplane.

NUMBER OF OBSERVERS: Two aerial observers.

COMMENTS:

SITE INFORMATION: Puget Sound CODE: PS

LOCATION: State: Washington
County: Thurston, Mason, Pierce, Snohomish, Skagit, Whatcom, Island, Kitsap, San Juan, Clallam, Jefferson.

HABITAT: Areas are one of the following: sandy coastal beach (X); rocky coastal beach (), coastal lagoon (), coastal bay () river estuary (X), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (X), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: ____.

There are 2 NWRs in the Puget Sound area--The Nisqually NWR occupies 720 hectares on the delta where the Nisqually river flows into Puget Sound. The Dungeness NWR occupies 306 hectares. Dungeness Spit stretches for 5.5 miles into the Strait of Juan de Fuca. Formed by eroding soil, wind, and water currents, it breaks the rough sea waves to form a quiet bay, sand and gravel beaches, and tideflats. Padilla Bay is part of the National Estuarine Reserve Research System.

SIZE:

OWNERS:
Private: There are several private land holdings in the area.

Public: U.S. Fish and Wildlife Service (Nisqually and Dungeness NWRs), State of Washington, County lands.

ACCESSIBILITY: All subareas that are presently being covered are accessible for shorebird censusing. To date, no special permission is required but we have not obtained complete coverage of all areas where private property requires access permission.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Being largely a tidal area habitat is fairly stable.

SEASONS OF SHOREBIRD OCCURRENCE: Estimates from Joe Buchanan: Over 100,000 in spring, fall, and winter (We only have data for spring 1991 (over 100,000) and coverage was not complete). There has never been a complete comprehensive census of this area.

METHOD OF CENSUSING: A method for covering this Bay has been designed by cooperators from Cascadia Research Collective. It is organized in much the same way as San Francisco Bay in that the shoreline is broken into many subareas (40-50) each covered by a team of ground-based observers who count shorebirds during a rising tide. All subareas in each section are covered on the same day at the same time. Precise methodology, however, is still being worked out. A coordinator is needed to recruit counters, obtain permits for access, disseminate census instructions, and to collect and tabulate results. PRBO has been contracting this job out to Cascadia Research Collective.

NUMBER OF OBSERVERS: 75-100.

COMMENTS: Counts must be restricted to weekends (because of the large number of people required) and to dates of favorable rising tides.

SITE INFORMATION: Grays Harbor CODE: GH

LOCATION: State: Washington
County: Grays Harbor

HABITAT: Areas are one of the following: sandy coastal beach (); rocky coastal beach (), coastal lagoon (), coastal bay () river estuary (X), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (X), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: Man-made jetties, uplands, and coastal dunes.

Enclosed by a narrow entrance, Grays Harbor opens into one of the largest estuaries on the Pacific coast. The estuary's shape resembles an east-facing horizontal pear that is approximately 13 miles at its widest point and narrows to less than 100 yards at is eastern end, nearly 32 miles from the estuary entrance. Bowerman Basin (the mud flat north of Bowerman Airfield) is an especially important area for shorebirds. Due to its higher elevation it has a unique tidal flat exposure and is an area of exceptionally rich prey production. Salt marshes border much of the harbor, occupying nearly 2227 hectares. The Chehalis River enters the estuary at its east end and provides most of the freshwater. Other major tributaries include the Humptulips and Hoquiam rivers in the north bay and the Elk and Johns rivers in the south bay. Most of the freshwater marsh habitat is found in the Chehalis river and north bay areas. Large salt marsh areas are located in the central portion of the estuary below Aberdeen and in the north and south bays. It has been a deepwater port since the early 1900's.

SIZE: 24340 hectare estuary with 14970 hectares of tidelands; Grays Harbor NWR (729 ha).

OWNERS:
Private: There are some private oyster companies.

Public: U.S. Fish and Wildlife Service (Grays Harbor NWR), Port of Grays Harbor.

ACCESSIBILITY: Most areas are accessible for shorebird censusing without gaining permission.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Being a tidal area, the habitat is fairly stable.

SEASONS OF SHOREBIRD OCCURRENCE: One million in spring (peak is around 23-25 April), tens of thousands in winter, and in fall.

METHOD OF CENSUSING: A method for covering the area has been designed by Steve Herman of Evergreen State College. It is organized in much the same way as San Francisco Bay in that the shoreline is broken into subareas (12) each covered by a team of observers who count shorebirds. A coordinator is needed to recruit counters, obtain permits for access, disseminate census instructions, and to collect and tabulate results.

NUMBER OF OBSERVERS: 25-30

COMMENTS: Counts must be restricted to weekends because of the large number of people required.

SITE INFORMATION: Willapa Bay CODE: WB

LOCATION: State: Washington
County: Pacific

HABITAT: Areas are one of the following: sandy coastal beach (); rocky coastal beach (), coastal lagoon (), coastal bay () river estuary (), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (X), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: ____.

5 rivers enter into Willapa Bay. They are (from south to north) Bear River, Naselle River, Palik River, Willapa River, and North River. Willapa Bay NWR (4656 hectares of uplands and tidelands) is comprised of 5 units: Willapa Bay; Leadbetter Point--580 hectares--of salt marsh, sand dunes and woods located on the northern tip of Long Beach Peninsula, a long sandy peninsula running north from the mouth of the Columbia River; Long Island--2024 ha-- island surrounded by tidal marshes and extensive mudflats located in the SE corner of the bay; Lewis--freshwater marshes at the south end of the bay; and Riekkola--grasslands established on diked tidelands at the south end of the bay.

SIZE:

OWNERS:
Private: There are several private land holdings around the bay.

Public: U.S. Fish and Wildlife Service.

ACCESSIBILITY: Access from private owners is necessary to get out to census areas.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Being a tidal area, the habitat is fairly stable.

SEASONS OF SHOREBIRD OCCURRENCE: Over 100,000 in spring; there has never been a fall count at Willapa Bay.

METHOD OF CENSUSING: A method for covering the area has been designed by Steve Herman of Evergreen State College. It is organized in much the same way as San Francisco Bay in that the shoreline is broken into subareas (10-12) each covered by a team of ground-based observers who count shorebirds. Aerial counts may be used if ground counts are not possible or to supplement ground counts. A coordinator is needed to recruit counters, obtain permits for access, disseminate census instructions, and to collect and tabulate results.

NUMBER OF OBSERVERS: 25-30 people

COMMENTS: Counts must be restricted to weekends because of the large number of people required.

SITE INFORMATION: Columbia River Delta CODE: CRD

LOCATION: State(s): Oregon & Washington
County: Clatsop (OR) & Pacific & Wahkiakum (WA)

HABITAT: Areas are one of the following: sandy coastal beach (); rocky coastal beach (), coastal lagoon (), coastal bay () river estuary (X), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (X), brackish marsh (), salt marsh (), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: ____.

There are several distinct areas of The Columbia River Estuary system. The South Jetty area is at the mouth of the river on the Oregon side, Trestle Bay is near the mouth on the Oregon side, Youngs Bay is further upriver on the Oregon side, the Lewis and Clark NWR (14170 hectares) is a chain of estuary islands that begins just above Tongue Point, OR and follows the Oregon shore of the main channel of the Columbia River upriver to Tenasillahe Island (accessible only by boat), and Baker Bay is near the mouth on the Washington side of the river.

SIZE:

OWNERS:
Private: There is some private property along the river.

Public: U.S. Fish and Wildlife Service, State of Oregon, Clatsop County

ACCESSIBILITY: No special permission is required.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: This estuary is under tidal influence so the variation in water area is fairly stable.

SEASONS OF SHOREBIRD OCCURRENCE: Partial coverage of the Columbia River Mouth in the fall yielded only 400 shorebirds (count occurred in mid-September so peak numbers probably missed); 30,000 in spring. The USFWS estimates that thousands may occur in fall and winter.

METHOD OF CENSUSING: This large area is best covered a combination of plane, boat, and ground-based observers. Aerial and/or boat surveys can be used to cover ther area from Tongue Point upriver to Tenasillahe Bay. Ground counts can be obtained from areas including the South Jetty, Trestle Bay, Youngs Bay. A coordinated coverage of the entire area has yet to be worked out.

NUMBER OF OBSERVERS: This depends on the type of count--aerial, boat, or ground). Because of space limitations, surveys from a plane or a boat will involve only a few people. A team of 5 ground-based counters has conducted past counts of the South Jetty, Trestle Bay, and Youngs Bay.

COMMENTS: Because of possible shorebird movement, the delta should be censused on the same day.

SITE INFORMATION: Tillamook Bay CODE: TIL

LOCATION: State: Oregon
County: Tillamook

HABITAT: Areas are one of the following: sandy coastal beach (); rocky coastal beach (), coastal lagoon (), coastal bay (X) river estuary (), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded (X) or dry ();

Other: ______________________________.

SIZE:

OWNERS:
Private: There is private ranch land (dairy) that abuts the southeast side of the bay; Nature Conservancy may have an easement on this property.

Public: State of Oregon; Tillamook County (spit).

ACCESSIBILITY: No special permission is necessary to gain access to private property along the southeast side of the bay although it has recently changed hands and this may change.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: The bay is subject to daily tidal action and is therefore fairly stable.

SEASONS OF SHOREBIRD OCCURRENCE: Thousands (4600) in spring; may be thousands in fall (partial coverage yielded 600).

METHOD OF CENSUSING: The bay shore is divided into 4 segments each covered by a team of observers (one segment, the upper bay, is covered by boat as access is difficult because the shoreline is dissected by many rivers and large sloughs).

NUMBER OF OBSERVERS: 4 teams of 2 people each = 8 observers.

COMMENTS: Because of possible shorebird movement, all sub-areas should be censused on the same day.

SITE INFORMATION: Coos Bay CODE: CB

LOCATION: State: Oregon
County: Coos

HABITAT: Areas are one of the following: sandy coastal beach (); rocky coastal beach (), coastal lagoon (), coastal bay (X) river estuary (), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: ______________________________.

Extensive mud and sand flats and saltmarsh.

SIZE: 2400 hectares of tidelands.

OWNERS:
Private: There are areas of private property on the east side of the bay, opposite the town of Coos Bay.

Public: State of Oregon, Port of Coos Bay, City of Coos Bay, Bureau of Land Management (North Spit), and NOAA (South Slough).

ACCESSIBILITY: No special permission is required.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Being a tidal area, the habitat is fairly stable.

SEASONS OF SHOREBIRD OCCURRENCE: 5000-10000 in fall; over 5000 likely in winter and spring but only 2550 in spring 1991.

METHOD OF CENSUSING: Coverage is obtained using land and boat-based counters. 10 sub-areas have been identified. Two boats are needed for complete coverage--one for South Slough and Lower Coos Bay and one for the north and east arms.

NUMBER OF OBSERVERS: 15-20

COMMENTS: Because of possible shorebird movement, all sub-areas should be censused on the same day.

SITE INFORMATION: Lakes Talawa & Earl CODE: LTE

LOCATION: State: California
County: Del Norte

HABITAT: Areas are one of the following: sandy coastal beach (); rocky coastal beach (), coastal lagoon (), coastal bay () river estuary (), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (), brackish marsh (), salt marsh (), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: SEE BELOW .

These shallow coastal lagoons are connected by a narrow channel and are periodically drained into the ocean through an outlet from Lake Talawa. Lake Earl is about 5.3 by 2.0 kilometers and occupies about 731 hectares. Lake Talawa, located between Lake Earl and the Pacific Ocean, is about 2.2 by 0.4 kilometers and occupies 64 hectares. The sand barrier beach separating Lake Talawa from the ocean is usually lowered by a bulldozer to allow for drainage when high lake water during the winter rainy season floods surrounding lands. Natural breaching may occur when a high lake water level and high tides cause the barrier beach to become saturated and wash away. Breaching permits the discharge of lake water and the entry of seawater resulting in a broad range of salinity. Lake Earl, fed by Jordan Creek, is mostly freshwater, whereas Lake Talawa is relatively saline. Much of Lake Talawa is bordered by salt marsh. Lake Earl is surrounded by bulrush and cattail. The lake area contains numerous sloughs, marshlands, freshwater wetlands, and extensive sand dunes. A residential subdivision occurs on the north shore of Lake Earl.

SIZE: 795 hectares.

OWNERS:
Private: There are a few private land holdings around the bay. There is a planned subdivision on land between Lakes Talawa and Earl and some grazed land around the lake.

Public: California Department of Fish and Game (Wildlife Area) and the California Department of Parks and Recreation.

ACCESSIBILITY: The bay is accessible for shorebird censusing. A key to a locked gate for access into the Wildlife Area is necessary from the Fish and Game. This can be obtained from the Wildlife Area Headquarters.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Lake Talawa is subject to some tidal action and therefore is more stable than Lake Earl which fluctuates in response to water availability.

SEASONS OF SHOREBIRD OCCURRENCE: Tens of thousands in fall, hundreds in spring, and < 100 in winter.

METHOD OF CENSUSING: A method for covering the bay has been designed by a coordinator in the area. Censusing is conducted from various vantage points around the lakes using spotting scopes.

NUMBER OF OBSERVERS: 2

COMMENTS: It is desirable to conduct shorebird counts of all Del Norte and Humboldt county sites on the same day.

SITE INFORMATION: Humboldt Bay CODE: HB

LOCATION: State: California
County: Humboldt

HABITAT: Areas are one of the following: sandy coastal beach (X); rocky coastal beach (), coastal lagoon (), coastal bay (X) river estuary (), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (X), brackish marsh (X), salt marsh (X), sewage treatment pond (X), salt pond (), agricultural wastewater pond (), agricultural field flooded (X) or dry (X);

Other: Also sand flats and tidal slough areas .

Humboldt Bay is the largest estuary and wetlands complex in California north of San Francisco. It is a long narrow coastal bay about 24 kilometers long and protected from the ocean by two narrow sand spits. The bay consists of two wide shallow northern and southern arms connected by a relatively narrow channel. It is roughly hour-glass in shape with an outlet to the sea in the middle. Jetties off the North and South Spits stabilize the narrow mouth. Four small freshwater creeks empty into the bay from the northeast (Jacoby Creek and Freshwater Creek from the east, Elk River from the southeast, and Salmon Creek from the south). The bay is bordered on 3 sides by dikes that protect pastures and fields reclaimed from salt or brackish marshes. The city of Arcata lies at the northeast corner of the bay and the communities of Eureka, Fields Landing, and King Salmon lie along the east side of Eureka Channel and South Bay. The west side of the bay consists of the relatively developed North Spit and the undeveloped South Spit. Oyster mariculture is practiced in the intertidal mudflats of the north bay.

SIZE: The bay surface and its surrounding wetlands comprise 6883 hectares. There are 2950 hectares of mudflat available at mean low tide (Gerstenberg 1979). Humboldt Bay NWR is 3482 hectares of marshland, mudflats, and open water. Most of it is water, but there are 162 hectares of estuarine habitat, 61 hectares of grassland, and 4.5 hectares of sand. The sewage pond is 20 hectares.

OWNERS:
Private: There are many private land holdings around the bay; Timber companies control some land on the south spit.

Public: U.S. Fish & Wildlife Service (Humboldt Bay NWR) and other state, local, and federal entities.

ACCESSIBILITY: The bay is accessible for shorebird censusing. Permission or notification is required from the U.S. Fish and Wildlife Service. Access to private land on the north spit near Manila has not been obtained. Otherwise, no special permission is required.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: The bay subject to daily tidal action and therefore is fairly stable. Winter rains--from October through April--make upland and freshwater marsh habitats available.

SEASONS OF SHOREBIRD OCCURRENCE: Tens of thousands in spring, fall, and winter.

METHOD OF CENSUSING: A method for covering the bay has been designed by coordinators from the U.S. Fish & Wildlife Service and at Humboldt State University. It is organized in much the same way as San Francisco Bay in that the shoreline is broken into many subareas (16) each covered by a team of ground-based observers who count shorebirds during a rising tide. One team conducts counts of the islands near Eureka from a boat. A coordinator is needed to recruit counters, obtain permits for access, disseminate census instructions, and to collect and tabulate results.

NUMBER OF OBSERVERS: 30+

COMMENTS: Counts must be restricted to weekends because of the large number of people required. Many students from HSU participate in the counts so it is desirable that the counts occur when school is in session.

SITE INFORMATION: Bodega Harbor CODE: BH

LOCATION: State: California
County: Sonoma

HABITAT: Areas are one of the following: sandy coastal beach (X); rocky coastal beach (X), coastal lagoon (), coastal bay (X) river estuary (), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: Sand dunes, jetties at the entrance to the harbor, rip-rap, and a small amount of freshwater wetland habitat.

The shallow harbor, roughly triangular in shape, about 1.7 miles and 1.5 miles wide at its widest point, is enclosed by a south trending peninsula, the Bodega Head, and a north trending sand spit, called Doran Spit or Doran Beach. This curving sand spit with a narrow opening to the ocean on the western end, separates Bodega Harbor from the outer Bodega Bay. The northeast side of Bodega Harbor is bordered by hills and the northwest side primarily by large heavily vegetated dunes. Most fresh water enters the estuary in winter and spring and there are no year-round streams. Bodega Harbor contains sizable docking facilities for commercial and recreational fishing boats on the north shore. Camping facilities have been developed on the west and south shores.

SIZE: 320 hectares.

OWNERS:
Private: There are a few private land holdings around the harbor.

Public: The tidelands of Bodega Harbor, to the high water mark are under control of Sonoma County. Much of the land surrounding the harbor is owned by Sonoma County (Westside Park and Doran Park), the University of California (Bodega Marine Lab), the State of California (Sonoma Coast State Park), and the Public Utilities District of Bodega Bay.

ACCESSIBILITY: The harbor is accessible for shorebird censusing. No special permission is required.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: The harbor is subject to daily tidal action and therefore is fairly stable.

SEASONS OF SHOREBIRD OCCURRENCE: Tens of thousands in winter and thousands in spring (4000) and fall (2500).

METHOD OF CENSUSING: Collaborators at Bodega Marine Lab have designed a method of coverage of the harbor. Censusing is conducted from various vantage points around the harbor using spotting scopes.

NUMBER OF OBSERVERS: 2-3.

COMMENTS: It is desirable to conduct a shorebird census of this area on the same day as the Point Reyes area wetlands are censused.

SITE INFORMATION: Tomales Bay CODE: TB

LOCATION: State: California
County: Marin

HABITAT: Areas are one of the following: sandy coastal beach (); rocky coastal beach (), coastal lagoon (), coastal bay (X) river estuary (), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (X), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: ____.

Tomales Bay, a long intertidal finger of bayland formed along the San Andreas Fault rift zone, is 13 miles long and one mile wide, very shallow, and is fed by two creeks at its southeastern end (Lagunitas and Olema creeks) and one creek at its northeastern end (Walker Creek). The amount of fresh water entering the bay is modest. The bay is not a true estuary, where substantial mixing of fresh water and salt water takes place; however, localized estuarine conditions exist at scattered points along the shoreline. Several fishing and small craft harbors are situated at deep water locations along the shoreline. There is an oyster mariculture industry along the east shore of the bay.

SIZE:

OWNERS:
Private: There are a few private land holdings used primarily as grazing lands; Audubon Canyon Ranch (Cypress Grove Preserve); Lawson's Landing Resort near Sand Point.

Public: State of California (Tomales State Park on the eastern shore), National Park Service (Golden Gate National Recreation Area on the eastern shore and Point Reyes National Seashore on the western shore), the State Wildlife and Conservation Board (Tomales Bay Ecological Reserve) and the California Department of Fish and Game.

ACCESSIBILITY: The bay is accessible for shorebird censusing. Permission is required from Audubon Canyon Ranch and notification is advisable from the private land holders. Agreements can be made with Lawson's Landing so that access through their development is free.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: The bay is subject to daily tidal action and therefore is fairly stable.

SEASONS OF SHOREBIRD OCCURRENCE: Tens of thousands in winter, spring, and fall (9900).

METHOD OF CENSUSING: A method for covering the bay has been designed by PRBO and refined by a collaborator from Audubon Canyon Ranch's Cypress Grove Preserve. It is organized in much the same way as San Francisco Bay in that the shoreline is broken into many subareas (9) each covered by a team of ground-based observers who count shorebirds during a rising tide. A coordinator is needed to recruit counters, obtain permits for access, disseminate census instructions, and to collect and tabulate results.

NUMBER OF OBSERVERS: 15-20.

COMMENTS: It is desirable to conduct a shorebird census of this area on the same day as the other Point Reyes/Bodega area wetlands are censused.

SITE INFORMATION: Drakes Estero CODE: DE

LOCATION: State: California
County: Marin

HABITAT: Areas are one of the following: sandy coastal beach (X); rocky coastal beach (), coastal lagoon (X), coastal bay () river estuary (), inland river margin (), freshwater lake (), freshwater pond (X), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (X), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: ____.

Drakes Estero consists of 4 fingers of water (Barries Bay, Creamery Bay, Schooner Bay, and Home Bay) emptying into a relatively large, shallow central area. The estero cuts into low hills. Ranchers have created some freshwater ponds on the periphery of the estero. Drakes has no year-round freshwater sources but receives winter and spring runoff. The sand spit at the opening of Drakes Estero into the ocean is much smaller than the Limantour and Bolinas spits. Southwest of the estero near the beach is Horseshoe Pond, a mainly freshwater marsh containing cattails and tules. Oysters are raised commercially within the estero.

SIZE: 964 hectares and about 37 hectares of pond habitat.

OWNERS:
Private: None, but Johnson's Oyster Company leases tidelands within the estero and the office is located at the north end of Schooner Bay.

Public: National Park Service (Point Reyes National Seashore).

ACCESSIBILITY: The estero is accessible for shorebird censusing. No special permission is required.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: The lagoon is a semi-enclosed body of water subject to daily tidal action, and therefore is fairly stable. Salt water is measurably diluted by fresh water only from October through April.

SEASONS OF SHOREBIRD OCCURRENCE: Tens of thousands in winter and thousands in spring (8300) and fall (7800).

METHOD OF CENSUSING: 5 ground-based teams count the estero: one team covers each of the 4 bays (team that covers Creamery Bay also covers outer Schnooer Bay and team that covers Home Bay also covers part of the estero mouth) and one team covers Drakes Spit and the estero mouth.

NUMBER OF OBSERVERS: 5+

COMMENTS: Birds fly across the mouth of estuary to and from Drakes Beach, so it is advisable to conduct counts simultaneously at Limantour and Drakes Estero as well as at other Point Reyes/Bodega area wetlands.

SITE INFORMATION: Limantour Estero CODE: LE

LOCATION: State: California
County: Marin

HABITAT: Areas are one of the following: sandy coastal beach (X); rocky coastal beach (), coastal lagoon (X), coastal bay () river estuary (), inland river margin (), freshwater lake (), freshwater pond (X), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: ______________________________.

The estero is bordered by hills, six freshwater impoundments, a spit with scattered high dunes, and a channel to the ocean shared with Drakes Estero. Several intermittent streams run into the estero in winter and spring.

SIZE: 331 hectare estuary plus 64 hectares of freshwater impoundments (since 1982 breaks in dikes have drained 28 hectares of pond habitat, part of which was restored to tidal action). The northern extension of the estuary is 146 hectares.

OWNERS:
Private: None.

Public: National Park Service (Point Reyes National Seashore).

ACCESSIBILITY: The estero is accessible for shorebird censusing. No special permission is required.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: The lagoon is a semi-enclosed body of water subject to daily tidal action, and therefore is fairly stable. Salt water is measurably diluted by fresh water only from October through April.

SEASONS OF SHOREBIRD OCCURRENCE: Thousands in spring (2400), fall (2900), and winter (5500).

METHOD OF CENSUSING: 2 teams are needed to cover this area: one for the outer estuary and spit and one for the northern extension of the estuary.

NUMBER OF OBSERVERS: 2 teams of 1-2 people each.

COMMENTS: Birds fly across the mouth of estuary to and from Drakes Beach, so it is advisable to conduct counts simultaneously at Limantour and Drakes Estero as well as at other Point Reyes/Bodega area wetlands.

SITE INFORMATION: Bolinas Lagoon CODE: BL

LOCATION: State: California
County: Marin

HABITAT: Areas are one of the following: sandy coastal beach (); rocky coastal beach (), coastal lagoon (X), coastal bay () river estuary (**X-in winter when freshwater runoff is relatively high**), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (**X-where streams open into the lagoon**), brackish marsh (), salt marsh (X), sewage treatment pond (X), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: ______________________________.

Bolinas Lagoon is a small shallow estuary. High hills, marshy pastures and the Seadrift sand spit surround the estuary except for a narrow opening to the ocean on the southwest side. Pine Gulch Creek drains into it year round and is the main source of fresh water.

SIZE: 587 hectares.

OWNERS:
Private: Seadrift Association.

Public: Marin County (Bolinas Lagoon Nature Preserve.

ACCESSIBILITY: The lagoon is accessible for shorebird censusing. Permission is needed to enter the Seadrift development in Stinson Beach.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: The lagoon is a semi-enclosed body of water subject to daily tidal action, and therefore is fairly stable. Salt water is measurably diluted by fresh water only from October through April.

SEASONS OF SHOREBIRD OCCURRENCE: Tens of thousands of shorebirds in spring and winter, and thousands (9700) in fall.

METHOD OF CENSUSING: 4 teams of censusers can cover the lagoon by driving and walking the shoreline: one team covers Kent Island using a canoe to gain access to the island; one team covers the Pine Gulch area on foot; one team drives around the lagoon from the north end towards Stinson Beach; and one team covers the Artificial Lagoon on Seadrift and then drives around the lagoon from south to north until meeting the team heading to the south. The Bolinas Sewage Ponds should be covered simultaneously or before the lagoon census.

NUMBER OF OBSERVERS: 4 teams of 2 each (8). Can be covered by fewer people in each team, if necessary.

COMMENTS: Other habitats, such as pastureland on the Bolinas mesa and the Bolinas Sewage Ponds should be censused simultaneously.

LOCATION: San Francisco Bay Code: SFB

State: California
Counties: Marin, Sonoma, Napa, Solano, Contra Costa, Alameda, Santa Clara, San Mateo.

The San Francisco Estuary system lies at the outlet of the Sacramento and San Joaquin River drainages. Wetland habitats range from the brackish water of the lower Delta and Suisun bay to the dilute salt water of San Pablo Bay and the shallow, highly saline waters of the South Bay. Since 1850 half of San Francisco Bay's open water and tidal marshes have been filled or cut off from tidal action by dikes and levees, eliminating 95 per cent of the original wetland habitats. San Francisco Bay and estuary, however, still contains 90 per cent of California's remaining coastal wetlands.

The largest areas of intertidal mudflats occur in South San Francisco Bay and San Pablo Bay. Only a small amount of rocky shore habitat exists but manmade rocky shore habitat consisting of breakwaters can be found at various locations around the Bay. Salt marsh is found throughout South, Central, and North San Francisco Bay. Brackish marshes are common in San Pablo Bay and in portions of San Francisco Bay with local freshwater influence. In South San Francisco Bay, the predominant wetland types, other than open water, are intertidal mudflats and salt ponds. San Pablo Bay is characterized by an abundance of intertidal mudflats and farmed wetlands.

HABITAT: A river estuary with extensive areas of tidal flats, salt marsh and salt evaporation ponds. Bordering the Bay are also seasonal fresh water and brackish water wetlands, sewage disposal ponds, and agricultural lands.

SIZE: The Bay's surface is 119100 hectares. Tidal flats: equal areas of approximately 12100 hectares north and south of the Bay Bridge; 3 times more seasonal pond habitat in the south (1200 ha) than in the north (400 ha); 3 times more salt pond habitat in the south (11100 ha) than in the north (3700 ha); 20 times more farmed wetland in the north (10400 ha) than in the south (520 ha).

OWNERS:

Private: Leslie Salt Company & the Oliver Brothers (abandoned salt works), Chevron Incorporated properties abut or contain important shorebird habitat in the Bay. There are many other private land holdings.

Public: Fish and Wildlife Service, California Department of Fish Game, Cities of Oakland, San Francisco, Palo Alto.

ACCESSIBILITY: The Bay is accessible for shorebird censusing but permits and keys for access are required from the Leslie Salt Company and the U.S. Fish and Wildlife Service. Permission for access to some areas of the Bay are also required from the Pacific Gas and Electric Company (for access to boardwalks under power lines), Chevron Incorporated for Castro Cove, and the Oliver Brothers.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Being largely a tidal area, the habitat is fairly stable. The value of some salt ponds around the Bay varies annually according to water levels.

SEASONS OF SHOREBIRD OCCURRENCE: Hundreds of thousands of shorebirds in spring, fall and winter. Dowitchers and Western Sandpipers show a strong spring peak of abundance which probably occurs between the third week of April and the first week of May.

METHOD OF CENSUSING: A method for covering this Bay has been designed by PRBO. The Bay shore is broken into hundreds of subareas each covered by a team of observers who count shorebirds during a rising tide. The Bay is broken into two sections. All subareas in each section are covered on the same day at the same time. Counter's physical abilities and knowledge of bird identification must be matched with subareas that vary markedly in accessibility and numbers of birds. A coordinator is needed to recruit counters, obtain permits for access, disseminate census instructions, and to collect and tabulate results. The coordinator spends about a month on each census. In winter rain can make many salt pond roads can not be driven thereby cutting off access to the Bay. On extremely high tides shorebirds can be counted at winter roosts.

NUMBER OF OBSERVERS: Over 100 observers are required on each of two days for the rising tide counts. This is about the maximum number of qualified people that PRBO has been able to consistently recruit for the counts. About 20 observers can complete winter counts at roosts over a period of 4-5 days. A plane is helpful in making winter roost counts in the San Pablo Bay portion of the estuary.

COMMENTS: Counts must be restricted to weekends (because of the large number of people required) and to dates of favorable rising tides. This makes it difficult to catch the peak of spring migration of Western Sandpipers and dowitchers because the peak extends over a short time frame. Rainy weather a few days before the spring count can limit access to large portions of the Bay shoreline because salt pond levee roads become too muddy to drive on. Additionally, critical access roads on salt pond levees can become inaccessible for two to three years after they have been covered with dredge spoils, the typical method of levee maintenance. Access to the cutoff shoreline is possible by boat. However, moderate to strong winds can make the counting of shorebirds from a boat difficult and sometimes dangerous.

SITE INFORMATION: Elkhorn Slough CODE: ES

LOCATION: State: California
County: Monterey

HABITAT: Areas are one of the following: sandy coastal beach (); rocky coastal beach (), coastal lagoon (X), coastal bay () river estuary (), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (X), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (X), agricultural wastewater pond (), agricultural field flooded (X) or dry (X);

Other: ______________________________.

Elkhorn Slough was once a freshwater lagoon connected to the Salinas River until 1908 when the river changed course during a large flood. The slough, isolated from the river but still open to the ocean, is now an estuary. The estuary joins the ocean at Moss Landing Harbor, a man-made small craft harbor. The slough and harbor are shaped like a small t. The north and south arms of the harbor cross the t; the slough extends inland about 4 miles and then curves in a northerly direction for another 3 (from Moss Landing to Watsonville). The slough is roughly 700 feet wide, gradually narrowing at its northern end. The harbor arms, about 500 feet wide, lie parallel to the ocean shoreline, behind sand spits that are about 1000 yards long and 100 to 300 yards wide. The harbor entrance is a man-made channel about 500 feet wide. Major streams no longer flow into the slough, it is considered a "seasonal estuary", as fresh water mixes with the sea only during the rainy season (October-April). Near to Moss Landing, the wetlands are diked off for salt evaporator ponds.

SIZE: Elkhorn Slough encompasses 1012 hectares, of which 312 are salt marsh, 271 are diked marsh, 170 are mudflat, and 77 are salt ponds. The Elkhorn Slough National Estuarine Research Reserve is 526 hectares.

OWNERS:
Private: The Nature Conservancy (Elkhorn Slough Preserve-202 hectares), plus many of the shoreline and marsh areas are privately owned.

Public: The ESNER Reserve is managed by the California Dept. of Fish and Game under an agreement with the Division of Marine and Estuarine Management and the National Oceanic and Atmospheric Administration; the State of California (Moss Landing Wildlife Area, and Moss Landing Marine Lab); Moss Landing Harbor District.

ACCESSIBILITY: The bay is accessible for shorebird censusing.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Being largely a tidal area, the habitat is fairly stable. The value of some salt ponds may vary annually according to water levels.

SEASONS OF SHOREBIRD OCCURRENCE: Tens of thousands in spring, fall, and winter.

METHOD OF CENSUSING: A method for covering this area has been designed by a coordinator in the Monterey Bay area. It is organized in much the same way as San Francisco Bay in that the area is broken into many subareas (6) each covered by a team of observers. A coordinator is needed to recruit counters, obtain permits for access, disseminate census instructions, and to collect and tabulate results. PRBO has been contracting this job out to people who live in the Monterey Bay area.

NUMBER OF OBSERVERS: 15-20

COMMENTS: Counts must be restricted to weekends because of the large number of people required. Counts of Elkhorn Slough, Ano Nuevo & Waddell Beach, Corcoran Lagoon, Pajaro River Mouth & Watsonville Slough, Salinas River Mouth, Salinas Sewage Ponds, and outer coastal beach strands should occur simultaneously.

SITE INFORMATION: Morro Bay CODE: MOB

LOCATION: State: California
County: San Luis Obispo

HABITAT: Areas are one of the following: sandy coastal beach (X); rocky coastal beach (), coastal lagoon (X), coastal bay () river estuary (), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: ____.

Morro Bay is four miles long with a maximum width of about one and 3/4 miles. The channel to the ocean (at the north end of the bay) is maintained by dredging. There is a breakwater extending westerly from the sand spit and another breakwater extends from Morro Rock in a south-southwesterly direction. It is really an estuary that is sheltered from the ocean by a 4 mile long sand spit. The lagoon receives water from two streams, Chorro and Los Osos creeks. The confluence of these creeks has formed a delta of salt marsh habitat. At one time Morro Creek entered the bay near the entrance. Since development of the harbor area, it discharges directly into the ocean.

SIZE: This lagoon has 588 hectares of tidal flats and 191 hectares of salt marsh.

OWNERS:
Private: Some private land holdings exist around the bay.

Public: Land ownership in and around Morro Bay is largely in public trust, the State of California being the major landowner. The California Department of Parks and Recreation (Morro Bay State Park) owns nearly 600 hectares in and adjacent to the bay. The Department of Fish and Game owns much of the tidal and wetland areas. The State Lands Commission holds in public trust tide and submerged lands in mid-bay. The City of Morro Bay owns most of the northern end of the bay and spit and the beach lands between Morro Rock (State Preserve) and Atascadero Beach.

ACCESSIBILITY: The bay is accessible for shorebird censusing. No special permission is required as the areas bordering private property are surveyed from the water.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Being largely a tidal area, the habitat is fairly stable.

SEASONS OF SHOREBIRD OCCURRENCE: Tens of thousands in fall and winter and thousands (4900) in spring.

METHOD OF CENSUSING: A method for covering this area has been designed by a coordinator in the Morro Bay area. It is organized in much the same way as San Francisco Bay in that the area is broken into many subareas (14) each covered by a team of observers. Areas included in the Morro Bay survey are the estuary itself (12 subareas; 7 are boat (canoe) based and 5 are ground-based teams), the 4-mile long barrier beach (1 subarea--ideally, this area should be divided further), and the coastal strand of Atascadero Beach, extending 2 1/2 miles north from the harbor entrance channel at Morro Rock (1 subarea). A local canoe club provides canoes and paddlers for the boat-based subareas. A coordinator is needed to recruit counters, obtain permits for access, disseminate census instructions, and to collect and tabulate results. PRBO has been contracting this job out to people who live in the Morro Bay area.

NUMBER OF OBSERVERS: 25

COMMENTS: Counts must be restricted to weekends because of the large number of people required. Counts of Morro Bay and the Santa Maria River Mouth should occur simultaneously.

SITE INFORMATION: Mugu Lagoon CODE: ML

LOCATION: State: California
County: Ventura

HABITAT: Areas are one of the following: sandy coastal beach (X); rocky coastal beach (), coastal lagoon (X), coastal bay () river estuary (), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: ____.

Mugu Lagoon is elongate, running parallel to the coast for 5.6 km but never exceeding 1 km wide. It is composed of two long arms projecting out from a broader central basin and is protected from the surf by two sand spits. The eastern arm is very narrow because the shore is steep along the flank of the Santa Monica Mountains and is maintained by the Navy as an ecological reserve. The western arm is broader and has a wider expanse of fringing salt marsh because in this direction the lagoon extends into the Oxnard Plain. Mugu Lagoon is fed by Calleguas Creek which opens into the central basin. The watershed of the lagoon, dominated by agriculture, has increased inputs of sediments and chemicals to the lagoon. The mouth of the lagoon opens in the vicinity of the central basin. Almost all freshwater inflow (from rainfall runoff) occurs from November to April and even within that winter period, inflow is concentrated in a few pulses.

SIZE: 600 hectares.

OWNERS:
Private: None.

Public: The lagoon lies entirely within the boundaries of the U.S. Naval Air Station (Pacific Missile Test Center).

ACCESSIBILITY: Access to the lagoon is restricted. Permission is required from the U.S. Navy.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Being largely a tidal area, the habitat is fairly stable.

SEASONS OF SHOREBIRD OCCURRENCE: Tens of thousands in winter and spring and thousands (9700) in fall.

METHOD OF CENSUSING: A method for covering this area has been designed by a coordinator in the Environmental Division of the U.S. Navy. It is organized in much the same way as San Francisco Bay in that the area is broken into 3 subareas each covered by a team of ground-based observers during the rising tide. The USFWS also conducts monthly counts of the lagoon.

NUMBER OF OBSERVERS: 7-10.

COMMENTS:

SITE INFORMATION: Bolsa Chica CODE: BC

LOCATION: State: California
County: Orange

HABITAT: Areas are one of the following: sandy coastal beach (); rocky coastal beach (), coastal lagoon (X), coastal bay () river estuary (), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: ______________________________.

Bolsa Chica is part of a once vast estuarine ecosystem that has undergone major changes since 1890. The state established the Bolsa chica Ecological Reserve on 225 hectares including outer Bolas Bay. Diked wetlands, including permanent and seasonal ponds, are located landward of the Reserve and serve as important roosting and secondary feeding area. Freshwater input is dependent on rainfall, storm runoff, and aquifers.

SIZE: 486 hectares.

OWNERS:
Private: Oil Company property.

Public: State of California (Bolsa Chica Ecological Reserve).

ACCESSIBILITY: The area is accessible for shorebird censusing. Permission is required from the oil company but is very difficult to obtain.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: The area is subject to daily tidal action and is fairly stable.

SEASONS OF SHOREBIRD OCCURRENCE: Thousands in fall (5400) and spring (3800). No data from the winter to date.

METHOD OF CENSUSING: A method for covering the area has been designed by collaborators from the U.S. Fish and Wildlife Service and the California Department of Fish and Game. It is organized in much the same way as San Francisco Bay in that the area is broken into 5 subareas each covered by a team of observers who count shorebirds during a rising tide. A coordinator is needed to recruit counters, obtain permits for access, disseminate census instructions, and to collect and tabulate results.

NUMBER OF OBSERVERS: 6-10.

COMMENTS: It is desirable to cover all southern California wetlands on the same date(s).

SITE INFORMATION: Upper Newport Bay CODE: UNB

LOCATION: State: California
County: Orange

HABITAT: Areas are one of the following: sandy coastal beach (); rocky coastal beach (), coastal lagoon (X), coastal bay () river estuary (), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (**X-where freshwater runoff enters the bay**), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: ______________________________.

Now the abandoned mouth of the Santa Ana River, Upper Newport Bay extends northward and inland 5.2 km from its boundary with Newport Bay,where and artificial channel connects the bay with the ocean. Freshwater input occurs frequently throughout the year as a result of runoff, rainfall, and drainage provided by the San Diego Creek, which enters the Reserve at the northeast boundary.

SIZE: 369 hectares

OWNERS:
Private: None.

Public: 300 hectares are owned by the California Department of Fish and Game as an ecological reserve; Orange County.

ACCESSIBILITY: The bay is accessible for shorebird censusing. Permission or notification is required from the California Dept. of Fish and Game.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: The bay is subject to daily tidal action and is therefore fairly stable.

SEASONS OF SHOREBIRD OCCURRENCE: Tens of thousands in winter and thousands in fall (5600) and spring (6700).

METHOD OF CENSUSING: A method for covering the area has been designed by collaborators from the U.S. Fish and Wildlife Service. It is organized in much the same way as San Francisco Bay in that the area is broken into 3 subareas each covered by a team of observers who count shorebirds during a rising tide. A coordinator is needed to recruit counters, obtain permits for access, disseminate census instructions, and to collect and tabulate results.

NUMBER OF OBSERVERS: 5-7

COMMENTS: It is desirable to cover all southern California wetlands on the same date(s).

SITE INFORMATION: Mission Bay and FCC CODE: MBY

LOCATION: State: California
County: San Diego

HABITAT: Areas are one of the following: sandy coastal beach (); rocky coastal beach (X), coastal lagoon (X), coastal bay () river estuary (), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: ____.

The majority of the bay was dredged and filled for an aquatic park with marinas, hotels, restaurants, and beaches. A few wetlands remain at Famosa Slough (south of the San Diego Flood Control Channel), Kendall-Frost Marsh and the Northern Wildlife Reserve (in the northeast part of the bay), and at the mouth of the river channel.

SIZE: Famosa Slough (10 hectares), Kendall-Frost Marsh (8.5 hectares), and the Northern Wildlife Reserve (36 hectares).

OWNERS:
Private: Famosa Slough is privately owned.

Public: The City of San Diego owns most of Mission Bay, the lower flood control channel from I-5 to the ocean, and Famosa Channel. The University of California Natural Land and Water Reserve system owns the Kendall-Frost Marsh Preserve.

ACCESSIBILITY: The bay is accessible for shorebird censusing but access permission or notification is required from San Diego Water Utilities District (Stony Point on Fiesta Island), and the manager of Campland-by-the-Bay (Kendall-Frost Marsh).

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Being largely a tidal area, the habitat is fairly stable.

SEASONS OF SHOREBIRD OCCURRENCE: Thousands in spring, fall, and winter (6 censuses to date--2 fall, 1 winter, and 3 spring--only spring numbers are greater than 5000, but fall and winter numbers exceed 4000).

METHOD OF CENSUSING: A method for covering this area has been designed by PRBO and refined by PRBO contractors. It is organized in much the same way as San Francisco Bay in that the shoreline is broken into 11 subareas each covered by a team of observers who count shorebirds during a rising tide. A coordinator (who organizes Mission Bay, San Diego Bay, and the Tijuana River Mouth) is needed to recruit counters, obtain permits for access, disseminate census instructions, and to collect and tabulate results. PRBO has been contracting this job out to people who live in the San Diego Bay Area.

NUMBER OF OBSERVERS: This area requires 8 teams (2 people/team) = 16 people.

COMMENTS: Counts must be restricted to weekends because of the large number of people required to cover the entire San Diego Bay area (counts of Mission Bay, San Diego Bay, and the Tijuana River Mouth should occur simultaneously).

SITE INFORMATION: San Diego Bay CODE: SDB

LOCATION: State: California
County: San Diego

HABITAT: Areas are one of the following: sandy coastal beach (X); rocky coastal beach (), coastal lagoon (), coastal bay (X) river estuary (), inland river margin (), freshwater lake (), freshwater pond (), freshwater reservoir (), brackish pond (), saline lake (), freshwater marsh (), brackish marsh (), salt marsh (X), sewage treatment pond (), salt pond (X), agricultural wastewater pond (), agricultural field flooded () or dry ();

Other: ____.

San Diego Bay constitutes the largest estuary along the San Diego coastline and has been extensively developed as a port resulting in the destruction of most of its wetlands. The bay is crescent-shaped, stretching for 14 miles along the coast and is 2 1/2 miles across at its widest point. Formerly, the San Diego, Sweetwater, and Otay rivers flowed into the bay. The bay is now much deeper and narrower than it was 150 years ago, and most shoreline development sits on fill. Only the south bay contains significant areas of marsh, mudflat, and salt evaporator ponds. Of the marshes that once bordered san Diego Bay, only about 10% remain. This remnant consists of 82 hectares, primarily at the Sweetwater and Paradise Marsh complex.

SIZE: 567 hectares of salt ponds, 145 of salt marsh, and 249 of mudflat.

OWNERS:
Private: Various private land holdings exist, over half the salt ponds are privately owned and the remainder are operated by the State Lands Commission.

Public: U.S. Fish and Wildlife Service (Sweetwater and Paradise Marsh Complex), San Diego Unified Port District, U.S. Navy, State Lands Commission.

ACCESSIBILITY: The bay is accessible for shorebird censusing but access permission or notification is required from California Dept. of Parks and Recreation, USFWS, San Diego Port District, Chula Vista Nature Center, North Island Naval Air Station, Naval Amphibious Base, Silver Strand State Beach, and PG&E.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Being largely a tidal area, the habitat is fairly stable. The value of some salt ponds may vary annually according to water levels.

SEASONS OF SHOREBIRD OCCURRENCE: Tens of thousands in spring and fall and thousands in winter (based on 1 winter census = 9363 birds).

METHOD OF CENSUSING: A method for covering the Bay has been designed by PRBO and refined by coordinators in San Diego. It is organized in much the same way as San Francisco Bay in that the shoreline is broken into 21 subareas each covered by a team of ground-based observers who count shorebirds during a rising tide. 13 salt ponds are also covered. A coordinator is needed to recruit counters, obtain permits for access, disseminate census instructions, and to collect and tabulate results. PRBO has been contracting this job out to people who live in the San Diego Bay area.

NUMBER OF OBSERVERS: 50+

COMMENTS: Counts must be restricted to weekends because of the large number of people required. Counts of Mission Bay, San Diego Bay, and the Tijuana River Mouth should occur simultaneously. Ideally, counts of all northern San Diego County lagoons should also occur on the same day.

SITE INFORMATION: The Grasslands. Includes numerous duck clubs and ranches, as well as Kesterson National Wildlife Refuge, Merced National Wildlife Refuge, San Luis National Wildlife Refuge, Los Banos Wildlife Area, and Volta Wildlife Area; Mendota Wildlife Area is also included here because of its proximity. Code(s): GRAS (Greater Grasslands), NOGR (North Grasslands), SOGR (South Grasslands), EAGR (East Grasslands), VOWA (Volta WA), MRNW (Merced NWR), MNWA (Mendota WA).

LOCATION: State: California
County: Merced, Fresno (Mendota WA)

HABITAT: A complex of managed freshwater ponds and marshes, native grasslands and alkali scrub, and agricultural lands.

SIZE: About 110,000 acres

OWNERS: Private: numerous private duck clubs and ranches.
Public: Grasslands Water District, Grasslands Resource Conservation District, U.S. Fish and Wildlife Service, California Dept. Fish and Game, California State Parks.

ACCESSIBILITY: Access to most areas via gravel or dirt roads, many of which are impassible during wet weather in winter. Permission must be obtained to enter numerous parcels of private land which has been facilitated by cooperating landowners via the Grasslands Water District. Surveys on wildlife refuges have been conducted by refuge personnel, but otherwise permission would need to be obtained to enter restricted parts of the refuges.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Amount of shallow-water habitat can vary as much as 90% from winter to summer because of water availabliity and waterfowl management practices.

SEASONS OF SHOREBIRD OCCURRENCE: Peak numbers in spring from April through mid-May; good numbers in winter as well from October through March; moderarte numbers in early fall, depending on water availability; small numbers of a few species breed locally.

METHOD OF CENSUSING: Entire area is divided into about 29 units and apportioned among available observers (about 25) who count over 3-4 days. Coverage is largely by driving and walking (short distances) on levee roads.

NUMBER OF OBSERVERS: see above

COMMENTS: Obtaining annual winter counts may depend on aerial surveys if the road system is impassable during winter rains.

SITE INFORMATION: Sacramento Valley Refuges -- Colusa, Delevan, Sacramento, and Sutter national wildlife refuges. Code(s): SUNW (Sutter NWR), SANW (Sacramento NWR), CONW (Colusa NWR), DENW (Delevan NWR).

LOCATION: State: California
County: Colusa (Colusa NWR, Delevan NWR), Glenn (Sacramento NWR), Sutter (Sutter NWR)

HABITAT: A complex of four national wildlife refuges with managed freshwater ponds, freshwater marshes, uplands, and croplands surrounded by a sea of agricultural lands.

SIZE: Colusa (4042 acres), Delevan (5633 acres), Sacramento (10,776 acres), Sutter (2591 acres).

OWNERS: Public: U.S. Fish and Wildlife Service

ACCESSIBILITY: Access by levee roads by vehicle or on foot. Censuses now conducted by refuge personnel, otherwise permission would need to be obtained to enter certain restricted parts of the refuges.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Acreage of flooded habitat and water levels varies by over 50% during a year depending on waterfowl management practices.

SEASONS OF SHOREBIRD OCCURRENCE: Peak use from April to mid-May in spring and from July though mid-September in fall; good numbers of some species overwinter and smaller numbers of some species breed locally.

METHOD OF CENSUSING: Each of the four refuges is surveyed by 1-2 observers for a half day by driving or walking levee roads.

NUMBER OF OBSERVERS: see above

COMMENTS: Data needed on winter shorebird use in this area.

SITE INFORMATION: Corcoran Waste Plant Percolation Ponds
Code: COSP

LOCATION: State: California
County: Kings

HABITAT: Municipal waste water treatment ponds.

SIZE: 57 acres

OWNERS: Public: City of Corcoran

ACCESSIBILITY: Ponds can be viewed from paved roads adjoining ponds, except on side bordering state prison.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Shallow-water ponds that support shorebirds can dry up in summer, depending on evaporation and waste water management practices.

SEASONS OF SHOREBIRD OCCURRENCE: Peak numbers from April to mid-May in spring and from July through September in fall; can be good numbers in winter; small numbers in summer.

METHOD OF CENSUSING: Can be surveyed from perimeter roads by one to several people in a few hours.

NUMBER OF OBSERVERS: see above

COMMENTS:

SITE INFORMATION: Visalia Water Conservation Plant Code: VISP

LOCATION: State: California
County: Tulare

HABITAT: Municipal waste water treatment ponds.

SIZE: 45 acres.

OWNERS: Public: City of Visalia

ACCESSIBILITY: Access by paved road to gravel roads on pond levees; permission to enter ponds should be obtained at time of entry.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Small though dependent on seasonal rainfall (winter) and waste water management practices.

SEASONS OF SHOREBIRD OCCURRENCE: Peak numbers from April to mid-May in spring and from July through September in fall; small numbers also in winter and summer.

METHOD OF CENSUSING: Coverage by a team of one to several observers for a few hours.

NUMBER OF OBSERVERS: see above

COMMENTS:

SITE INFORMATION: Barbizon Farms Evaporation Ponds Code: BFEP

LOCATION: State: California
County: Kings County

HABITAT: Agricultural drainage evaporation ponds.

SIZE: About 70 acres.

OWNERS: Private: Barbizon Farms

ACCESSIBILITY: Access via paved roads, but permission must be obtained from owner to enter ponds.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Available habitat can vary by 100% during the course of the year depending on rainfall, irrigation practices, and evaporation rates.

SEASONS OF SHOREBIRD OCCURRENCE: Peak numbers from April to mid-May in spring and from July through September in fall; sometimes good numbers in winter as well; small numbers of some species breed locally.

METHOD OF CENSUSING: Coverage by a team of one or two observers walking levees and counting for up to several hours.

NUMBER OF OBSERVERS: see above

COMMENTS: Ponds may concentrate selenium and other heavy metals that may be harmful to wildlife.

SITE INFORMATION: J & W (Liberty) Farms Evaporation Ponds
Code: JWEP

LOCATION: State: California
County: Kings

HABITAT: Agricultural drainage evaporation ponds

SIZE: About 640 acres.

OWNERS: Private: J & W Farms

ACCESSIBILITY: Access via dirt roads which may be impassable during winter rains. Permission to enter ponds must be obtained from owner.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Area of flooded habitat can vary by over 50% from season to season depending on rainfall, irrigation practices, and evaporation rates.

SEASONS OF SHOREBIRD OCCURRENCE: Peak numbers from April to mid-May in spring and from July through September in fall; moderate use in winter; small numbers of some species breed locally.

METHOD OF CENSUSING: Coverage in several hours by a team of one to two observers driving levee roads.

NUMBER OF OBSERVERS: see above

COMMENTS:

SITE INFORMATION: Westlake Farms South (#3) Evaporation Ponds
Code: WSEP

LOCATION: State: California
County: Kings

HABITAT: Diked agricultural drainage evaporation ponds.

SIZE: About 740 acres.

OWNERS: Private: Westlake Farms

ACCESSIBILITY: Access via dirt roads which may be impassable during winter rains. Permission to enter ponds must be obtained from owner.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Area of flooded water may vary seasonally by about 50% depending on rainfall, irrigation practices, and evaporation rates.

SEASONS OF SHOREBIRD OCCURRENCE: Peak numbers from April to mid-May in spring and from July through September in fall; moderate numbers in winter; small numbers of some species breed locally.

METHOD OF CENSUSING: Coverage over several hours by a team of two observers driving levee roads.

NUMBER OF OBSERVERS: see above

COMMENTS: May concentrate selenium and other heavy methods that may harm wildlife.

SITE INFORMATION: Tulare Lake Drainage District -- Hacienda Ranch Evaporation Ponds Code: HREP

LOCATION: State: California
County: Kings County

HABITAT: Diked agricultural drainage evaporation ponds.

SIZE: About 1100 acres.

OWNERS: Private: Tulare Lake Drainage District

ACCESSIBILITY: Access via dirt roads that may be impassable during winter rains. Permission to enter ponds must be obtained via a written application for a permit to the TLDD Board of Directors.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Area of flooded shallow water may vary by about 25% seasonally depending on rainfall, irrigation practices, and evaporation rates.

SEASONS OF SHOREBIRD OCCURRENCE: Peak numbers from April to mid-May in spring and from July through September in fall; good numbers in winter; moderate numbers of several species breed locally.

METHOD OF CENSUSING: Coverage takes about one-half day by a team of 2-4 observers driving levee roads.

NUMBER OF OBSERVERS: see above

COMMENTS: Ponds may concentrate selenium and other heavy metals that may harm wildlife.

SITE INFORMATION: Tulare Lake Drainage District -- South Evaporation Ponds Code: TSEP

LOCATION: State: California
County: Kings, Kern

HABITAT: Diked agricultural drainage evaporation ponds.

SIZE: About 1800 acres.

OWNERS: Private: Tulare Lake Drainage District

ACCESSIBILITY: Access via dirt roads that may be impassable during winter rains. Permission to enter ponds must be obtained by permit application to TLDD Board of Directors.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Area of flooded water varies by about 10% seasonally depending on rainfall, irrigation practices, and evaporation rates.

SEASONS OF SHOREBIRD OCCURRENCE: Peak numbers from April to mid-May in spring and from July through September in fall; moderate numbers in winter; moderate numbers of some species breed locally.

METHOD OF CENSUSING: Coverage takes a team of 1-2 observers driving levee roads 4-5 hours to complete.

NUMBER OF OBSERVERS: see above

COMMENTS:

SITE INFORMATION: Salton Sea Code: SASE

LOCATION: State: California
County: Riverside, Imperial

HABITAT: A large somewhat salty inland sea. Shoreline habitats include sandy beaches and mudflats, river mouths, and managed freshwater marshes and ponds on state and federal wildlife refuges. Nearby agricultural fields (flooded and fallow) sometimes also host large numbers of some species of large shorebirds.

SIZE: About 55 km by 25 km.

OWNERS: Private: Torres Martinez Indian Reservation, various ranches and private inholdings.
Public: Salton Sea National Wildlife Refuge, Imperial Wildlife Area, Salton Sea State Recreation Area, Salton Sea Naval Test Base, Bureau of Land Management, Bureau of Reclamation, Imperial County, Coachella Valley Water District, Imperial Irrigation District.

ACCESSIBILITY: Access available to much of shoreline by paved or dirt roads, though some survey areas require long walks. Permission must be obtained to enter some private lands and the Naval Test Base.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: A rather deep lake so not much change in shoreline from season to season. On the other hand, in the last 30 years the lake level has been rising; litigation has forced adoption of a management plan to drop the lake level 1.5 feet with stabilization thereafter. Water levels at the Wister Unit of Imperial Wildlife area fluctuate to accomodate waterfowl management objectives.

SEASONS OF SHOREBIRD OCCURRENCE: Peak numbers from April through mid-May in spring and from July through September in fall; large numbers of shorebirds also winter and good numbers of some species also breed locally.

METHOD OF CENSUSING: Twelve observers survey 8 census areas; access to census areas by vehicles, though most habitat is actually covered on foot.

NUMBER OF OBSERVERS: see above

COMMENTS: Salinity in the Sea has been rising, threatening fish populations.

SITE INFORMATION: Piute Ponds, Edwards Airforce Base Code: PIPO

LOCATION: State: California
County: Los Angeles

HABITAT: A series of managed freshwater ponds and marshes fed by treated effluent from nearby Lancaster sewage ponds; interspersed with some upland Joshua Tree woodland and desert scrub habitat. In wet years, water on the adjacent Rosamond Lake playa also attracts some shorebirds.

SIZE: About 500 acres.

OWNERS: Public: Edwards Airforce Base (managed in cooperation with Calif. Dept. Fish and Game).

ACCESSIBILITY: Accessbile via dirt road, but need permission to enter from the Commander at Edwards Airforce Base.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Amount of pond habitat can decrease by about 50% from spring through fall via evaporation; less variability between years.

SEASONS OF SHOREBIRD OCCURRENCE: Peak numbers from April to mid-May in spring and from July to mid-September in fall; small numbers of a few species breed locally and/or overwinter.

METHOD OF CENSUSING: one person (or group) surveys the ponds from levees over the course of one half day.

NUMBER OF OBSERVERS: see above

COMMENTS: Managed for waterfowl; creation of new ponds by Ducks Unlimited in fall 1989 nearly doubled the size of existing wetland habitat.

SITE INFORMATION: Owens Lake Code: OWLA

LOCATION: Owens Lake
State: California
County: Inyo

HABITAT: Formerly a large hypersaline-alkaline lake. Now because of water diversions Owens is a large alkali playa with a few freshwater seeps, marshes, and abandoned salt evaporators on its borders; some small bodies of water on the lake bed are supersaturated brine.

SIZE: The playa is about 26 km by 17 km.

OWNERS: Private: various small private inholdings
Public: Bureau of Land Management, City of Los Angeles

ACCESSIBILITY: Access to census areas can be obtained via paved or dirt roads and moderate amounts of walking.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Seep discharge varies somewhat from season to season and year to year depending on precipitation and its effect on the water table.

SEASONS OF SHOREBIRD OCCURRENCE: Peak use from April to mid-May in spring and from July to mid-September in fall; good numbers of a few species breed locally.

METHOD OF CENSUSING: Coverage by one or two census teams of 2-4 people each driving to various spots and counting all on one day.

NUMBER OF OBSERVERS: see above

COMMENTS: Plans to cap some springs threatens the already limited shorebird habitat at the lake.

SITE INFORMATION: Mono Lake Code: MOLA

LOCATION: State: California
County: Mono

HABITAT: A hypersaline-alkaline lake. The shoreline consists of extensive wet and dry alkali playa, sandy beaches, and muddy flats which may merge with adjacent freshwater, brackish, and salt marshes.

SIZE: About 21 km by 13 km.

OWNERS: Private: A number of small private inholdings.
Public: U.S. Forest Service, Mono Lake State Tufa Reserve, and Los Angeles Department of Water and Power.

ACCESSIBILITY: Access by road is easy only on the west shore; otherwise access requires 4-wheel drive vehicles or walking long distances on foot. Dust storms on the alkali playa can drive censusers from the lakeshore.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Varies slightly seasonally or annually, although the lake level has been declining steadily since water diversions from its tributary streams began in 1941.

SEASONS OF SHOREBIRD OCCURRENCE: Peak use of migrants in spring from April to mid-May and in fall from July through mid-September; small populations of several species breed locally.

METHOD OF CENSUSING: Lakeshore split into sub-areas and covered mostly on foot, though access to some remote sites provided by 4-wheel drive vehicles.

NUMBER OF OBSERVERS: Shoreline count requires 7-10 observers split into 3-4 parties on both of 2 consecutive days. Phalarope counts best done in one day by 1-2 observers in a boat.

COMMENTS: Large numbers of Wilson's and Red-necked Phalaropes stage here from July through September to feed on vast quantities of alkali (brine) flies and brine shrimp.

SITE INFORMATION: Honey Lake Code: HOLA

LOCATION: State: California
County: Lassen

HABITAT: A shallow hypersaline-alkaline lake with extensive alkali playa, mudflats, sandy beaches, and limited shoreline marsh; at high water, lake borders on grass- or sage-covered uplands. Honey Lake Wildlife Area on the north shore of the lake provides a complex of freshwater ponds, marshes, grassy uplands, and croplands.

SIZE: About 21 km by 10 km.

OWNERS: Private: various ranches
Public: State of California, California Dept. Fish Game, U.S. Dept. of Defense (U.S. Army), Bureau of Land Management.

ACCESSIBILITY: Access to shoreline can be obtained at many spots along the shoreline via paved or (mostly) dirt roads, but shorebird surveys require extensive walking if lake has water. Permission to enter lands along the southeast shoreline must be obtained via the Commander of the U.S. Army base at Herlong.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: The lake is very shallow and hence can vary greatly from season to season or from year to year based on the precipitation regime. In drought periods the lake may become totally dry in summer as it did in 1990 and 1991.

SEASONS OF SHOREBIRD OCCURRENCE: Peak use from April to mid-May in spring and from July to mid-September in fall; good numbers of some species breed locally.

METHOD OF CENSUSING: In most years, it takes at least 4 observers to cover all available habitat over one day. When the lake is dry, one observer can survey both units of Honey Lake WA in one day.

NUMBER OF OBSERVERS: see above

COMMENTS:

SITE INFORMATION: Goose Lake Code: GOLA

LOCATION: State and County: California, Modoc Co.; Oregon, Lake Co.

HABITAT: A freshwater lake with exposed mudflats, alkali playa, freshwater marsh, stream mouths, and sand and cobble beaches.

SIZE: About 47 km by 13 km.

OWNERS: Private: various ranches, Indian lands
Public: states of California and Oregon, U.S. Forest Service

ACCESSIBILITY: Much of the west shore can be driven on a gravel road with the need to walk down at various spots to count shorebirds; road access to only limited portions of the rest of the lake.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Usually little variation from season to season or from year to year, except in extreme drought conditions when it can dry up (1926, 1929-1934) or during very wet periods when it can overflow (1869, 1881, & 1890)

SEASONS OF SHOREBIRD OCCURRENCE: Peak use from April to mid-May in spring and from July to mid-September in fall; small numbers of some species breed locally.

METHOD OF CENSUSING: Coverage over 3 days by 5-6 observers walking most of shoreline except for west shore. Could be surveyed in one day with eight good observers by the above method or by two observers in an airboat; a one day aerial census by two observers is also feasible, though identification of small shorebird species would not be possible.

NUMBER OF OBSERVERS: see above

COMMENTS:

SITE INFORMATION: Lower Klamath National Wildlife Refuge
Code: LOKL

LOCATION: State and County: California, Siskiyou Co.; Oregon, Klamath Co.

HABITAT: Managed freshwater ponds, marshes, grassy uplands, and croplands.

SIZE: 47,600 acres

OWNERS: Public: U.S. Fish and Wildlife Service

ACCESSIBILITY: Accessible on levee roads.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Varies somewhat from season to season and year to year based on precipitation and water management practices.

SEASONS OF SHOREBIRD OCCURRENCE: Peak use from April to mid-May in spring and from July to mid-September in fall.

METHOD OF CENSUSING: Coverage by 1-2 observers driving and counting from stops on levee roads for a half day.

NUMBER OF OBSERVERS: see above

COMMENTS:

SITE INFORMATION: Lake Lowell Code: LALO

LOCATION: State: Idaho
County: Canyon

HABITAT: A freshwater irrigation reservoir; the prime shorebird habitats of mudlfats and mud/gravel flats are exposed as water recedes, particularly during summer and fall.

SIZE: 15 km long and 5 km wide at its widest point.

OWNERS: Public: Bureau of Reclamation, U.S. Fish and Wildlife Service (part of Deer Flat NWR).

ACCESSIBILITY: Access to the shoreline of this public recreation reservoir is available at many sites via roads and boat launches.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Mudflat exposure varies from about 25%-50%, particularly from season to season, depending on precipitation patterns and water management practices.

SEASONS OF SHOREBIRD OCCURRENCE: Primary use when mudflat exposure (and presumably greatest invertebrate productivity) coincides with fall migratory periods; peak shorebird numbers from mid-July to mid-September. Limited use during spring migration when water levels are generally high and mudflat availability is minimal.

METHOD OF CENSUSING: To date one observer has surveyed only about 5 km (the most productive parts) of the reservoir's shoreline. More thorough coverage could be obtained by using 4-5 observers and a boat.

NUMBER OF OBSERVERS: (see above)

COMMENTS: More census data is needed to better document shorebird use of this site.

SITE INFORMATION: American Falls Reservoir Code: AFRE

LOCATION: State: Idaho
County: Power, Bannock, and Bingham

HABITAT: A freshwater reservoir formed by damming the Snake River at American Falls. The primary habitats for shorebirds of mudflats and muddy beaches are exposed as water recedes, particularly during summer and fall.

SIZE: About 35 km long and 10 km at its widest point

OWNERS: Public: Bureau of Reclamation and Bureau of Land Management.
Private: Fort Hall Indian Reservation (Shoshone Bannock Tribe).

ACCESSIBILITY: Access to the shoreline can be made by vehicle at many points, but much of the shoreline must be approached by boat.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Mudflat exposure may vary by over 50%, particularly from season to season, depending on precipitation patterns and water management practices.

SEASONS OF SHOREBIRD OCCURRENCE: Primary use when mudflat exposure (and presumably greatest invertebrate productivity) coincides with fall migratory periods: peak shorebird numbers from mid-July to mid-September. Limited use during spring migration when water levels are generally high and hence mudflat availability is minimal.

METHOD OF CENSUSING: To date one or two observers have surveyed only parts of the reservoir's shoreline by foot, car, and canoe. More thorough coverage could be obtained by using a total of 4-5 observers; use of a boat would also be very helpful.

NUMBER OF OBSERVERS: see above.

COMMENTS: Appears to be the most important site to shorebirds in Idaho (in fall). Although spring use appears to be minimal, little spring census data is available.

SITE INFORMATION: Great Salt Lake Code: GSLA

LOCATION: State: Utah
County: Box Elder, Tooele, Salt Lake, Davis, and Weber

HABITAT: A hypersaline lake with a complex of adjacent managed wetlands; freshwater, brakish, and salt marshes; river estuaries; alkali flats; and agricultural fields.

SIZE: About 130 km long and 50 km wide.

OWNERS: Private: numerous private landowners, duck clubs, salt extraction companies, etc.
Public: State of Utah, U.S. Fish and Wildlife Service, Utah Division of Wildlife Resources, U.S. Dept. Defense (U.S. Airforce), International Airport at Salt Lake City, Bureau of Land Management.

ACCESSIBILITY: Access is difficult to obtain to the shoreline of military and some private lands

ANNUAL VARIABILITY IN AVAILABLE HABITAT: The lake level normally fluctuates within a 5 foot range. At its highest level (once in 100 years) the lake doubles in size and the shoreline can shift 1.5 to 2 miles upward from the low-level shoreline.

SEASONS OF SHOREBIRD OCCURRENCE: Peak use occurs during spring from April to mid-May and in fall from July to mid-September; good breeding populations of a few species.

METHOD OF CENSUSING: Most censuses of the lakeshore and adjacent wetlands have been covered on foot and by car by a team of 13-18 observers spliting into 8-10 teams. Sometimes these areas have been covered solely by plane; phalarope counts have usually been conducted by plane.

NUMBER OF OBSERVERS: see above.

COMMENTS: Census coverage has included only about 50% of the total lakeshore and adjecent habitats, but these consitute roughly 95% of the suitable shorebird habitat, concentrated mostly on the east shore of the lake.

SITE INFORMATION: Malheur-Harney Lakes Basin/Malheur National Wildlife Refuge Code(s): MALA (Malheur Lake), STLA (Stinking Lake)

LOCATION: State: Oregon
County: Harney

HABITAT: A vast complex of saline-alkaline or freshwater lakes, freshwater marshes and meadows, brackish or salt marshes, and alkaline playas.

SIZE: Over 184,000 acres of wetlands and uplands. The lakes that attract large numbers of migrant shorebirds are Malheur Lake (average 45,000 acres), Harney Lake (when dry, usually seasonally, it is a 30,000 acre alkaline playa), Mud Lake, and Stinking Lake (300 acres).

OWNERS: Private: various private ranches adjacent to refuge
Public: U.S. Fish and Wildlife Service

ACCESSIBILITY: Some counts require airboats and access to some areas limited to USFWS personnel.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: water levels can vary greatly depending on annual and longterm precipitation.

SEASONS OF SHOREBIRD OCCURRENCE: Peak use by migrants in spring from April to mid-May and in fall from July to mid-September; good numbers of some species breed locally.

METHOD OF CENSUSING: Coverage by 6-12 observers in 4 or more parties by ATV's, airboats, and on foot.

NUMBER OF OBSERVERS: see above

COMMENTS: Areas used by shorebirds and numbers of shorebirds can vary greatly depending on annual and longterm fluctuations in water levels.

SITE INFORMATION: Summer Lake Code: SULA

LOCATION: State: Oregon
County: Lake

HABITAT: A hypersaline-alkaline lake with adjacent managed freshwater marshes and ponds. The lakeshore consists of extensive alkali flats; when lake is full it abuts meadows on the west shore.

SIZE: About 19 km by 5 km.

OWNERS: Private: various ranches
Public: Bureau of Land Management, Oregon Department of Fish and Wildlife.

ACCESSIBILITY: Shoreline is difficult to access when exposed mudlfats sometimes become saturated from wind and waves or rainfall; such conditions may necessitate an aerial census (see below).

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Size of lake may vary by 25% seasonally, and may almost dry up during drought periods.

SEASONS OF SHOREBIRD OCCURRENCE: Peak use by migrants in spring from April to mid-May and in fall from July through mid-September; good numbers of several species breed locally.

METHOD OF CENSUSING: Usually covered by 3-4 observers using ATV's, but wet substrate in spring sometimes necessitates an aerial count by one observer.

NUMBER OF OBSERVERS: see above

COMMENTS:

SITE INFORMATION: Lake Abert Code: ABLA

LOCATION: State: Oregon
County: Lake

HABITAT: A hypersaline-alkaline lake. Shoreline habitats include alkali playa and mudflats, as well as sand, gravel, or cobble beaches.

SIZE: About 27 km long and 10 km wide.

OWNERS: Private: some private ranches
Public: Bureau of Land Management

ACCESSIBILITY: May be hard to get to shoreline when the lake recedes and leaves exposed mudflats.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: A relatively deep body of water so shoreline habitat fluctuations are slow.

SEASONS OF SHOREBIRD OCCURRENCE: Peak use by migrants in spring in April to mid-May and in fall from July through mid-September; good numbers of several species breed locally.

METHOD OF CENSUSING: Usually covered by 1-3 observers using ATV's, but wet substrate in spring sometimes necessitates an aerial count by one observer.

NUMBER OF OBSERVERS: see above

COMMENTS:

SITE INFORMATION: Hart Lake Code: HTLA

LOCATION: State: Oregon
County: Lake

HABITAT: At high water levels the lake abuts freshwater marsh and rocky shoreline; when the lake is low mudlflats are exposed. Wet hayfields are a major upland habitat nearby.

SIZE: About 10.5 km by 3 km.

OWNERS: Private: various private ranches
Public: Hart Mountain National Wildlife Refuge, State of Oregon, Bureau of Land Management.

ACCESSIBILITY: Access to shoreline available via dirt, gravel, or paved roads.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Size of lake may decrease by 30% seasonally from evaporation. In wet cycles the lake may overflow, but in very dry periods it may dry up completely.

SEASONS OF SHOREBIRD OCCURRENCE: Peak use by migrants in spring from April to mid-May and in fall from July through September; good numbers of several species breed locally.

METHOD OF CENSUSING: Coverage by two observers from perimeter roads.

NUMBER OF OBSERVERS: see above

COMMENTS:

SITE INFORMATION: Lahontan Valley Wetlands Code(s): STWA (Stillwater Wildlife Management Area), CALA (Carson Lake).

LOCATION: State: Nevada
County: Churchill

HABITAT: A complex of freshwater, brackish, and saline wetlands including ponds, marshes, alkali playas, with variable amounts of shallow water and mudflats. The key shorebird areas are Stillwater Wildlife Management Area and Carson Lake.

SIZE: Stillwater WMA encompasses 200,000 acres and Carson Lake varies from 5500 to 7500 acres.

OWNERS: Private: Canvasback Club, Greenhead Club
Public: Bureau of Reclamation, U.S. Fish and Wildlife Service, Bureau of Land Management. Stillwater WMA is administered by Nevada Dept. Wildlife, U.S. Fish and Wildlife Service, and the Truckee-Carson Irrigation District; administration will soon transfer solely to U.S. Fish and Wildlife Service. Under the auspices of the Bureau of Reclamation, Carson Lake is managed by T-CID; Nevada Department of Wildlife will soon be the new owner.

ACCESSIBILITY: Large wetland areas and difficulty of access require use of airboats and All Terrain Vehicles (see below).

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Extent of shallow water habitat can vary by greater than 50% both seasonally and annually.

SEASONS OF SHOREBIRD OCCURRENCE: Peak use from April to mid-May in spring and from July to mid-September in fall; good numbers of some species breed locally.

METHOD OF CENSUSING: Coverage over 3-6 days by 3-5 observers using airboats, ATV's, and vehicles.

NUMBER OF OBSERVERS: see above

COMMENTS: These wetlands are threatened by limited water availability and concentrations of heavy metals.

SITE INFORMATION: Humboldt Wildlife Management Area Code: HUWA

LOCATION: State: Nevada
County: Pershing and Churchill

HABITAT: A complex of managed wetlands with freshwater, brackish, and saline ponds and marshes and alkali playa.

SIZE: 17,400 wetland acres

OWNERS: Public: Nevada Dept. Wildlife

ACCESSIBILITY: Perimeter road sometimes flooded; part of wetlands can be reached by vehicle for shorebird surveys, but much of area accessible only by airboat.

ANNUAL VARIABILITY IN AVAILABLE HABITAT: Extent of shallow water habitat can vary greatly based on annual precipitation; in very dry periods, the wetlands may dry up completely, as they did in 1991. Less seasonal variation in wetland habitat.

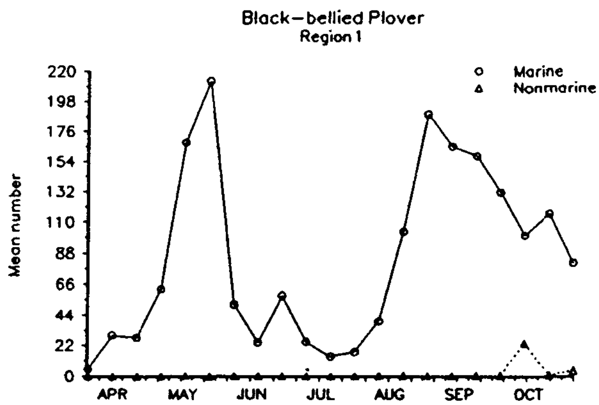
SEASONS OF SHOREBIRD OCCURRENCE: Peak use from April to mid-May in spring and from July to mid-September in fall; good numbers of some species breed locally.

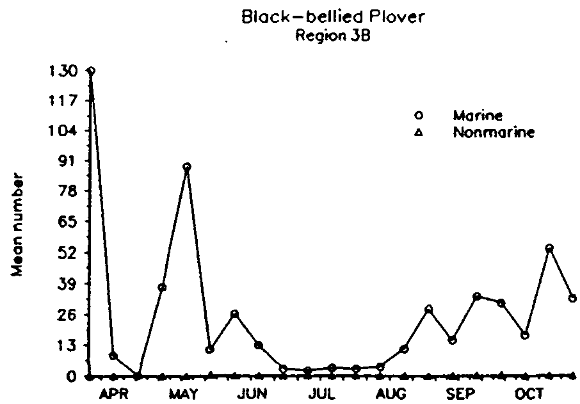
METHOD OF CENSUSING: Coverage by 2 observers for a half day; some habitat surveyed from perimeter road but most covered via airboat.

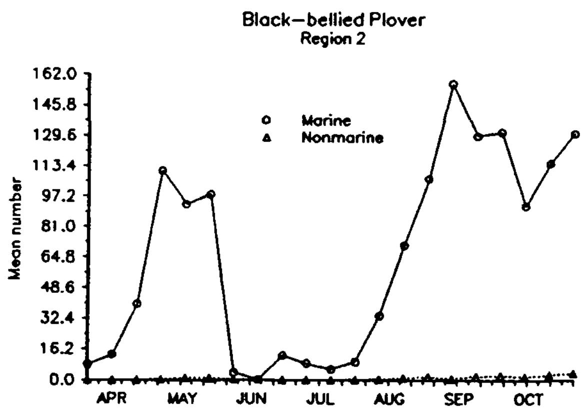
NUMBER OF OBSERVERS: see above

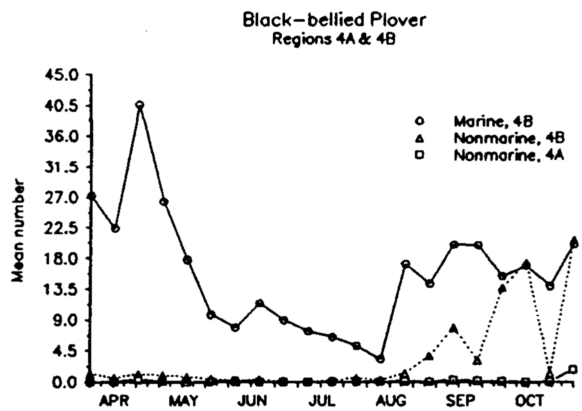
COMMENTS:

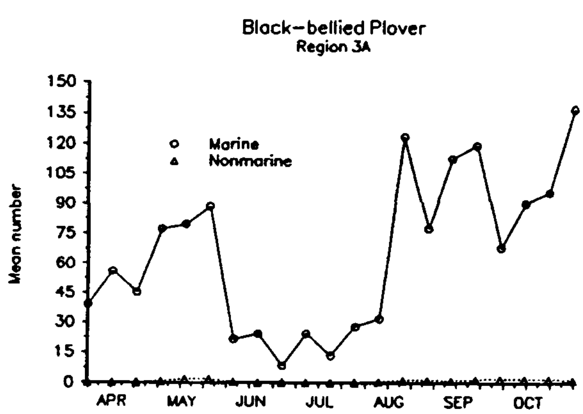
Appendix 5. Timing of shorebird migration at U. S. sites east of the 105^{th} Meridian based on data from the International Shorebird Surveys. Mean values for each region were calculated by screening the database for sites which had adequate census coverage for the spring and/or autumn migration periods. 'Adequate' was defined as sites having at least one census during each third of the month between 1 April and 10 June (Spring) or 10 July-31 October (Fall). In cases where data were missing for a single dateblock (dateblocks are 1-10, 11-20, and 21-31 of the months concerned) 'missing values' were supplied by averaging the counts from the preceding and following date blocks. Data from all other sites that did not meet the above criteria were excluded. The mean numbers for each dateblock in each region were then determined by averaging the counts during each dateblock at each site in the region. The regions are identified in Figure 1. Numbers of acceptable censuses by region were: Region 1 - 4569 (3507 fall, 1062 spring); Region 2 - 3384 (2761 fall, 623 spring); Region 3A - 2119 (1316 fall, 803 spring); Region 3B - 373 (277 fall, 96 spring); Region 4A - 976 (841 fall, 135 spring); Region 4B - 3567 (2442 fall, 1125 spring); Region 5A - 1360 (813 fall, 547 spring); Region 5B - 2831 (1782 fall, 1049 spring).

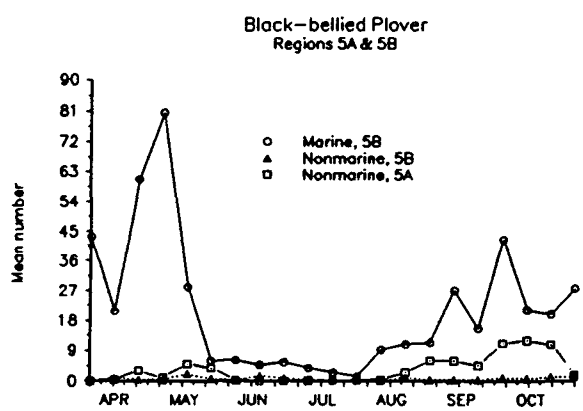

Black-bellied Plover
Region 1
Marine
Nonmarine
Mean number
220
198
176
154
132
110
88
66
44
22
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

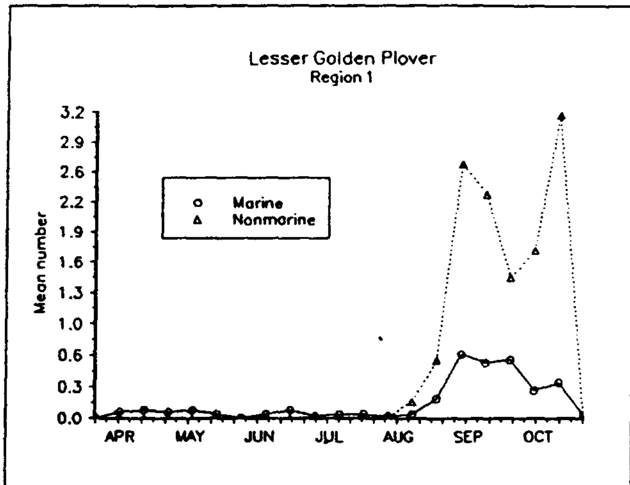

Black-bellied Plover
Region 3B
Marine
Nonmarine
Mean number
130
117
104
91
78
65
52
39
26
13
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

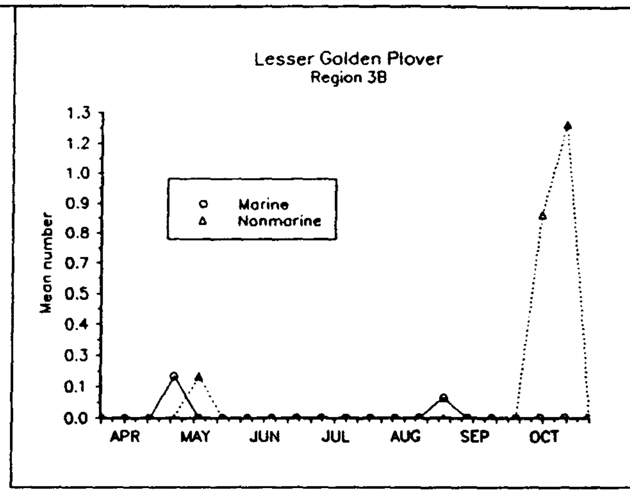

Black-bellied Plover
Region 2
Marine
Nonmarine
Mean number
162.0
145.8
129.6
113.4
97.2
81.0
64.8
48.6
32.4
16.2
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

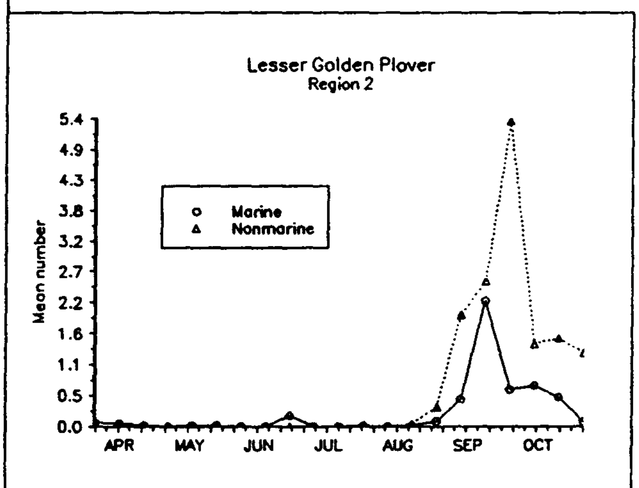

Black-bellied Plover
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
45.0
40.5
36.0
31.5
27.0
22.5
18.0
13.5
9.0
4.5
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

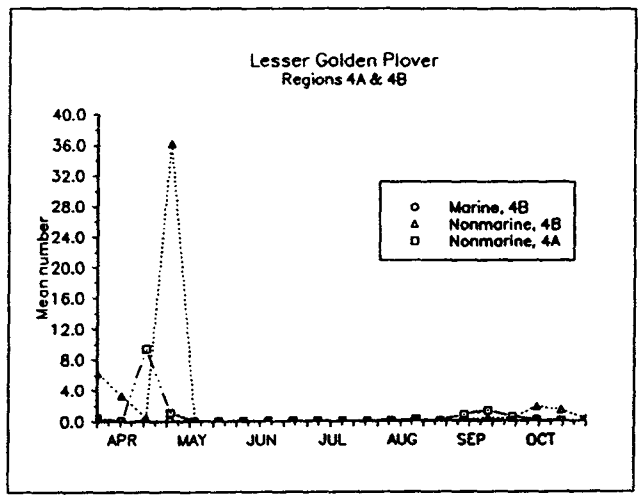

Black-bellied Plover
Region 3A
Marine
Nonmarine
Mean number
150
135
120
105
90
75
60
45
30
15
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

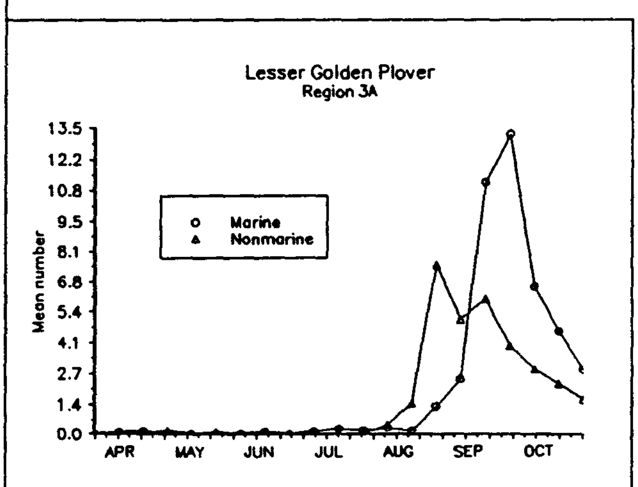

Black-bellied Plover
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
90
81
72
63
54
45
36
27
18
9
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

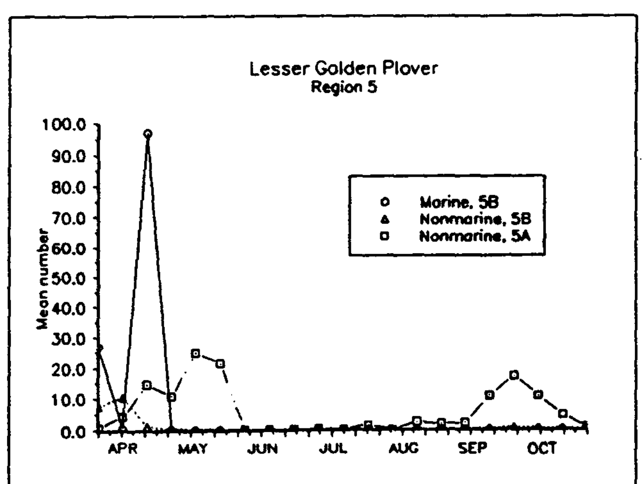

Lesser Golden Plover
Region 1
Mean number
Marine
Nonmarine
3.2
2.9
2.6
2.2
1.9
1.6
1.3
1.0
0.6
0.3
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

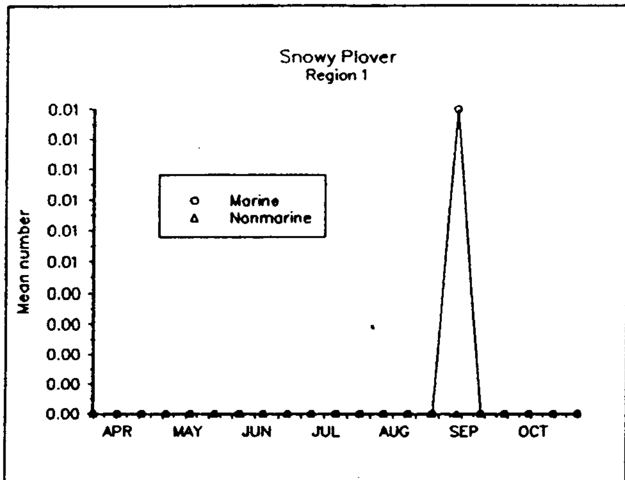

Lesser Golden Plover
Region 3B
Mean number
Marine
Nonmarine
1.3
1.2
1.0
0.9
0.8
0.7
0.5
0.4
0.3
0.1
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

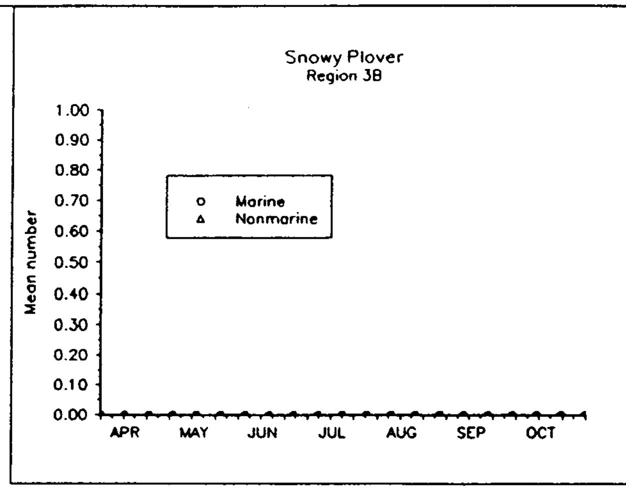

Lesser Golden Plover
Region 2
Mean number
Marine
Nonmarine
5.4
4.9
4.3
3.8
3.2
2.7
2.2
1.6
1.1
0.5
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

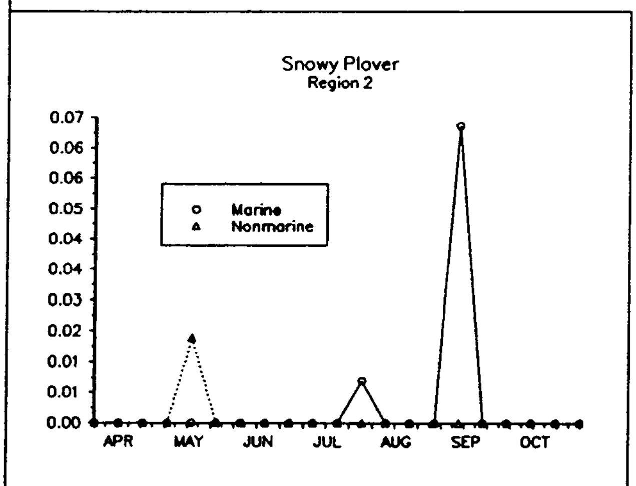

Lesser Golden Plover
Regions 4A & 4B
Mean number
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
40.0
36.0
32.0
28.0
24.0
20.0
16.0
12.0
8.0
4.0
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

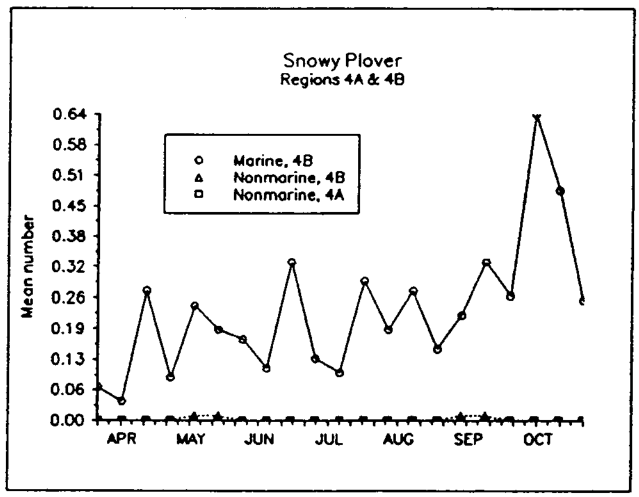

Lesser Golden Plover
Region 3A
Mean number
Marine
Nonmarine
13.5
12.2
10.8
9.5
8.1
6.8
5.4
4.1
2.7
1.4
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

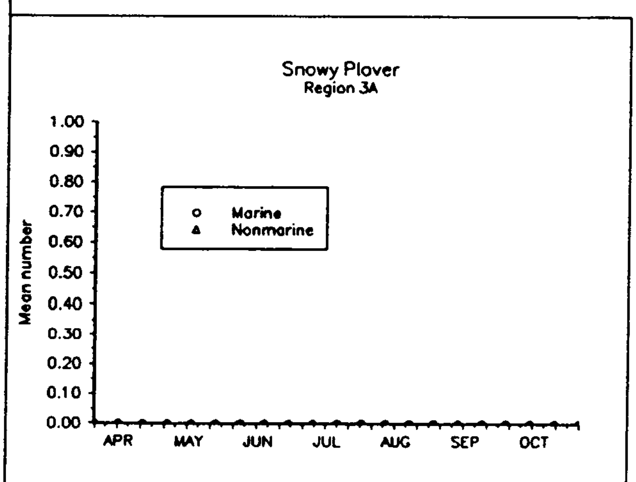

Lesser Golden Plover
Region 5
Mean number
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

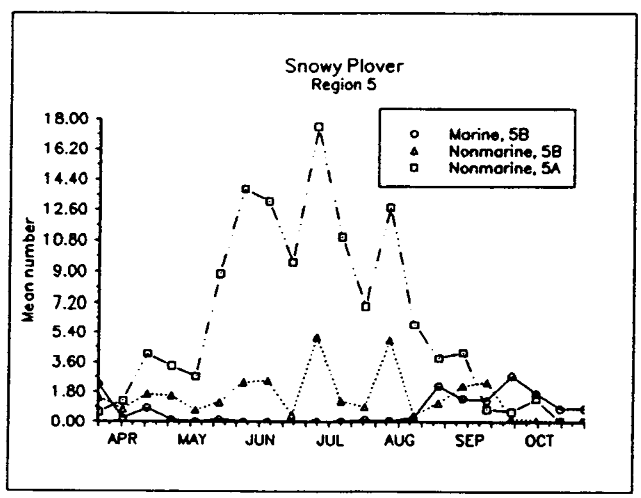

Snowy Plover
Region 1
Marine
Nonmarine
Mean number
0.01
0.01
0.01
0.01
0.01
0.01
0.00
0.00
0.00
0.00
0.00
APR MAY JUN JUL AUG SEP OCT

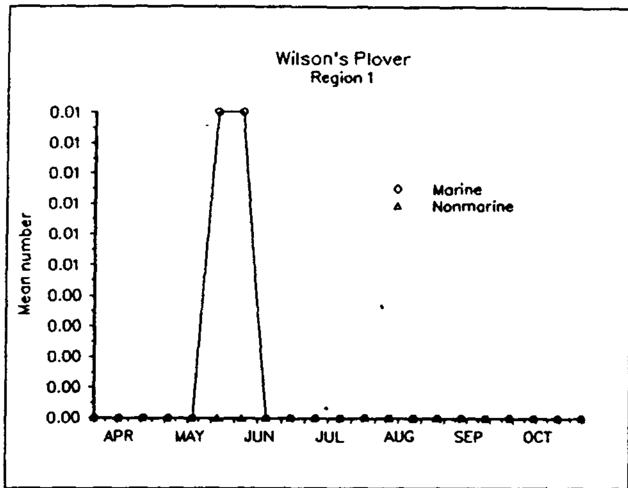

Snowy Plover
Region 3B
Marine
Nonmarine
Mean number
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
APR MAY JUN JUL AUG SEP OCT

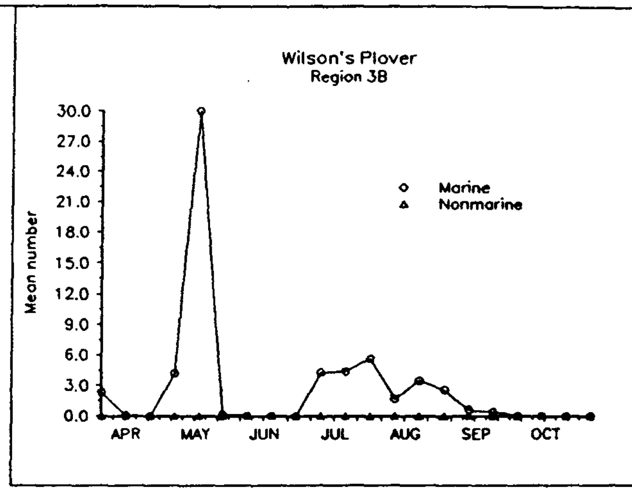

Snowy Plover
Region 2
Marine
Nonmarine
0.07
0.06
0.06
0.05
0.04
0.04
0.03
0.02
0.01
0.01
0.00
APR MAY JUN JUL AUG SEP OCT

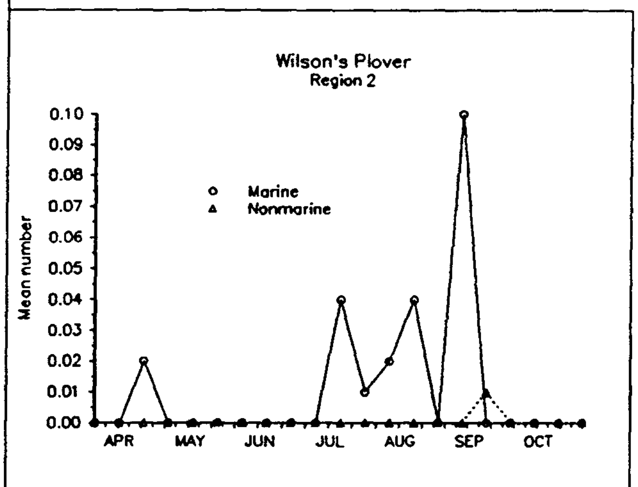

Snowy Plover
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
0.64
0.58
0.51
0.45
0.38
0.32
0.26
0.19
0.13
0.06
0.00
APR MAY JUN JUL AUG SEP OCT

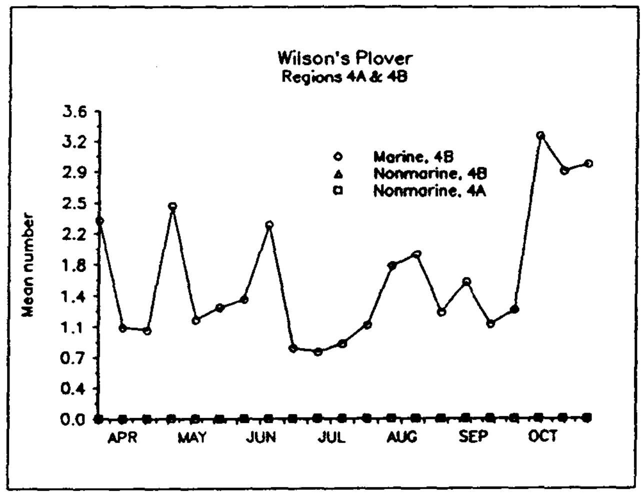

Snowy Plover
Region 3A
Marine
Nonmarine
Mean number
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
APR MAY JUN JUL AUG SEP OCT

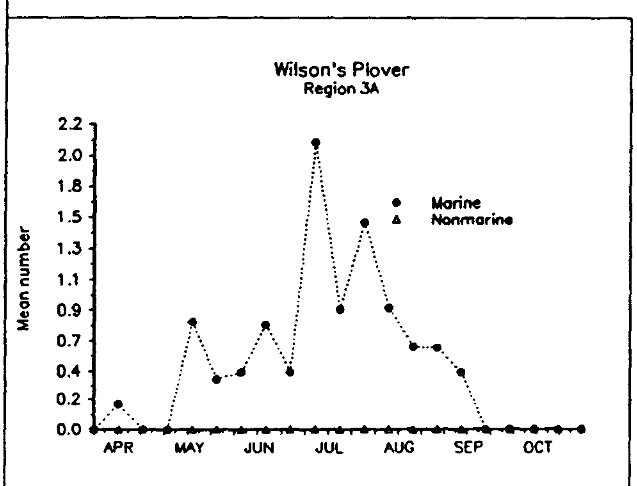

Snowy Plover
Region 5
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
18.00
16.20
14.40
12.60
10.80
9.00
7.20
5.40
3.60
1.80
0.00
APR MAY JUN JUL AUG SEP OCT

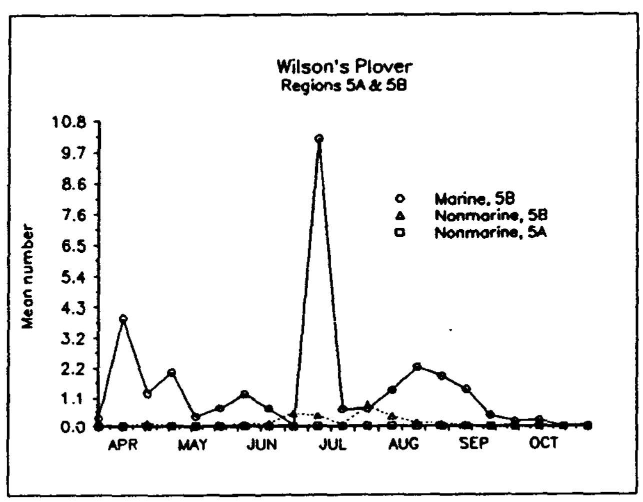

Wilson's Plover
Region 1
Mean number
0.01
0.00
Marine
Nonmarine
APR MAY JUN JUL AUG SEP OCT

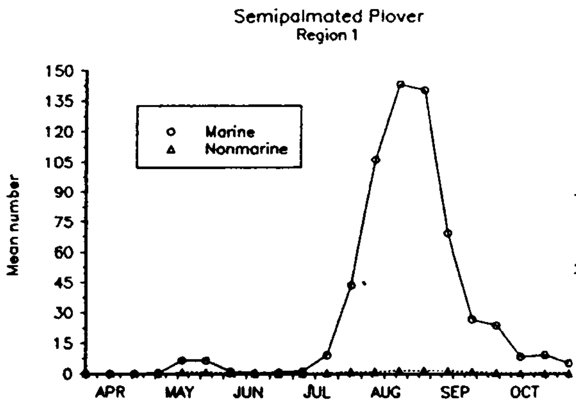

Wilson's Plover
Region 3B
Mean number
30.0 27.0 24.0 21.0 18.0 15.0 12.0 9.0 6.0 3.0 0.0
Marine
Nonmarine
APR MAY JUN JUL AUG SEP OCT

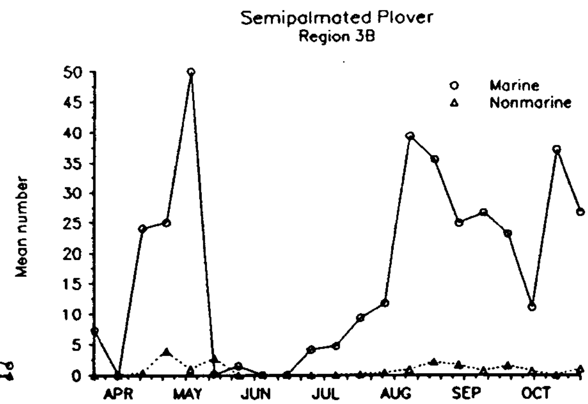

Wilson's Plover
Region 2
Mean number
0.10 0.09 0.08 0.07 0.06 0.05 0.04 0.03 0.02 0.01 0.00
Marine
Nonmarine
APR MAY JUN JUL AUG SEP OCT

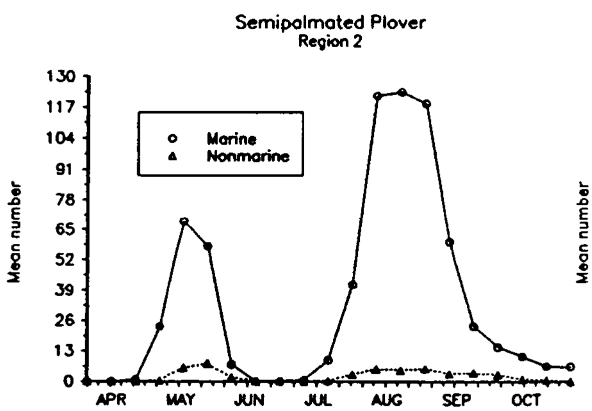

Wilson's Plover
Regions 4A & 4B
Mean number
3.6 3.2 2.9 2.5 2.2 1.8 1.4 1.1 0.7 0.4 0.0
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
APR MAY JUN JUL AUG SEP OCT

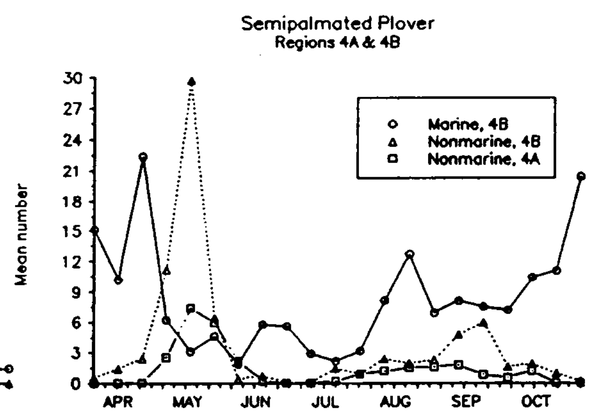

Wilson's Plover
Region 3A
Mean number
2.2 2.0 1.8 1.5 1.3 1.1 0.9 0.7 0.4 0.2 0.0
Marine
Nonmarine
APR MAY JUN JUL AUG SEP OCT

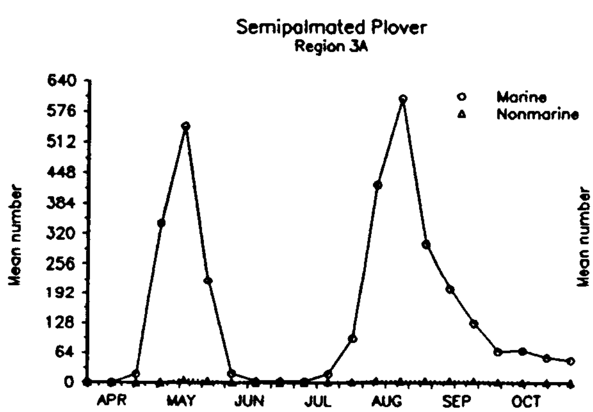

Wilson's Plover
Regions 5A & 5B
Mean number
10.8 9.7 8.6 7.6 6.5 5.4 4.3 3.2 2.2 1.1 0.0
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
APR MAY JUN JUL AUG SEP OCT

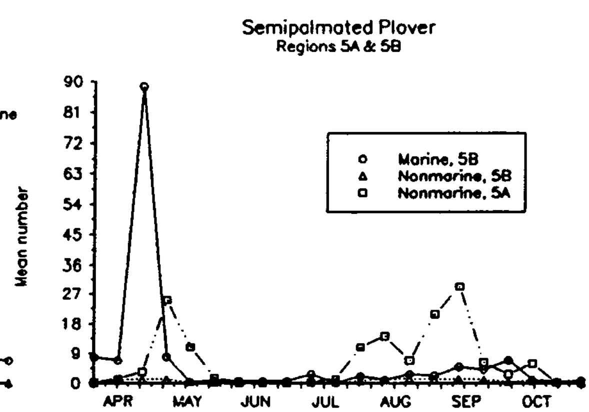

Semipalmated Plover
Region 1
Marine
Nonmarine
Mean number
150 135 120 105 90 75 60 45 30 15 0
APR MAY JUN JUL AUG SEP OCT

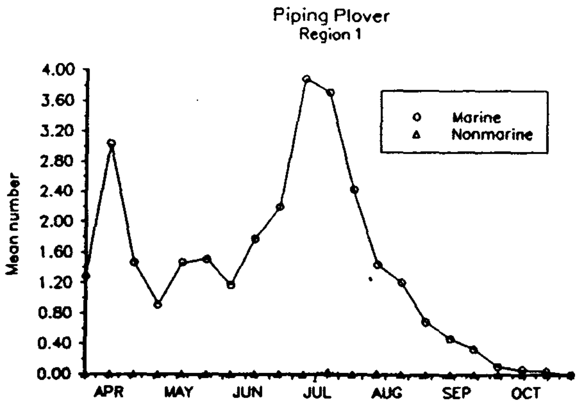

Semipalmated Plover
Region 3B
Marine
Nonmarine
Mean number
50 45 40 35 30 25 20 15 10 5 0
APR MAY JUN JUL AUG SEP OCT

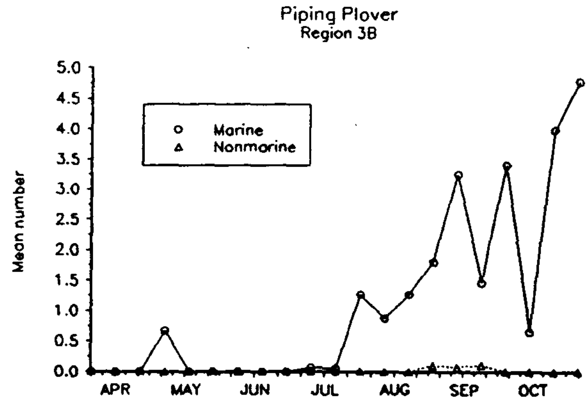

Semipalmated Plover
Region 2
Marine
Nonmarine
Mean number
130 117 104 91 78 65 52 39 26 13 0
APR MAY JUN JUL AUG SEP OCT

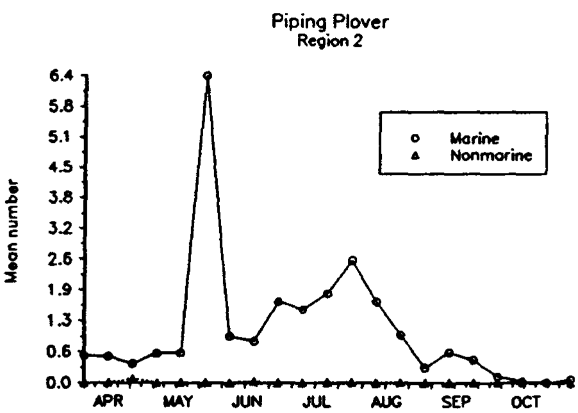

Semipalmated Plover
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
30 27 24 21 18 15 12 9 6 3 0
APR MAY JUN JUL AUG SEP OCT

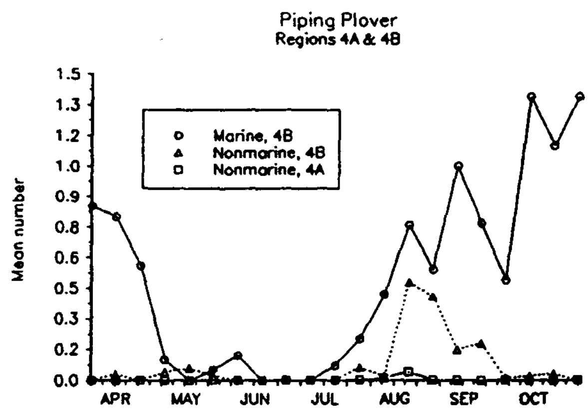

Semipalmated Plover
Region 3A
Marine
Nonmarine
Mean number
640 576 512 448 384 320 256 192 128 64 0
APR MAY JUN JUL AUG SEP OCT

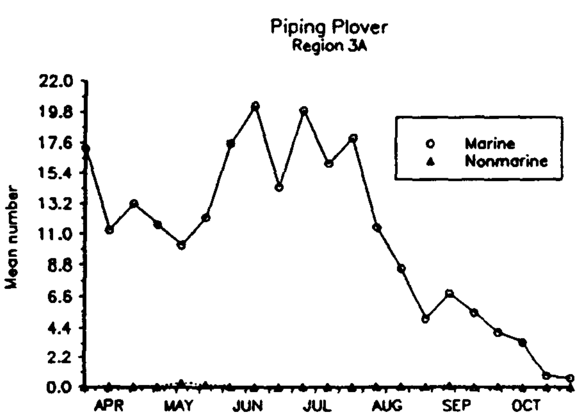

Semipalmated Plover
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
90 81 72 63 54 45 36 27 18 9 0
APR MAY JUN JUL AUG SEP OCT

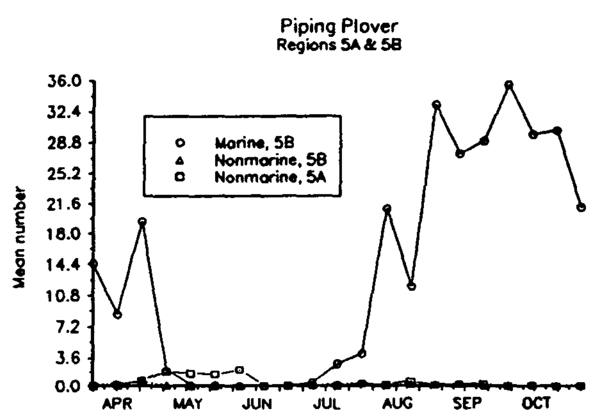

Piping Plover
Region 1
Marine
Nonmarine
Mean number
4.00
3.60
3.20
2.80
2.40
2.00
1.60
1.20
0.80
0.40
0.00
APR
MAY
JUN
JUL
AUG
SEP
OCT

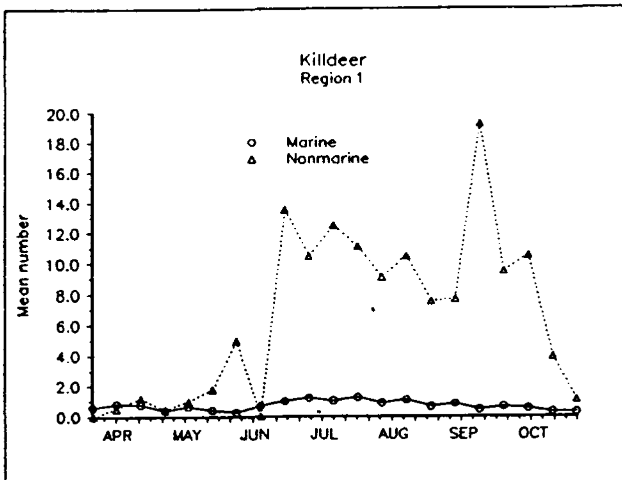

Piping Plover
Region 3B
Marine
Nonmarine
Mean number
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

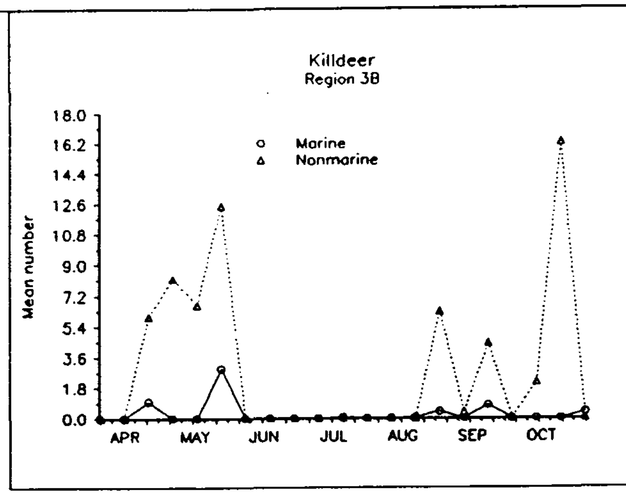

Piping Plover
Region 2
Marine
Nonmarine
Mean number
6.4
5.8
5.1
4.5
3.8
3.2
2.6
1.9
1.3
0.6
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

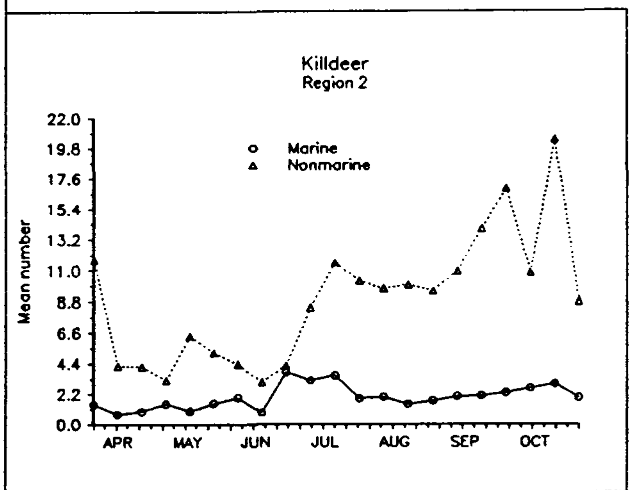

Piping Plover
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
1.5
1.3
1.2
1.0
0.9
0.8
0.6
0.5
0.3
0.2
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

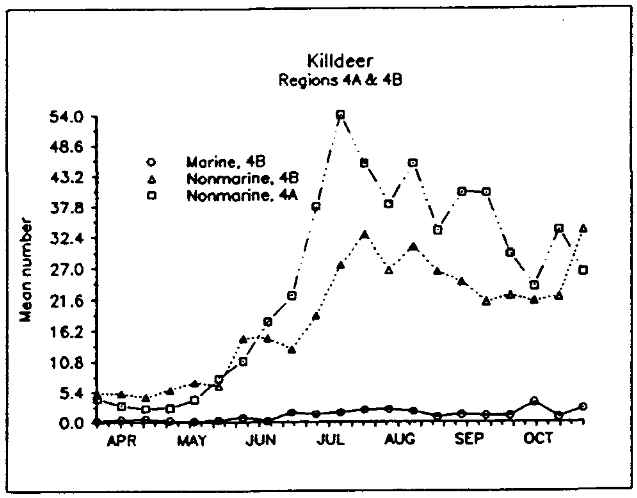

Piping Plover
Region 3A
Marine
Nonmarine
Mean number
22.0
19.8
17.6
15.4
13.2
11.0
8.8
6.6
4.4
2.2
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

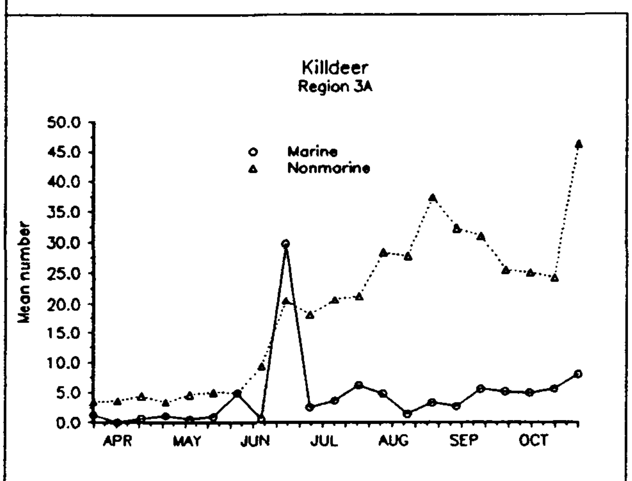

Piping Plover
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
36.0
32.4
28.8
25.2
21.6
18.0
14.4
10.8
7.2
3.6
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

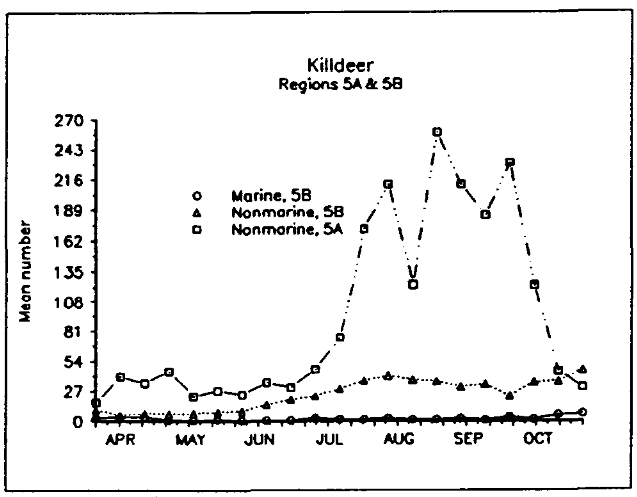

Killdeer
Region 1
Marine
Nonmarine
Mean number
APR
MAY
JUN
JUL
AUG
SEP
OCT

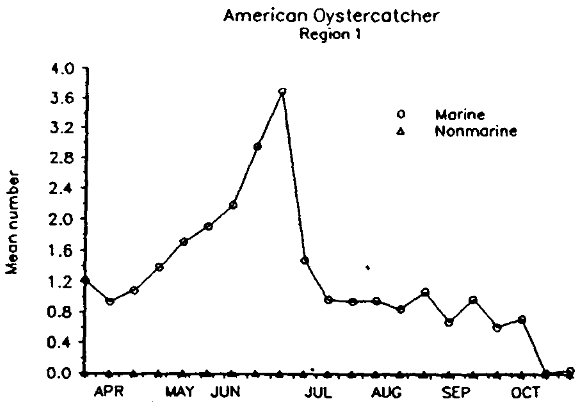

Killdeer
Region 3B
Marine
Nonmarine
Mean number
APR
MAY
JUN
JUL
AUG
SEP
OCT

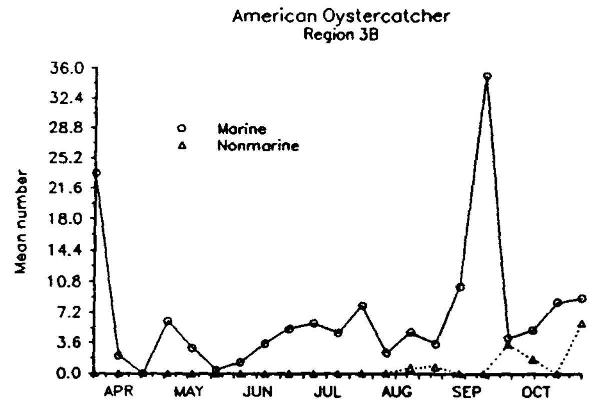

Killdeer
Region 2
Marine
Nonmarine
Mean number
APR
MAY
JUN
JUL
AUG
SEP
OCT

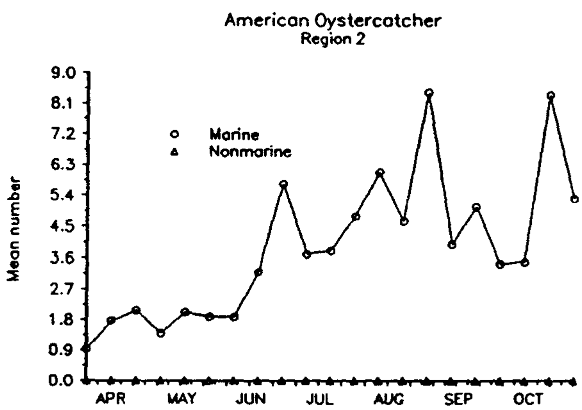

Killdeer
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
APR
MAY
JUN
JUL
AUG
SEP
OCT

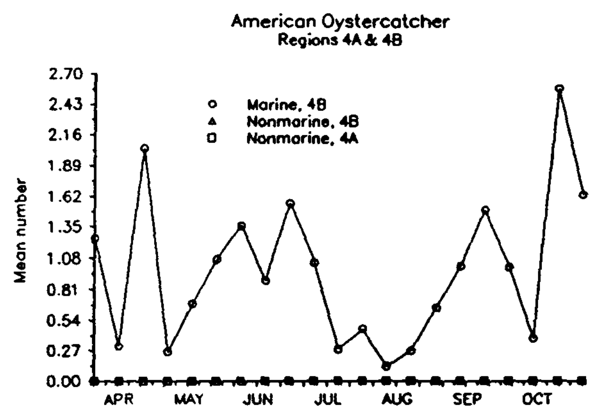

Killdeer
Region 3A
Marine
Nonmarine
Mean number
APR
MAY
JUN
JUL
AUG
SEP
OCT

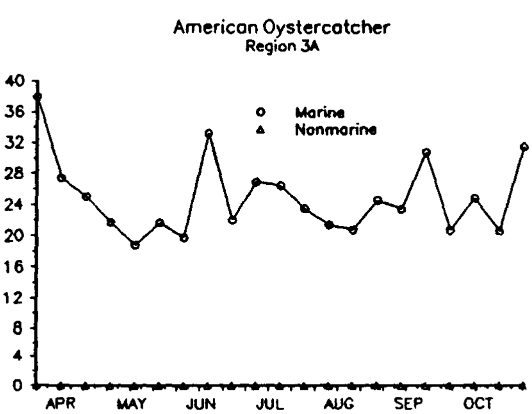

Killdeer
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
APR
MAY
JUN
JUL
AUG
SEP
OCT

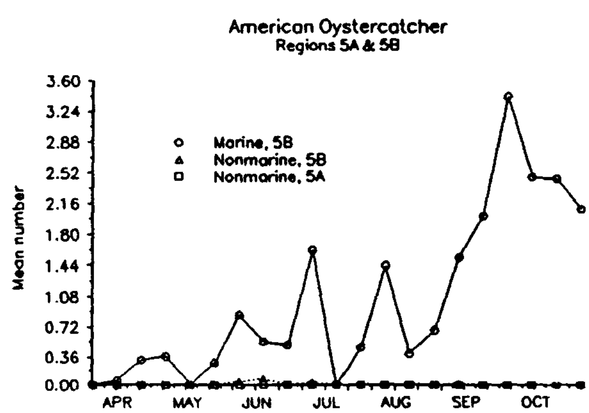

American Oystercatcher
Region 1
Mean number
4.0
3.6
3.2
2.8
2.4
2.0
1.6
1.2
0.8
0.4
0.0
Marine
Nonmarine
APR MAY JUN JUL AUG SEP OCT

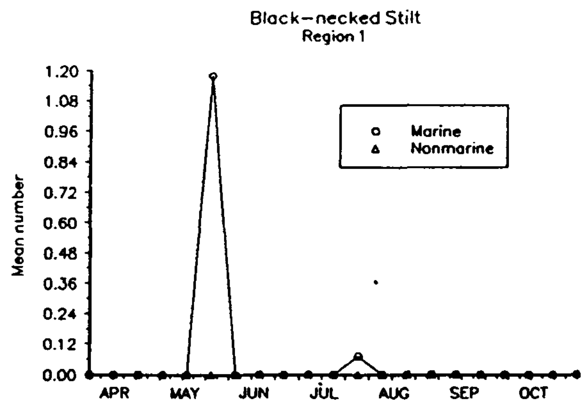

American Oystercatcher
Region 3B
Mean number
36.0
32.4
28.8
25.2
21.6
18.0
14.4
10.8
7.2
3.6
0.0
Marine
Nonmarine
APR MAY JUN JUL AUG SEP OCT

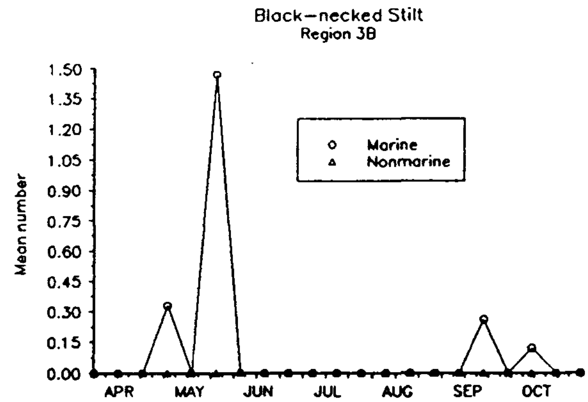

American Oystercatcher
Region 2
Mean number
9.0
8.1
7.2
6.3
5.4
4.5
3.6
2.7
1.8
0.9
0.0
Marine
Nonmarine
APR MAY JUN JUL AUG SEP OCT

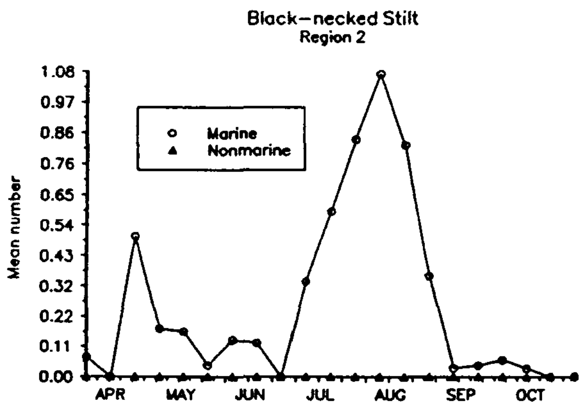

American Oystercatcher
Regions 4A & 4B
Mean number
2.70
2.43
2.16
1.89
1.62
1.35
1.08
0.81
0.54
0.27
0.00
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
APR MAY JUN JUL AUG SEP OCT

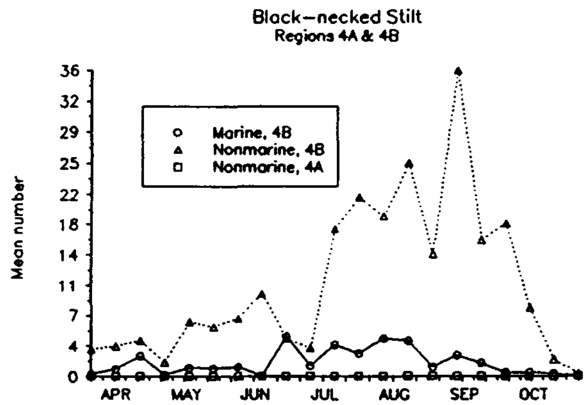

American Oystercatcher
Region 3A
40
36
32
28
24
20
16
12
8
4
0
Marine
Nonmarine
APR MAY JUN JUL AUG SEP OCT

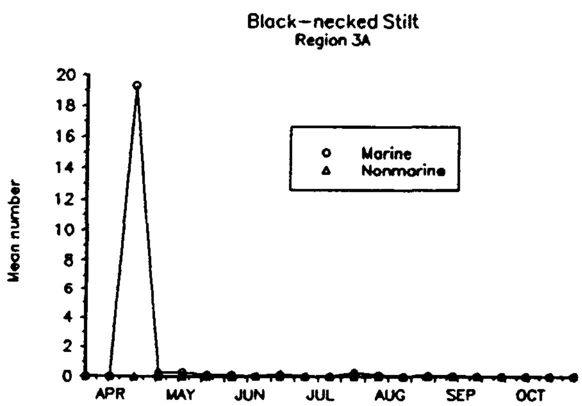

American Oystercatcher
Regions 5A & 5B
Mean number
3.60
3.24
2.88
2.52
2.16
1.80
1.44
1.08
0.72
0.36
0.00
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
APR MAY JUN JUL AUG SEP OCT

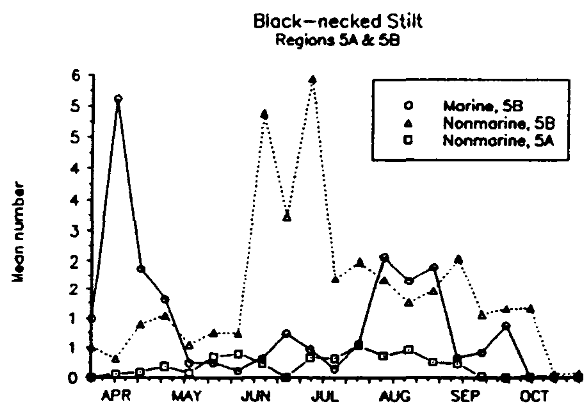

Black-necked Stilt
Region 1
1.20
1.08
0.96
0.84
0.72
0.60
0.48
0.36
0.24
0.12
0.00
Mean number
APR MAY JUN JUL AUG SEP OCT
Marine
Nonmarine

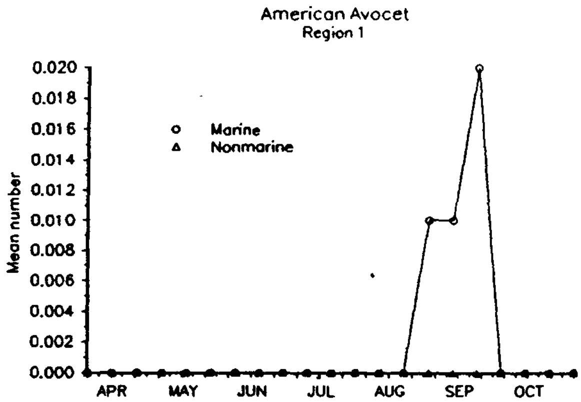

Black-necked Stilt
Region 3B
1.50
1.35
1.20
1.05
0.90
0.75
0.60
0.45
0.30
0.15
0.00
Mean number
APR MAY JUN JUL AUG SEP OCT
Marine
Nonmarine

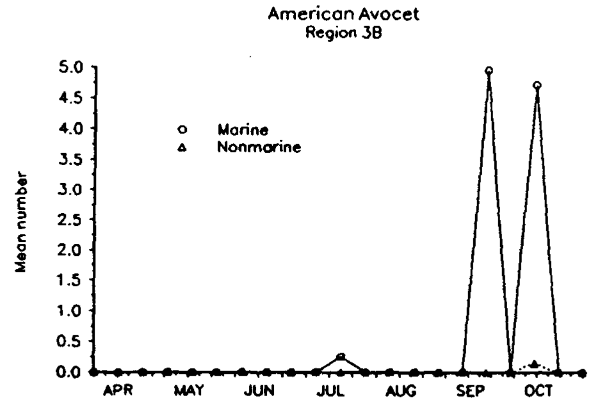

Black-necked Stilt
Region 2
1.08
0.97
0.86
0.76
0.65
0.54
0.43
0.32
0.22
0.11
0.00
Mean number
APR MAY JUN JUL AUG SEP OCT
Marine
Nonmarine

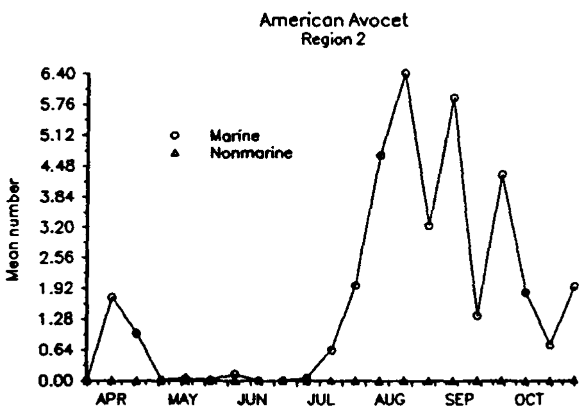

Black-necked Stilt
Regions 4A & 4B
36
32
29
25
22
18
14
11
7
4
0
Mean number
APR MAY JUN JUL AUG SEP OCT
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A

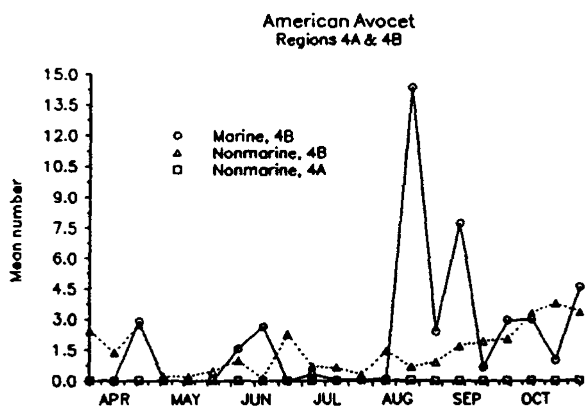

Black-necked Stilt
Region 3A
20
18
16
14
12
10
8
6
4
2
0
Mean number
APR MAY JUN JUL AUG SEP OCT
Marine
Nonmarine

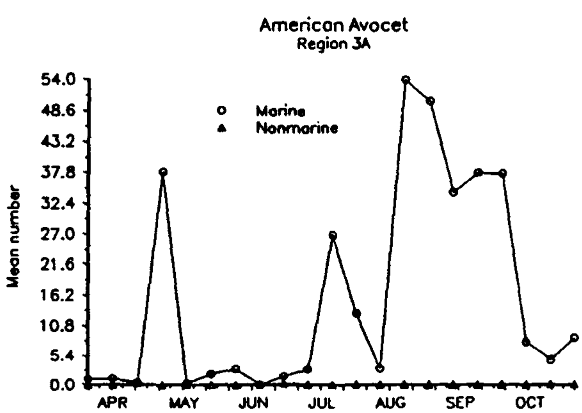

Black-necked Stilt
Regions 5A & 5B
6
5
5
4
4
3
2
2
1
1
0
Mean number
APR MAY JUN JUL AUG SEP OCT
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A

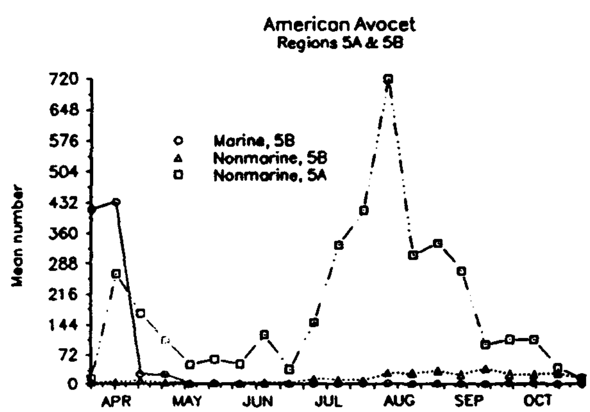

American Avocet
Region 1
Marine
Nonmarine
Mean number
0.020
0.018
0.016
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
APR
MAY
JUN
JUL
AUG
SEP
OCT

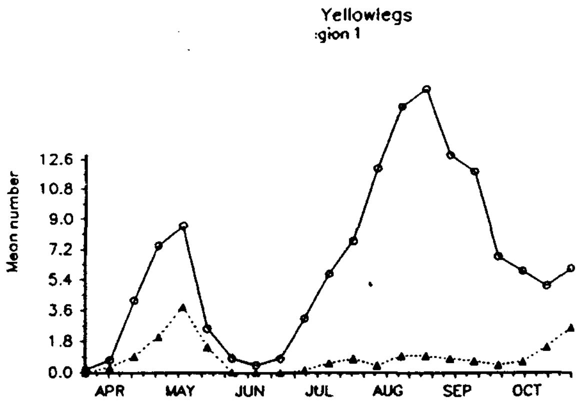

American Avocet
Region 3B
Marine
Nonmarine
Mean number
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

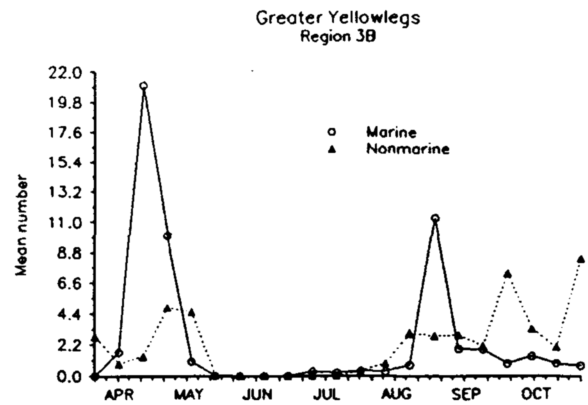

American Avocet
Region 2
Marine
Nonmarine
Mean number
6.40
5.76
5.12
4.48
3.84
3.20
2.56
1.92
1.28
0.64
0.00
APR
MAY
JUN
JUL
AUG
SEP
OCT

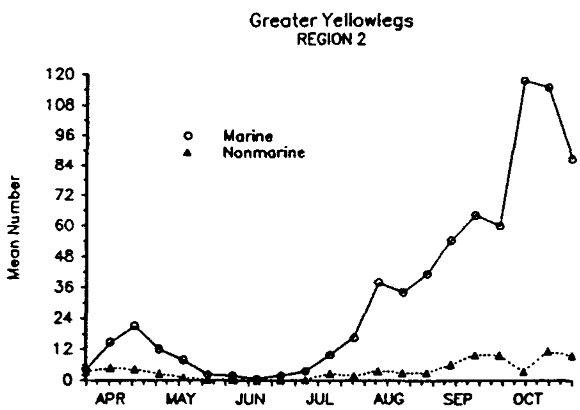

American Avocet
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
15.0
13.5
12.0
10.5
9.0
7.5
6.0
4.5
3.0
1.5
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

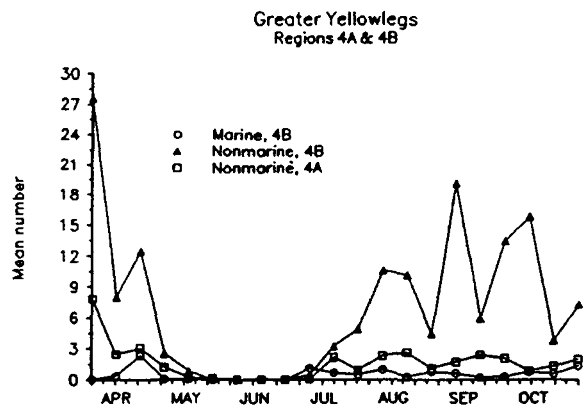

American Avocet
Region 3A
Marine
Nonmarine
Mean number
54.0
48.6
43.2
37.8
32.4
27.0
21.6
16.2
10.8
5.4
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

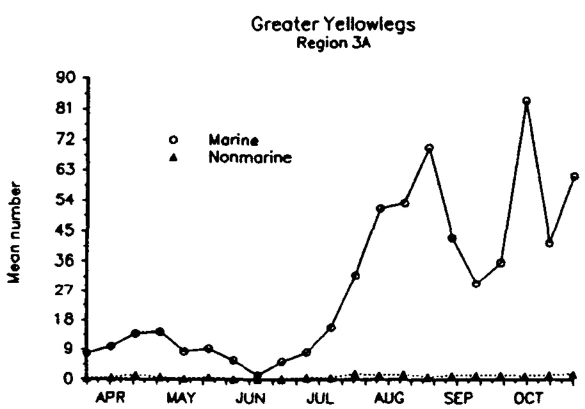

American Avocet
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
720
648
576
504
432
360
288
216
144
72
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

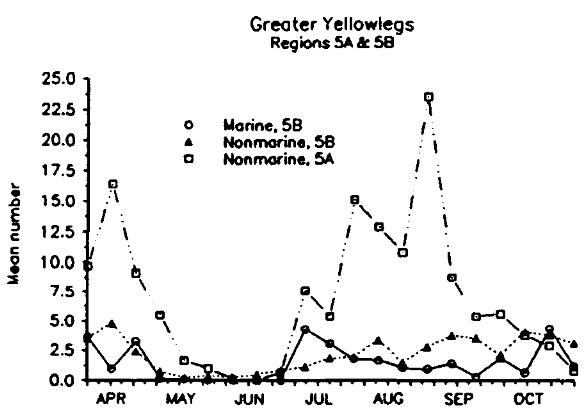

Yellowlegs
:gion 1
Mean number
12.6
10.8
9.0
7.2
5.4
3.6
1.8
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

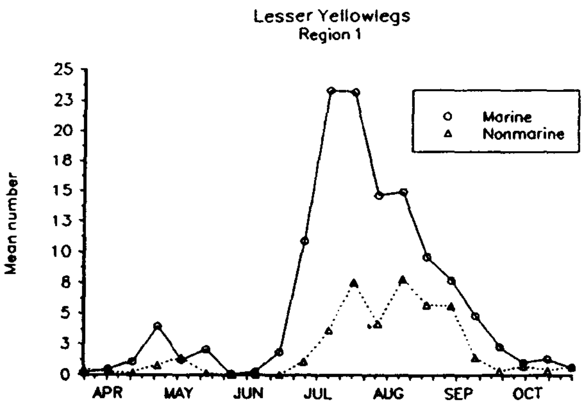

Greater Yellowlegs
Region 3B
Marine
Nonmarine
Mean number
22.0
19.8
17.6
15.4
13.2
11.0
8.8
6.6
4.4
2.2
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

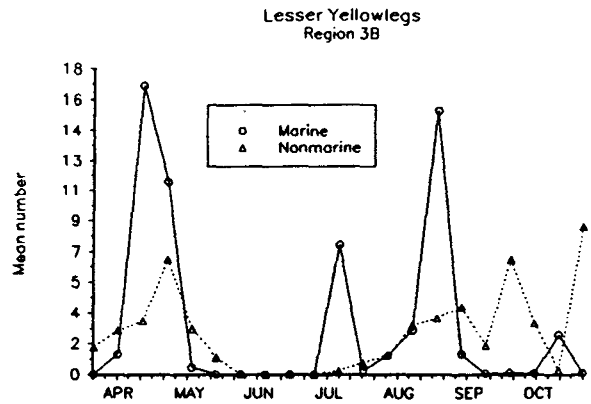

Greater Yellowlegs
REGION 2
Marine
Nonmarine
Mean Number
120
108
96
84
72
60
48
36
24
12
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

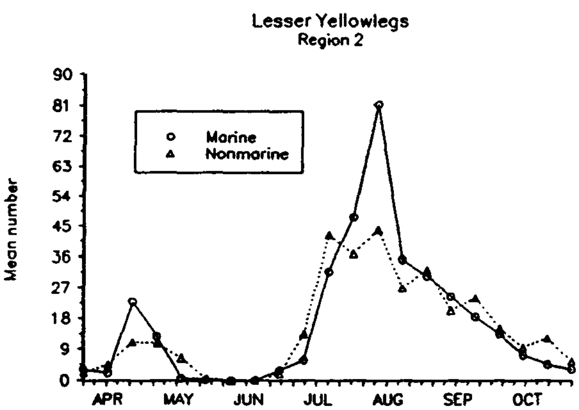

Greater Yellowlegs
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
30
27
24
21
18
15
12
9
6
3
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

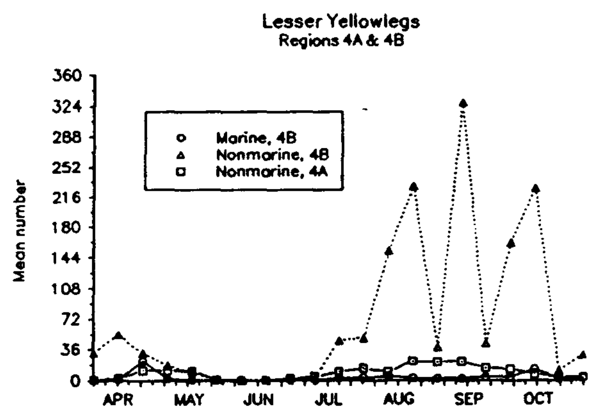

Greater Yellowlegs
Region 3A
Marine
Nonmarine
Mean number
90
81
72
63
54
45
36
27
18
9
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

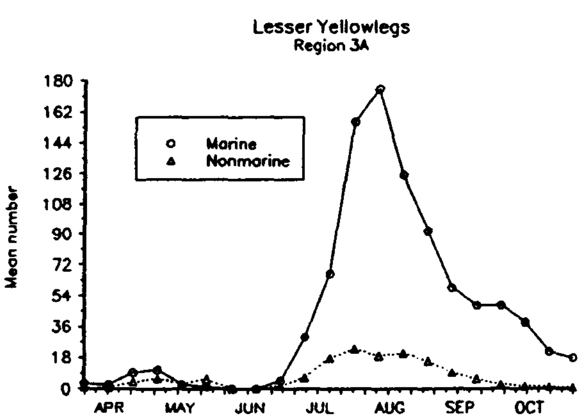

Greater Yellowlegs
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
25.0
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

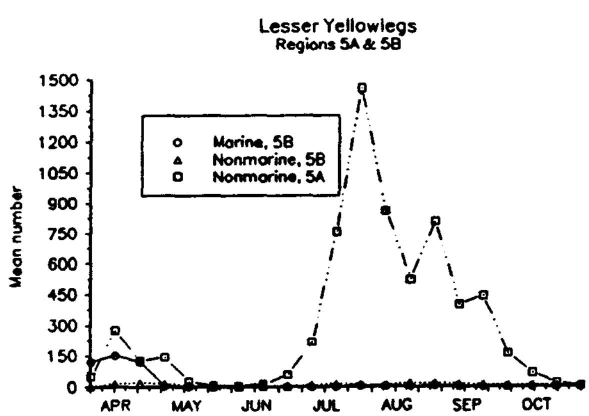

Lesser Yellowlegs
Region 1
Marine
Nonmarine
Mean number
25 23 20 18 15 13 10 8 5 3 0
APR MAY JUN JUL AUG SEP OCT

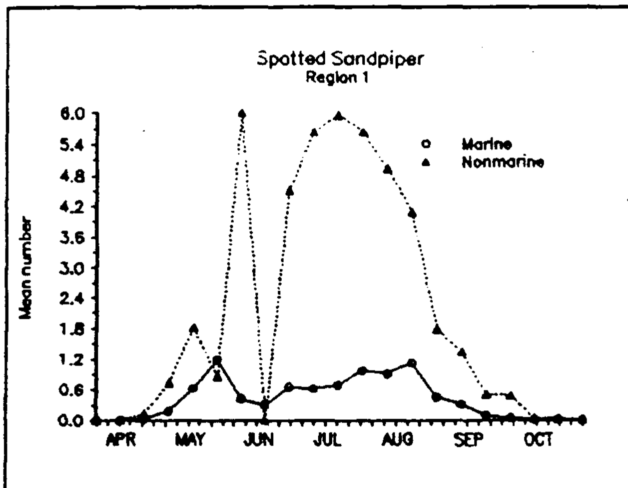

Lesser Yellowlegs
Region 3B
Marine
Nonmarine
Mean number
18 16 14 13 11 9 7 5 4 2 0
APR MAY JUN JUL AUG SEP OCT

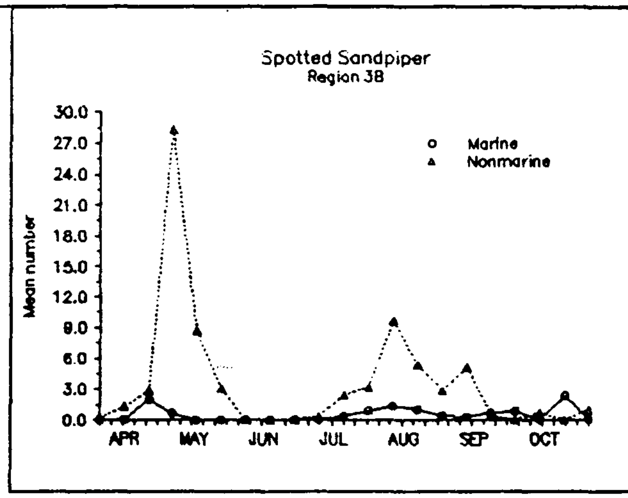

Lesser Yellowlegs
Region 2
Marine
Nonmarine
Mean number
90 81 72 63 54 45 36 27 18 9 0
APR MAY JUN JUL AUG SEP OCT

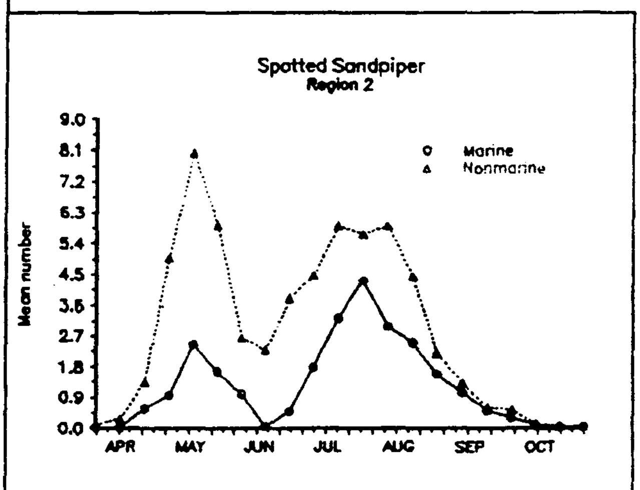

Lesser Yellowlegs
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
360 324 288 252 216 180 144 108 72 36 0
APR MAY JUN JUL AUG SEP OCT

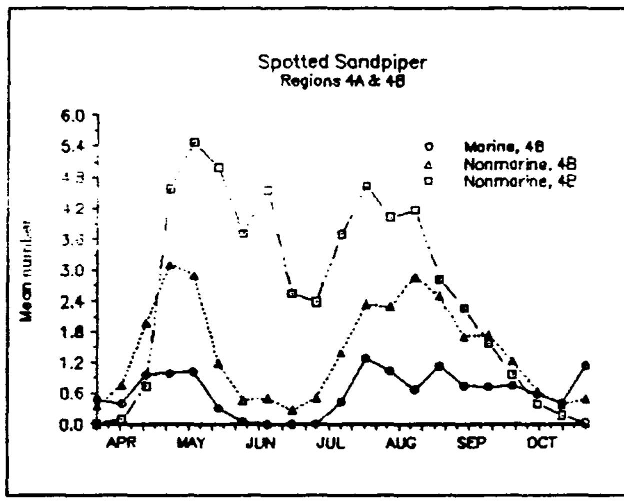

Lesser Yellowlegs
Region 3A
Marine
Nonmarine
Mean number
180 162 144 126 108 90 72 54 36 18 0
APR MAY JUN JUL AUG SEP OCT

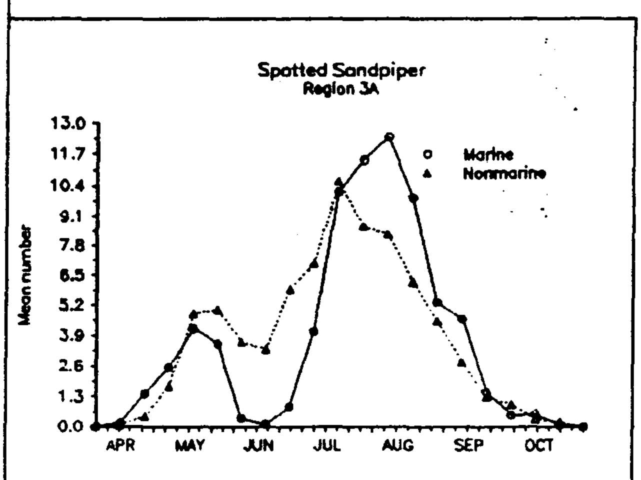

Lesser Yellowlegs
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
1500 1350 1200 1050 900 750 600 450 300 150 0
APR MAY JUN JUL AUG SEP OCT

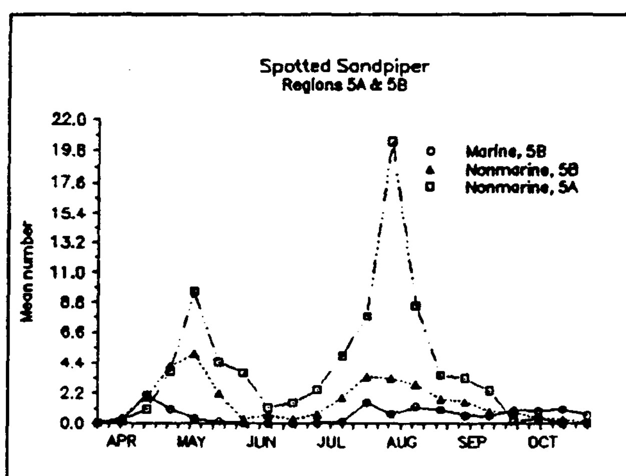

Spotted Sandpiper
Region 1
Mean number
6.0
5.4
4.8
4.2
3.6
3.0
2.4
1.8
1.2
0.6
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT
Marine
Nonmarine

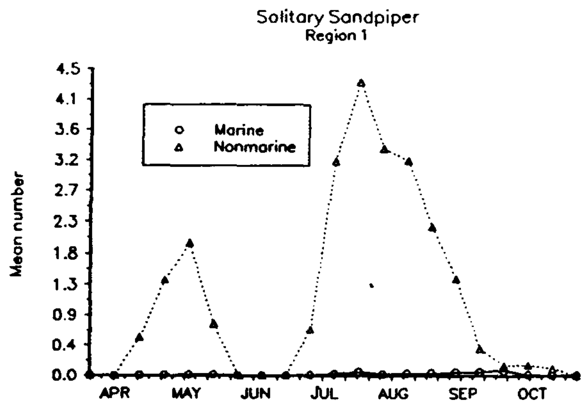

Spotted Sandpiper
Region 3B
Mean number
30.0
27.0
24.0
21.0
18.0
15.0
12.0
9.0
6.0
3.0
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT
Marine
Nonmarine

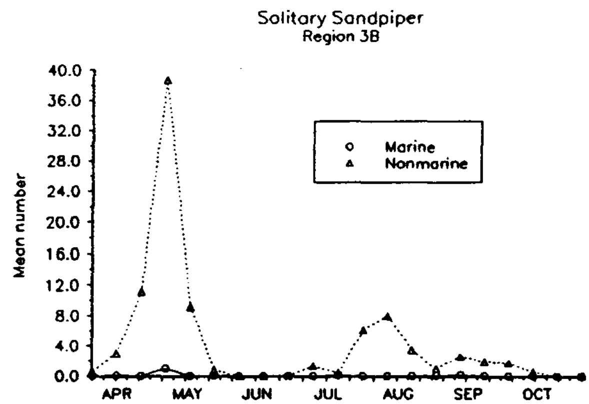

Spotted Sandpiper
Region 2
Mean number
9.0
8.1
7.2
6.3
5.4
4.5
3.6
2.7
1.8
0.9
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT
Marine
Nonmarine

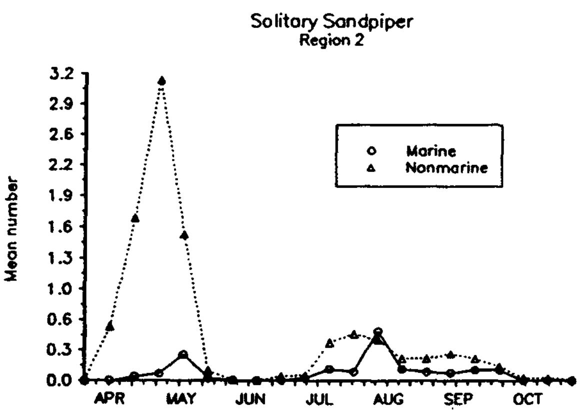

Spotted Sandpiper
Regions 4A & 4B
6.0
5.4
3.0
2.4
1.8
1.2
0.6
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT
Marine, 4B
Nonmarine, 4B

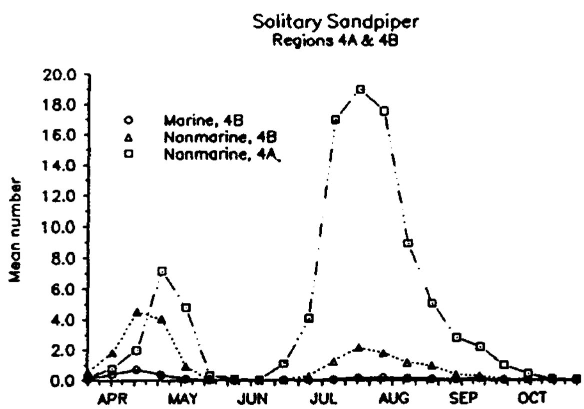

Spotted Sandpiper
Region 3A
Mean number
13.0
11.7
10.4
9.1
7.8
6.5
5.2
3.9
2.6
1.3
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT
Marine
Nonmarine

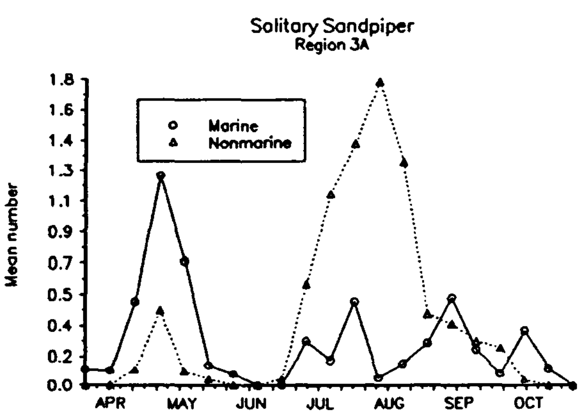

Spotted Sandpiper
Regions 5A & 5B
Mean number
22.0
19.8
17.6
15.4
13.2
11.0
8.8
6.6
4.4
2.2
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A

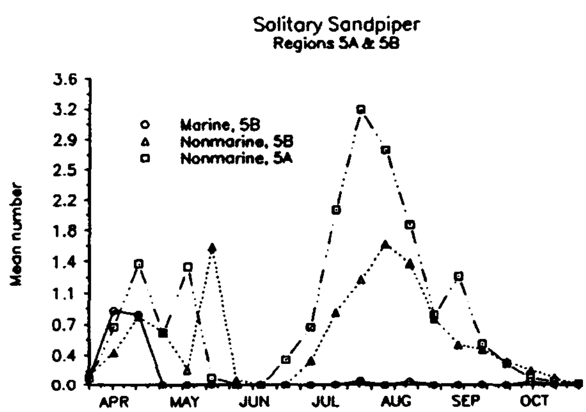

Solitary Sandpiper
Region 1
Marine
Nonmarine
Mean number
4.5
4.1
3.6
3.2
2.7
2.3
1.8
1.3
0.9
0.4
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

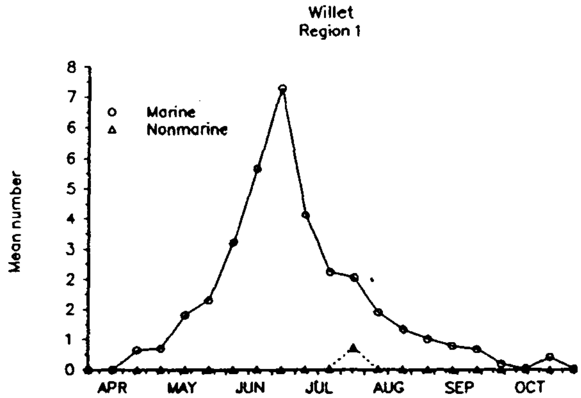

Solitary Sandpiper
Region 3B
Marine
Nonmarine
Mean number
40.0
36.0
32.0
28.0
24.0
20.0
16.0
12.0
8.0
4.0
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

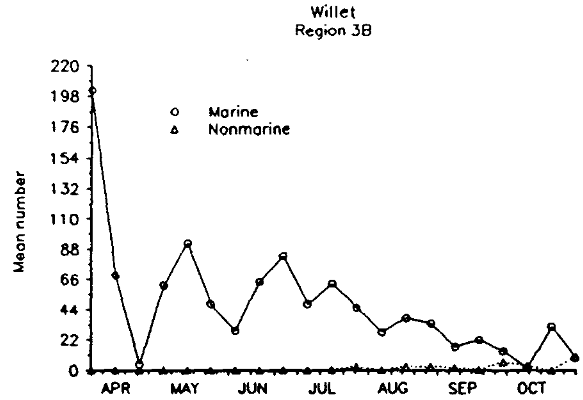

Solitary Sandpiper
Region 2
Marine
Nonmarine
Mean number
3.2
2.9
2.6
2.2
1.9
1.6
1.3
1.0
0.6
0.3
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

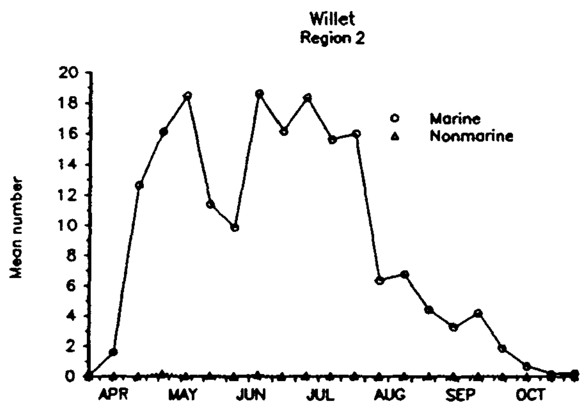

Solitary Sandpiper
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

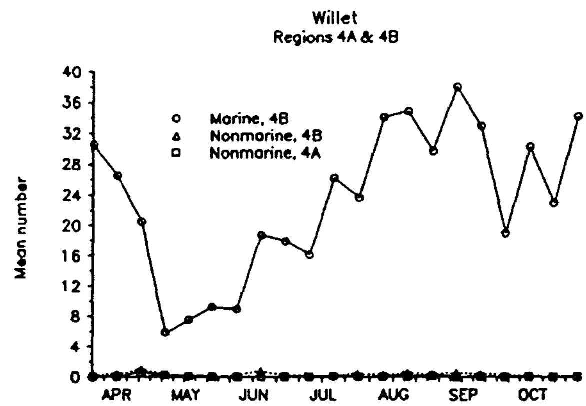

Solitary Sandpiper
Region 3A
Marine
Nonmarine
Mean number
1.8
1.6
1.4
1.3
1.1
0.9
0.7
0.5
0.4
0.2
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

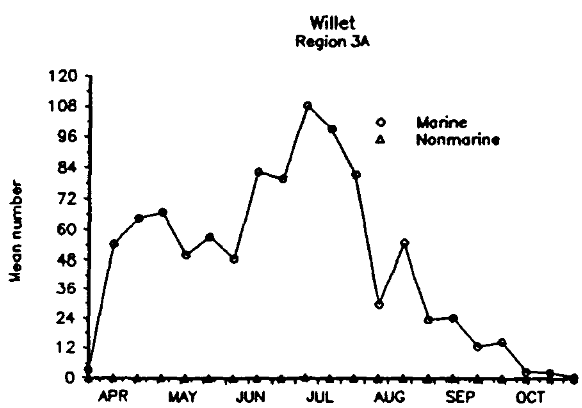

Solitary Sandpiper
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
3.6
3.2
2.9
2.5
2.2
1.8
1.4
1.1
0.7
0.4
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

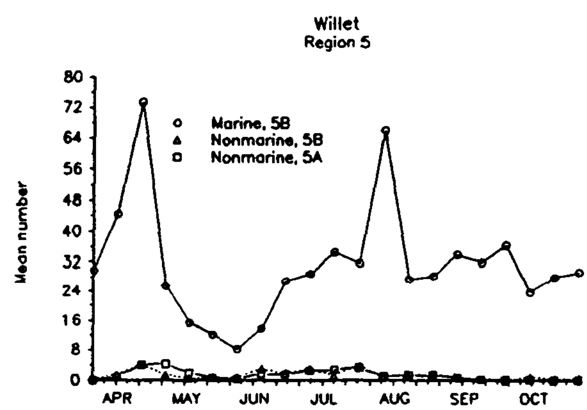

Willet
Region 1
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

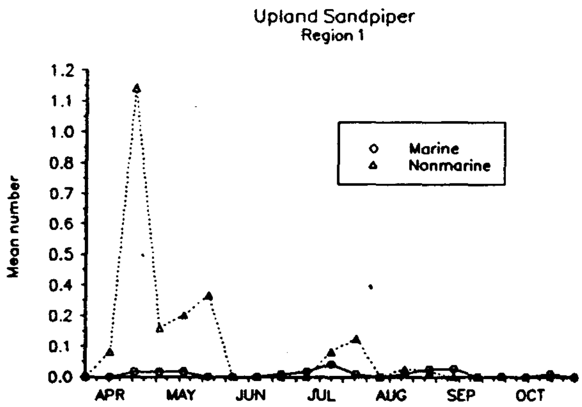

Willet
Region 3B
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

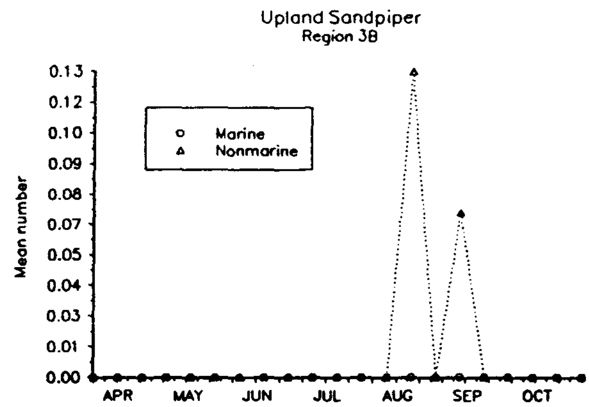

Willet
Region 2
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

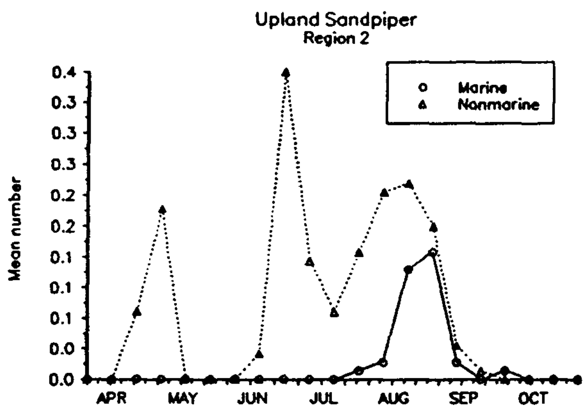

Willet
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
APR MAY JUN JUL AUG SEP OCT

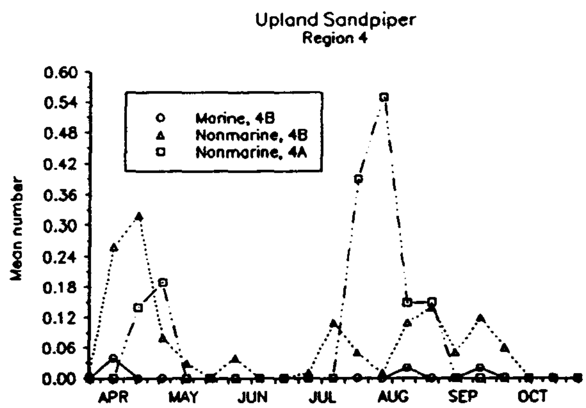

Willet
Region 3A
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

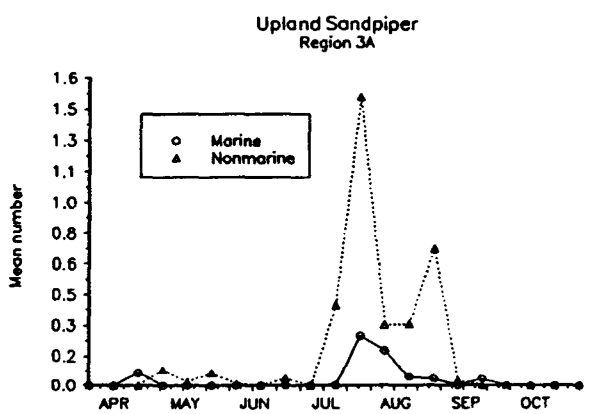

Willet
Region 5
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
APR MAY JUN JUL AUG SEP OCT

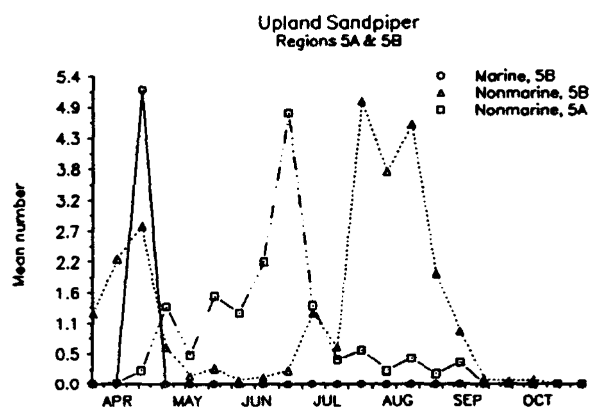

Upland Sandpiper
Region 1
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

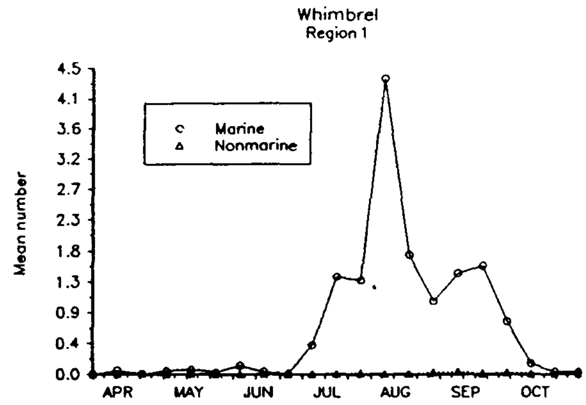

Upland Sandpiper
Region 3B
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

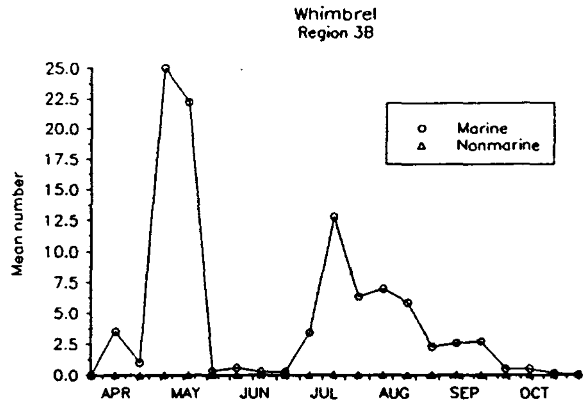

Upland Sandpiper
Region 2
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

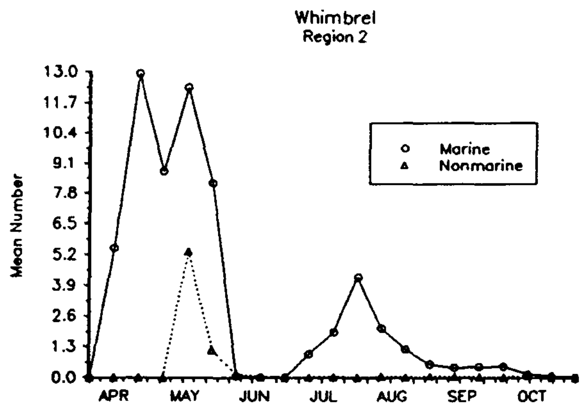

Upland Sandpiper
Region 4
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
APR MAY JUN JUL AUG SEP OCT

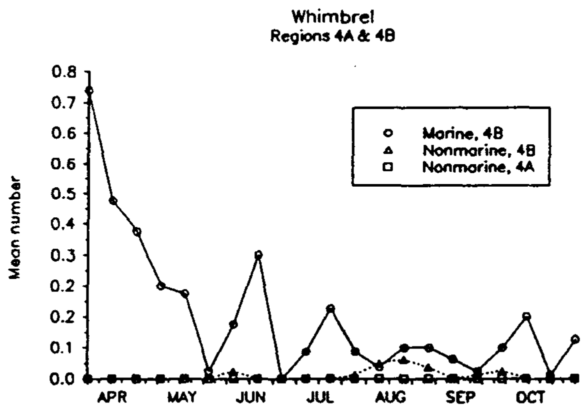

Upland Sandpiper
Region 3A
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

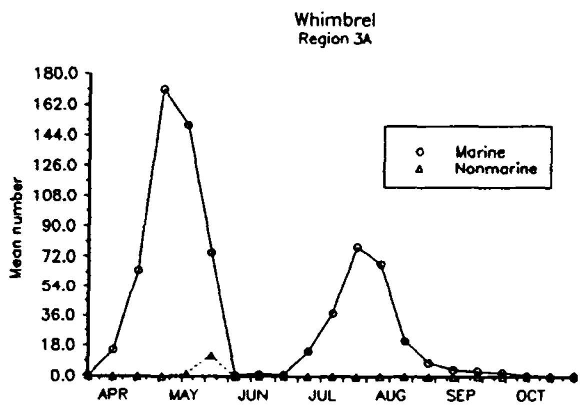

Upland Sandpiper
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
APR MAY JUN JUL AUG SEP OCT

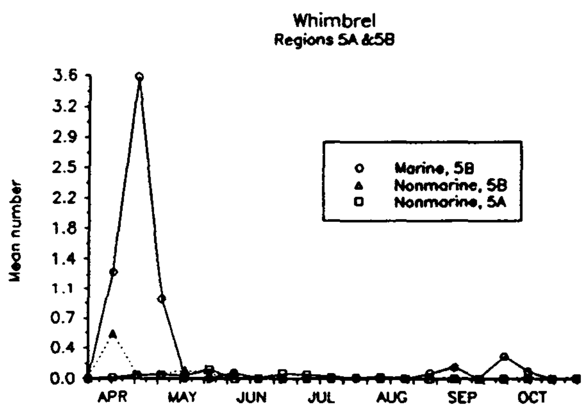

Whimbrel
Region 1
Marine
Nonmarine
Mean number
4.5
4.1
3.6
3.2
2.7
2.3
1.8
1.3
0.9
0.4
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

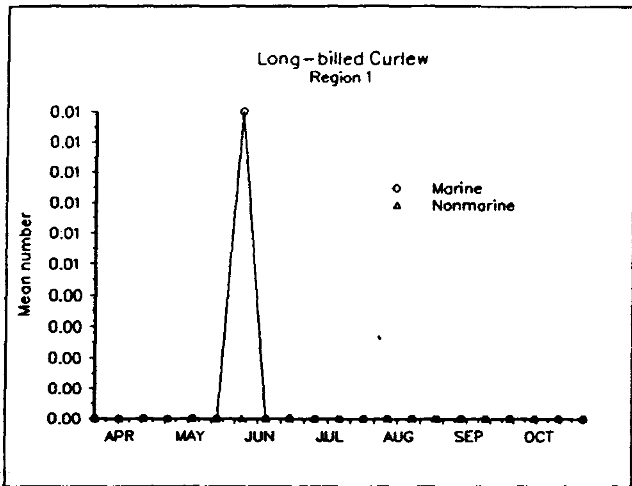

Whimbrel
Region 3B
Marine
Nonmarine
Mean number
25.0
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

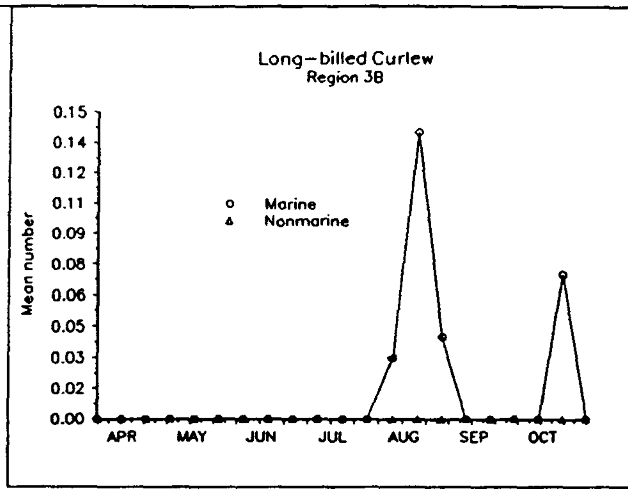

Whimbrel
Region 2
Marine
Nonmarine
Mean Number
13.0
11.7
10.4
9.1
7.8
6.5
5.2
3.9
2.6
1.3
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

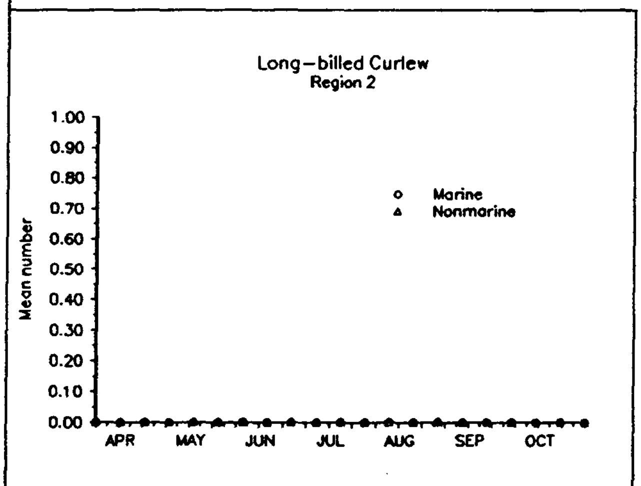

Whimbrel
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
0.8
0.7
0.6
0.6
0.5
0.4
0.3
0.2
0.2
0.1
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

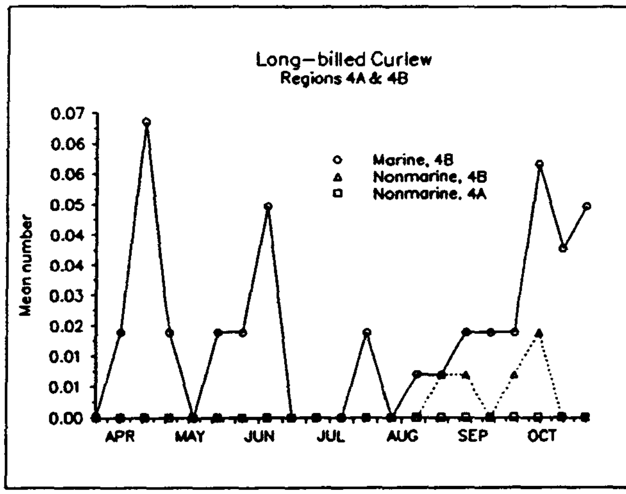

Whimbrel
Region 3A
Marine
Nonmarine
Mean number
180.0
162.0
144.0
126.0
108.0
90.0
72.0
54.0
36.0
18.0
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

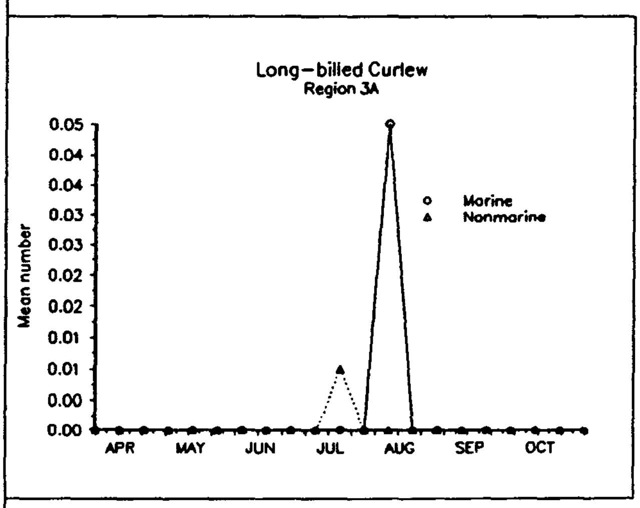

Whimbrel
Regions 5A &5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
3.6
3.2
2.9
2.5
2.2
1.8
1.4
1.1
0.7
0.4
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

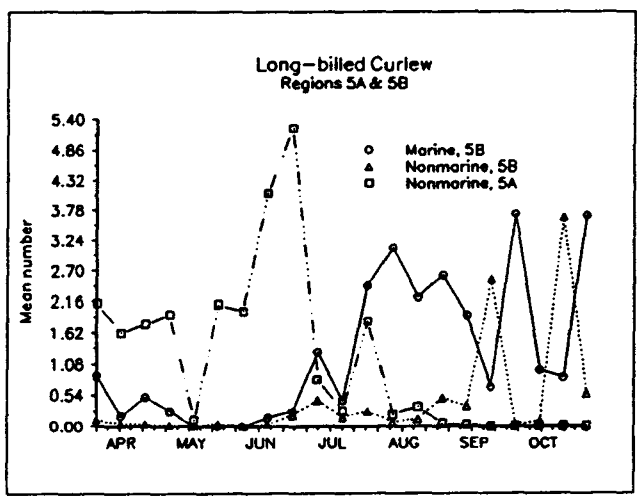

Long-billed Curlew
Region 1
Mean number
Marine
Nonmarine
APR MAY JUN JUL AUG SEP OCT

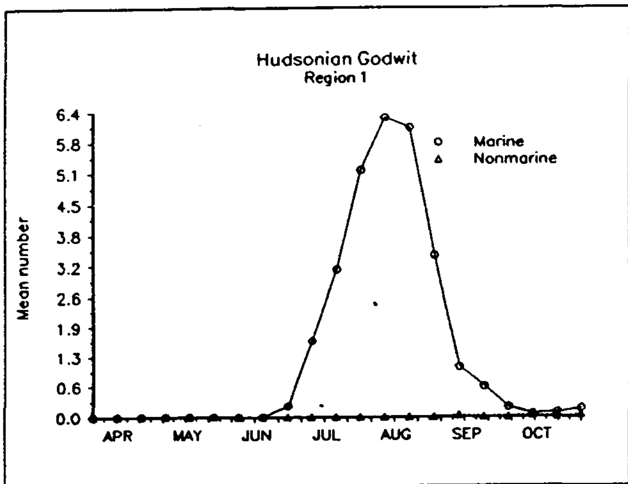

Long-billed Curlew
Region 3B
Mean number
Marine
Nonmarine
APR MAY JUN JUL AUG SEP OCT

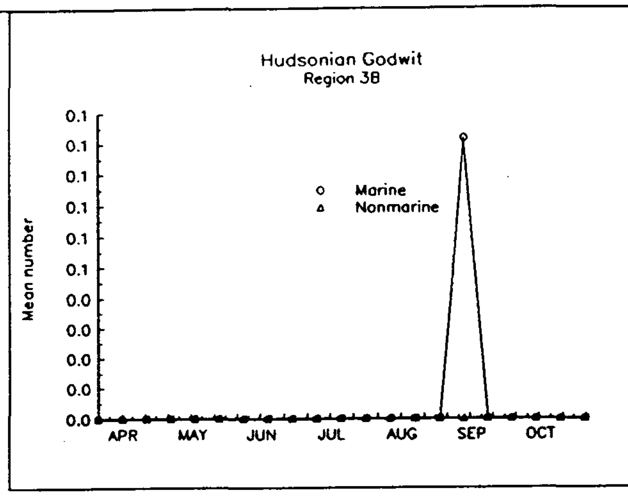

Long-billed Curlew
Region 2
Mean number
Marine
Nonmarine
APR MAY JUN JUL AUG SEP OCT

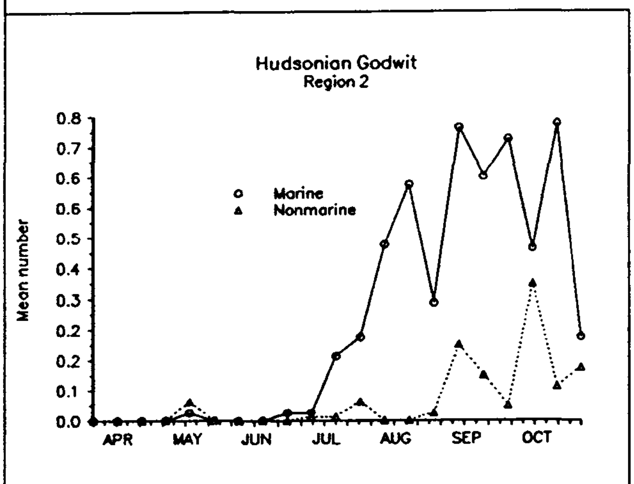

Long-billed Curlew
Regions 4A & 4B
Mean number
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
APR MAY JUN JUL AUG SEP OCT

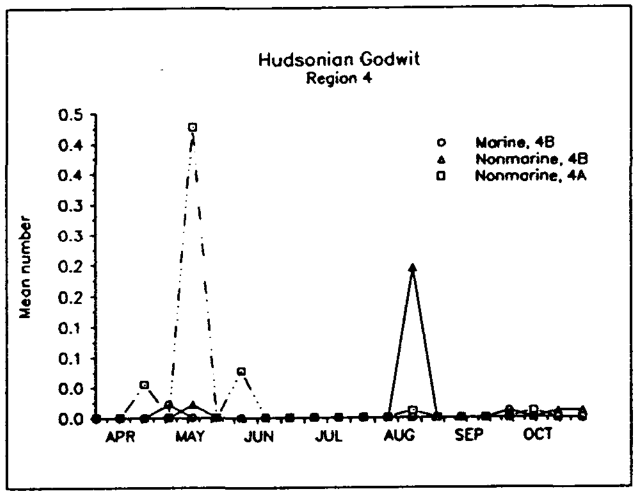

Long-billed Curlew
Region 3A
Mean number
Marine
Nonmarine
APR MAY JUN JUL AUG SEP OCT

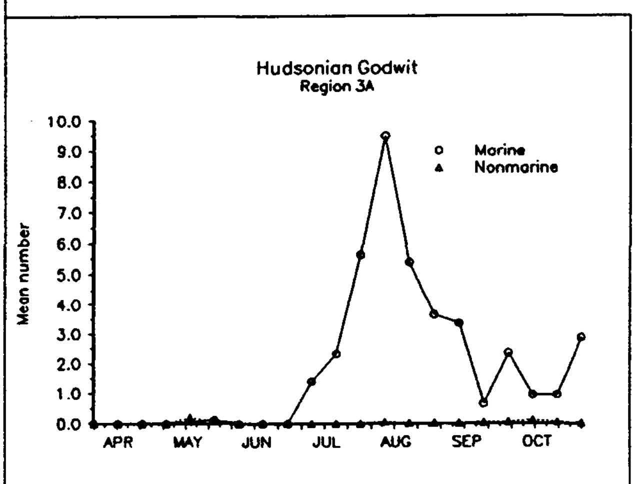

Long-billed Curlew
Regions 5A & 5B
Mean number
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
APR MAY JUN JUL AUG SEP OCT

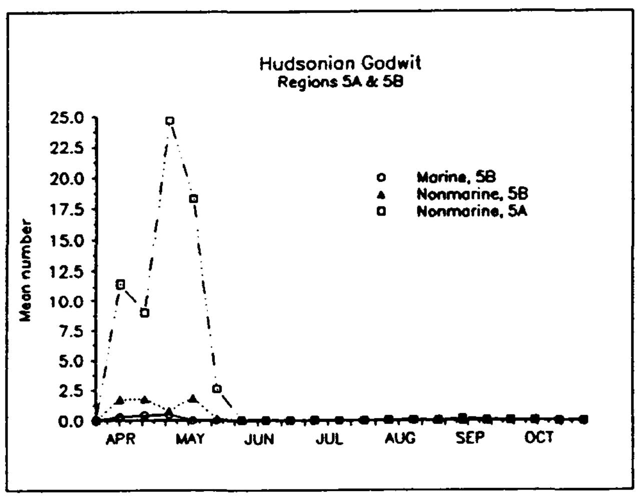

Hudsonian Godwit
Region 1
Marine
Nonmarine
Mean number
6.4
5.8
5.1
4.5
3.8
3.2
2.6
1.9
1.3
0.6
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

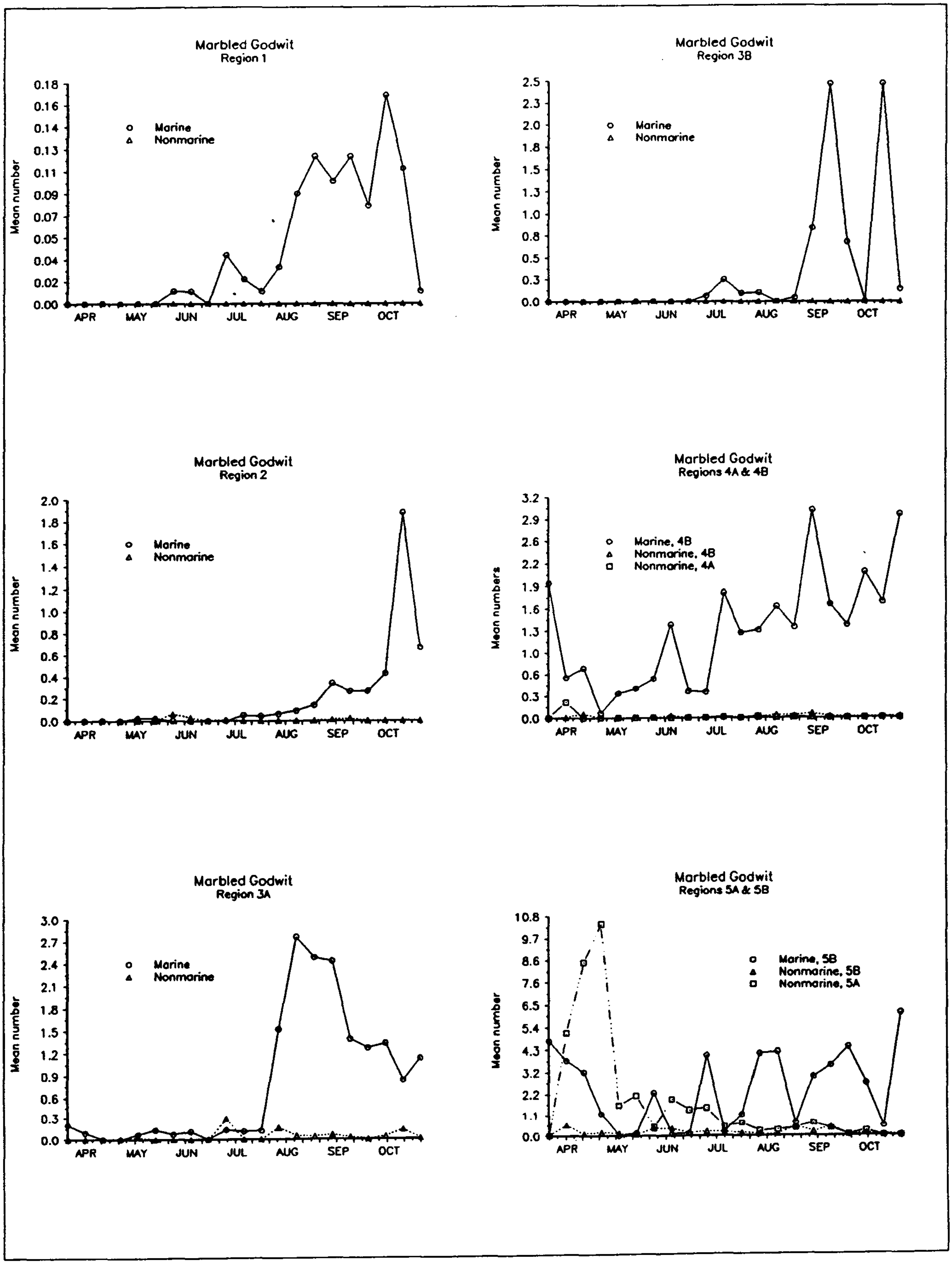

Hudsonian Godwit
Region 3B
Marine
Nonmarine
Mean number
0.1
0.1
0.1
0.1
0.1
0.1
0.0
0.0
0.0
0.0
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

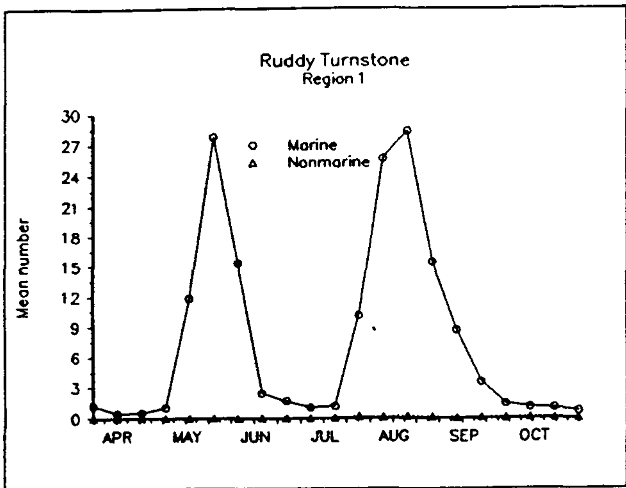

Hudsonian Godwit
Region 2
Marine
Nonmarine
Mean number
0.8
0.7
0.6
0.6
0.5
0.4
0.3
0.2
0.2
0.1
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

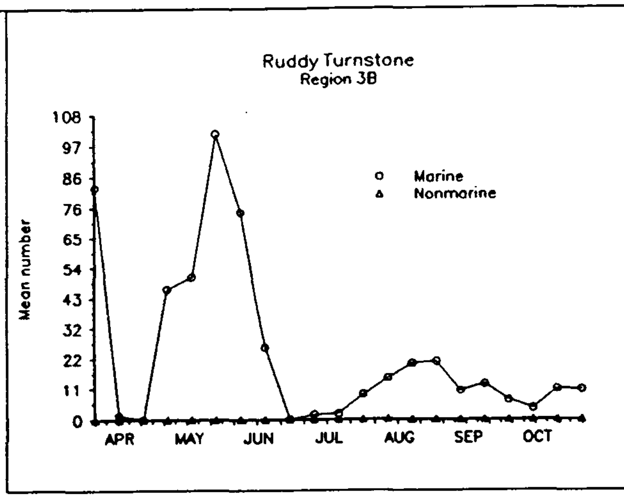

Hudsonian Godwit
Region 4
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
0.5
0.4
0.4
0.3
0.3
0.2
0.2
0.1
0.1
0.0
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

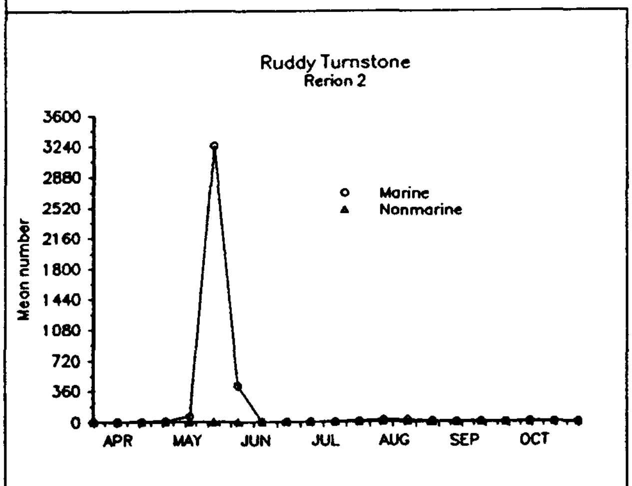

Hudsonian Godwit
Region 3A
Marine
Nonmarine
Mean number
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

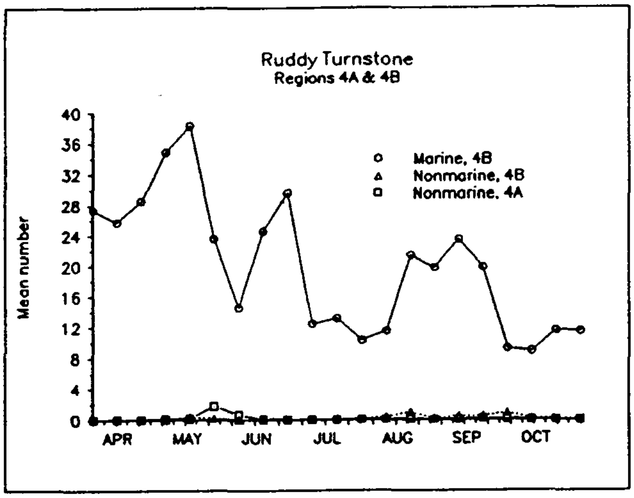

Hudsonian Godwit
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
25.0
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

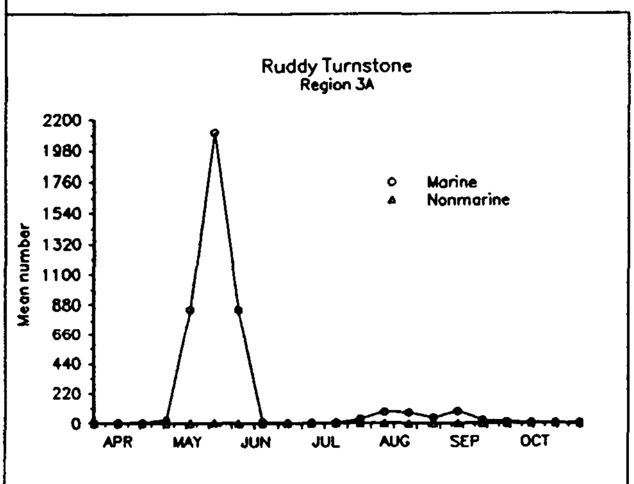

Marbled Godwit
Region 1
Marine
Nonmarine
Mean number
0.18
0.16
0.14
0.13
0.11
0.09
0.07
0.05
0.04
0.02
0.00
APR
MAY
JUN
JUL
AUG
SEP
OCT
Marbled Godwit
Region 3B
Marine
Nonmarine
Mean number
2.5
2.3
2.0
1.8
1.5
1.3
1.0
0.8
0.5
0.3
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT
Marbled Godwit
Region 2
Marine
Nonmarine
Mean number
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT
Marbled Godwit
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean numbers
3.2
2.9
2.6
2.2
1.9
1.6
1.3
1.0
0.6
0.3
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT
Marbled Godwit
Region 3A
Marine
Nonmarine
Mean number
3.0
2.7
2.4
2.1
1.8
1.5
1.2
0.9
0.6
0.3
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT
Marbled Godwit
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
10.8
9.7
8.6
7.6
6.5
5.4
4.3
3.2
2.2
1.1
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

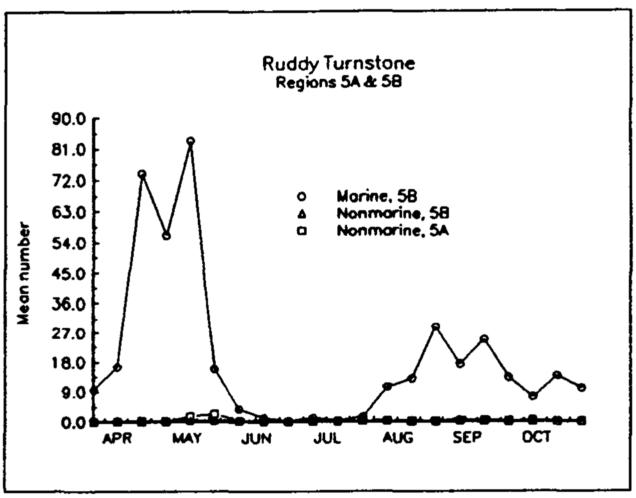

Ruddy Turnstone
Region 1
Marine
Nonmarine
Mean number
30
27
24
21
18
15
12
9
6
3
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

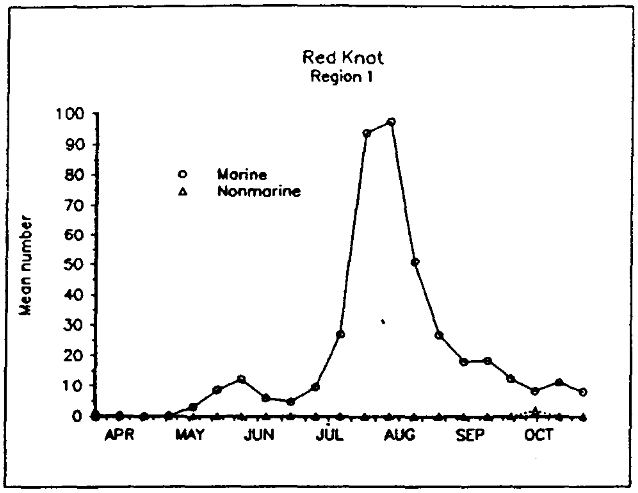

Ruddy Turnstone
Region 3B
Marine
Nonmarine
Mean number
108
97
86
76
65
54
43
32
22
11
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

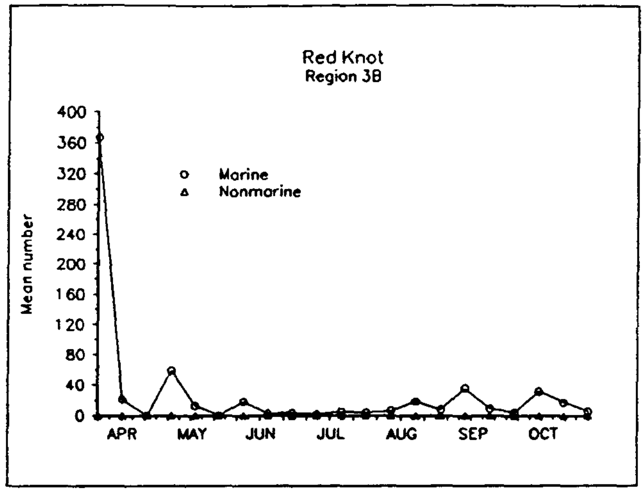

Ruddy Turnstone
Rerion 2
Marine
Nonmarine
Mean number
3600
3240
2880
2520
2160
1800
1440
1080
720
360
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

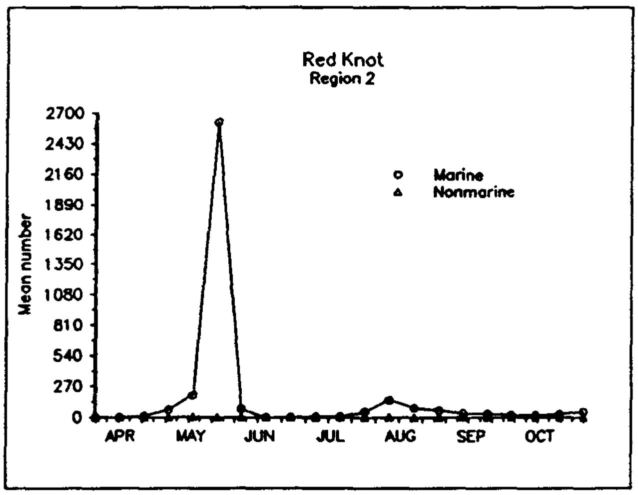

Ruddy Turnstone
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
40
36
32
28
24
20
16
12
8
4
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

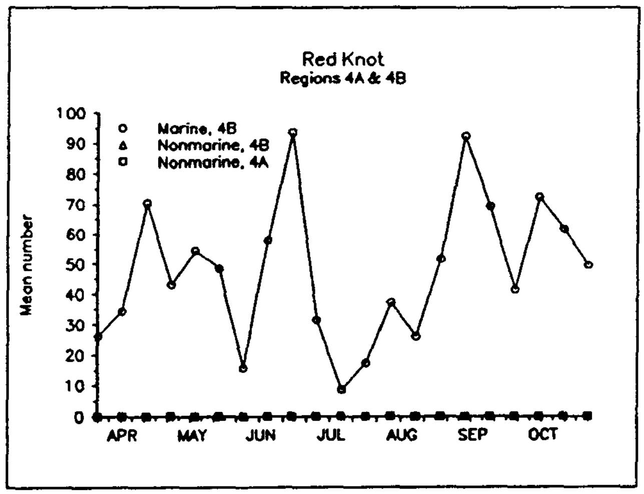

Ruddy Turnstone
Region 3A
Marine
Nonmarine
Mean number
2200
1980
1760
1540
1320
1100
880
660
440
220
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

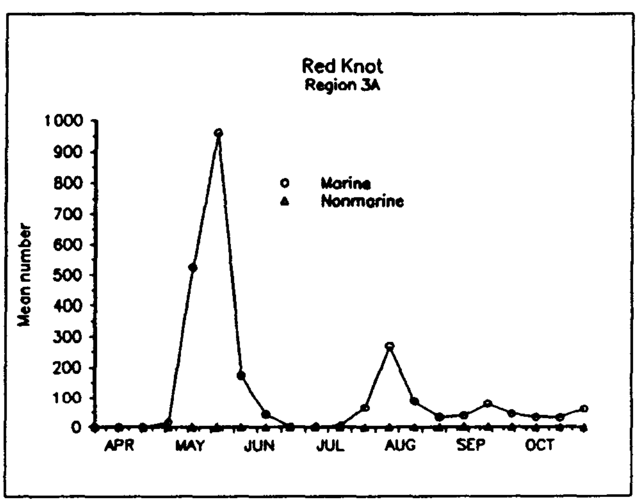

Ruddy Turnstone
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
90.0
81.0
72.0
63.0
54.0
45.0
36.0
27.0
18.0
9.0
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

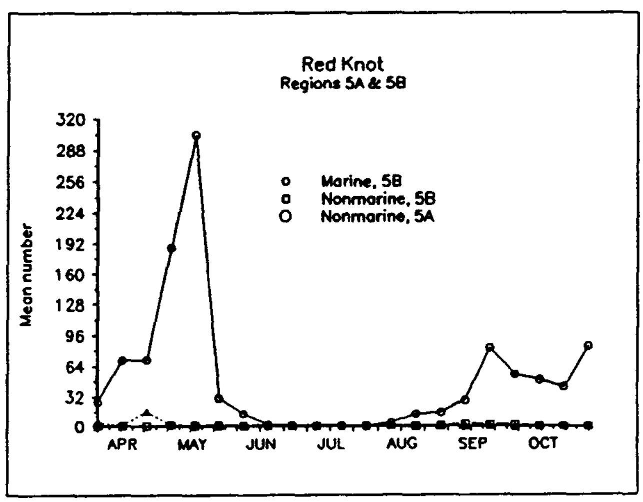

Red Knot
Region 1
Marine
Nonmarine
Mean number
100
90
80
70
60
50
40
30
20
10
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

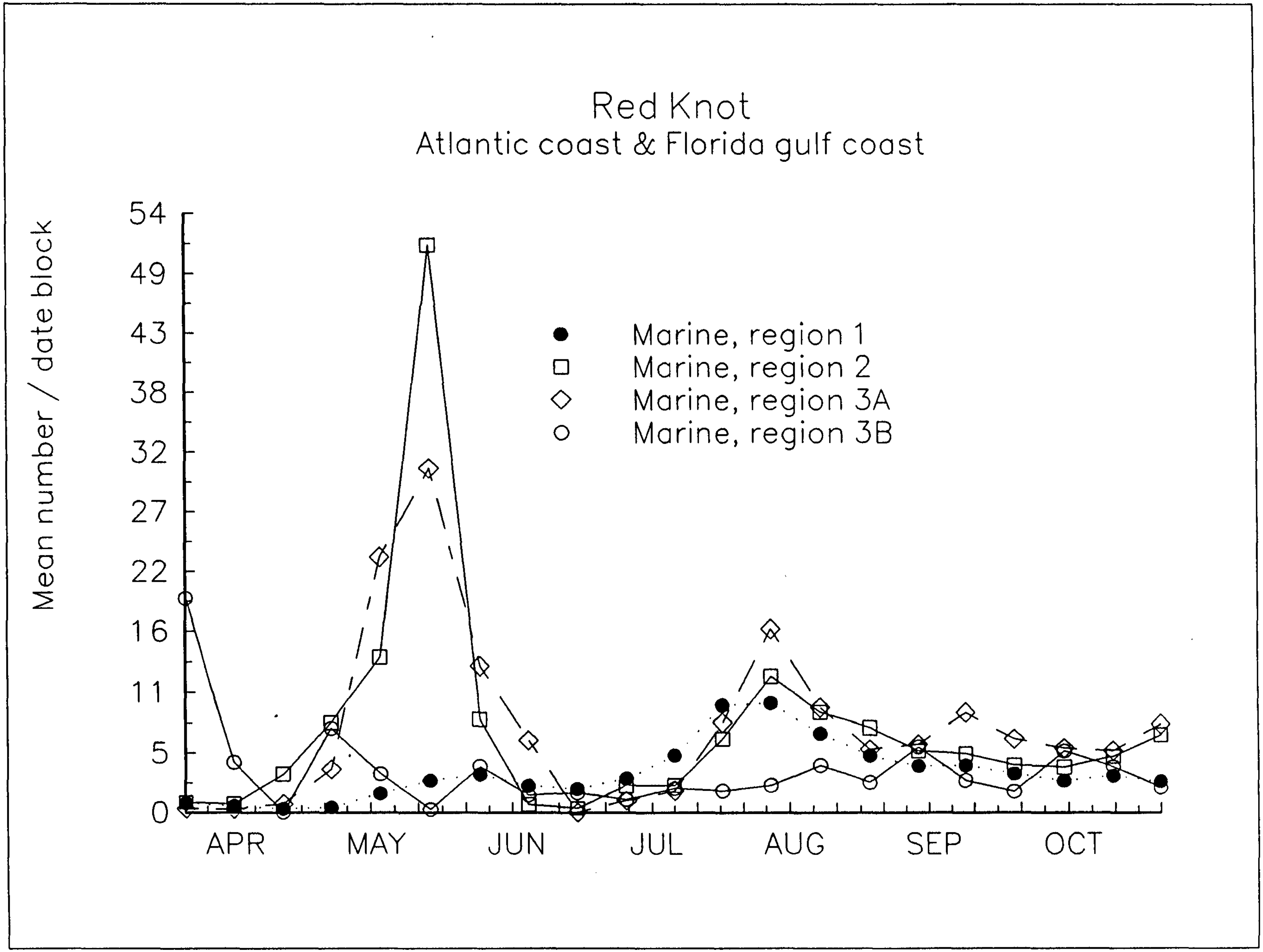

Red Knot
Region 3B
Marine
Nonmarine
Mean number
400
360
320
280
240
200
160
120
80
40
0
APR
MAY
JUN
JUL
AUG
SEP
OCT


Red Knot
Region 2
Marine
Nonmarine
Mean number
2700
2430
2160
1890
1620
1350
1080
810
540
270
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

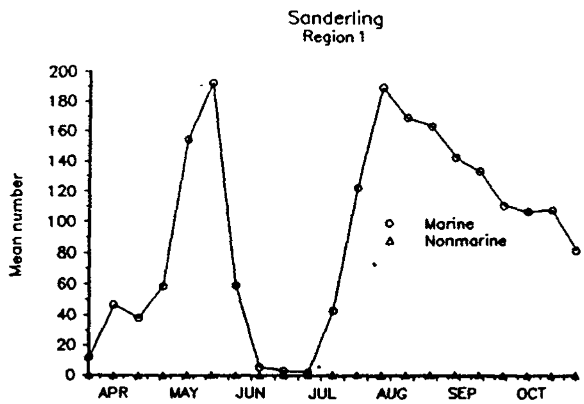

Red Knot
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
100
90
80
70
60
50
40
30
20
10
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

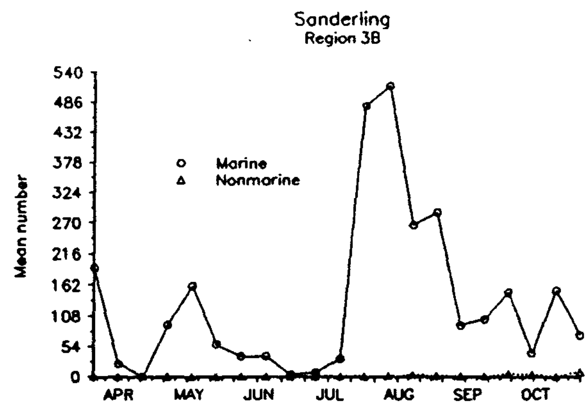

Red Knot
Region 3A
Marine
Nonmarine
Mean number
1000
900
800
700
600
500
400
300
200
100
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

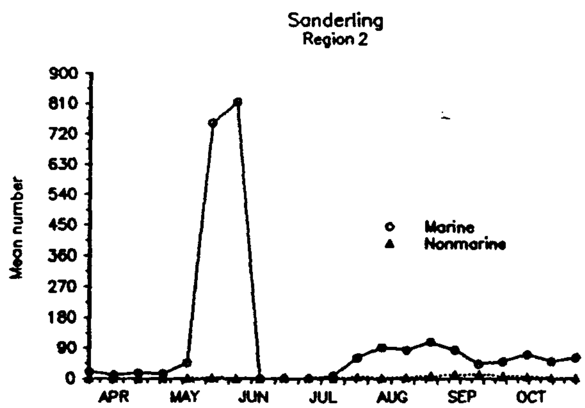

Red Knot
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
320
288
256
224
192
160
128
96
64
32
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

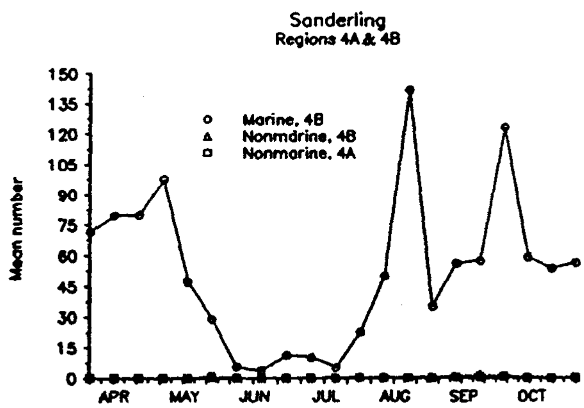


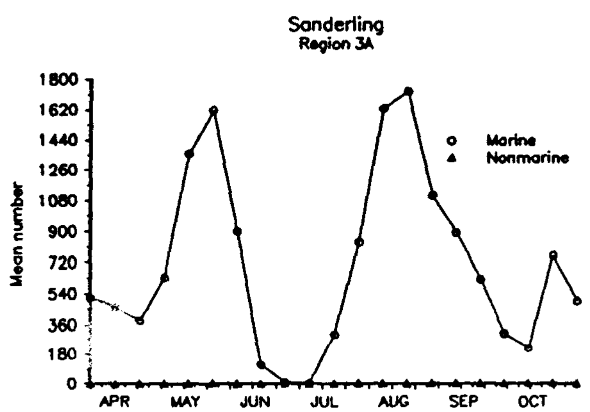
Red Knot
Atlantic coast & Florida gulf coast
Mean number / date block
54
49
43
38
32
27
22
16
11
5
0
APR
MAY
JUN
JUL
AUG
SEP
OCT
Marine, region 1
Marine, region 2
Marine, region 3A
Marine, region 3B

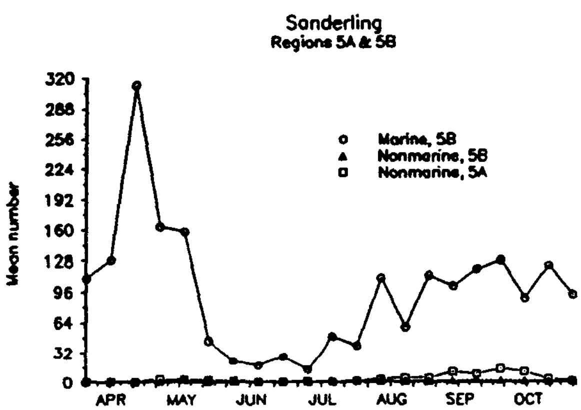

Sanderling
Region 1
Marine
Nonmarine
Mean number
200
180
160
140
120
100
80
60
40
20
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

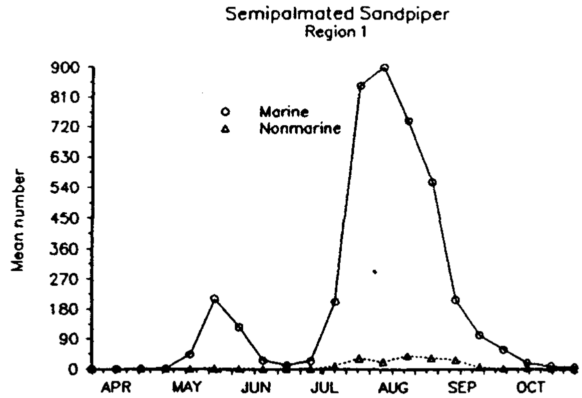

Sanderling
Region 3B
Marine
Nonmarine
Mean number
540
486
432
378
324
270
216
162
108
54
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

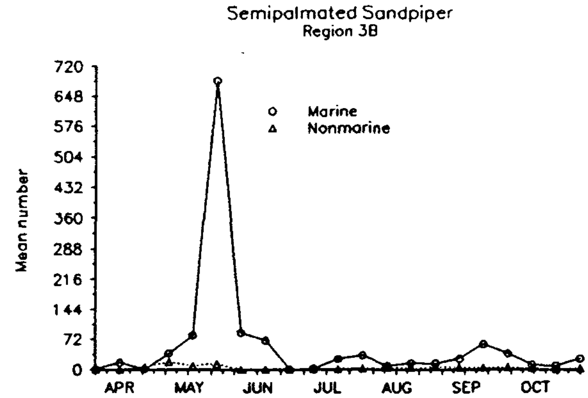

Sanderling
Region 2
Marine
Nonmarine
Mean number
900
810
720
630
540
450
360
270
180
90
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

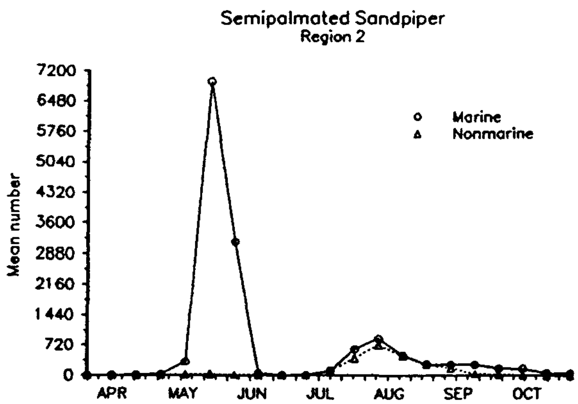

Sanderling
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
150
135
120
105
90
75
60
45
30
15
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

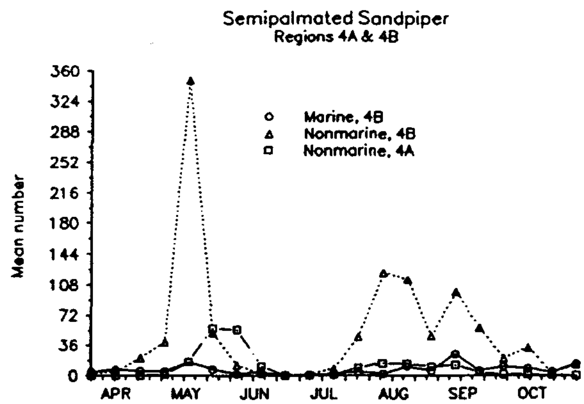

Sanderling
Region 3A
Marine
Nonmarine
Mean number
1800
1620
1440
1260
1080
900
720
540
360
180
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

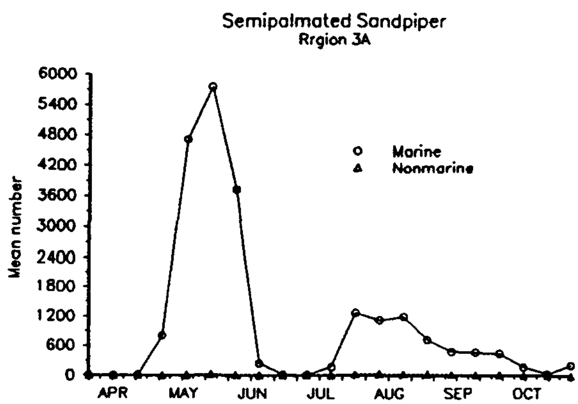

Sanderling
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
320
288
256
224
192
160
128
96
64
32
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

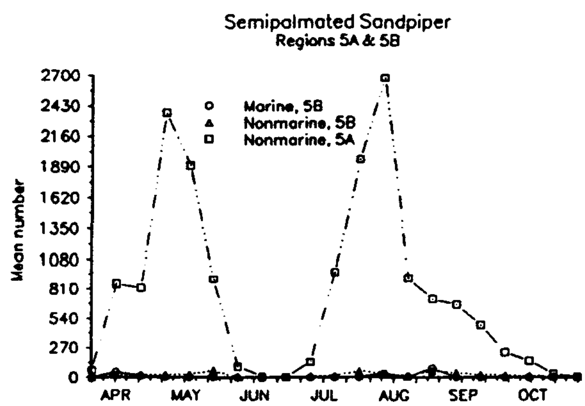

Semipalmated Sandpiper
Region 1
Marine
Nonmarine
Mean number
900 810 720 630 540 450 360 270 180 90 0
APR MAY JUN JUL AUG SEP OCT

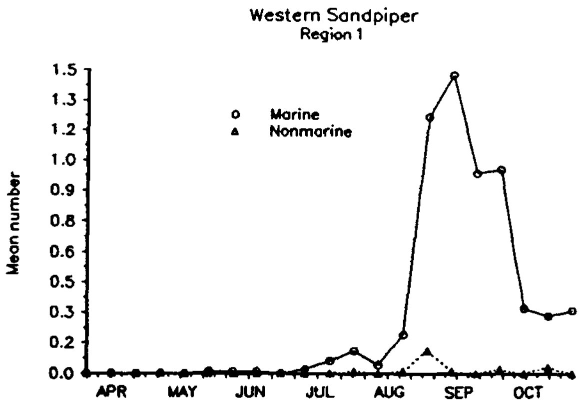

Semipalmated Sandpiper
Region 3B
Marine
Nonmarine
Mean number
720 648 576 504 432 360 288 216 144 72 0
APR MAY JUN JUL AUG SEP OCT

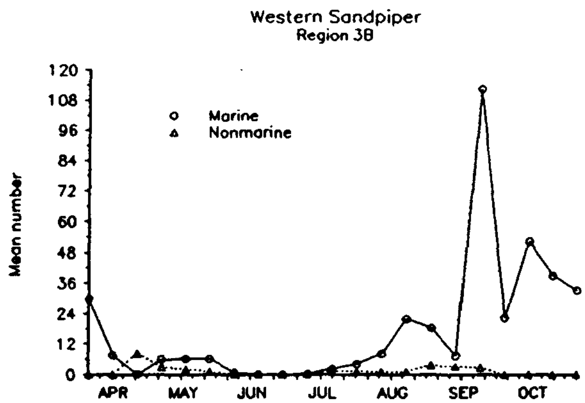

Semipalmated Sandpiper
Region 2
Marine
Nonmarine
Mean number
7200 6480 5760 5040 4320 3600 2880 2160 1440 720 0
APR MAY JUN JUL AUG SEP OCT

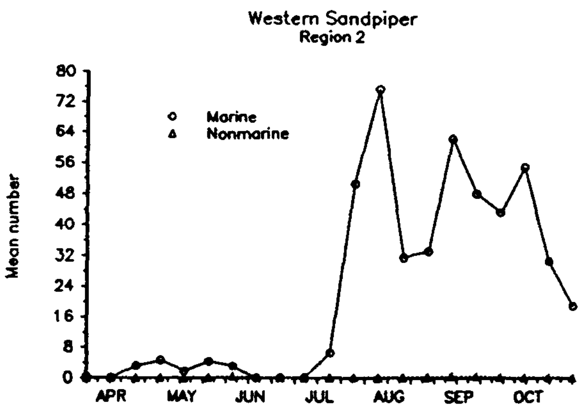

Semipalmated Sandpiper
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
360 324 288 252 216 180 144 108 72 36 0
APR MAY JUN JUL AUG SEP OCT

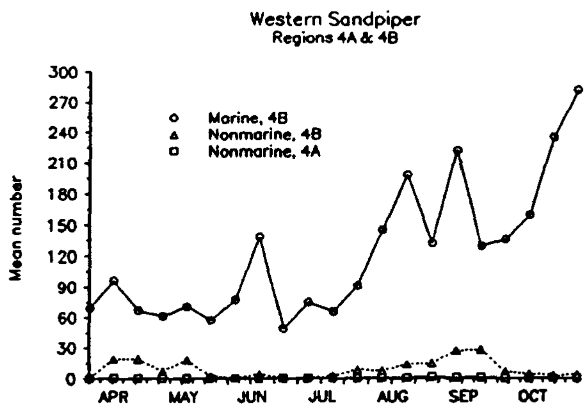

Semipalmated Sandpiper
Rrgion 3A
Marine
Nonmarine
Mean number
6000 5400 4800 4200 3600 3000 2400 1800 1200 600 0
APR MAY JUN JUL AUG SEP OCT

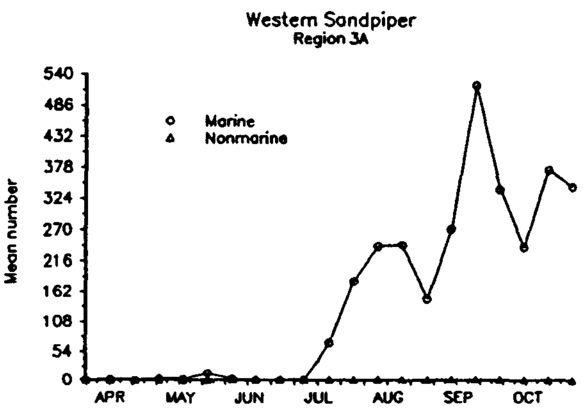

Semipalmated Sandpiper
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
2700 2430 2160 1890 1620 1350 1080 810 540 270 0
APR MAY JUN JUL AUG SEP OCT

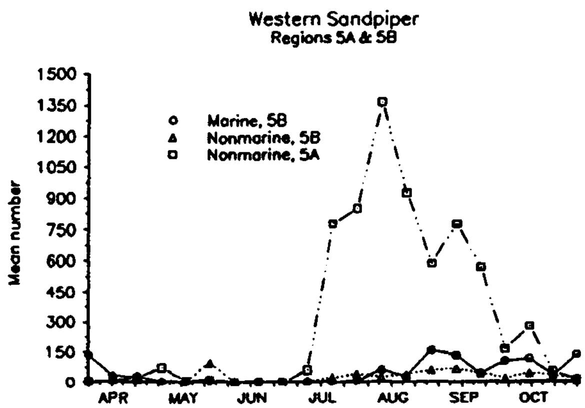

Western Sandpiper
Region 1
Marine
Nonmarine
Mean number
1.5
1.3
1.2
1.0
0.9
0.8
0.6
0.5
0.3
0.2
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

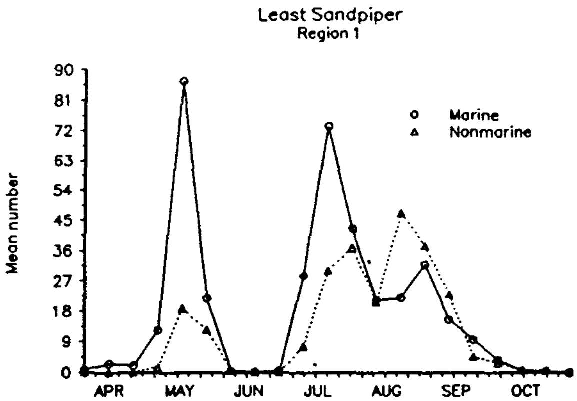

Western Sandpiper
Region 3B
Marine
Nonmarine
Mean number
120
108
96
84
72
60
48
36
24
12
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

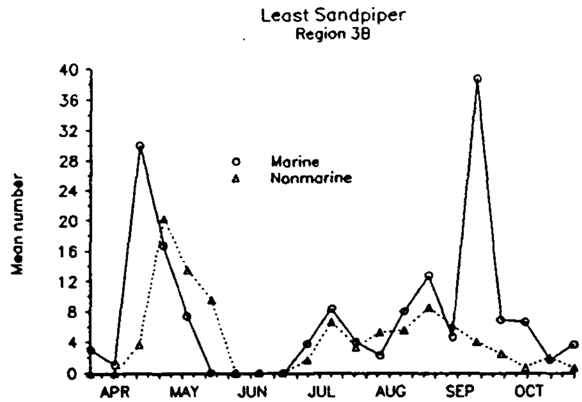

Western Sandpiper
Region 2
Marine
Nonmarine
Mean number
80
72
64
56
48
40
32
24
16
8
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

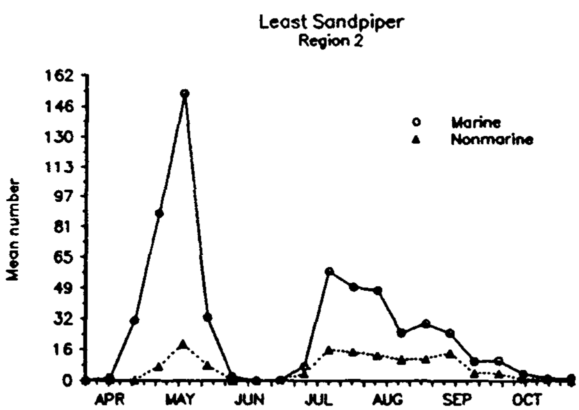

Western Sandpiper
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
300
270
240
210
180
150
120
90
60
30
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

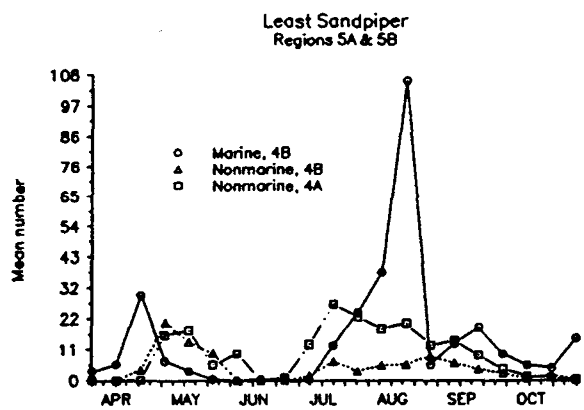

Western Sandpiper
Region 3A
Marine
Nonmarine
Mean number
540
486
432
378
324
270
216
162
108
54
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

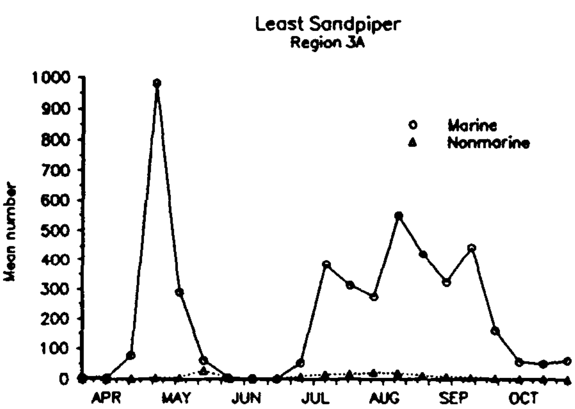

Western Sandpiper
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
1500
1350
1200
1050
900
750
600
450
300
150
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

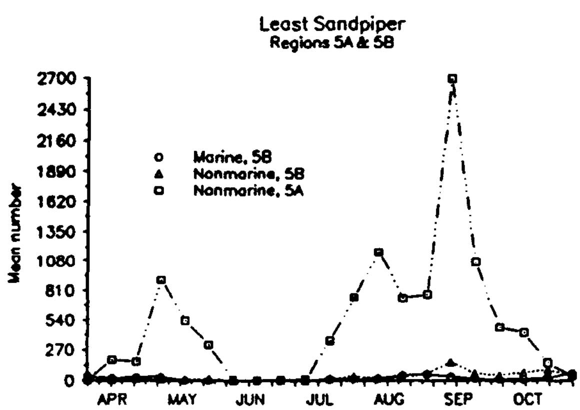

Least Sandpiper
Region 1
Marine
Nonmarine
Mean number
0 9 18 27 36 45 54 63 72 81 90
APR MAY JUN JUL AUG SEP OCT

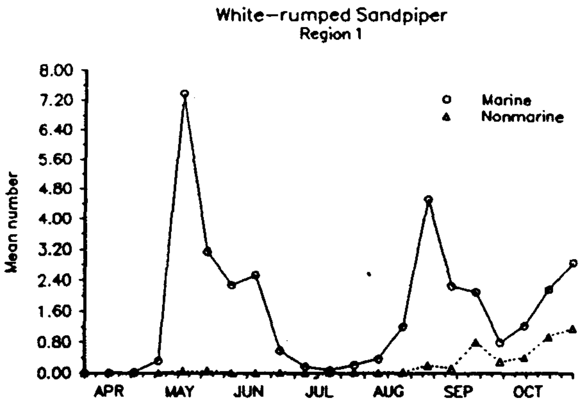

Least Sandpiper
Region 3B
Marine
Nonmarine
Mean number
0 4 8 12 16 20 24 28 32 36 40
APR MAY JUN JUL AUG SEP OCT

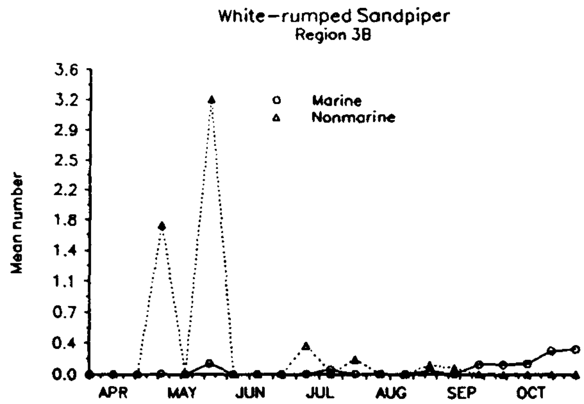

Least Sandpiper
Region 2
Marine
Nonmarine
Mean number
0 16 32 49 65 81 97 113 130 146 162
APR MAY JUN JUL AUG SEP OCT

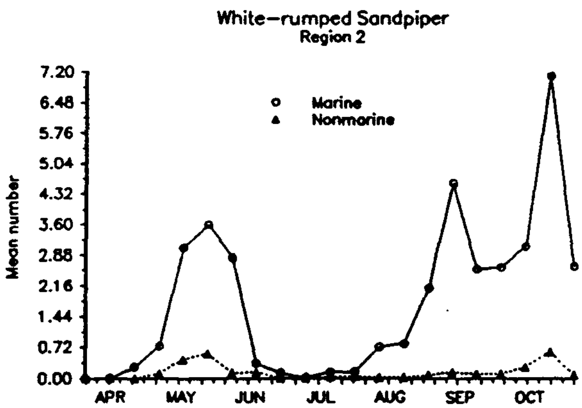

Least Sandpiper
Regions 5A & 5B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
0 11 22 32 43 54 65 76 86 97 108
APR MAY JUN JUL AUG SEP OCT

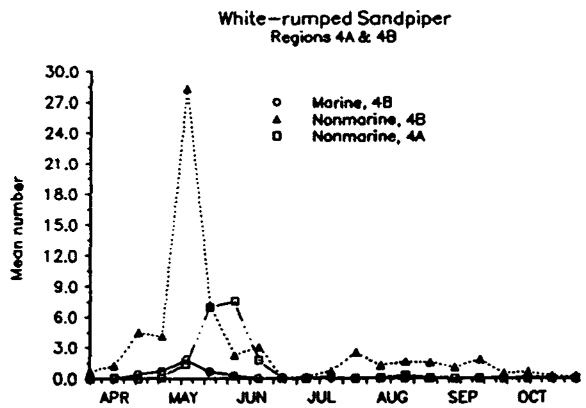

Least Sandpiper
Region 3A
Marine
Nonmarine
Mean number
0 100 200 300 400 500 600 700 800 900 1000
APR MAY JUN JUL AUG SEP OCT

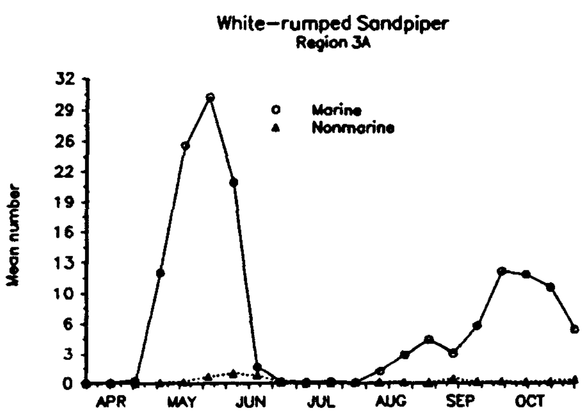

Least Sandpiper
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
0 270 540 810 1080 1350 1620 1890 2160 2430 2700
APR MAY JUN JUL AUG SEP OCT

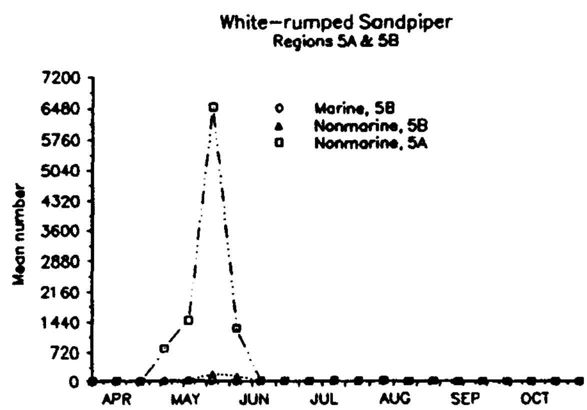

White-rumped Sandpiper
Region 1
Marine
Nonmarine
Mean number
8.00
7.20
6.40
5.60
4.80
4.00
3.20
2.40
1.60
0.80
0.00
APR
MAY
JUN
JUL
AUG
SEP
OCT

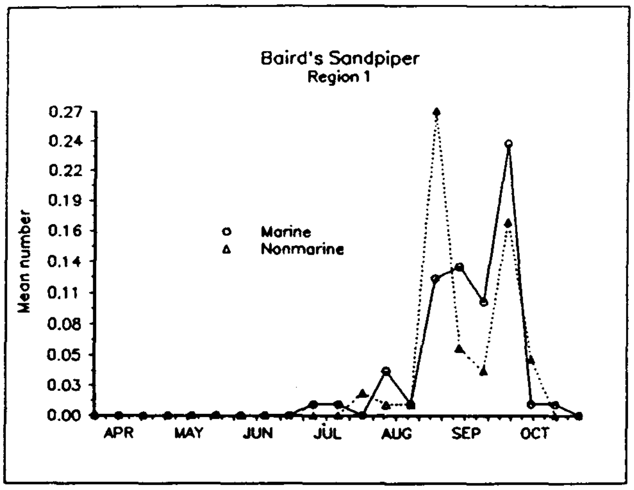

White-rumped Sandpiper
Region 3B
Marine
Nonmarine
Mean number
3.6
3.2
2.9
2.5
2.2
1.8
1.4
1.1
0.7
0.4
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

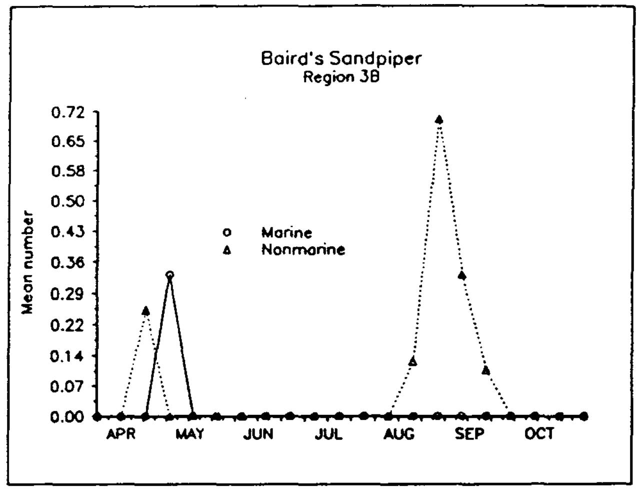

White-rumped Sandpiper
Region 2
Marine
Nonmarine
Mean number
7.20
6.48
5.76
5.04
4.32
3.60
2.88
2.16
1.44
0.72
0.00
APR
MAY
JUN
JUL
AUG
SEP
OCT

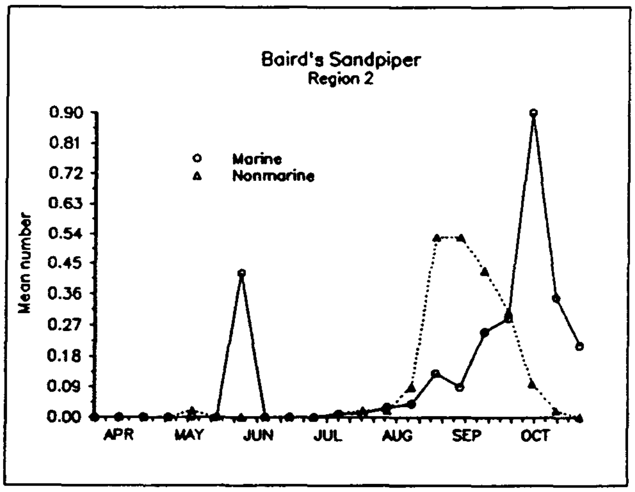

White-rumped Sandpiper
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
30.0
27.0
24.0
21.0
18.0
15.0
12.0
9.0
6.0
3.0
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

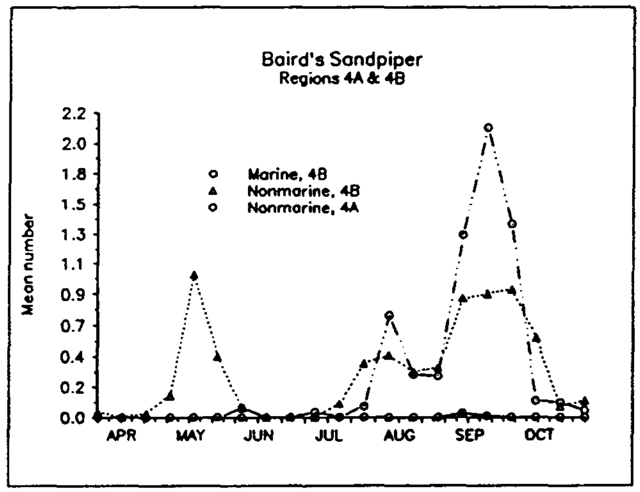

White-rumped Sandpiper
Region 3A
Marine
Nonmarine
Mean number
32
29
26
22
19
16
13
10
6
3
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

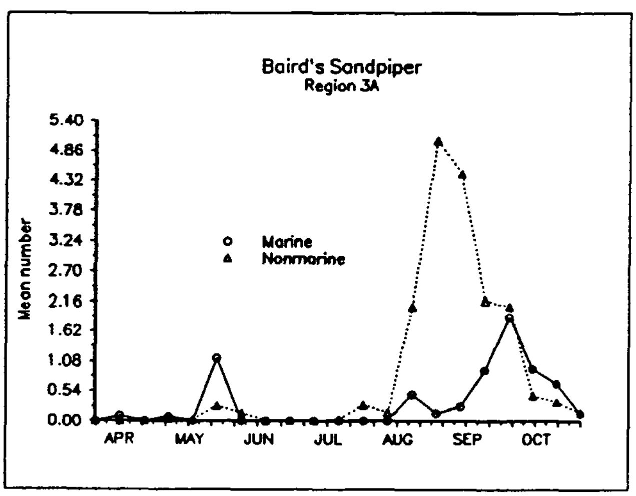

White-rumped Sandpiper
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
7200
6480
5760
5040
4320
3600
2880
2160
1440
720
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

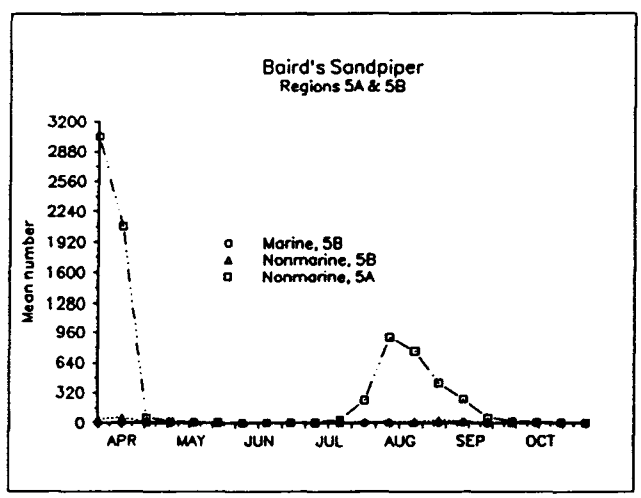

Baird's Sandpiper
Region 1
Mean number
0.27
0.24
0.22
0.19
0.16
0.14
0.11
0.08
0.05
0.03
0.00
Marine
Nonmarine
APR
MAY
JUN
JUL
AUG
SEP
OCT

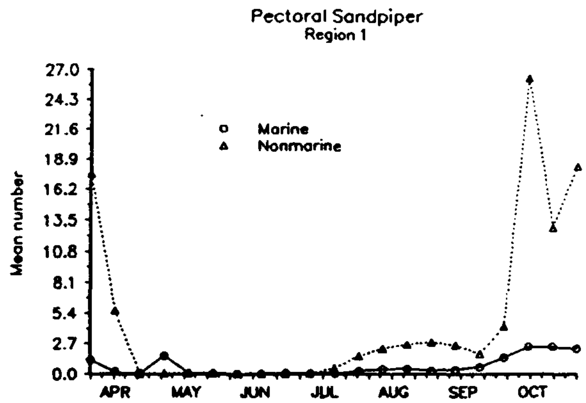

Baird's Sandpiper
Region 3B
Mean number
0.72
0.65
0.58
0.50
0.43
0.36
0.29
0.22
0.14
0.07
0.00
Marine
Nonmarine
APR
MAY
JUN
JUL
AUG
SEP
OCT

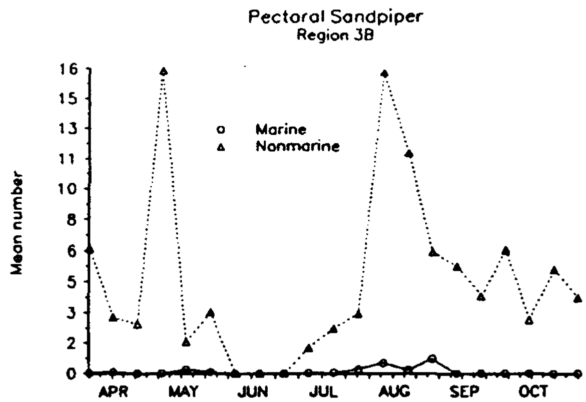

Baird's Sandpiper
Region 2
Mean number
0.90
0.81
0.72
0.63
0.54
0.45
0.36
0.27
0.18
0.09
0.00
Marine
Nonmarine
APR
MAY
JUN
JUL
AUG
SEP
OCT

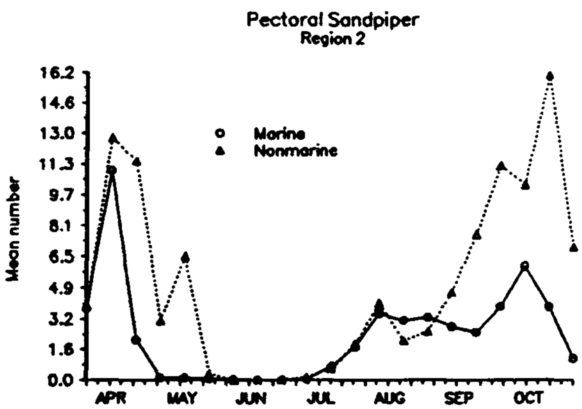

Baird's Sandpiper
Regions 4A & 4B
Mean number
2.2
2.0
1.8
1.5
1.3
1.1
0.9
0.7
0.4
0.2
0.0
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
APR
MAY
JUN
JUL
AUG
SEP
OCT

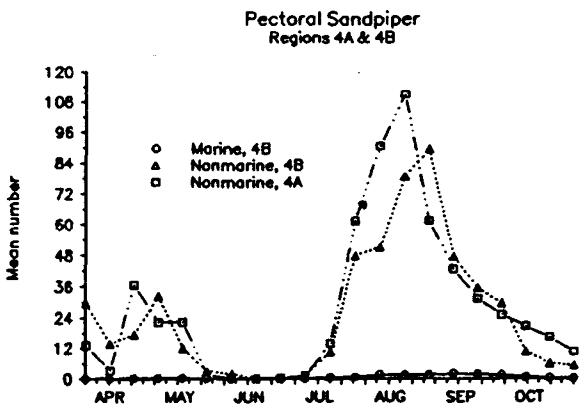

Baird's Sandpiper
Region 3A
Mean number
5.40
4.86
4.32
3.78
3.24
2.70
2.16
1.62
1.08
0.54
0.00
Marine
Nonmarine
APR
MAY
JUN
JUL
AUG
SEP
OCT

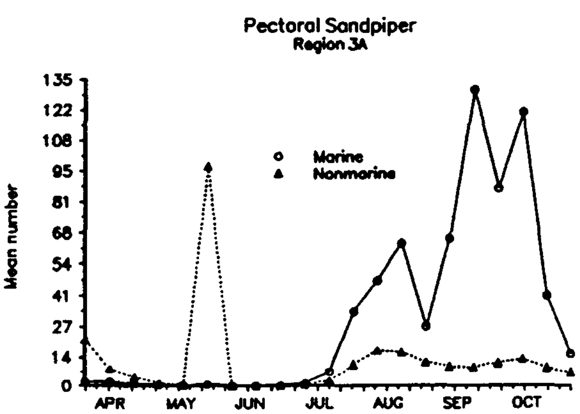

Baird's Sandpiper
Regions 5A & 5B
Mean number
3200
2880
2560
2240
1920
1600
1280
960
640
320
0
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
APR
MAY
JUN
JUL
AUG
SEP
OCT

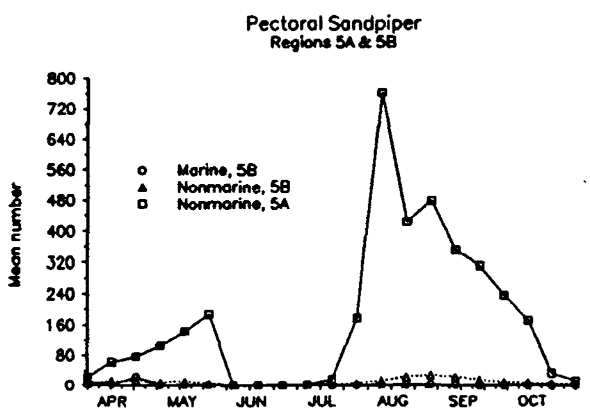

Pectoral Sandpiper
Region 1
Marine
Nonmarine
Mean number
27.0
24.3
21.6
18.9
16.2
13.5
10.8
8.1
5.4
2.7
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

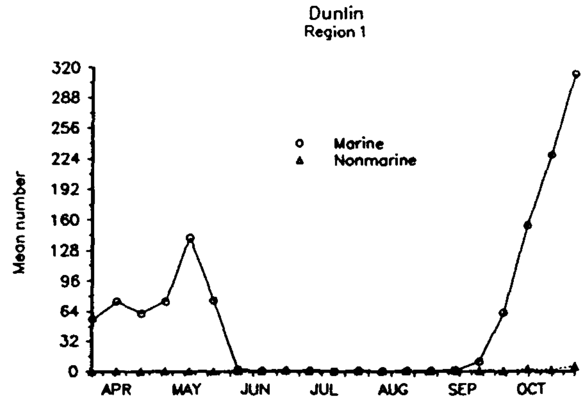

Pectoral Sandpiper
Region 3B
Marine
Nonmarine
Mean number
APR
MAY
JUN
JUL
AUG
SEP
OCT

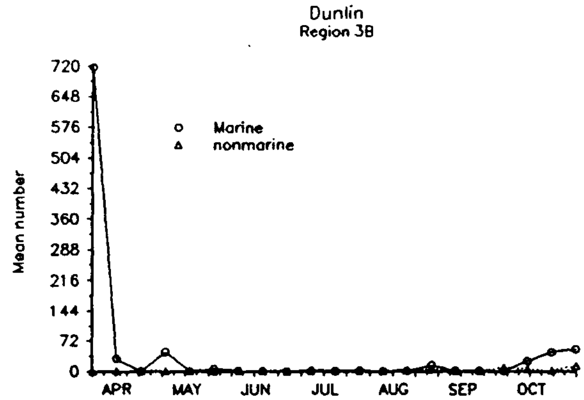

Pectoral Sandpiper
Region 2
Marine
Nonmarine
Mean number
16.2
14.6
13.0
11.3
9.7
8.1
6.5
4.9
3.2
1.6
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

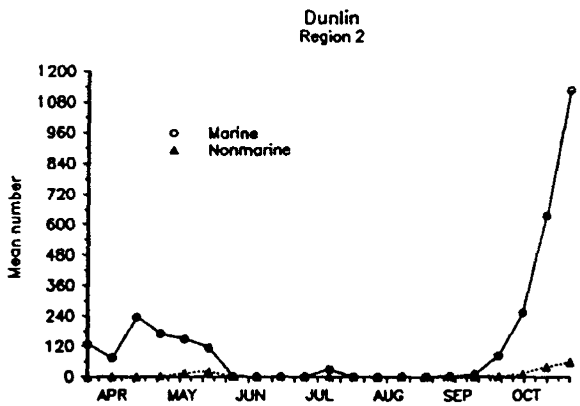

Pectoral Sandpiper
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
120
108
96
84
72
60
48
36
24
12
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

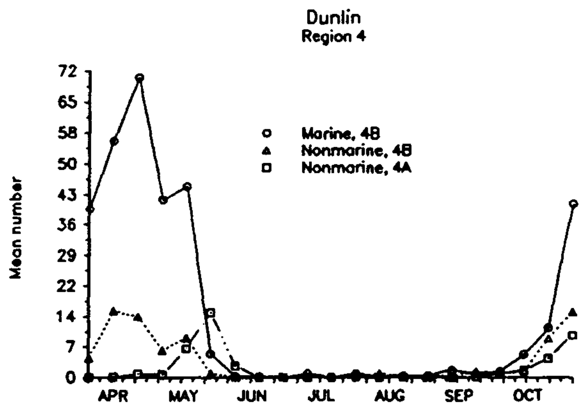

Pectoral Sandpiper
Region 3A
Marine
Nonmarine
Mean number
135
122
108
95
81
68
54
41
27
14
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

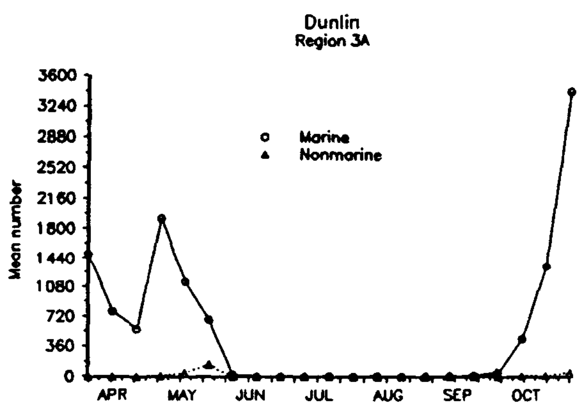

Pectoral Sandpiper
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
800
720
640
560
480
400
320
240
160
80
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

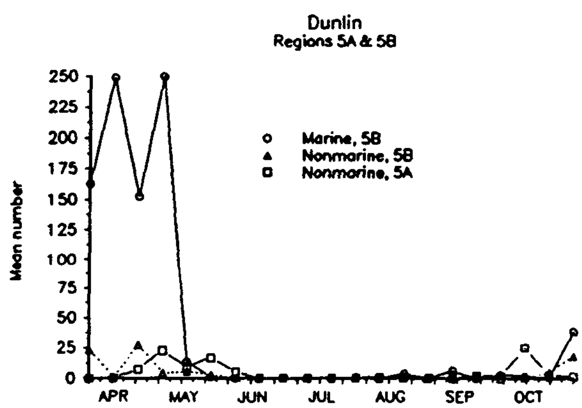

Dunlin
Region 1
Marine
Nonmarine
Mean number
320
288
256
224
192
160
128
96
64
32
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

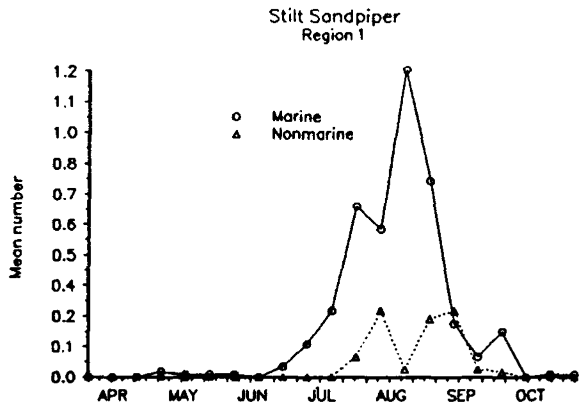

Dunlin
Region 3B
Marine
nonmarine
Mean number
720
648
576
504
432
360
288
216
144
72
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

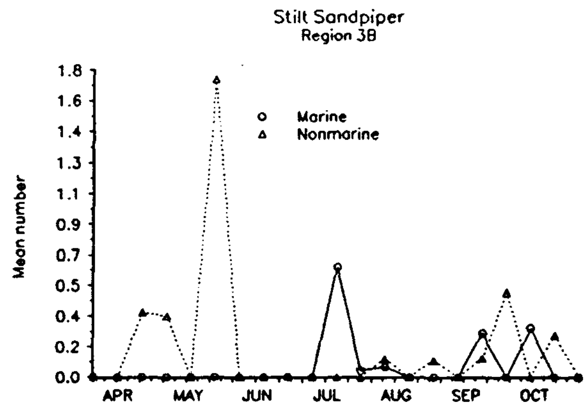

Dunlin
Region 2
Marine
Nonmarine
Mean number
1200
1080
960
840
720
600
480
360
240
120
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

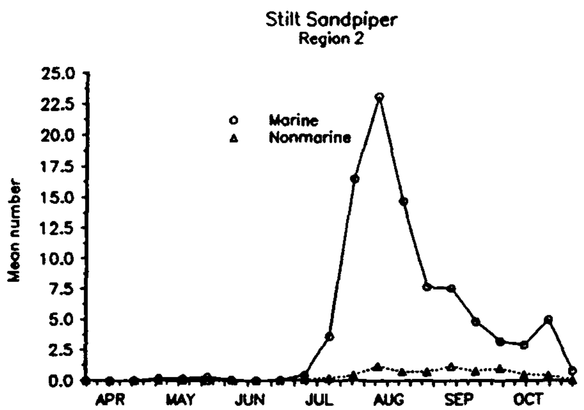

Dunlin
Region 4
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
72
65
58
50
43
36
29
22
14
7
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

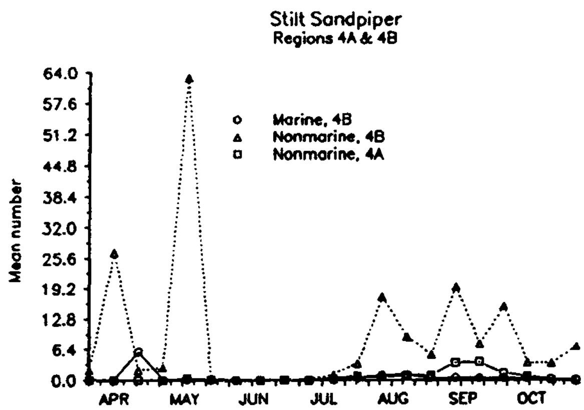

Dunlin
Region 3A
Marine
Nonmarine
Mean number
3600
3240
2880
2520
2160
1800
1440
1080
720
360
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

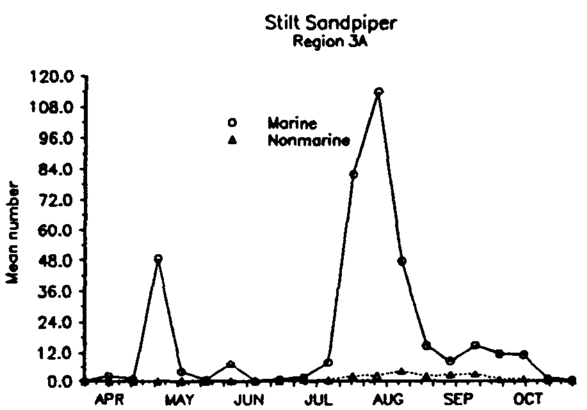

Dunlin
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
250
225
200
175
150
125
100
75
50
25
0
APR
MAY
JUN
JUL
AUG
SEP
OCT

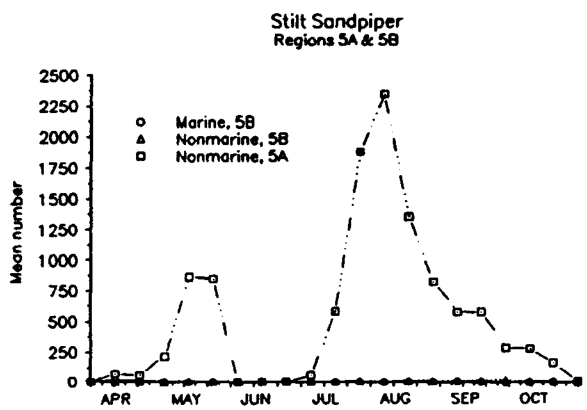

Stilt Sandpiper
Region 1
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

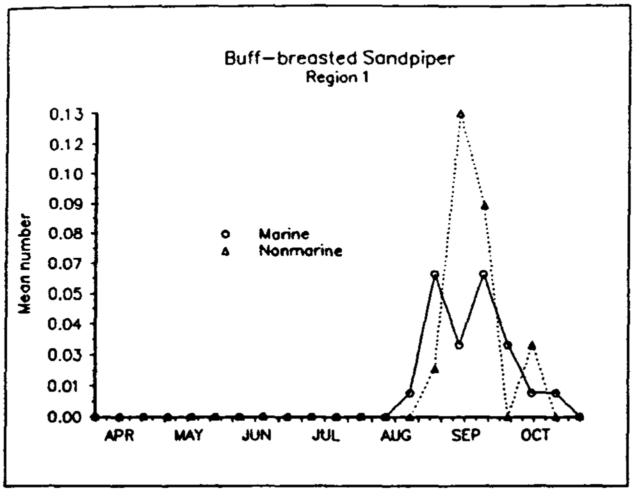

Stilt Sandpiper
Region 3B
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT


Stilt Sandpiper
Region 2
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

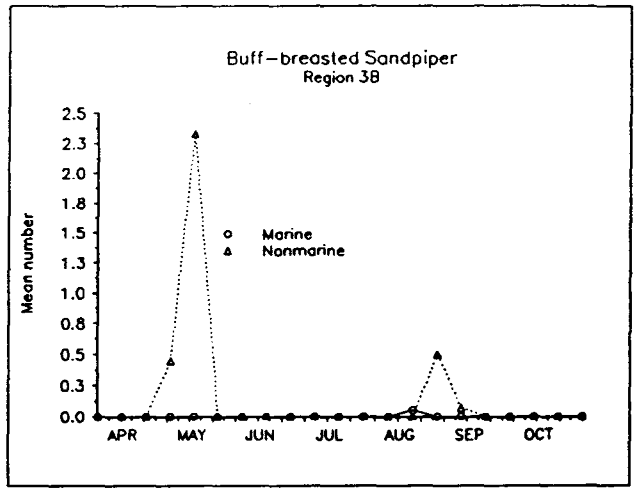

Stilt Sandpiper
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
APR MAY JUN JUL AUG SEP OCT


Stilt Sandpiper
Region 3A
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

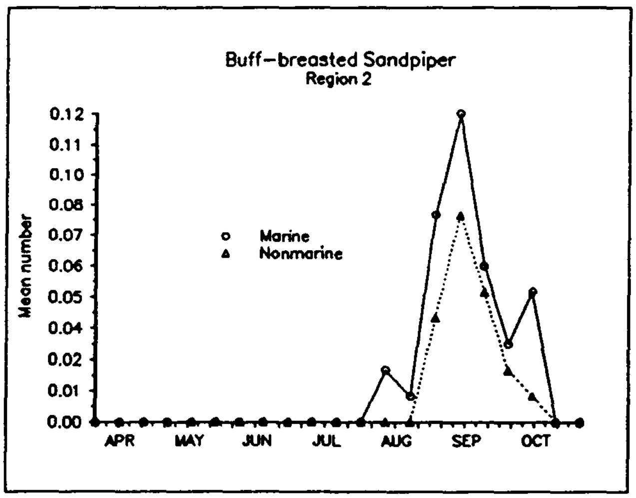

Stilt Sandpiper
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
APR MAY JUN JUL AUG SEP OCT



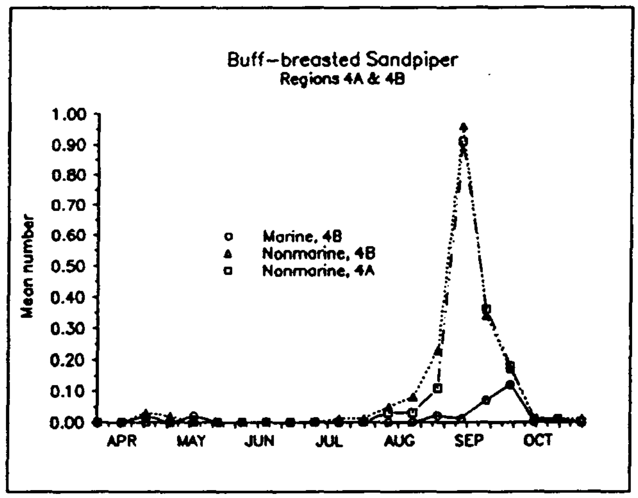
Buff-breasted Sandpiper
Region 1
Mean number
Marine
Nonmarine
0.13
0.12
0.10
0.09
0.08
0.07
0.05
0.04
0.03
0.01
0.00
APR
MAY
JUN
JUL
AUG
SEP
OCT



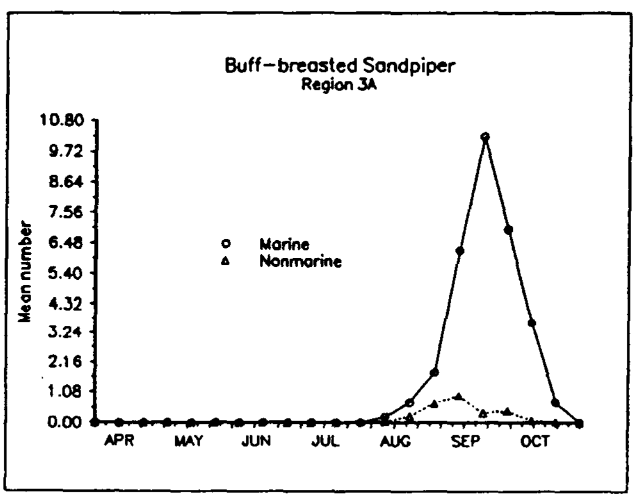
Buff-breasted Sandpiper
Region 3B
Mean number
Marine
Nonmarine
2.5
2.3
2.0
1.8
1.5
1.3
1.0
0.8
0.5
0.3
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT



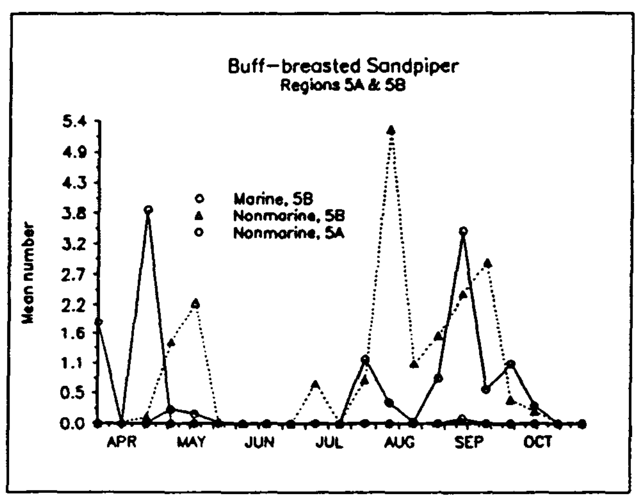
Buff-breasted Sandpiper
Region 2
Mean number
Marine
Nonmarine
0.12
0.11
0.10
0.08
0.07
0.06
0.05
0.04
0.02
0.01
0.00
APR
MAY
JUN
JUL
AUG
SEP
OCT



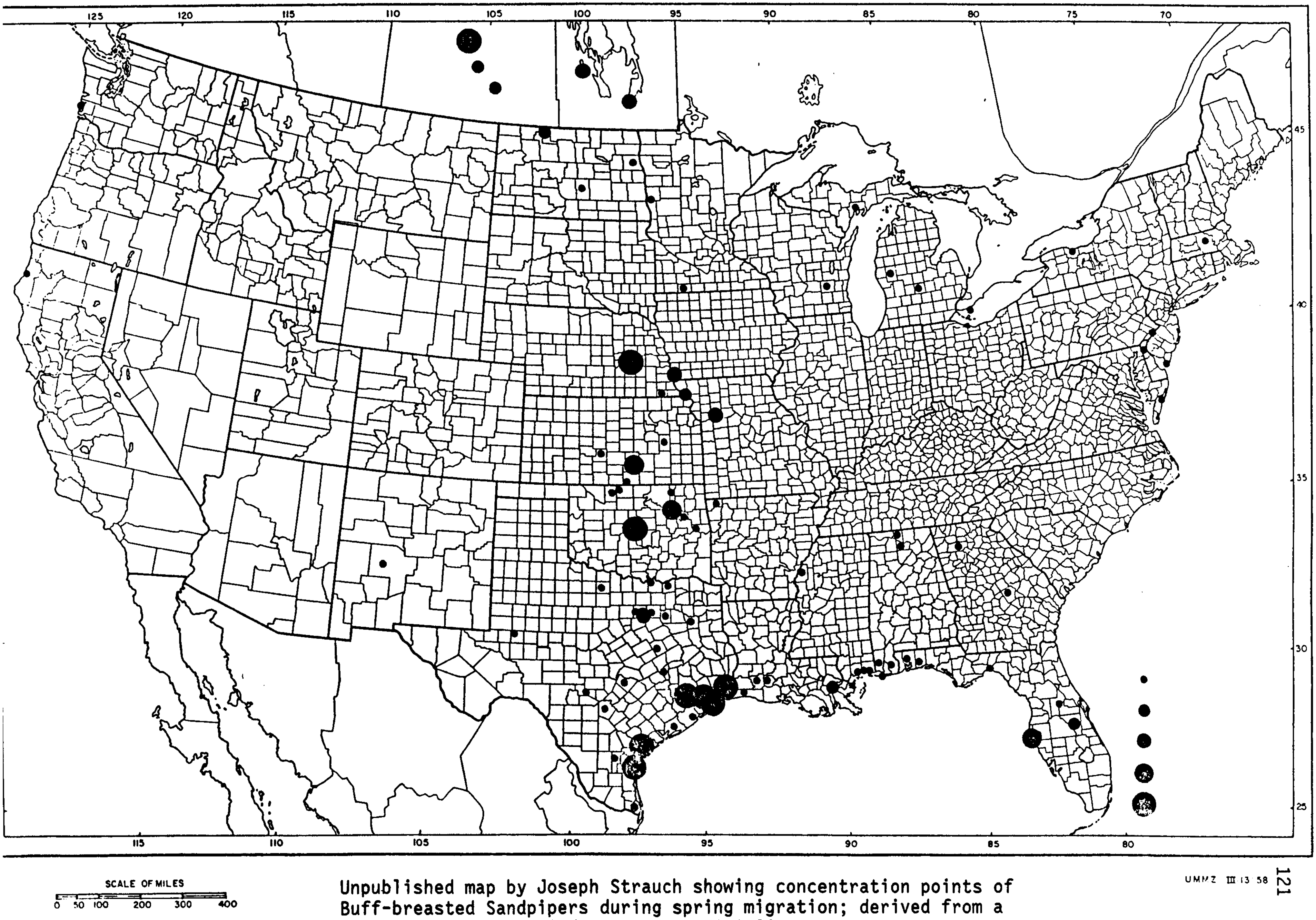
Buff-breasted Sandpiper
Regions 4A & 4B
Mean number
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
APR
MAY
JUN
JUL
AUG
SEP
OCT



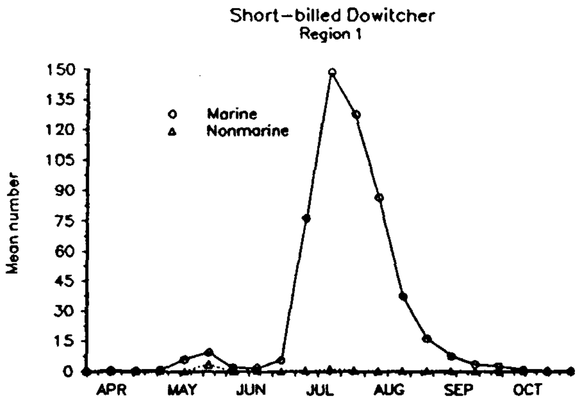
Buff-breasted Sandpiper
Region 3A
Mean number
Marine
Nonmarine
10.80
9.72
8.64
7.56
6.48
5.40
4.32
3.24
2.16
1.08
0.00
APR
MAY
JUN
JUL
AUG
SEP
OCT

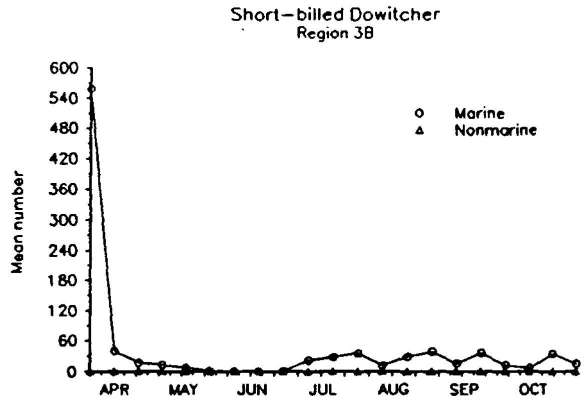


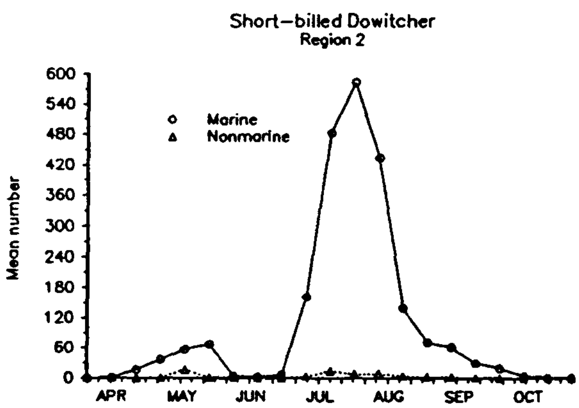
Buff-breasted Sandpiper
Regions 5A & 5B
Mean number
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
5.4
4.9
4.3
3.8
3.2
2.7
2.2
1.6
1.1
0.5
0.0
APR
MAY
JUN
JUL
AUG
SEP
OCT

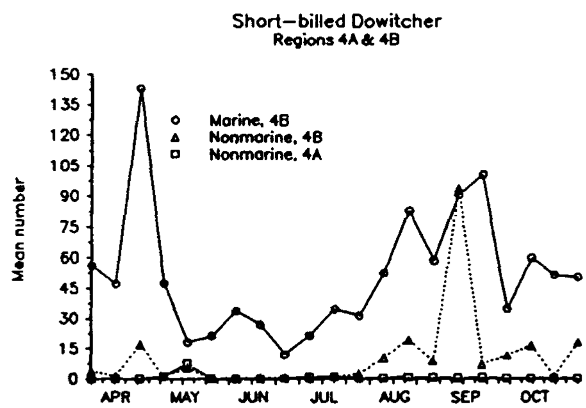


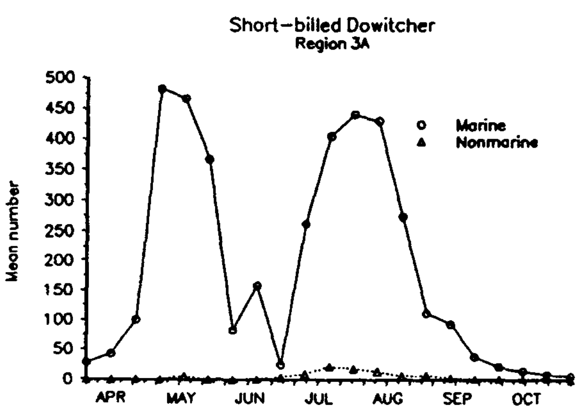
Unpublished map by Joseph Strauch showing concentration points of Buff-breasted Sandpipers during spring migration; derived from a survey of American Birds records 1974-1984.

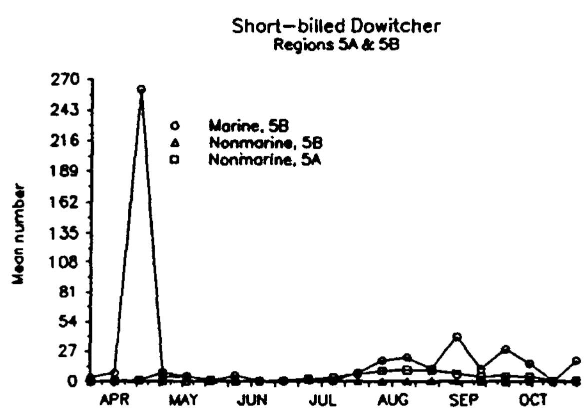

Short-billed Dowitcher
Region 1
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

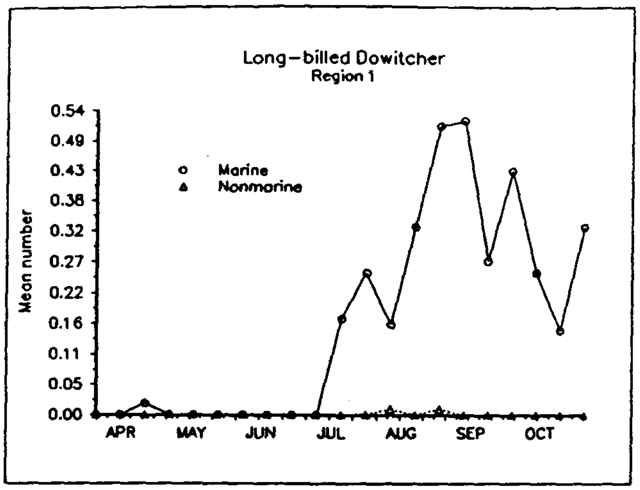

Short-billed Dowitcher
Region 3B
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

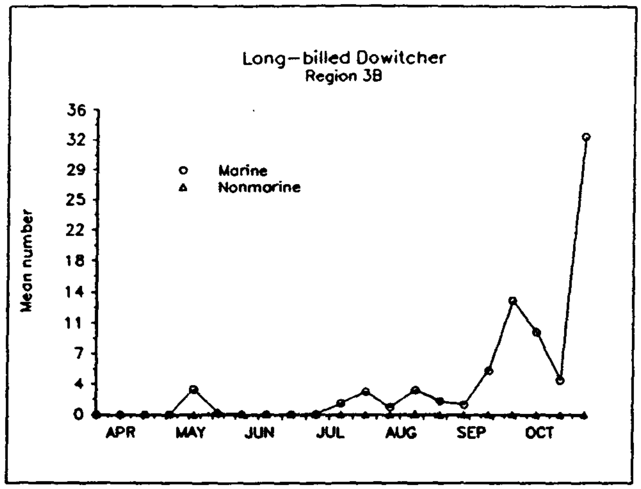

Short-billed Dowitcher
Region 2
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

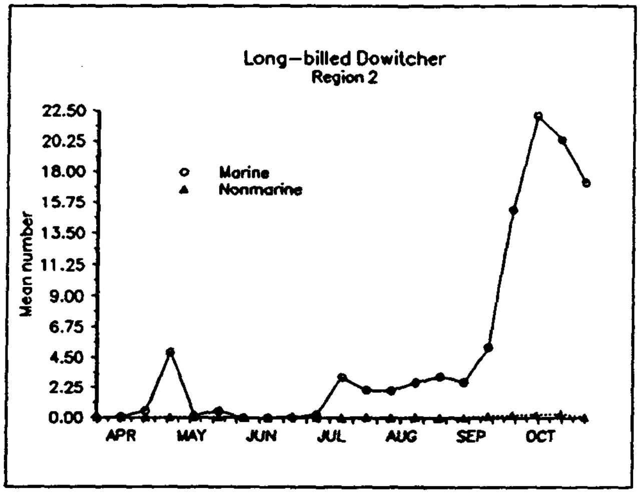

Short-billed Dowitcher
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
Mean number
APR MAY JUN JUL AUG SEP OCT

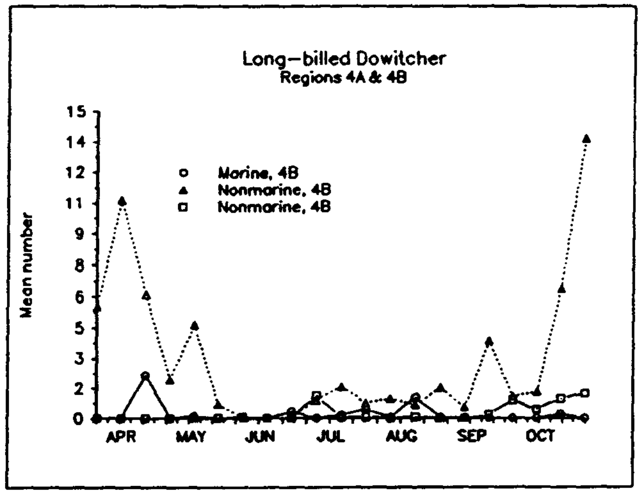

Short-billed Dowitcher
Region 3A
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

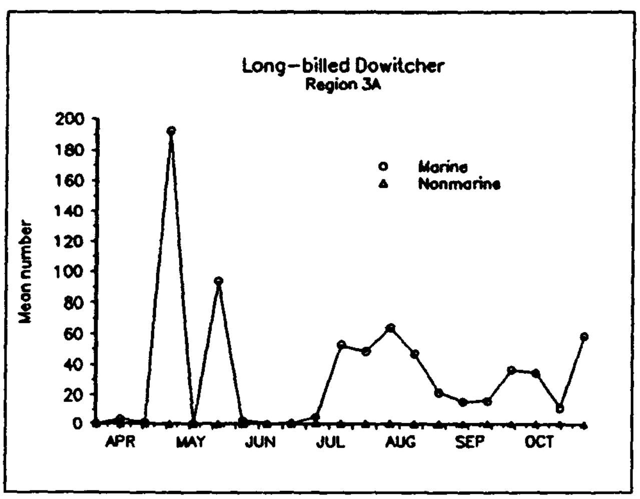

Short-billed Dowitcher
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
APR MAY JUN JUL AUG SEP OCT

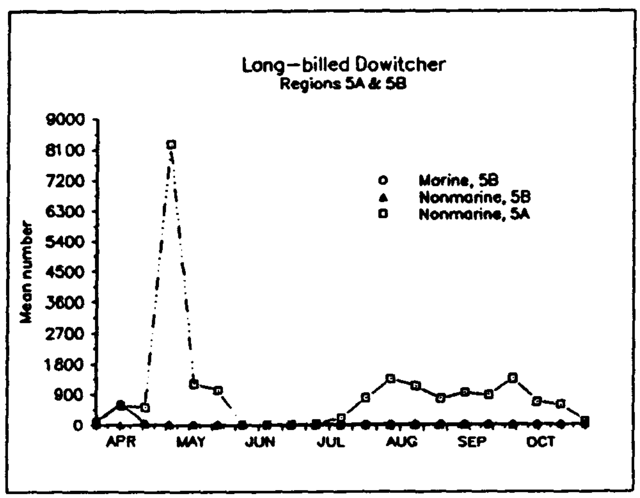

Long-billed Dowitcher
Region 1
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

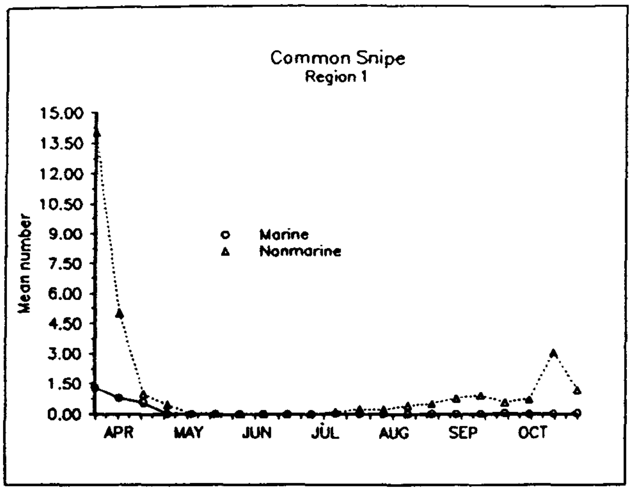

Long-billed Dowitcher
Region 3B
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

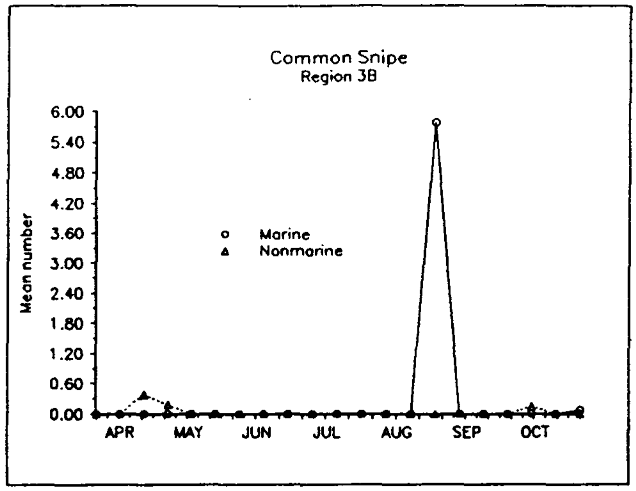

Long-billed Dowitcher
Region 2
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

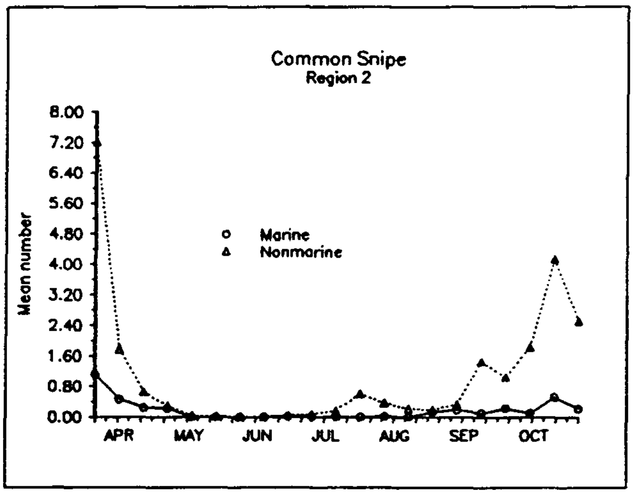

Long-billed Dowitcher
Regions 4A & 4B
Marine, 4B
Nonmarine, 4B
Nonmarine, 4B
Mean number
APR MAY JUN JUL AUG SEP OCT

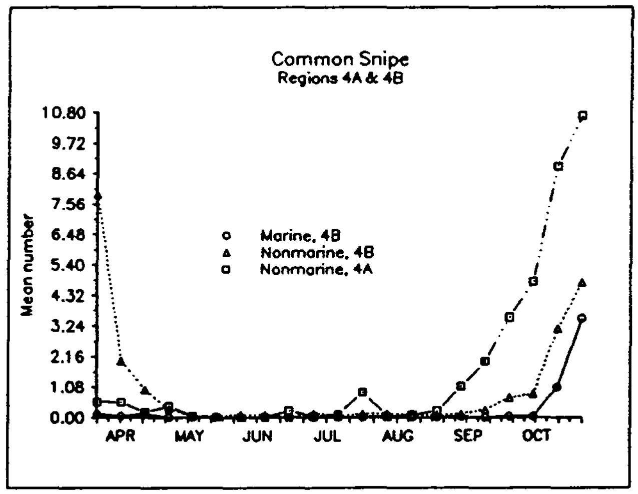

Long-billed Dowitcher
Region 3A
Marine
Nonmarine
Mean number
APR MAY JUN JUL AUG SEP OCT

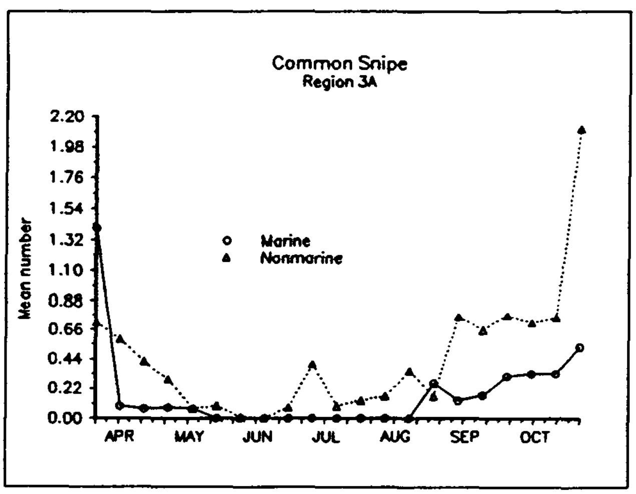

Long-billed Dowitcher
Regions 5A & 5B
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
Mean number
APR MAY JUN JUL AUG SEP OCT

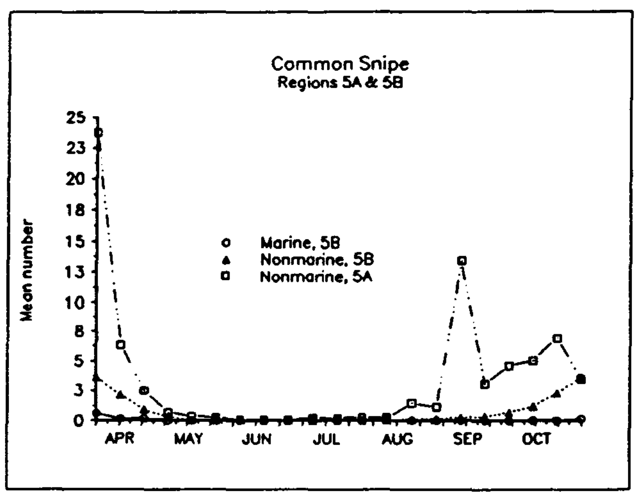

Common Snipe
Region 1
Mean number
15.00
13.50
12.00
10.50
9.00
7.50
6.00
4.50
3.00
1.50
0.00
Marine
Nonmarine
APR
MAY
JUN
JUL
AUG
SEP
OCT

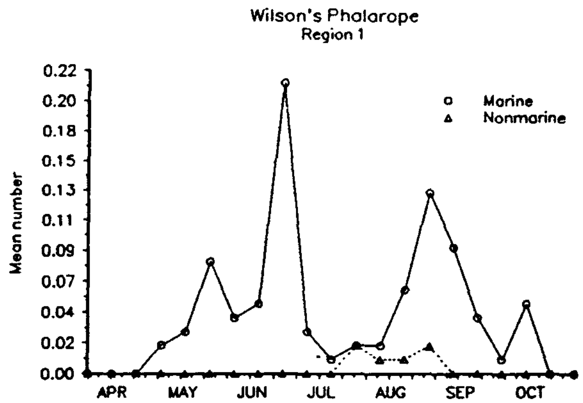

Common Snipe
Region 3B
Mean number
6.00
5.40
4.80
4.20
3.60
3.00
2.40
1.80
1.20
0.60
0.00
Marine
Nonmarine
APR
MAY
JUN
JUL
AUG
SEP
OCT

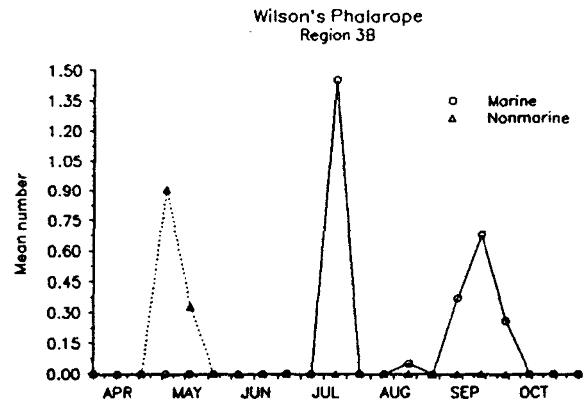

Common Snipe
Region 2
Mean number
8.00
7.20
6.40
5.60
4.80
4.00
3.20
2.40
1.60
0.80
0.00
Marine
Nonmarine
APR
MAY
JUN
JUL
AUG
SEP
OCT

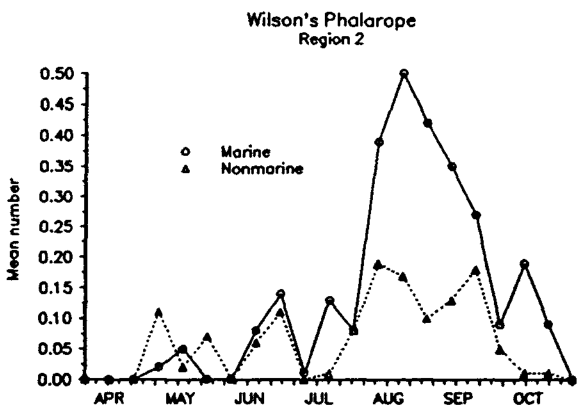

Common Snipe
Regions 4A & 4B
Mean number
10.80
9.72
8.64
7.56
6.48
5.40
4.32
3.24
2.16
1.08
0.00
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
APR
MAY
JUN
JUL
AUG
SEP
OCT

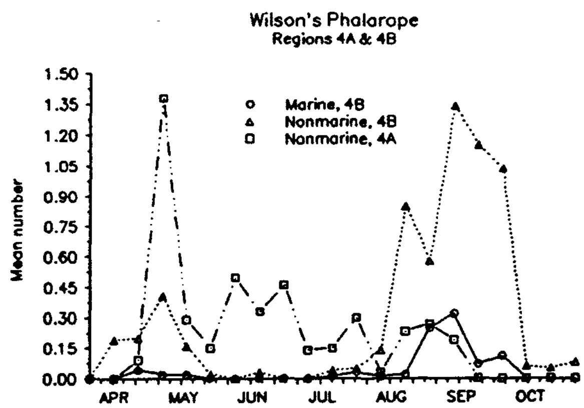

Common Snipe
Region 3A
Mean number
2.20
1.98
1.76
1.54
1.32
1.10
0.88
0.66
0.44
0.22
0.00
Marine
Nonmarine
APR
MAY
JUN
JUL
AUG
SEP
OCT

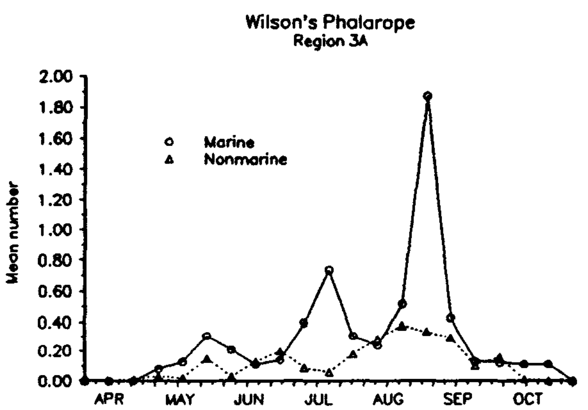

Common Snipe
Regions 5A & 5B
Mean number
25
23
20
18
15
13
10
8
5
3
0
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
APR
MAY
JUN
JUL
AUG
SEP
OCT

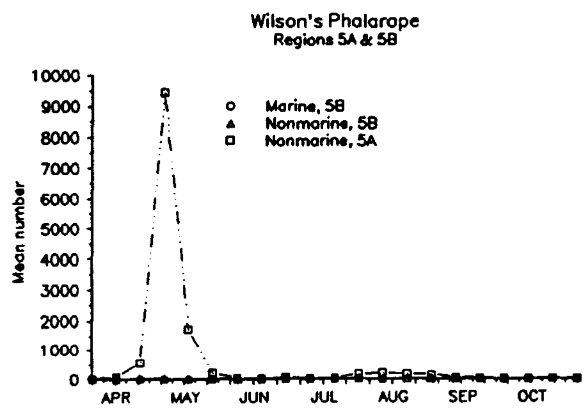

Wilson's Phalarope
Region 1
Mean number
0.22
0.20
0.18
0.15
0.13
0.11
0.09
0.07
0.04
0.02
0.00
Marine
Nonmarine
APR
MAY
JUN
JUL
AUG
SEP
OCT


Wilson's Phalarope
Region 3B
Mean number
1.50
1.35
1.20
1.05
0.90
0.75
0.60
0.45
0.30
0.15
0.00
Marine
Nonmarine
APR
MAY
JUN
JUL
AUG
SEP
OCT


Wilson's Phalarope
Region 2
Mean number
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Marine
Nonmarine
APR
MAY
JUN
JUL
AUG
SEP
OCT


Wilson's Phalarope
Regions 4A & 4B
Mean number
1.50
1.35
1.20
1.05
0.90
0.75
0.60
0.45
0.30
0.15
0.00
Marine, 4B
Nonmarine, 4B
Nonmarine, 4A
APR
MAY
JUN
JUL
AUG
SEP
OCT


Wilson's Phalarope
Region 3A
Mean number
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Marine
Nonmarine
APR
MAY
JUN
JUL
AUG
SEP
OCT


Wilson's Phalarope
Regions 5A & 5B
Mean number
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Marine, 5B
Nonmarine, 5B
Nonmarine, 5A
APR
MAY
JUN
JUL
AUG
SEP
OCT

Appendix 6. Tables show counts of shorebirds at sites east of the 105^{th} Meridian where more than 5000 shorebirds were counted. Data come from the Christmas Bird Counts, the Migration Season Accounts of the journal American Birds, the Maritimes Shorebird Surveys and other Canadian Wildlife Service resources, and from the International Shorebirds Surveys. Details of sources are available on disk from Manomet Bird Observatory. Because of dramatic differences between data obtained from the above surveys and those data obtained from questionnaires, the data from questionnaires are listed separately in Appendix 8 and are not included in Tables 1-31.

Table 1A. List of sitenames used in Tables 1-30. The first two letters of the sitecodes are state abbreviations.

Sites in the United States

ITECODE	REGION	NAME
L1	4B	BLAKELY ISLAND
L2	4B	BLAKELY ISLAND PONDS
L3	4B	GUNTERSVILLE
L4	4B	MOBILE DELTA
T1	1	FRONTAGE RD, NEW HAVEN
T2	1	MILFORD PT(E SIDE OF HOUSATONIC R.
E1	2	BOMBAY HOOK NWR
E2	2	BOMBAY HOOK TIDAL MARSH
E3	2	LITTLE CREEK, BEACH AND MARSH
L1	4B	BELLE GLADE FARM (PALM BEACH CO.)
L2	4B	CAPE ROMANO
L3	4B	CEDAR KEY
L4	4B	CLEARSPRING&NORALYN PHOSPHATE MINES
L5	4B	COOT BAY-EVERGLA
L6	4B	DUDA FARM, BELLE GLADE
L7	4B	JACKSONVILLE
L8	4B	KEY LARGO-PLANTA
L9	4B	NORTH PINELLAS
L10	4B	ST. AUGUSTINE
L11	4B	ST. PETERSBURG
L12	4B	TAMPA
L13	4B	TAMPA, HOOKER'S POINT
L14	4B	VENICE-ENGLEWOOD
A1	4B	GLYNN CO.
A2	4B	SAPELO I.
L1	4A	FREEPORT
S1	5A	CHEYENNE BOTTOMS
S2	5A	QUIVIRA NWR, BIG SALT, STAFFORD CO.
A1	5B	CAMERON PARISH
A2	5B	CREOLE
A3	5B	CROWLEY
A4	5B	GRAND ISLE
A5	5B	JOHNSONS BAYOU
A6	5B	LAFAYETTE
A7	5B	PINE PRAIRIE
A8	5B	RESERVE-BONNET C
A9	5B	ROCKEFELLER SWR
A10	5B	SABINE NWR
A11	5B	VENICE
MA1	1	DUXBURY BEACH
MA2	1	MONOMOY ISLAND NWR, NORTH END
MA3	1	NEW ISLAND
MA4	1	NEWBURYPORT HARBOR(A,B,C)
MA5	1	NEWBURYPORT/PLUM ISLAND
MA6	1	PARKER RIVER NWR
MA7	1	PLYMOUTH BEACH
MA8	1	SCITUATE, THIRD CLIFF (A,B)

le 1A, Cont.

9	1	SNAKE ISLAND, BOSTON-WINTHROP
)1	2	ASSATEAGUE ISLAND
)2	2	BACK BAY AREA
)3	2	CRISFIELD
:1	1	HOLMES BAY AND SPRAGUE MARSH
:2	1	LUBEC-LUBEC FLATS
:3	1	RIPLEY NECK,NEAR HARRINGTON
:4	1	WESKEAG MARSH
)1	5A	SQUAW CREEK NWR
31	5A	CRESCENT LAKE NWR
32	5A	SHERIDAN CO,RD CENS(BOXBUTTE-LAKSID
:1	3B	MOREHEAD CITY
:2	3B	PEA ISLAND-RAMP 6-8
:3	3B	SOUTHPORT-BALD H
:4	3B	WILMINGTON
)1	5A	FARGO
)2	5A	GRAND FORKS SEWAGE LAGOON
J1	2	BRIGANTINE BEACH
J2	2	BRIGANTINE NWR
J3	2	CAPE MAY
J4	2	DELAWARE BAY (AERIAL SURVEY)
J5	2	GREAT EGG HARBOR (INLET?)
J6	2	HAKENSACK MEADOWS,N.ARLNGTN,LINDHURS
J7	2	OCEANVILLE
Y1	2	JAMAICA BAY WR, NPS
K1	5B	AIRBOAT SURVEY,SALT PLAIN NWR
K2	5B	SALT PLAINS NWR
A1	2	TINICUM NWR
C1	3B	CHARLESTON
C2	3B	NE END OF FOLLY BEACH
N1	4B	SEWAGE LAGOONS,T.J.MAXON TRTT PLANT
X1	5B	AIRPORT, EAST FLATS, PORT ARANSAS
X2	5B	ANAHUAC NWR
X3	5B	BOLIVAR FLATS
X4	5B	BOLIVAR PENINSUL
X5	5B	CHAMBERS CO.
X6	5B	CORPUS CHRISTI
X7	5B	CORPUS CHRISTI (
X8	5B	CYPRESS CREEK
X9	5B	FREEPORT
X10	5B	GALVESTON
X11	5B	HOUSTON
X12	5B	LAGUNA ATASCOSA NWR
X13	5B	LUBBOCK
X14	5B	PORT ARANSAS
X15	5B	SAN BERNARD NWR
X16	5B	UPPER TEXAS COAST(HAR,BRAZ,CHAM CO)
A1	3A	CAPE CHARLES
A2	3A	CHINCOTEAGUE NWR
A3	3A	CRANEY ISLAND
A4	3A	CRANEY ISLAND LANDFILL
A5	3A	METOMKIN ISLAND
A6	3A	WACHAPREAGUE
V1	3A	CHARLESTON

ble 1A, Cont.

Sites in Canada

SITECODE	REG	NAME
AB1	C	BEAVERHILL LK.,ALBERTA
AB2	C	CHAPPICE LK.,ALBERTA
AB3	C	CIPHER LK.,ALBERTA
AB4	C	GILLESPIE LK.,ALBERTA
AB5	C	GOOSEBERRY LK.,ALBERTA
AB6	C	KILLARNEY/LEANE LKS.,ALBERTA
AB7	C	KIMIWAN LK.,ALBERTA
AB8	C	NETISKOW LK.,ALBERTA
AB9	C	REFLEX LKS.,ALBERTA
AB10	C	SOUNDING LKS.,ALBERTA
AB11	C	SULLIVAN LK.,ALBERTA
MB1	C	OAK HAMMOCK MARSH, MANITOBA
MB2	C	WHITEWATER L., MANITOBA
NR1	C	CAPE JOURIMAIN, NB
NR2	C	CASTALIA, G. MANAN, NB
NR3	C	CASTILIA, G. MANAN, NB
NR4	C	COURTENAY BAY, ST JOHN, NB
NR5	C	DANIELS FLATS, SHEPODY BAY, NB
NR6	C	GANNET ROCK, GRAND MANAN, NB
NR7	C	GRAND ANSE, NB
NR8	C	HARVEY DAM, NB
NR9	C	KENT ISLAND, NB
NR10	C	MACES BAY, NB
NR11	C	MANAWANGONISH MARSH, NB
NR12	C	MARY'S POINT, NB
NR13	C	OFF GRAN MANAN, NB
NR14	C	QUACO BAY, NB
NR15	C	SAINTS REST MARSH, NB
NS1	C	BLACK ROCK, NS
NS2	C	BRIER ISLAND, NS
NS3	C	CAPE SABLE, NS
NS4	C	CHEVERIE CREEK MOUTH, NS
NS5	C	CHEVERIE, NS
NS6	C	CHEZZETCOOK INLET, NS
NS7	C	COLE HBR., NS
NS8	C	COOK'S BEACH, NS
NS9	C	CRESCENT BEACH, NS
NS10	C	ECONOMY, NS
NS11	C	EVANGELINE BEACH, NS
NS12	C	GRAND PRé, NS
NS13	C	HIGHLAND VILLIAGE, NS
NS14	C	JOHN LUSBY MARSH, AMHERST, NS
NS15	C	KINGSPORT TO OAK I., NS
NS16	C	LOWER DEBERT/LITTLE DYKE, NS
NS17	C	MINUDIE, NS

ɔle 1A, Cont.

18	C	MOOSE BROOK, NS
19	C	NOEL BAY, NS
20	C	OAK I., EAST.
21	C	STERLING BROOK, NS
1	C	ALBANY R. MOUTH, JAMES B, ONT.
2	C	HAVRE AUX BASQUES, MAGDALEN I.
3	C	LONGRIDGE PT, ONT.
1	C	BATTURES, QUE.
2	C	ILE ROUGE, QUE.
3	C	ILE ROUGH, QUE.
4	C	MAGDALEN ISLANDS, QUE.
5	C	MONTMAGNY, QUE.
6	C	PORTNEUF SANDBAR, QUE.
7	C	PORTNEUF, QUE.
8	C	STE-ANNE R., QUE.
1	C	BLAINE LKS., SASK.
2	C	BUFFER L., SASK.
3	C	CHAPLIN LAKE, SASK
4	C	KILLSQUAW L., SASK.
5	C	KUTAWAGON L., SASK.
6	C	L. DIEFENBAKER, SASK.
7	C	LAC LENORE., SASK.
8	C	LANDIS L., SASK.
9	C	LAST MT. L., SASK.
10	C	MANITO/WELLS LKS., SASK.
11	C	MIDDLE LK., SASK.
12	C	MUDDY LK., SASK.
13	C	OPUNTIA LK., SASK.
14	C	PELICAN LK., SASK.
15	C	REED LK., SASK.

Table 1. Number (thousands) of shorebirds at wetlands in Region 1 (see Fig. 1) of the US during autumn migration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	CT1	CT2	MA1	MA2	MA3	MA4	MA5	MA6	MA7	MA8	MA9	ME1	ME2	ME3	ME4
BBPL	0.95	0.50	0.54	5.00	0.60	0.95	0.67	1.67	0.98	0.50	0.30	0.06	1.00	+	0.60
LGPL	+	+	0.01	0.06	+	0.01	0.05	0.02	0.01	0.01	0.00	+	0.00	0.00	+
SNPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	1.50	0.30	0.26	2.00	0.80	0.60	0.26	1.33	1.21	0.55	0.06	0.50	1.70	3.40	0.48
PIPL	+	+	0.01	0.10	0.08	0.01	0.00	0.01	0.06	0.02	+	0.00	0.00	0.00	0.00
KILL	+	0.01	0.00	+	+	0.04	0.03	0.01	0.01	0.01	+	0.01	+	0.00	0.01
AMOY	0.00	0.00	0.00	0.05	0.02	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00
BNST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMAV	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GRYE	0.08	0.07	0.11	0.50	0.05	0.38	0.14	0.39	0.05	0.03	0.02	0.01	0.01	+	0.05
LEYE	0.03	0.02	0.01	0.30	0.02	1.00	0.24	0.38	0.01	0.01	0.02	0.03	0.01	+	0.05
SOSA	0.00	0.00	0.00	+	+	+	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WILL	+	+	+	0.15	+	+	0.00	0.00	+	+	0.00	0.00	0.00	0.00	+
SPSA	+	+	+	0.01	+	0.01	+	0.01	+	0.01	+	+	+	0.00	+
UPSA	0.00	0.00	0.00	+	0.00	+	+	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.00	+	+	0.59	0.01	0.01	+	+	0.02	0.01	0.00	0.02	+	0.00	+
LBCU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.00	0.00	0.20	0.00	0.07	0.02	0.05	0.04	+	0.03	0.00	+	0.00	0.00
MAGO	+	0.00	0.00	0.01	+	+	+	+	0.00	+	0.00	0.00	0.00	0.00	0.00
RUTU	0.20	0.15	0.12	0.50	0.10	0.10	0.02	0.08	0.29	0.20	0.30	0.01	0.05	0.01	+
REKN	0.19	0.05	0.24	3.00	0.90	0.05	0.20	0.02	0.95	2.80	0.15	0.01	0.01	0.00	0.00
SAND	0.50	0.15	0.80	5.00	2.00	0.10	0.05	0.59	2.50	0.40	0.03	0.02	1.00	0.03	+
SESA	4.73	3.00	2.60	8.00	2.00	11.60	4.29	2.81	7.61	5.00	3.91	7.00	8.73	19.39	3.73
WESA	+	0.00	0.01	0.02	0.05	+	0.00	0.01	0.01	0.05	0.00	+	0.03	0.10	0.03
LESA	0.10	0.30	0.03	2.00	0.60	0.20	0.05	0.13	0.06	0.63	0.10	0.03	0.96	0.58	0.14
WRSA	+	0.01	0.01	0.25	0.03	0.01	0.02	0.03	0.05	0.01	0.00	0.03	0.34	0.59	0.06
BASA	0.00	0.00	0.00	+	0.00	+	0.00	0.01	+	+	0.00	+	+	0.01	+
PESA	0.00	0.00	0.02	0.10	0.01	0.02	0.02	0.01	0.01	0.01	0.00	+	0.00	0.00	+
DUNL	0.15	0.08	1.63	2.50	1.50	2.00	1.35	2.71	0.71	2.25	0.00	0.01	0.00	0.00	0.00
STSA	0.00	+	0.00	+	0.00	0.04	0.01	0.03	0.00	+	0.00	0.00	0.00	0.00	0.00
BBSA	0.00	+	+	+	0.00	+	0.00	0.01	+	+	0.00	+	0.00	0.00	0.00
SBDO	0.16	2.00	0.36	3.00	1.00	2.20	0.64	0.59	0.36	0.05	0.42	0.30	0.01	0.01	0.40
LBDO	0.00	+	0.00	+	+	0.04	0.02	0.06	+	+	0.00	0.00	+	0.00	+
COSN	0.00	0.00	0.00	+	0.00	+	+	0.01	+	0.00	0.00	0.00	0.00	0.00	0.00
AMWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPH	0.00	0.00	0.00	+	+	0.01	+	0.01	+	+	0.00	0.00	0.00	0.00	0.00
RNPH	0.00	0.00	0.00	0.01	+	0.00	0.00	+	+	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00	0.00	0.08
PEEP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
totl	6.38	6.64	6.73	33.35	9.77	19.45	8.07	10.95	14.93	12.52	5.33	8.03	13.85	24.11	5.65

Table 2. Number (thousands) of shorebirds at wetlands in Region 1 (see Fig. 1) of the US during spring migration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	CT1	CT2	MA1	MA2	MA3	MA4	MA5	MA6	MA7	MA8	MA9	ME1	ME2	ME3	ME4
BBPL	0.00	0.00	0.00	1.50	0.00	2.40	0.00	1.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LGPL	0.00	0.00	0.00	+	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.00	0.00	0.00	0.05	0.00	0.03	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPL	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KILL	0.00	0.00	0.00	+	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMOY	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BNST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMAV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GRYE	0.00	0.00	0.00	0.02	0.00	0.20	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LEYE	0.00	0.00	0.00	+	0.00	0.01	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SOSA	0.00	0.00	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WILL	0.00	0.00	0.00	0.06	0.00	+	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SPSA	0.00	0.00	0.00	+	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UPSA	0.00	0.00	0.00	+	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBCU	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RUTU	0.00	0.00	0.00	0.33	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REKN	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAND	0.00	0.00	0.00	3.50	0.00	+	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SESA	0.00	0.00	0.00	2.50	0.00	3.20	0.00	1.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WESA	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LESA	0.00	0.00	0.00	0.50	0.00	3.00	0.00	1.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WRSA	0.00	0.00	0.00	0.08	0.00	0.25	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BASA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DUNL	0.00	0.00	0.00	3.50	0.00	0.45	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STSA	0.00	0.00	0.00	+	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.00	0.00	0.00	0.04	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBDO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COSN	0.00	0.00	0.00	+	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPH	0.00	0.00	0.00	+	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RNPH	0.00	0.00	0.00	0.01	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
totl	0.00	0.00	0.00	12.39	0.00	9.75	0.00	5.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 3. Number (thousands) of shorebirds at wetlands in Region 2 (see Fig. 1) of the US during autumn migration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	DE1	DE2	DE3	MD1	MD2	MD3	NJ1	NJ2	NJ3	NJ4	NJ5	NJ6	NJ7	NY1	PA1
BBPL	0.03	0.00	0.00	0.00	0.00	0.00	3.00	2.25	0.00	0.00	0.11	0.07	0.00	1.16	+
LGPL	+	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	+	0.26	0.00	0.01	0.04
SNPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.58	0.00	0.01	0.61	0.00	0.00	1.00	0.55	0.00	0.00	0.25	0.13	0.00	1.12	0.04
PIPL	0.00	0.00	0.00	0.08	0.00	0.00	0.05	0.03	0.00	0.00	0.02	0.00	0.00	0.00	0.00
KILL	0.02	0.00	0.00	0.01	0.00	0.00	+	0.01	0.00	0.00	0.01	0.03	0.00	0.03	0.10
AMOY	0.00	0.00	0.00	0.05	0.00	0.00	0.30	0.30	0.00	0.00	0.04	0.00	0.00	0.14	0.00
BNST	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMAV	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	+	0.00
GRYE	0.12	0.00	+	0.00	0.00	0.00	0.03	1.25	0.00	0.00	0.01	0.20	0.00	0.60	0.30
LEYE	2.50	0.00	0.48	0.07	0.00	0.00	0.05	1.55	0.00	0.00	0.04	1.20	0.00	0.18	1.50
SOSA	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	+	0.00	+	0.01
WILL	0.02	0.00	0.03	0.65	0.00	0.00	0.04	1.00	0.00	0.00	0.03	0.00	0.00	0.03	0.00
SPSA	0.01	0.00	+	0.03	0.00	0.00	0.01	0.04	0.00	0.00	0.10	0.02	0.00	0.01	0.03
UPSA	+	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00	0.00	+	0.00	0.00	+	0.03
WHIM	0.00	0.00	0.07	0.28	0.00	0.00	0.01	0.01	0.00	0.00	0.03	0.00	0.00	0.01	0.00
LBCU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.01	0.00	0.00	+	0.00	0.00	+	0.02	0.00	0.00	0.00	0.01	0.00	0.01	+
MAGO	+	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	+	+	0.00	+	0.00
RUTU	0.08	0.00	0.04	0.13	0.00	0.00	0.03	0.15	0.00	0.00	0.12	+	0.00	0.41	+
REKN	+	0.00	0.00	0.01	0.00	0.00	0.25	0.30	0.00	0.00	2.29	+	0.00	1.23	+
SAND	0.01	0.00	0.05	2.50	7.00	0.00	2.00	0.10	0.00	0.00	1.40	0.00	0.00	0.35	+
SESA	10.28	0.00	10.00	0.75	0.00	0.00	0.05	16.10	0.00	0.00	0.29	6.19	0.00	2.29	15.00
WESA	2.60	0.00	0.20	0.17	0.00	0.00	0.60	2.98	0.00	0.00	0.25	0.01	0.00	0.02	0.04
LESA	0.72	0.00	0.10	0.24	0.00	0.00	0.05	1.00	0.00	0.00	0.08	0.33	0.00	0.14	0.30
WRSA	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.05	0.00	0.00	+	0.01	0.00	0.07	0.01
BASA	+	0.00	0.00	0.00	0.00	0.00	+	+	0.00	0.00	+	+	0.00	+	+
PESA	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	+	0.01	0.00	0.07	0.50
DUNL	0.56	0.00	0.00	0.00	0.00	0.00	10.00	15.00	0.00	0.00	1.20	1.20	0.00	1.31	0.50
STSA	0.42	0.00	0.02	0.01	0.00	0.00	0.00	0.53	0.00	0.00	0.00	0.01	0.00	0.06	0.06
BBSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	+	0.00
SBDO	1.00	0.00	1.12	1.31	0.00	0.00	0.30	11.33	0.00	0.00	0.90	0.70	0.00	2.21	0.07
LBDO	0.11	0.00	0.00	0.00	0.00	0.00	0.02	0.22	0.00	0.00	+	0.01	0.00	0.03	0.01
COSN	+	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	+	0.01	0.00	+	0.05
AMWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
WIPH	0.02	0.00	0.00	+	0.00	0.00	0.00	0.01	0.00	0.00	+	0.01	0.00	0.01	0.01
RNPH	+	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	+	0.00	+	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTL	19.34	0.00	12.11	6.89	7.00	0.00	17.80	51.08	0.00	0.00	7.18	10.40	0.00	11.53	18.60

able 4. Number (thousands) of shorebirds at wetlands in Region 2 (see Fig. 1) of the US during spring igration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	DE1	DE2	DE3	MD1	MD2	MD3	NJ1	NJ2	NJ3	NJ4	NJ5	NJ6	NJ7	NY1	PA1
BBPL	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.06	0.00	0.00	1.00	0.00
LGPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	+	0.00
SNPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.00	0.00	0.18	0.00	0.00	0.70	0.00
PIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00
KILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00	0.00	+	0.00	0.00	0.01	0.00
AMOY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.01	0.00
BNST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMAV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	+	0.00
GRYE	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.02	0.00	0.00	0.09	0.00
LEYE	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	+	0.00	0.00	0.01	0.00
SOSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	+	0.00
WILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.05	0.00	0.00	0.02	0.00
SPSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	+	0.00	0.00	0.01	0.00
UPSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.18	0.00	0.00	0.00	0.00
LBCU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RUTU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04	0.00	90.36	0.07	0.00	0.00	0.47	0.00
REKN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	95.53	3.55	0.00	0.00	0.35	0.00
SAND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	27.94	0.34	0.00	0.00	+	0.00
SESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.22	0.00	202.19	0.34	0.00	0.00	5.72	0.00
WESA	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	+	0.00	0.00	0.00	0.00
LESA	0.00	0.96	0.00	0.00	0.00	0.00	0.00	1.96	0.00	0.00	0.10	0.00	0.00	0.41	0.00
WRSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.02	0.00	0.00	0.00	0.02	0.00
BASA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	+	0.00	0.00	0.01	0.00
DUNL	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.92	0.00	0.00	1.20	0.00	0.00	0.85	0.00
STSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.00	0.00	0.15	0.00	0.00	0.01	0.00
LBDO	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COSN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00
WIPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RNPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTL	0.00	8.89	0.00	0.00	0.00	0.00	0.00	9.90	0.00	416.05	6.63	0.00	0.00	9.70	0.00

Table 5. Number (thousands) of shorebirds at wetlands in Region 2 (see Fig. 1) of the US during winter. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	DE1	DE2	DE3	MD1	MD2	MD3	NJ1	NJ2	NJ3	NJ4	NJ5	NJ6	NJ7	NY1	PA1
BBPL	0.02	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.63	0.00	0.00	0.00	0.80	0.00	0.00
LGPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
PIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KILL	0.08	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00
AMOY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.04	0.00	0.00
BNST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMAV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GRYE	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.05	0.00	0.00
LEYE	0.05	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00
SOSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SPSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UPSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBCU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RUTU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
REKN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.45	0.00	0.00	0.00	0.63	0.00	0.00
SESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WESA	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
LESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
WRSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BASA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DUNL	8.38	0.00	0.00	0.00	0.00	0.65	0.00	0.00	34.40	0.00	0.00	0.00	5.73	0.00	0.00
STSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBDO	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COSN	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
AMWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
WIPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RNPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTL	8.64	0.00	0.00	0.00	0.00	5.75	0.00	0.00	40.52	0.00	0.00	0.00	7.29	0.00	0.00

Table 6. Number (thousands) of shorebirds at wetlands in Region 3A (see Fig. 1) of the US during autumn migration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	VA1	VA2	VA3	VA4	VA5	VA6	WV1
BBPL	0.00	0.43	0.00	+	0.00	0.00	0.00
LGPL	0.00	0.15	0.00	0.00	0.00	0.00	0.00
SNPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.02	0.00	+	0.00	0.00	0.00
SEPL	0.00	1.83	0.00	0.03	0.00	0.00	0.00
PIPL	0.00	0.15	0.00	0.00	0.00	0.00	0.00
KILL	0.00	0.02	0.00	0.01	0.00	0.00	0.00
AMOY	0.00	0.18	0.00	0.00	0.00	0.00	0.00
BNST	0.00	+	0.00	0.00	0.00	0.00	0.00
AMAV	0.00	0.06	0.00	0.50	0.00	0.00	0.00
GRYE	0.00	0.74	0.00	0.02	0.00	0.00	0.00
LEYE	0.00	2.00	3.00	0.02	0.00	0.00	0.00
SOSA	0.00	0.01	0.00	+	0.00	0.00	0.00
WILL	0.00	0.44	0.00	0.03	0.00	0.00	0.00
SPSA	0.00	0.06	0.00	0.01	0.00	0.00	0.00
UPSA	0.00	0.01	0.00	0.00	0.00	0.00	0.00
WHIM	0.00	0.36	0.00	0.00	0.00	0.00	0.00
LBCU	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.04	0.00	0.02	0.00	0.00	0.00
MAGO	0.00	0.01	0.00	0.01	0.00	0.00	0.00
RUTU	0.00	0.29	0.00	0.03	0.00	0.00	0.00
REKN	0.00	2.18	0.00	0.01	0.00	0.00	0.00
SAND	0.00	11.13	0.50	0.02	0.00	0.00	0.00
SESA	0.00	50.00	0.00	4.97	0.00	0.00	0.00
WESA	0.00	15.00	0.00	3.80	0.00	0.00	0.00
LESA	0.00	5.00	0.00	1.62	0.00	0.00	0.00
WRSA	0.00	0.08	0.00	0.06	0.00	0.00	0.00
BASA	0.00	+	0.00	0.01	0.00	0.00	0.00
PESA	0.00	1.07	0.00	+	0.00	0.00	0.00
DUNL	0.00	8.84	0.00	1.50	0.00	0.00	0.00
STSA	0.00	0.82	0.00	0.05	0.00	0.00	0.00
BBSA	0.00	0.34	0.00	0.00	0.00	0.00	0.00
SBDO	0.00	2.44	0.00	0.10	0.00	0.00	0.00
LBDO	0.00	0.58	0.00	0.16	0.00	0.00	0.00
COSN	0.00	+	0.00	0.00	0.00	0.00	0.00
AMWO	0.00	+	0.00	0.00	0.00	0.00	0.00
WIPH	0.00	0.03	0.00	+	0.00	0.00	0.00
RNPH	0.00	+	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTL	0.00	84.72	0.00	12.97	0.00	0.00	0.00

Table 7. Number (thousands) of shorebirds at wetlands in Region 3A (see Fig. 1) of the US during spring migration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	VA1	VA2	VA3	VA4	VA5	VA6	WV1
BBPL	0.00	0.32	0.00	+	0.00	0.00	0.00
LGPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	+	0.00	0.00	0.00	0.00	0.00
SEPL	0.00	11.62	0.00	+	0.00	0.00	0.00
PIPL	0.00	0.04	0.00	+	0.00	0.00	0.00
KILL	0.00	+	0.00	0.04	0.00	0.00	0.00
AMOY	0.00	0.07	0.00	0.00	0.00	0.00	0.00
BNST	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMAV	0.00	0.00	0.00	0.24	0.00	0.00	0.00
GRYE	0.00	0.07	0.00	+	0.00	0.00	0.00
LEYE	0.00	0.04	0.00	0.01	0.00	0.00	0.00
SOSA	0.00	+	0.00	0.00	0.00	0.00	0.00
WILL	0.00	0.22	0.00	0.01	0.00	0.00	0.00
SPSA	0.00	0.02	0.00	+	0.00	0.00	0.00
UPSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.00	0.43	0.00	0.00	0.00	0.00	0.00
LBCU	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.00	+	0.00	0.00	0.00	0.00	0.00
RUTU	0.00	15.88	0.00	0.01	0.00	0.00	0.00
REKN	0.00	10.51	0.00	0.00	8.00	0.00	0.00
SAND	0.00	10.03	1.00	0.03	0.00	0.00	0.00
SESA	0.00	20.40	0.00	7.98	0.00	0.00	0.00
WESA	0.00	0.01	0.00	0.06	0.00	0.00	0.00
LESA	0.00	3.51	0.00	2.78	0.00	0.00	0.00
WRSA	0.00	0.15	0.00	0.08	0.00	0.00	0.00
BASA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DUNL	0.00	8.68	5.00	0.30	0.00	0.00	0.00
STSA	0.00	0.01	0.00	0.36	0.00	0.00	0.00
BBSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.00	2.44	0.00	0.80	0.00	0.00	0.00
LBDO	0.00	+	0.00	1.50	0.00	0.00	0.00
COSN	0.00	0.01	0.00	0.00	0.00	0.00	0.00
AMWO	0.00	+	0.00	0.00	0.00	0.00	0.00
WIPH	0.00	+	0.00	+	0.00	0.00	0.00
RNPH	0.00	0.01	0.00	0.03	0.00	0.00	0.00
REPH	0.00	+	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	8.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTL	0.00	73.98	9.00	14.22	8.00	0.00	0.00

Table 8. Number (thousands) of shorebirds at wetlands in Region 3A (see Fig. 1) of the US during winter. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	VA1	VA2	VA3	VA4	VA5	VA6	WV1
BBPL	0.29	0.39	0.00	0.00	0.00	0.24	0.00
LGPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KILL	0.02	0.06	0.00	0.00	0.00	0.00	0.01
AMOY	0.63	0.52	0.00	0.00	0.00	0.02	0.00
BNST	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMAV	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GRYE	0.14	0.05	0.00	0.00	0.00	0.08	0.00
LEYE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SOSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WILL	0.08	0.00	0.00	0.00	0.00	0.00	0.00
SPSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UPSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBCU	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.08	0.01	0.00	0.00	0.00	0.00	0.00
RUTU	0.10	0.02	0.00	0.00	0.00	0.03	0.00
REKN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAND	0.19	0.85	0.00	0.00	0.00	0.08	0.00
SESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WESA	0.07	0.03	0.00	0.00	0.00	0.04	0.00
LESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WRSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BASA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DUNL	11.57	11.17	0.00	0.00	0.00	5.23	0.00
STSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.00	0.00	0.00	0.00	0.00	0.04	0.00
LBDO	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COSN	0.02	0.00	0.00	0.00	0.00	0.00	0.00
AMWO	0.06	0.03	0.00	0.00	0.00	0.02	0.00
WIPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RNPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.06	0.02	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTL	13.31	13.14	0.00	0.00	0.00	5.77	5.24

Table 9. Number (thousands) of shorebirds at wetlands in Regio (see Fig. 1) of the US during autumn migration. Only locations 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	NC1	NC2	NC3	NC4	SC1	SC2
BBPL	0.00	0.10	0.00	0.00	0.00	0.00
LGPL	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.00	0.02	0.00	0.00	0.00	0.00
PIPL	0.00	+	0.00	0.00	0.00	0.00
KILL	0.00	0.00	0.00	0.00	0.00	0.00
AMOY	0.00	+	0.00	0.00	0.00	0.00
BNST	0.00	0.00	0.00	0.00	0.00	0.00
AMAV	0.00	0.00	0.00	0.00	0.00	0.00
GRYE	0.00	0.00	0.00	0.00	0.00	0.00
LEYE	0.00	0.00	0.00	0.00	0.00	0.00
SOSA	0.00	0.00	0.00	0.00	0.00	0.00
WILL	0.00	0.36	0.00	0.00	0.00	0.00
SPSA	0.00	+	0.00	0.00	0.00	0.00
UPSA	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.00	+	0.00	0.00	0.00	0.00
LBCU	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.00	0.00	0.00	0.00	0.00	0.00
RUTU	0.00	0.06	0.00	0.00	0.00	0.00
REKN	0.00	0.01	0.00	0.00	0.00	0.00
SAND	0.00	6.15	0.00	0.00	0.00	0.00
SESA	0.00	0.27	0.00	0.00	0.00	0.00
WESA	0.00	+	0.00	0.00	0.00	0.00
LESA	0.00	0.00	0.00	0.00	0.00	0.00
WRSA	0.00	0.00	0.00	0.00	0.00	0.00
BASA	0.00	0.00	0.00	0.00	0.00	0.00
PESA	0.00	0.00	0.00	0.00	0.00	0.00
DUNL	0.00	0.16	0.00	0.00	0.00	0.00
STSA	0.00	0.00	0.00	0.00	0.00	0.00
BBSA	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.00	0.01	0.00	0.00	0.00	0.00
LBDO	0.00	0.01	0.00	0.00	0.00	0.00
COSN	0.00	0.00	0.00	0.00	0.00	0.00
AMWO	0.00	0.00	0.00	0.00	0.00	0.00
WIPH	0.00	0.00	0.00	0.00	0.00	0.00
RNPH	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00
TOTL	0.00	7.15	0.00	0.00	0.00	0.00

Table 10. Number (thousands) of shorebirds at wetlands in Region 3B (see Fig. 1) of the US during spring migration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	NC1	NC2	NC3	NC4	SC1	SC2
BBPL	0.00	0.00	0.00	0.00	0.00	0.30
LGPL	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.00	0.00	0.00	0.00	0.00	0.00
PIPL	0.00	0.00	0.00	0.00	0.00	0.00
KILL	0.00	0.00	0.00	0.00	0.00	0.00
AMOY	0.00	0.00	0.00	0.00	0.00	0.05
BNST	0.00	0.00	0.00	0.00	0.00	0.00
AMAV	0.00	0.00	0.00	0.00	0.00	0.00
GRYE	0.00	0.00	0.00	0.00	0.00	0.00
LEYE	0.00	0.00	0.00	0.00	0.00	0.00
SOSA	0.00	0.00	0.00	0.00	0.00	0.00
WILL	0.00	0.00	0.00	0.00	0.00	0.04
SPSA	0.00	0.00	0.00	0.00	0.00	0.00
UPSA	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.00	0.00	0.00	0.00	0.00	0.00
LBCU	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.00	0.00	0.00	0.00	0.00	0.00
RUTU	0.00	0.00	0.00	0.00	0.00	0.00
REKN	0.00	0.00	0.00	0.00	0.00	1.00
SAND	0.00	0.00	0.00	0.00	0.00	0.25
SESA	0.00	0.00	0.00	0.00	0.00	0.00
WESA	0.00	0.00	0.00	0.00	0.00	0.08
LESA	0.00	0.00	0.00	0.00	0.00	0.00
WRSA	0.00	0.00	0.00	0.00	0.00	0.00
BASA	0.00	0.00	0.00	0.00	0.00	0.00
PESA	0.00	0.00	0.00	0.00	0.00	0.00
DUNL	0.00	0.00	0.00	0.00	0.00	2.00
STSA	0.00	0.00	0.00	0.00	0.00	0.00
BBSA	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.00	0.00	0.00	0.00	0.00	1.50
LBDO	0.00	0.00	0.00	0.00	0.00	0.00
COSN	0.00	0.00	0.00	0.00	0.00	0.00
AMWO	0.00	0.00	0.00	0.00	0.00	0.00
WIPH	0.00	0.00	0.00	0.00	0.00	0.00
RNPH	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00
TOTL	0.00	0.00	0.00	0.00	0.00	5.21

Table 11. Number (thousands) of shorebirds at wetlands in Regio
(see Fig. 1) of the US during winter. Only locations with
5000 or more shorebirds are included. A plus sign is shown for
< 10 birds.

Site>	NC1	NC2	NC3	NC4	SC1	SC2
BBPL	0.34	0.00	0.30	0.34	0.17	0.00
LGPL	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.20	0.00	0.08	0.10	0.29	0.00
PIPL	0.04	0.00	0.00	0.00	0.00	0.00
KILL	0.03	0.00	0.02	0.02	0.00	0.00
AMOY	0.15	0.00	0.33	0.21	0.57	0.00
BNST	0.00	0.00	0.00	0.00	0.00	0.00
AMAV	0.00	0.00	0.00	0.00	0.00	0.00
GRYE	0.05	0.00	0.07	0.04	0.02	0.00
LEYE	0.00	0.00	0.00	0.00	0.03	0.00
SOSA	0.00	0.00	0.00	0.00	0.00	0.00
WILL	0.22	0.00	0.31	0.21	0.19	0.00
SPSA	0.00	0.00	0.00	0.00	0.00	0.00
UPSA	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.00	0.00	0.00	0.00	0.03	0.00
LBCU	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.04	0.00	0.21	0.03	0.05	0.00
RUTU	0.13	0.00	0.14	0.11	0.17	0.00
REKN	0.08	0.00	0.07	0.02	0.06	0.00
SAND	0.15	0.00	0.62	0.17	0.03	0.00
SESA	0.00	0.00	0.00	0.00	0.00	0.00
WESA	0.40	0.00	1.14	1.22	1.33	0.00
LESA	0.00	0.00	0.11	0.00	0.00	0.00
WRSA	0.00	0.00	0.00	0.00	0.00	0.00
BASA	0.00	0.00	0.00	0.00	0.00	0.00
PESA	0.00	0.00	0.00	0.00	0.00	0.00
DUNL	3.32	0.00	2.01	3.36	0.67	0.00
STSA	0.00	0.00	0.00	0.00	0.00	0.00
BBSA	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.51	0.00	0.38	0.30	0.00	0.00
LBDO	0.00	0.00	0.00	0.00	0.00	0.00
COSN	0.07	0.00	0.01	0.00	0.00	0.00
AMWO	0.01	0.00	0.00	0.00	0.03	0.00
WIPH	0.00	0.00	0.00	0.00	0.00	0.00
RNPH	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	1.60	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00
TOTL	5.74	0.00	5.79	6.12	0.00	0.00

Table 12. Number (thousands) of shorebirds at wetlands in Floridian parts of Region 4 (see Fig. 1) of the U.S. during autumn migration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	FL1	FL2	FL3	FL4	FL5	FL6	FL7	FL8	FL9	FL10	FL11	FL12	FL13	FL14
BBPL	1.86	0.30	0.00	0.00	0.00	2.70	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00
LGPL	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
SEPL	0.04	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00
PIPL	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KILL	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00
AMOY	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BNST	1.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00
AMAV	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05	0.00
GRYE	1.30	0.00	0.00	0.00	0.00	2.07	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00
LEYE	22.60	0.00	0.00	0.00	0.00	17.70	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00
SOSA	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
WILL	0.01	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00
SPSA	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
UPSA	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00	0.00
LBCU	+	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	+	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00
RUTU	0.07	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00
REKN	+	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
SAND	+	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.15	0.00
SESA	11.18	0.30	0.00	0.00	0.00	7.90	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.00
WESA	1.53	8.11	0.00	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	0.00	3.24	0.00
LESA	19.60	0.02	0.00	0.00	0.00	11.01	0.00	0.00	0.00	0.00	0.00	0.00	6.31	0.00
WRSA	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00
BASA	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PESA	3.44	0.00	0.00	0.00	0.00	3.44	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00
DUNL	0.03	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STSA	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
BBSA	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	4.80	3.75	0.00	0.00	0.00	5.60	0.00	0.00	0.00	0.00	0.00	0.00	1.06	0.00
LBDO	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
COSN	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPH	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RNPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	24.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
totl	94.61	16.21	0.00	0.00	0.00	30.37	0.00	0.00	0.00	0.00	0.00	0.00	19.20	0.00

Table 13. Number (thousands) of shorebirds at wetlands in Floridian parts of Region 4 (see Fig. 1) of the U.S. during spring migration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	FL1	FL2	FL3	FL4	FL5	FL6	FL7	FL8	FL9	FL10	FL11	FL12	FL13	FL14
BBPL	0.00	0.31	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00
LGPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00	0.00
SEPL	0.00	0.12	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00
PIPL	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KILL	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
AMOY	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BNST	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00
AMAV	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00
GRYE	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LEYE	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.00
SOSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00
WILL	0.00	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00
SPSA	0.00	0.01	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
UPSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00	0.00
LBCU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RUTU	0.00	0.72	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REKN	0.00	1.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00
SAND	0.00	1.14	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SESA	0.00	0.04	0.00	15.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WESA	0.00	2.00	0.00	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.23	0.00
LESA	0.00	0.22	0.00	12.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76	0.00
WRSA	0.00	+	0.00	1.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BASA	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00
DUNL	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.45	0.00
STSA	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00
BBSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.00	1.63	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.92	0.00
LBDO	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00
COSN	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPH	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00
RNPH	0.00	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
totl	0.00	9.22	0.00	37.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.81	0.00

Table 14. Number (thousands) of shorebirds at wetlands in Floridian parts of Region 4 (see Fig. 1) of the U.S. during winter. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	FL1	FL2	FL3	FL4	FL5	FL6	FL7	FL8	FL9	FL10	FL11	FL12	FL13	FL14
BBPL	0.00	0.00	0.16	0.00	3.67	0.00	0.24	0.51	0.35	0.24	0.20	0.12	0.00	0.07
LGPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.06	0.00	0.04	0.12	0.00	0.00
SEPL	0.00	0.00	0.02	0.00	0.07	0.00	0.35	0.28	0.29	0.52	0.11	0.31	0.00	0.01
PIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00
KILL	0.00	0.00	0.02	0.00	0.25	0.00	0.23	0.01	0.42	0.18	0.40	0.66	0.00	0.11
AMOY	0.00	0.00	0.09	0.00	0.00	0.00	0.04	0.00	0.08	0.07	0.13	0.00	0.00	0.00
BNST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00
AMAV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00
GRYE	0.00	0.00	0.01	0.00	0.05	0.00	0.02	0.02	0.01	0.03	0.02	0.02	0.00	0.00
LEYE	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.02	0.00	0.05	0.18	0.00	0.00
SOSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WILL	0.00	0.00	0.74	0.00	3.29	0.00	0.27	0.02	0.81	0.23	0.50	0.17	0.00	0.25
SPSA	0.00	0.00	0.01	0.00	0.03	0.00	0.01	0.00	0.07	0.02	0.02	0.02	0.00	0.00
UPSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00
LBCU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.10	0.00	0.04	0.00	0.00	0.00
RUTU	0.00	0.00	0.02	0.00	0.00	0.00	0.32	0.09	0.20	0.23	0.15	0.13	0.00	0.06
REKN	0.00	0.00	0.00	0.00	0.08	0.00	0.02	0.03	0.79	0.02	0.34	0.92	0.00	0.18
SAND	0.00	0.00	0.20	0.00	0.08	0.00	0.72	0.00	0.16	0.12	0.10	0.08	0.00	0.10
SESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WESA	0.00	0.00	1.49	0.00	16.51	0.00	1.77	2.37	0.94	0.19	0.50	15.80	0.00	0.00
LESA	0.00	0.00	0.27	0.00	6.39	0.00	0.01	0.40	0.18	0.00	0.01	0.40	0.00	0.00
WRSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BASA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DUNL	0.00	0.00	3.43	0.00	1.41	0.00	0.77	1.01	2.00	1.02	2.00	2.68	0.00	0.00
STSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.00	0.00	0.82	0.00	2.75	0.00	0.52	0.98	0.74	2.56	0.80	2.27	0.00	0.04
LBDO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
COSN	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.02	0.01	0.07	0.06	0.00	0.00
AMWO	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RNPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	1.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
totl	0.00	0.00	8.27	0.00	34.66	0.00	5.54	5.75	7.24	5.47	5.50	24.22	0.00	0.00

Table 17. Number (thousands) of shorebirds at wetlands outside Florida in Region 4 (see Fig. 1) during winter. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	AL1	AL2	AL3	AL4	GA1	GA2	IL1	TN1
BBPL	0.00	0.00	0.00	0.06	0.59	0.23	0.00	0.00
LGPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.00	0.00	0.00	0.00	2.60	1.60	0.00	0.00
PIPL	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
KILL	0.00	0.00	0.03	0.39	0.05	0.00	0.00	0.00
AMOY	0.00	0.00	0.00	0.00	0.04	0.02	0.00	0.00
BNST	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00
AMAV	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
GRYE	0.00	0.00	0.00	0.16	0.01	0.01	0.00	0.00
LEYE	0.00	0.00	0.00	0.53	0.00	0.00	0.00	0.00
SOSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WILL	0.00	0.00	0.00	0.02	0.33	0.14	0.00	0.00
SPSA	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
UPSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBCU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RUTU	0.00	0.00	0.00	0.00	0.31	0.03	0.00	0.00
REKN	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00
SAND	0.00	0.00	0.00	0.04	0.30	0.75	0.00	0.00
SESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WESA	0.00	0.00	0.00	1.22	8.42	0.76	0.00	0.00
LESA	0.00	0.00	0.00	0.67	0.02	0.04	0.00	0.00
WRSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BASA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DUNL	0.00	0.00	0.00	1.24	1.70	3.60	0.00	0.00
STSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.00	0.00	0.00	0.03	0.54	0.02	0.00	0.00
LBDO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COSN	0.00	0.02	0.03	0.05	0.00	0.00	0.00	0.00
AMWO	0.00	0.00	26.63	0.00	0.00	0.00	0.00	0.00
WIPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RNPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	1.84	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.90	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
totl	0.00	0.00	26.67	8.33	14.96	7.22	16.26	0.00

Table 16. Number (thousands) of shorebirds at wetlands outside Florida i (see Fig. 1) during spring migration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	AL1	AL2	AL3	AL4	GA1	GA2	IL1	TN1
BBPL	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
LGPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00
PIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KILL	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
AMOY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BNST	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
AMAV	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00
GRYE	1.13	0.10	0.00	0.00	0.00	0.00	0.00	0.00
LEYE	1.18	0.10	0.00	0.00	0.00	0.00	0.00	0.00
SOSA	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00
WILL	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
SPSA	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00
UPSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBCU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00
RUTU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REKN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAND	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00
SESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WESA	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00
LESA	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00
WRSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BASA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DUNL	0.00	5.50	0.00	0.00	0.00	0.00	0.00	0.00
STSA	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
BBSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	3.50	0.98	0.00	0.00	0.00	0.00	0.00	0.00
LBDO	0.00	0.42	0.00	0.00	0.00	0.00	0.00	0.00
COSN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RNPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
totl	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00

Table 15. Number (thousands) of shorebirds at wetlands outside Florida in Region 4 (see Fig. 1) during autumn migration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	AL1	AL2	AL3	AL4	GA1	GA2	IL1	TN1
BBPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+
LGPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
SNPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
PIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
AMOY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BNST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
AMAV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GRYE	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.02
LEYE	3.10	0.00	0.00	0.00	0.00	0.00	0.00	0.13
SOSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
WILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+
SPSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
UPSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBCU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RUTU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
REKN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+
SESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32
WESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
LESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60
WRSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
BASA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+
PESA	5.00	0.00	0.00	0.00	0.00	0.00	0.00	3.65
DUNL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
STSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
BBSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
SBDO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
LBDO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COSN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
AMWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+
RNPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
totl	8.10	0.00	0.00	0.00	0.00	0.00	0.00	7.22

Table 18. Number (thousands) of shorebirds at wetlands in Region 5A (see Fig. 1) during autumn migration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	KS1	KS2	MO1	NB1	NB2	ND1	ND2
BBPL	0.42	0.01	0.00	0.00	0.00	0.00	0.00
LGPL	0.54	0.00	0.00	0.00	0.00	0.40	0.00
SNPL	0.25	0.31	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	1.25	0.03	0.00	0.00	0.00	0.00	0.00
PIPL	0.02	0.00	0.00	0.00	0.00	0.00	0.00
KILL	8.94	0.25	0.00	0.00	0.17	0.00	0.00
AMOY	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BNST	0.02	0.03	0.00	0.00	0.00	0.00	0.00
AMAV	11.82	0.46	0.00	0.00	0.47	0.00	0.00
GRYE	1.63	0.11	0.00	0.00	+	0.00	0.00
LEYE	52.14	0.91	0.00	0.00	0.08	0.00	8.00
SOSA	0.02	+	0.00	0.00	0.00	0.00	0.00
WILL	0.17	0.01	0.00	0.00	0.02	0.00	0.00
SPSA	0.28	+	0.00	0.00	0.00	0.00	0.00
UPSA	0.01	+	0.00	0.00	0.02	0.00	0.00
WHIM	+	0.00	0.00	0.00	0.00	0.00	0.00
LBCU	0.01	0.00	0.00	0.00	0.01	0.00	0.00
HUGO	0.01	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.03	+	0.00	0.00	0.00	0.00	0.00
RUTU	0.02	+	0.00	0.00	0.00	0.00	0.00
REKN	0.18	0.00	0.00	0.00	0.00	0.00	0.00
SAND	0.52	0.01	0.00	0.00	0.00	0.00	0.00
SESA	41.05	0.50	0.00	0.00	0.01	0.00	0.00
WESA	18.31	0.29	0.00	0.00	0.01	0.00	0.00
LESA	158.00	0.97	0.00	0.00	0.03	0.00	0.00
WRSA	0.16	+	0.00	0.00	0.00	0.00	0.00
BASA	31.11	0.08	0.00	0.00	0.13	0.00	0.00
PESA	28.81	0.25	0.00	0.00	+	0.00	8.00
DUNL	0.16	0.00	0.00	0.00	0.00	0.00	0.00
STSA	28.78	0.52	0.00	0.00	0.03	0.00	0.00
BBSA	0.18	0.00	0.00	0.00	0.00	0.00	0.13
SBDO	0.89	0.00	0.00	0.00	0.00	0.00	0.00
LBDO	28.29	0.38	0.00	0.00	0.02	0.00	0.00
COSN	0.94	0.00	0.00	0.00	+	0.00	0.00
AMWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPH	10.72	0.44	0.00	0.00	3.84	0.00	1.00
RNPH	0.16	0.00	0.00	0.00	0.73	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.71	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
totl	426.55	5.57	0.00	0.00	5.57	0.00	19.63

Table 19. Number (thousands) of shorebirds at wetlands in Region 5A (see Fig. 1) during spring migration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	KS1	KS2	MO1	NB1	NB2	ND1	ND2
BBPL	0.19	0.00	0.00	+	0.00	0.00	0.00
LGPL	0.04	0.00	0.00	0.00	0.00	4.00	0.00
SNPL	0.06	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.49	0.00	0.00	+	0.00	0.00	0.00
PIPL	+	0.00	0.00	0.00	0.00	0.00	0.00
KILL	0.78	0.00	0.00	0.18	0.00	0.00	0.00
AMOY	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BNST	0.01	0.00	0.00	+	0.00	0.00	0.00
AMAV	6.54	0.00	0.00	0.13	0.00	0.00	0.00
GRYE	0.19	0.00	0.00	0.04	0.00	0.00	0.00
LEYE	5.99	0.00	7.00	0.01	0.00	0.00	0.00
SOSA	0.02	0.00	0.00	0.01	0.00	0.00	0.00
WILL	0.11	0.00	0.00	0.01	0.00	0.00	0.00
SPSA	0.18	0.00	0.00	0.02	0.00	0.00	0.00
UPSA	0.03	0.00	0.00	0.08	0.00	0.00	0.00
WHIM	+	0.00	0.00	0.00	0.00	0.00	0.00
LBCU	0.01	0.00	0.00	0.13	0.00	0.00	0.00
HUGO	0.76	0.00	0.09	0.00	0.00	0.00	0.00
MAGO	0.54	0.00	0.00	0.00	0.00	0.00	0.00
RUTU	0.01	0.00	0.00	0.00	0.00	0.00	0.00
REKN	0.02	0.00	0.00	0.00	0.00	0.00	0.00
SAND	0.24	0.00	0.00	+	0.00	0.00	0.00
SESA	52.50	0.00	0.00	0.01	0.00	0.00	0.00
WESA	1.32	0.00	0.00	0.00	0.00	0.00	0.00
LESA	21.32	0.00	0.00	0.08	0.00	0.00	0.00
WRSA	180.00	0.00	5.00	0.00	0.00	1.00	0.00
BASA	62.58	0.00	0.20	0.02	0.00	0.00	0.00
PESA	8.95	0.00	0.00	0.00	0.00	0.00	0.00
DUNL	1.40	0.00	0.00	0.00	0.00	0.00	0.00
STSA	42.38	0.00	0.30	0.06	0.00	0.00	0.00
BBSA	0.01	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBDO	210.00	0.00	0.00	0.10	0.00	0.00	0.00
COSN	0.01	0.00	0.00	0.01	0.00	0.00	0.00
AMWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPH	146.00	0.00	0.00	8.06	0.00	0.00	0.00
RNPH	1.24	0.00	0.00	0.03	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
totl	744.08	0.00	12.59	8.95	0.00	5.00	0.00

Table 20. Number (thousands) of shorebirds at wetlands in Region 5B (see Fig. 1) during autumn migration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds. Texas sites are in a separate table.

Site>	LA1	LA2	LA3	LA4	LA5	LA6	LA7	LA8	LA9	LA10	LA11	OK1	OK2
BBPL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01
LGPL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
SNPL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.63
WIPL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.04
PIPL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KILL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.24
AMOY	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BNST	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
AMAV	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	1.13
GRYE	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.15
LEYE	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	1.50
SOSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+
WILL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.02
SPSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
UPSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
WHIM	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBCU	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+
RUTU	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00
REKN	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAND	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
SESA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.78	7.14
WESA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.74	4.36
LESA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.51	14.73
WRSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.10
BASA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46	2.48
PESA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.03
DUNL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.60
BBSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBDO	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	1.51
COSN	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
AMWO	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPH	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.13
RNPH	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+	0.00
REPH	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
PEEP	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
totl	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.68	34.94

Table 21. Number (thousands) of shorebirds at wetlands in Region 5B (see Fig. 1) during spring migration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds. Texas sites are in a separate table.

Site>	LA1	LA2	LA3	LA4	LA5	LA6	LA7	LA8	LA9	LA10	LA11	OK1	OK2
BBPL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LGPL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
WIPL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
PIPL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KILL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
AMOY	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BNST	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+
AMAV	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
GRYE	10.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
LEYE	2.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
SOSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+
WILL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
SPSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
UPSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
WHIM	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBCU	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
HUGO	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
MAGO	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+
RUTU	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+
REKN	0.0	0.00	0.00	1.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAND	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SESA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55
WESA	0.0	0.00	0.00	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35
LESA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
WRSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.52
BASA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.37
PESA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
DUNL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
BBSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.0	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBDO	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
COSN	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
AMWO	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPH	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
RNPH	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
totl	12.0	0.00	0.00	8.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.05

Table 22. Number (thousands) of shorebirds at wetlands in Region 5B (see Fig. 1) during winter. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds. Texas sites are in a separate table.

Site>	LA1	LA2	LA3	LA4	LA5	LA6	LA7	LA8	LA9	LA10	LA11	OK1	OK2
BBPL	0.0	0.47	0.15	0.27	0.32	0.00	0.00	0.02	0.10	0.56	0.00	0.00	0.00
LGPL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	0.0	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.0	0.07	0.00	0.05	0.00	0.00	0.00	0.00	0.03	0.08	0.00	0.00	0.00
PIPL	0.0	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KILL	0.0	0.19	4.47	0.07	0.39	0.00	0.48	4.55	0.21	1.62	0.14	0.00	0.00
AMOY	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BNST	0.0	3.13	0.29	0.14	0.43	0.00	0.00	0.02	0.09	0.82	0.00	0.00	0.00
AMAV	0.0	3.58	0.00	0.00	0.95	0.00	0.00	0.00	1.84	1.07	0.00	0.00	0.00
GRYE	0.0	0.05	0.17	0.16	0.04	0.00	0.02	0.01	0.01	0.35	0.04	0.00	0.00
LEYE	0.0	0.02	0.52	0.04	0.02	0.00	0.02	0.06	0.00	0.25	0.71	0.00	0.00
SOSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WILL	0.0	1.10	0.00	0.12	0.26	0.00	0.00	0.00	0.14	0.50	0.00	0.00	0.00
SPSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
UPSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBCU	0.0	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00
HUGO	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.0	0.00	0.00	0.02	0.04	0.00	0.00	0.00	0.11	0.02	0.00	0.00	0.00
RUTU	0.0	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00
REKN	0.0	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00
SAND	0.0	0.39	0.00	0.72	0.15	0.00	0.00	0.00	0.00	0.30	0.30	0.00	0.00
SESA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WESA	0.0	4.44	0.09	1.61	0.77	0.00	2.16	0.08	0.78	16.51	0.05	0.00	0.00
LESA	0.0	0.02	0.23	0.75	0.04	0.00	1.31	0.36	0.09	0.27	0.06	0.00	0.00
WRSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BASA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PESA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DUNL	4.5	7.56	3.20	2.78	0.00	2.33	0.15	0.21	2.04	2.68	0.00	0.00	0.00
STSA	0.0	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBSA	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.0	5.70	0.00	0.62	0.03	0.00	0.00	0.00	0.81	1.56	1.56	0.00	0.00
LBDO	0.0	0.47	7.16	0.00	0.03	0.00	0.23	0.00	0.00	3.67	2.83	0.00	0.00
COSN	0.0	0.09	0.81	0.00	0.05	0.00	0.44	0.51	0.05	0.23	0.19	0.00	0.00
AMWO	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.01	0.00	0.00	0.00
WIPH	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RNPH	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.0	0.00	0.50	2.00	0.00	0.00	0.00	0.00	2.00	2.40	0.00	0.00	0.00
DOSP	0.0	0.05	0.00	0.00	0.24	0.00	0.03	0.00	0.00	0.06	0.17	0.00	0.00
SBSP	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
totl	0.0	24.30	21.98	10.12	7.16	5.49	7.02	5.78	6.47	32.59	6.86	0.00	0.00

Table 23. Number (thousands) of shorebirds at wetlands in Texas (Region 5B-- see Fig. 1) during autumn migration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	TX1	TX2	TX3	TX4	TX5	TX6	TX7	TX8	TX9	TX10	TX11	TX12	TX13	TX14	TX15	TX16
BBPL	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LGPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPL	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPL	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KILL	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMOY	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BNST	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMAV	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GRYE	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LEYE	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SOSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WILL	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SPSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UPSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBCU	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HUGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RUTU	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REKN	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAND	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SESA	0.00	0.00	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WESA	0.00	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LESA	0.00	0.00	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WRSA	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BASA	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DUNL	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBSA	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.00	0.00	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBDO	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COSN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RNPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
totl	0.00	0.00	5.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 24. Number (thousands) of shorebirds at wetlands in Texas (Region 5B --see Fig. 1) during spring migration. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	TX1	TX2	TX3	TX4	TX5	TX6	TX7	TX8	TX9	TX10	TX11	TX12	TX13	TX14	TX15	TX16
BBPL	0.05	0.01	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
LGPL	0.01	0.01	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	+	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+
WIPL	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
SEPL	0.02	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.82
PIPL	0.06	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KILL	+	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
AMOY	+	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BNST	0.07	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
AMAV	0.03	0.01	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GRYE	+	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LEYE	0.08	2.50	0.05	0.00	7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.31
SOSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
WILL	0.07	0.03	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
SPSA	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UPSA	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
WHIM	+	0.01	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
LBCU	+	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+
HUGO	+	0.01	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
MAGO	0.01	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	+
RUTU	0.01	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
REKN	2.46	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
SAND	0.04	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.24
SESA	0.33	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
WESA	0.04	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
LESA	0.38	0.01	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
WRSA	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BASA	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PESA	0.09	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27
DUNL	2.77	0.00	3.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.31
STSA	0.02	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
BBSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	+	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBDO	0.41	10.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64
COSN	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIPH	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.04
RNPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
totl	8.43	12.96	11.25	0.00	13.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	7.01

Table 25. Number (thousands) of shorebirds at wetlands in Texas (Region 5B --see Fig. 1) during winter. Only locations with 5000 or more shorebirds are included. A plus sign is shown for < 10 birds.

Site>	TX1	TX2	TX3	TX4	TX5	TX6	TX7	TX8	TX9	TX10	TX11	TX12	TX13	TX14	TX15	TX16
BBPL	0.00	0.00	0.00	0.05	0.00	0.14	0.16	0.00	0.78	0.40	0.10	0.11	0.00	0.11	0.11	0.00
LGPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SNPL	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00
WIPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPL	0.00	0.00	0.00	0.00	0.00	0.14	0.03	0.00	0.03	0.17	0.00	0.00	0.00	0.00	0.00	0.00
PIPL	0.00	0.00	0.00	0.03	0.00	0.00	0.01	0.00	0.02	0.02	0.00	0.00	0.00	0.04	0.01	0.00
KILL	0.00	0.00	0.00	0.50	0.00	0.59	0.25	1.68	1.66	0.76	2.42	0.10	0.00	0.04	0.36	0.00
AMOY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00
BNST	0.00	0.00	0.00	0.08	0.00	0.15	0.15	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
AMAV	0.00	0.00	0.00	0.30	0.00	0.92	0.31	0.00	0.02	0.86	0.10	0.12	0.00	0.13	0.25	0.00
GRYE	0.00	0.00	0.00	0.12	0.00	0.15	0.03	0.16	0.14	0.04	0.36	0.04	0.00	0.05	0.06	0.00
LEYE	0.00	0.00	0.00	0.10	0.00	0.06	0.02	0.00	0.31	0.07	0.08	0.05	0.00	0.08	0.03	0.00
SOSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WILL	0.00	0.00	0.00	0.28	0.00	0.05	0.20	0.00	0.63	0.57	0.07	0.29	0.00	0.50	0.34	0.00
SPSA	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.02	0.02	0.05	0.00	0.00	0.00	0.00	0.00
UPSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHIM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBCU	0.00	0.00	0.00	0.99	0.00	0.11	0.15	0.25	0.13	0.11	0.00	0.03	0.00	0.07	0.26	0.00
HUGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGO	0.00	0.00	0.00	0.02	0.00	0.02	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.23	0.00	0.00
RUTU	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.05	0.17	0.00	0.00	0.00	0.04	0.02	0.00
REKN	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAND	0.00	0.00	0.00	0.27	0.00	0.06	0.19	0.00	0.50	0.55	2.30	0.03	0.00	0.30	0.14	0.00
SESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WESA	0.00	0.00	0.00	0.14	0.00	2.00	0.41	0.35	0.71	0.64	1.72	70.00	0.00	8.00	3.41	0.00
LESA	0.00	0.00	0.00	0.00	0.00	0.54	0.21	0.54	0.22	0.33	1.10	18.00	0.00	0.03	0.00	0.00
WRSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BASA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PESA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DUNL	0.00	0.00	0.00	1.00	0.00	0.25	0.16	2.54	5.41	1.37	1.40	2.09	0.00	3.42	3.11	0.00
STSA	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SBDO	0.00	0.00	0.00	0.20	0.00	0.01	0.00	0.00	0.01	0.03	0.31	0.00	0.00	0.00	0.68	0.00
LBDO	0.00	0.00	0.00	0.28	0.00	0.54	0.35	9.40	0.53	0.05	2.01	15.50	0.00	0.00	2.70	0.00
COSN	0.00	0.00	0.00	0.04	0.00	0.11	0.01	0.14	0.10	0.11	0.13	0.00	0.00	0.00	0.06	0.00
AMWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
WIPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RNPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YESP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEEP	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00
DOSP	0.00	0.00	0.00	4.00	0.00	0.00	0.96	0.00	3.16	2.39	0.33	0.00	0.00	0.37	0.00	0.00
SBSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	15.55	0.10	0.00	0.00	0.00	0.00	0.00
totl	0.00	0.00	0.00	8.41	0.00	5.91	11.25	15.04	0.00	27.06	12.59	106.40	0.00	13.45	11.55	0.00

Table 26. Number (thousands) of shorebirds at wetlands in Nova Scotia during autumn migration. Only lo
5000 or more shorebirds are included. A hyphen indicates less than 10 birds or species grouped in othe

Site>	NS1	NS3	NS5	NS8	NS11	NS13	NS14	NS15	NS16	NS17	NS18	NS19	NS20	NS21
BBPL	-	0.52	-	-	0.50	-	-	0.84	-	-	-	-	-	-
LGPL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SNPL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WIPL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPL	-	1.64	-	0.80	-	-	-	-	0.84	-	-	-	0.50	-
PIPL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KILL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMOY	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BNST	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMAV	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GRYE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEYE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SOSA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WILL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SPSA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UPSA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WHIM	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LBCU	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HUGO	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAGO	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RUTU	-	-	-	-	-	-	-	-	-	-	-	-	-	-
REKN	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAND	-	1.25	-	-	-	-	-	-	-	-	-	-	-	-
SESA	-	5.60	-	4.20	25.00	4.50	100.00	26.00	5.00	30.00	6.65	15.00	12.00	5.00
WESA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LESA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WRSA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BASA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PESA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DUNL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
STSA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BBSA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SBDO	-	1.28	-	1.10	-	-	-	0.60	-	-	-	-	-	-
LBDO	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COSN	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMWO	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WIPH	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RNPH	-	-	-	-	-	-	-	-	-	-	-	-	-	-
REPH	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YESP	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PEEP	4.00	3.10	-	-	-	-	-	-	-	-	2.50	7.30	-	3.50
DOSP	-	-	-	-	0.50	-	-	-	-	-	-	-	-	-
SBSP	1.05	-	5.35	.80	5.00	0.80	1.20	0.26	0.11	-	-	-	1.10	-
totl	5.05	13.39	5.35	6.90	31.00	5.30	101.20	27.70	5.95	30.00	9.15	22.30	13.60	8.50

Table 27. Number (thousands) of shorebirds at wetlands in New Brunswick during autumn migration. Only locations with 5000 or more shorebirds are included. A Hyphen indicates < 10 or species grouped in other categories.

Site>	NR2	NR4	NR5	NR6	NR7	NR9	NR10	NR11	NR12
BBPL	-	-	-	-	-	-	-	-	.80
LGPL	-	-	-	-	-	-	-	-	-
SNPL	-	-	-	-	-	-	-	-	-
WIPL	-	-	-	-	-	-	-	-	-
SEPL	1.00	-	-	-	-	1.00	2.00	-	2.00
PIPL	-	-	-	-	-	-	-	-	-
KILL	-	-	-	-	-	-	-	-	-
AMOY	-	-	-	-	-	-	-	-	-
BNST	-	-	-	-	-	-	-	-	-
AMAV	-	-	-	-	-	-	-	-	-
GRYE	-	-	-	-	-	-	-	-	-
LEYE	-	-	-	-	-	-	-	-	-
SOSA	-	-	-	-	-	-	-	-	-
WILL	-	-	-	-	-	-	-	-	-
SPSA	-	-	-	-	-	-	-	-	-
UPSA	-	-	-	-	-	-	-	-	-
WHIM	-	-	-	-	-	-	-	-	-
LBCU	-	-	-	-	-	-	-	-	-
HUGO	-	-	-	-	-	-	-	-	-
MAGO	-	-	-	-	-	-	-	-	-
RUTU	-	-	-	-	-	-	-	-	-
REKN	-	-	-	-	-	-	-	-	1.00
SAND	-	-	-	-	-	-	-	-	.75
SESA	6.40	7.00	20.00	-	72.00	3.45	6.50	9.00	200.00
WESA	-	-	-	-	-	-	-	-	-
LESA	0.70	-	-	-	-	1.00	3.00	3.13	2.50
WRSA	-	-	-	-	.50	-	-	.60	-
BASA	-	-	-	-	-	-	-	-	-
PESA	-	-	-	-	-	-	-	-	-
DUNL	-	-	-	-	1.30	-	-	-	.75
STSA	-	-	-	-	-	-	-	-	-
BBSA	-	-	-	-	-	-	-	-	-
SBDO	-	-	-	-	-	.50	-	-	.90
LBDO	-	-	-	-	-	-	-	-	-
COSN	-	-	-	-	-	-	-	-	-
AMWO	-	-	-	-	-	-	-	-	-
WIPH	-	-	-	-	-	-	-	-	-
RNPH	-	-	-	1.00	-	5.00	-	-	-
REPH	-	-	-	10.00	-	-	-	-	-
YESP	-	-	-	-	-	-	-	-	-
PEEP	-	-	-	-	55.00	-	1.00	10.00	200.00
DOSP	-	-	-	-	-	-	-	.95	-
SBSP	150.00	-	-	-	-	100.00	-	-	-
totl	158.10	7.00	20.00	11.00	128.80	110.90	12.50	23.68	408.70

Table 28. Number (thousands) of shorebirds at wetlands in Quebec and Ontario during autumn or spring in Manitoba. Only locations with 5000 or more shorebirds are included. Hyphens represent less than 10 birds, unrecorded species, or a species grouped in other categories.

Site>	QB1	QB2	QB3	QB4	QB5	QB7	QB8	ON1	ON2	ON3
BBPL	-	-	10.00	-	-	-	-	-	-	-
LGPL	-	-	-	-	-	-	-	-	-	-
SNPL	-	-	-	-	-	-	-	-	-	-
WIPL	-	-	-	-	-	-	-	-	-	-
SEPL	-	-	-	-	-	-	-	-	-	-
PIPL	-	-	-	-	-	-	-	-	-	-
KILL	-	-	-	-	-	-	-	-	-	-
AMOY	-	-	-	-	-	-	-	-	-	-
BNST	-	-	-	-	-	-	-	-	-	-
AMAV	-	-	-	-	-	-	-	-	-	-
GRYE	-	-	-	-	-	-	-	-	-	-
LEYE	-	-	-	-	-	-	-	-	-	-
SOSA	-	-	-	-	-	-	-	-	-	-
WILL	-	-	-	-	-	-	-	-	-	-
SPSA	-	-	-	-	-	-	-	-	-	-
UPSA	-	-	-	-	-	-	-	-	-	-
WHIM	-	-	-	-	-	-	-	-	-	-
LBCU	-	-	-	-	-	-	-	-	-	-
HUGO	-	-	-	-	-	-	-	10.00	-	-
MAGO	-	-	-	-	-	-	-	-	-	-
RUTU	-	-	-	-	-	-	-	-	-	-
REKN	-	-	-	-	-	-	-	-	-	5.00
SAND	-	-	-	-	-	-	-	-	-	-
SESA	-	-	-	-	-	-	-	-	-	-
WESA	-	-	-	-	-	-	-	-	-	-
LESA	-	-	-	-	-	-	-	-	-	-
WRSA	-	-	-	-	-	-	-	-	-	-
BASA	-	-	-	-	-	-	-	-	-	-
PESA	-	-	-	-	-	-	-	-	-	-
DUNL	-	-	-	-	-	-	-	-	-	-
STSA	-	-	-	-	-	-	-	-	-	-
BBSA	-	-	-	-	-	-	-	-	-	-
SBDO	-	-	-	-	-	-	-	-	7.63	-
LBDO	-	-	-	-	-	-	-	-	-	-
COSN	-	-	-	-	-	-	-	-	-	-
AMWO	-	-	-	-	-	-	-	-	-	-
WIPH	-	-	-	-	-	-	-	-	-	-
RNPH	-	-	-	-	-	-	-	-	-	-
REPH	-	-	-	-	-	-	-	-	-	-
YESP	-	-	-	-	-	-	-	-	-	-
PEEP	-	-	-	37.00	-	-	-	-	-	-
DOSP	-	-	-	-	-	-	-	-	-	-
SBSP	9.60	13.45	-	-	15.85	9.65	5.00	-	-	-
totl	9.60	13.45	10.00	37.00	15.85	9.65	5.00	10.00	14.38	5.00

Table 29. Number (thousands) of shorebirds at wetlands in Alberta during Spring migration. Only locations with 5000 or more shorebirds are included. Hyphens represent < 10 birds, unrecorded species, or a species grouped in other categories.

Site>	AB1	AB2	AB3	AB4	AB5	AB7	AB8	AB9	AB10	AB11
BBPL	-	-	-	-	-	-	-	-	-	-
LGPL	-	-	-	-	-	-	-	-	-	-
SNPL	-	-	-	-	-	-	-	-	-	-
WIPL	-	-	-	-	-	-	-	-	-	-
SEPL	-	-	-	-	-	-	-	-	-	-
PIPL	-	-	-	-	-	-	-	.04	-	-
KILL	-	-	-	-	-	-	-	-	-	-
AMOY	-	-	-	-	-	-	-	-	-	-
BNST	-	-	-	-	-	-	-	-	-	-
AMAV	-	-	-	-	-	-	-	-	*0.90	-
GRYE	-	-	-	-	-	-	-	-	-	-
LEYE	-	-	-	-	-	-	-	-	11.50	-
SOSA	-	-	-	-	-	-	-	-	-	-
WILL	-	-	-	-	-	-	-	-	-	-
SPSA	-	-	-	-	-	-	-	-	-	-
UPSA	-	-	-	-	-	-	-	-	-	-
WHIM	-	-	-	-	-	-	-	-	-	-
LBCU	-	-	-	-	-	-	-	-	-	-
HUGO	-	-	-	-	-	-	-	-	-	-
MAGO	-	-	-	-	-	-	-	-	-	-
RUTU	-	-	-	-	-	-	-	-	-	-
REKN	-	-	-	-	-	-	-	-	-	-
SAND	-	4.50	-	-	-	-	-	20.00	-	-
SESA	-	-	-	-	-	-	-	-	-	-
WESA	-	-	-	-	-	-	-	-	-	-
LESA	-	-	-	-	-	-	-	-	-	-
WRSA	-	-	-	-	-	-	-	-	-	-
BASA	-	-	-	-	-	-	10.00	-	-	-
PESA	-	-	-	-	-	-	-	-	-	-
DUNL	-	-	-	-	-	-	-	-	-	-
STSA	-	-	-	10.00	-	-	-	-	-	-
BBSA	.70	-	-	-	-	-	-	-	-	-
SBDO	-	-	-	-	-	-	-	-	-	-
LBDO	-	-	-	-	-	-	-	-	-	-
COSN	-	-	-	-	-	-	-	-	-	-
AMWO	-	-	-	-	-	-	-	-	-	-
WIPH	-	-	-	-	-	-	-	-	-	-
RNPH	-	-	-	-	*10.00	-	-	-	-	-
REPH	7.00	-	-	-	-	-	-	-	-	-
YESP	-	-	-	-	-	-	-	-	13.53	-
PEEP	-	-	-	-	-	-	-	-	-	-
DOSP	-	-	-	-	-	12.00	-	-	-	-
SBSP	23.50	11.00	10.00	16.85	14.73	27.05	17.70	36.00	55.80	14.13
totl	31.20	15.50	10.00	26.85	14.73	39.05	27.70	56.4	80.83	14.13

* Count from autumn

Table 30. Number (thousands) of shorebirds at wetlands in Saskatchewan during spring migration. Only locations with 5000 or more shorebirds are included. Hyphens represent less than 10 birds, unrecorded species, or a species grouped in other categories.

Site>	SK1	SK2	SK3	SK4	SK5	SK7	SK8	SK9	SK10	SK11	SK12	SK13	SK14	SK15
BBPL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LGPL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SNPL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WIPL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIPL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KILL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMOY	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BNST	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMAV	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GRYE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEYE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SOSA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WILL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SPSA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UPSA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WHIM	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LBCU	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HUGO	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAGO	-	-	-	-	-	-	-	*1.00	-	-	-	-	-	-
RUTU	-	-	-	-	-	-	-	-	-	-	-	-	-	-
REKN	-	-	-	-	-	-	-	5.00	-	-	-	-	-	-
SAND	10.00	-	14.00	-	-	-	-	-	-	-	-	-	-	-
SESA	-	-	3.60	-	-	-	-	-	-	-	-	-	-	-
WESA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LESA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WRSA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BASA	-	-	16.73	-	-	-	-	-	-	-	-	-	-	-
PESA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DUNL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
STSA	-	-	.83	-	-	-	-	-	-	-	-	-	-	-
BBSA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SBDO	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LBDO	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COSN	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMWO	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WIPH	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RNPH	-	-	-	-	-	-	-	-	36.85	-	-	-	-	-
REPH	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YESP	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PEEP	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DOSP	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SBSP	29.00	10.68	27.65	7.25	12.23	25.00	24.80	-	-	12.63	10.65	5.80	75.00	6.60
totl	39.00	10.68	62.81	7.25	12.23	25.00	24.80	5.00	36.85	12.63	10.65	5.80	75.00	6.60

Table 31. Numbers of Purple Sandpipers found during Christmas Bird Counts east of the 105^{th} Meridian. Counts of less than 50 are not listed.

Number	State	Location	Year
502	CT	NEW HAVEN	81
209	CT	NEW HAVEN	82
259	CT	NEW HAVEN	83
383	CT	NEW HAVEN	84
87	CT	NEW HAVEN	85
187	CT	NEW HAVEN	86
274	CT	NEW HAVEN	87
64	CT	NEW HAVEN	88
58	CT	NEW LONDON	80
72	CT	NEW LONDON	82
62	CT	NEW LONDON	84
82	CT	NEW LONDON	86
80	CT	NEW LONDON	87
77	CT	NEW LONDON	89
62	CT	OLD LYME-SAYBROO	81
61	CT	OLD LYME-SAYBROO	83
123	CT	OLD LYME-SAYBROO	84
56	CT NY	GREENWICH-STAMFO	84
50	DE	REHOBOTH	80
59	MA	CAPE ANN	81
215	MA	CAPE ANN	82
59	MA	CAPE ANN	83
58	MA	CAPE ANN	84
158	MA	CAPE ANN	85
74	MA	CAPE ANN	86
59	MA	CAPE ANN	87
89	MA	CAPE ANN	89
210	MA	GREATER BOSTON	83
51	MA	GREATER BOSTON	87
109	MA	MARSHFIELD	84
153	MA	MARSHFIELD	87
140	MA	MARSHFIELD	88
55	MA	NANTUCKET	85
225	MA	QUINCY	80
300	MA	QUINCY	82
86	MA	QUINCY	84
340	MA	QUINCY	85
81	MA	QUINCY	86
235	MA	QUINCY	87
130	MD	OCEAN CITY	80
110	MD	OCEAN CITY	81
125	MD	OCEAN CITY	82
86	MD	OCEAN CITY	83
150	MD	OCEAN CITY	84
100	MD	OCEAN CITY	85
220	MD	OCEAN CITY	86
70	MD	OCEAN CITY	87
57	MD	OCEAN CITY	88

50	MD	OCEAN CITY	89
168	ME	BATH-PHIPPSBURG-	80
252	ME	BATH-PHIPPSBURG-	81
250	ME	BATH-PHIPPSBURG-	82
89	ME	BATH-PHIPPSBURG-	83
82	ME	BATH-PHIPPSBURG-	84
354	ME	BATH-PHIPPSBURG-	85
240	ME	BATH-PHIPPSBURG-	86
59	ME	BATH-PHIPPSBURG-	87
105	ME	BATH-PHIPPSBURG-	88
97	ME	BATH-PHIPPSBURG-	89
366	ME	BIDDEFORD-KENNEB	80
195	ME	BIDDEFORD-KENNEB	81
160	ME	BIDDEFORD-KENNEB	82
183	ME	BIDDEFORD-KENNEB	83
168	ME	BIDDEFORD-KENNEB	84
262	ME	BIDDEFORD-KENNEB	85
106	ME	BIDDEFORD-KENNEB	86
87	ME	BIDDEFORD-KENNEB	89
70	ME	EASTPORT	81
276	ME	EASTPORT	84
60	ME	GREATER PORTLAND	85
60	ME	GREATER PORTLAND	86
118	ME	GREATER PORTLAND	87
233	ME	MONHEGAN I.	80
355	ME	MOOSE I.-JONESPO	80
157	ME	MOOSE I.-JONESPO	81
642	ME	MOOSE I.-JONESPO	82
332	ME	MOOSE I.-JONESPO	83
1014	ME	MOOSE I.-JONESPO	84
425	ME	MOOSE I.-JONESPO	86
1346	ME	MOOSE I.-JONESPO	87
445	ME	MOOSE I.-JONESPO	89
157	ME	MOUNT DESERT I.	80
153	ME	MOUNT DESERT I.	81
706	ME	MOUNT DESERT I.	82
110	ME	MOUNT DESERT I.	83
168	ME	MOUNT DESERT I.	84
165	ME	MOUNT DESERT I.	85
100	ME	MOUNT DESERT I.	87
160	ME	MOUNT DESERT I.	89
134	ME	SCHOODIC PT.	80
117	ME	SCHOODIC PT.	81
64	ME	SCHOODIC PT.	82
87	ME	SCHOODIC PT.	83
112	ME	SCHOODIC PT.	84
173	ME	SCHOODIC PT.	86
110	ME	SCHOODIC PT.	87
103	ME	SCHOODIC PT.	88
70	ME	THOMASTON-ROCKLA	81
65	ME	THOMASTON-ROCKLA	87
369	ME	THOMASTON-ROCKLA	88
225	ME	YORK CO.	83
120	ME	YORK CO.	84

109	ME	YORK CO.	85
153	ME	YORK CO.	86
231	ME	YORK CO.	87
289	ME	YORK CO.	88
334	ME	YORK CO.	89
61	NB	BLACKS HARBOUR	88
170	NB	GRAND MANAN I.	80
83	NB	GRAND MANAN I.	81
113	NB	GRAND MANAN I.	82
52	NB	GRAND MANAN I.	83
71	NB	GRAND MANAN I.	84
75	NB	GRAND MANAN I.	85
215	NB	GRAND MANAN I.	87
430	NB	GRAND MANAN I.	89
88	NFL	CAPE RACE	80
251	NFL	CAPE RACE	83
252	NFL	CAPE RACE	84
127	NFL	CAPE RACE	85
309	NFL	CAPE RACE	87
164	NFL	CAPE RACE	88
158	NFL	CAPE RACE	89
59	NFL	CAPE ST. MARY'S	83
131	NFL	ST. PAUL'S-COW H	83
59	NH	COASTAL NEW HAMP	82
99	NH	COASTAL NEW HAMP	83
112	NH	COASTAL NEW HAMP	84
66	NH	COASTAL NEW HAMP	85
89	NH	COASTAL NEW HAMP	86
72	NH	COASTAL NEW HAMP	89
164	NH	ISLES OF SHOALS	80
530	NH	ISLES OF SHOALS	83
268	NH	ISLES OF SHOALS	86
75	NJ	BARNEGAT	80
147	NJ	BARNEGAT	82
51	NJ	BARNEGAT	85
156	NJ	BARNEGAT	87
98	NJ	BARNEGAT	88
60	NJ	BARNEGAT	89
101	NJ	CAPE MAY	80
450	NJ	CAPE MAY	81
141	NJ	CAPE MAY	82
235	NJ	CAPE MAY	83
410	NJ	CAPE MAY	84
68	NJ	CAPE MAY	85
62	NJ	CAPE MAY	86
185	NJ	CAPE MAY	87
116	NJ	CAPE MAY	88
151	NJ	CAPE MAY	89
50	NJ	LAKEHURST	80
142	NJ	LAKEHURST	84
79	NJ	MARMORA	80
83	NJ	MARMORA	82
76	NJ	MARMORA	83
140	NJ	MARMORA	87

515	NJ	OCEANVILLE	83
50	NJ	OCEANVILLE	84
355	NS	BRIER I.	83
67	NS	BRIER I.	86
52	NS	ECONOMY	82
250	NS	ECONOMY	83
78	NS	ECONOMY	84
127	NS	ECONOMY	86
105	NS	ECONOMY	87
60	NS	ECONOMY	88
55	NS	ECONOMY	89
59	NS	HALIFAX (EAST)	82
80	NS	HALIFAX (WEST)	80
130	NS	HALIFAX (WEST)	82
159	NS	HALIFAX (WEST)	83
125	NS	HALIFAX (WEST)	85
90	NS	HALIFAX (WEST)	87
75	NS	KINGSTON	85
88	NS	KINGSTON	89
57	NS	PORT HEBERT	80
125	NS	PORT HEBERT	83
153	NS	PORT HEBERT	86
80	NS	PORT HEBERT	88
159	NY	BRONX-WESTCHESTE	83
125	NY	BRONX-WESTCHESTE	84
87	NY	BRONX-WESTCHESTE	85
177	NY	BRONX-WESTCHESTE	86
88	NY	BRONX-WESTCHESTE	87
85	NY	L.I.: BROOKLYN	80
50	NY	L.I.: BROOKLYN	86
52	NY	L.I.: BROOKLYN	89
52	NY	L.I.: MONTAUK	83
59	NY	L.I.: QUEENS	83
93	NY	L.I.: QUEENS	85
85	NY	L.I.: SOUTHERN N	80
158	NY	L.I.: SOUTHERN N	82
235	NY	L.I.: SOUTHERN N	83
72	NY	L.I.: SOUTHERN N	84
75	NY	L.I.: SOUTHERN N	85
84	NY	L.I.: SOUTHERN N	86
60	NY	L.I.: SOUTHERN N	87
178	NY	STATEN I.	80
95	NY	STATEN I.	81
146	NY	STATEN I,	82
162	NY	STATEN I.	83
79	NY	STATEN I.	84
66	RI	SOUTH KINGSTOWN	80
181	RI	SOUTH KINGSTOWN	82
83	RI	SOUTH KINGSTOWN	83
74	RI	SOUTH KINGSTOWN	84
124	RI	SOUTH KINGSTOWN	85
134	RI	SOUTH KINGSTOWN	86
78	RI	SOUTH KINGSTOWN	89
105	RI MA	NEWPORT CO.-WEST	80

54	RI MA	NEWPORT CO.-WEST	81
62	RI MA	NEWPORT CO.-WEST	82
236	RI MA	NEWPORT CO.-WEST	83
132	RI MA	NEWPORT CO.-WEST	84
229	RI MA	NEWPORT CO.-WEST	85
78	RI MA	NEWPORT CO.-WEST	86
81	RI MA	NEWPORT CO.-WEST	87
88	RI MA	NEWPORT CO.-WEST	88
137	RI MA	NEWPORT CO.-WEST	89
94	VA	LITTLE CREEK	80
89	VA	LITTLE CREEK	83
55	VA	LITTLE CREEK	85
58	VA	LITTLE CREEK	87
50	VA	LITTLE CREEK	89

Appendix 7. Information on selected sites identified in the U. S. and Canada as having counts of 5000 or more shorebirds during spring or autumn migration. Site names are listed in Appendix 5 for cross reference to the Tables in Appendix 6.

SITE NAME: Holmes Bay and Sprague Neck CODE: MEBS

LOCATION: Machias, ME

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach (X), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry (X). Other: Tidal mudflats and temporary tidal pools are also important to shorebirds. Blueberry 'barrens' used by WHIM.

SIZE: 1.5 x 1.0 mi.

OWNERSHIP, private (X) or public (X)
Part of the area is a U.S. Naval Communications Facility.

ACCESSIBILITY: Readily accessible with permission. Access otherwise is severely restricted by Navy. Most of site can be easily reached on foot (1/2 mile walk).

ANNUAL VARIATION IN HABITAT: none

SEASONS OF SHOREBIRD OCCURRENCE: Fall migration

MAJOR SPECIES: BBPL, SESA

CENSUS CONSIDERATIONS: Potentially useful for PTC if SESA PTC during autumn is elected.

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS:

SITE NAME: Lubec Flats & Gravel Bar CODE: MEAX

LOCATION: Lubec, ME

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach (X), coastal lagoon ( ), coastal bay (X), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ).
Other: Tidal flats adjacent to private property.

SIZE: ca. 2 x 2 mi.

OWNERSHIP, private (X) or public ( )
Intertidal with public access.

ACCESSIBILITY: Readily accessible

ANNUAL VARIATION IN HABITAT: none

SEASONS OF SHOREBIRD OCCURRENCE: Fall migration.

MAJOR SPECIES:

CENSUS CONSIDERATIONS: SESA is the most abundant shorebird. Because SESA are much more abundant at other northeastern locations this is a low priority site for PTC.

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS:

SITE NAME: Ripley Neck CODE: MEBB

LOCATION: Near Harrington, ME

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach (X), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ).
Other:

SIZE: 5 mi. in length

OWNERSHIP: private ( ) or public ( ).

ACCESSIBILITY: Accessible by boat and on foot (16-mi. walk)

ANNUAL VARIATION IN HABITAT:

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED:

COMMENTS:

SITE NAME: Wesheag Marsh CODE: MEAT

LOCATION: So. Thomaston, ME

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay (X), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond (X), freshwater reservoir ( ), brackish pond (X), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry (X). Other: Mudflats and sandflats.

SIZE: 1 x 2 mi.

OWNERSHIP: private ( ) or public ( ).

ACCESSIBILITY: Accessible by foot

ANNUAL VARIATION IN HABITAT: Tidal, minimum annual variation

SEASONS OF SHOREBIRD OCCURRENCE: Spring and fall migration

MAJOR SPECIES: BBPL, LEYE (spring); SESA and other peep (fall)

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS:

SITE NAME: Duxbury Beach CODE: MABL

LOCATION: Duxbury, MA.

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach (X), coastal lagoon ( ), coastal bay (X), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ).
Other:

SIZE: 3.5 x .25 mi.

OWNERSHIP, private (X) or public ( ): Nonprofit Trust

ACCESSIBILITY: Accessible by 4-wheel vehicle with permission or permit.

ANNUAL VARIATION IN HABITAT: none

SEASONS OF SHOREBIRD OCCURRENCE: Fall migration

MAJOR SPECIES: High counts of SAND and REKN.

CENSUS CONSIDERATIONS: Shorebird numbers may fluctuate with recreational use of nearby Plymouth Beach.

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS: Relatively small numbers of shorebirds that are abundant at other northeastern sites make this a low priority site for population trend censusing.

SITE NAME: Newburyport Harbor CODE: MABB

LOCATION: Newburyport, MA.

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary (X), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ). Other: Intertidal mud flats at the mouth of the Merrimack River. An important feeding area for shorebirds which, at higher tides, fly to resting areas in nearby saltmashes, including those within Parker River NWR.

SIZE: ca. 3 x 1 mi. (at low tide).

OWNERSHIP, private ( ) or public ( )
Intertidal areas in public domain, ownership not determined.

ACCESSIBILITY: Readily surveyed by vehicle from adjacent rd.

ANNUAL VARIATION IN HABITAT: none

SEASONS OF SHOREBIRD OCCURRENCE: Spring and fall migration.

MAJOR SPECIES:

CENSUS CONSIDERATIONS: A good site for PTC because of legal protection, proximity to Parker River NWR, numbers of shorebirds, and ease of censusing. Censusing needs to be done during a 1-hr. window of falling tide. Otherwise, shorebirds are too distant to identify.

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS:

SITE NAME: New Island CODE: MABA

LOCATION: Eastham, MA

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay (X), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ).
Other: Used principally as a resting area by shorebirds that forage in nearby salt marshes and intertidal mudflats of Nauset Bay.

SIZE: ca. 10 ac.

OWNERSHIP, private ( ) or public (X)
National Park Service, Cape Cod National Seashore.

ACCESSIBILITY: Accessible by boat.

ANNUAL VARIATION IN HABITAT: none.

SEASONS OF SHOREBIRD OCCURRENCE: Fall, and to a lesser extent spring migration.

MAJOR SPECIES: BBPL, SEPL, SESA, SBDO, DUNL, REKN

CENSUS CONSIDERATIONS: A potential site for fall migration PTC of SBDO, SEPL, BBPL, and REKN.

NUMBER OF OBSERVERS NEEDED: 2

COMMENTS:

SITE NAME: Plymouth Beach CODE: MABM

LOCATION: Plymouth, MA

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay (X), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ).
Other: Used principally as a resting area by shorebirds that forage on intertidal sand and mudflats of Plymouth, Kingston, and Duxbury Bays, which taken together total approximately 8,000 ac. of intertidal flats.

SIZE: 3 x .25 mi.

OWNERSHIP, private (X) or public (X)
Most of the areas used by shorebirds are land owned by the town of Plymouth and open to the public by permit.

ACCESSIBILITY: Accessible by 4-wheel drive vehicle or on foot.

ANNUAL VARIATION IN HABITAT: Little variation

SEASONS OF SHOREBIRD OCCURRENCE: Mostly fall migration
MAJOR SPECIES: BBPL, SEPL, SESA, SAND

CENSUS CONSIDERATIONS: Area is heavily used for recreation which causes disturbance of shorebird habitat. Shorebird numbers fluctuate inversely with vehicle numbers; not a good site for PTC because of this variability.

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS:

SITE NAME: Scituate, Third Cliff CODE: MABG

LOCATION: Scituate, MA

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach (X), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry ( ). Other: sand and mudflats

SIZE:

OWNERSHIP: private (?) or public ( ).

ACCESSIBILITY: Accessible on foot

ANNUAL VARIATION IN HABITAT: Tidal, shorebird numbers have remained relatively constant.

SEASONS OF SHOREBIRD OCCURRENCE: Spring and fall migration

MAJOR SPECIES:

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS:

SITE NAME: Parker River NWR CODE: WPAR

LOCATION: Newburyport, MA

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay (X), river estuary (X), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh (X), brackish marsh (X), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded (X), or dry (X). Other:

SIZE: Unknown

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY: Accessible by vehicle and on foot

ANNUAL VARIATION IN HABITAT: Annual fluctuation in water level is 50%. Shorebird numbers vary less than 25% annually.

SEASONS OF SHOREBIRD OCCURRENCE: Fall migration

MAJOR SPECIES: See Appendix 6

CENSUS CONSIDERATIONS: Census can most easily be accomplished when shorebirds leave the refuge to forage.

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS:

SITE NAME: Monomoy Island NWR CODE: MAAY

LOCATION: Chatham, MA

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay (X), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond (X), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh (X), sewage treatment site ( ), salt pond (X), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ). Other: A National Wilderness area. Foot traffic and visitation areas are restricted during shorebird migration to minimize disturbance.

SIZE: ca. 10 X .75 mi.

OWNERSHIP, private ( ) or public (X)
US Fish and Wildlife Service

ACCESSIBILITY: Accessible by boat

ANNUAL VARIATION IN HABITAT: None, with the exception of storms which cause shifts in location of shorebird habitat.

SEASONS OF SHOREBIRD OCCURRENCE: Spring, fall, winter

MAJOR SPECIES:

CENSUS CONSIDERATIONS: Island is in 3 parts, all of which need to be censused.

NUMBER OF OBSERVERS NEEDED: 2 parties of 2 persons each.

COMMENTS: The regulation of disturbance to shorebirds, the species composition and numbers of shorebirds, and the fact that this is a wildlife refuge, combine to make this a suitable site for PTC.

SITE NAME: Frontage Road CODE: CTAA

LOCATION: New Haven, CT

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay (X), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ).

Other: Tidal mud flats, used by shorebirds only for foraging.

SIZE: ca. 1 x .75 mi.

OWNERSHIP, private ( ) or public ( )
Intertidal lands accessible to public.

ACCESSIBILITY: Easily surveyed by vehicle from municipal shorefront park.

ANNUAL VARIATION IN HABITAT: none

SEASONS OF SHOREBIRD OCCURRENCE: Mostly fall migration, small numbers of shorebirds in spring.

MAJOR SPECIES: Large counts of SESA.

CENSUS CONSIDERATIONS: Relatively small numbers of shorebird species that are more abundant elsewhere in the Northeast and Canada make this a low priority site for population trend censusing.

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS:

SITE NAME: Milford Point CODE: CTAD

LOCATION: East side of Housatonic River mouth.

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary (X), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ).
Other: Intertidal sand and mud flats attract shorebirds for foraging and beach is used as a resting area unless disturbed.

SIZE: 0.5 x 0.5 mi.

OWNERSHIP, private ( ) or public (X): Town conservation area (?)

ACCESSIBILITY: Readily accessible by car and foot

ANNUAL VARIATION IN HABITAT: None

SEASONS OF SHOREBIRD OCCURRENCE: Spring (SEPL, BBPL, LESA, SESA) and fall (SBDO, LESA, SESA, SAND, DUNL)

MAJOR SPECIES: see above

CENSUS CONSIDERATIONS: Relatively low numbers of shorebirds make this a low priority site for PTC censusing.

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS:

SITE NAME: Sandy Point CODE:

LOCATION: New Haven area, CT

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), saltmarsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ).
Other: Used as a high tide resting area for shorebirds, most of which commute to foraging areas in New Haven Harbor (see Frontage Rd. site account.)

SIZE: 3 x 0.5 mi.

OWNERSHIP, private ( ) or public ( )
A portion is public, remaining areas are undetermined.

ACCESSIBILITY: Accessible by foot.

ANNUAL VARIATION IN HABITAT: None

SEASONS OF SHOREBIRD OCCURRENCE: Greatest numbers of shorebirds occur during fall migration.

MAJOR SPECIES: BBPL, SEPL, SESA

CENSUS CONSIDERATIONS: Not a high priority for PTC because shorebird numbers generally are not high.

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS:

SITE NAME: Jamaica Bay Wildlife Sanct. CODE: NYAA

LOCATION: New York City, NY

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay (X), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond (X), freshwater reservoir ( ), brackish pond (X), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ). Other: East pond is 100 acres, West Pond 40 acres. Extensive intertidal mudflats used for low tide foraging, with many shorebirds coming into the ponds to rest and bathe at high tides.

SIZE: 9,155 ac.

OWNERSHIP, private ( ) or public (X)
National Park Service, Gateway National Recreation Area.

ACCESSIBILITY: Readily accessible

ANNUAL VARIATION IN HABITAT: Pond water levels can be managed, but management goals are not necessarily consistent from year to year.

SEASONS OF SHOREBIRD OCCURRENCE: Spring and fall migration, higher numbers in fall.

MAJOR SPECIES: Large numbers of SESA and BBPL in fall.

CENSUS CONSIDERATIONS: Numbers of shorebirds are relatively low from standpoint of northeastern locations, making this a site of relatively low priority for PTC. However, in terms annual habitat consistency and in terms of obtaining volunteer assistance, this could be a useful site.

NUMBER OF OBSERVERS NEEDED: 2

COMMENTS:

SITE NAME: Brigantine Beach CODE: NJA XX

LOCATION: Brigantine, NJ

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay (X), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ). Other:

SIZE: 4 x .25 mi

OWNERSHIP, private ( ) or public (X): legal public access, ownership ?

ACCESSIBILITY: Readily accessible by car and foot

ANNUAL VARIATION IN HABITAT: Shorebird numbers affected by recreational use of beach.

SEASONS OF SHOREBIRD OCCURRENCE: Migration seasons, especially late fall.

MAJOR SPECIES: REKN, BBPL,

CENSUS CONSIDERATIONS: Not suitable for population trend censusing due to heavy recreational usage.

NUMBER OF OBSERVERS NEEDED:

COMMENTS:

SITE NAME: Brigantine NWR CODE: NJAA
(Edwin B. Forsythe NWR)

LOCATION: Oceanville, NJ

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay (X), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh (X), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ).

Other: Impoundments, no water control structures; water levels depend on rainfall.

SIZE:

OWNERSHIP, private ( ) or public (X) : U.S. Fish & Wildlife Serv.

ACCESSIBILITY: Holgate Unit accessible by boat, impoundment accessible by vehicle, some areas accessible only by foot.

ANNUAL VARIATION IN HABITAT: Tidal habitats predictable, impoundment habitats unpredictable (depending on rainfall)

SEASONS OF SHOREBIRD OCCURRENCE: Highest shorebird numbers during spring and autumn migration. Wintering numbers of DUNL sometimes high.

MAJOR SPECIES:

CENSUS CONSIDERATIONS: Boat required for marsh census transects and census of Holgate Unit, a coastal barrier island.

NUMBER OF OBSERVERS NEEDED: 2-3 for complete, simultaneous census.

COMMENTS: A long history of data available through the ISS. Most data come from the Brigantine Unit, but some counts available from Holgate Unit.

SITE NAME: Delaware Bay CODE: NJAM

LOCATION: Principally the shorelines of Cape May and Cumberland Counties in New Jersey and the western shores of the bay between Cape Henlopen and Dover, Delaware.

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay (X), river estuary (X), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh (X), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ).
Other:

SIZE:

OWNERSHIP, private (X) or public (X)
Some of the areas most important to shorebirds are in the proposed Cape May NWR, some are state lands of Delaware and NJ, and some are private lands owned by conservation organizations. Much of the land is also private property under individual ownership.

ACCESSIBILITY: Variable. Most of the lands that would need to be accessed for ground censusing are accessible by road.

ANNUAL VARIATION IN HABITAT: Little annual variation.

SEASONS OF SHOREBIRD OCCURRENCE: Spring migration

MAJOR SPECIES: REKN, DUNL, SESA, RUTU, SAND

CENSUS CONSIDERATIONS: A primary location for population trend censusing of REKN, SESA, RUTU, and SAND. Aerial survey with ground truthing at the time of survey is required.

NUMBER OF OBSERVERS NEEDED: 10

COMMENTS: Aerial censusing has been conducted for a number of years, but has not been adequately ground-truthed with systematic stratified sampling.

SITE NAME: Great Egg Harbor Inlet CODE: NJAC

LOCATION: Near Longport, NJ

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay (X), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ).

Other: Sodbanks are an important habitat to shorebirds at this site.

SIZE: Ca. 2 x .5 mi.

OWNERSHIP, private (X) or public (X)
Intertidal areas accessible to public, beach and uplands private.

ACCESSIBILITY: Easily surveyed from nearby road

ANNUAL VARIATION IN HABITAT: none

SEASONS OF SHOREBIRD OCCURRENCE: Fall migration, smaller numbers in spring. An important site to REKN during fall migration, nesting PIPL.

MAJOR SPECIES: REKN

CENSUS CONSIDERATIONS: Relatively small numbers of shorebirds that occur in larger numbers at other northeastern sites make this a low priority site for population trend censusing.

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS:

SITE NAME: Hackensack Meadows CODE: NJAD

LOCATION: Hackensack, NJ

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary (X), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond (X), saline lake ( ), freshwater marsh (X), brackish marsh (X), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ).
Other: Impoundments, tidal flats and sewage pool

SIZE: Unknown, impoundment areas cover 99 ac., sewage pool totals 80+ ac.

OWNERSHIP, private ( ) or public ( )

ACCESSIBILITY:

ANNUAL VARIATION IN HABITAT: Pools sometimes flooded in July\August to prevent botulism

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES: Large numbers of peep, especially SESA. WIPH ad NOPH are regular fall migrants. Average of 31 species during fall migration.

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED:

COMMENTS:

SITE NAME: Tinicum NWR CODE: PAAE
(Tinicum National Environmental Center)

LOCATION: Philadelphia, PA

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin (X), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh (X), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry ( ). Other: Freshwater impoundments

SIZE: The refuge comprises 900 ac. with additional disjunct acreage. Refuge freshwater marsh area totals 145 ac.

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY: Readily accessible by vehicle or on foot

ANNUAL VARIATION IN HABITAT: Much of the refuge is tidal with little fluctuation in water level. Impoundment areas are fed by Darby Creek which depends upon rainfall. Annual variation in shorebird numbers is not known. The refuge is managed primarily for waterfowl, recreation and educational purposes. Impoundments are periodically drawn down to control invasive vegetation such as loosestrife.

SEASONS OF SHOREBIRD OCCURRENCE: Spring and fall migration

MAJOR SPECIES: Based on 4 years of data (1984-88), highest counts of SESA and LEYE

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS:

SITE NAME: Bombay Hook NWR CODE: WBOM

LOCATION: Kenton, DE

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry (X). Other: Freshwater impoundments and tidal mudflats

SIZE: Unknown. Total of 13,900 ac. wetlands, 12,000 ac. of which are salt marsh.

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY: Accessible by boat or aerially

ANNUAL VARIATION IN HABITAT: Annual fluctuation in water levels and shorebird numbers is less than 25%. Water level in freshwater impoundments can be controlled.

SEASONS OF SHOREBIRD OCCURRENCE: Spring and fall migration

MAJOR SPECIES: See Appendix 6

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED: 2

COMMENTS:

SITE NAME: Little Creek Beach & marsh CODE: DEAN

LOCATION: Delaware Bay coast

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh (X), brackish marsh ( ), saltmarsh (X), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ).
Other: Impoundments

SIZE: 1 x 7 mi.

OWNERSHIP, private ( ) or public (X)

ACCESSIBILITY:

ANNUAL VARIATION IN HABITAT:

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES:

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED:

COMMENTS:

SITE NAME: Assateague Island, MD CODE: MDAA

LOCATION:

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ). Other:

SIZE:

OWNERSHIP, private ( ) or public ( )

ACCESSIBILITY:

ANNUAL VARIATION IN HABITAT:

SEASONS OF SHOREBIRD OCCURRENCE:

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED:

COMMENTS: Information not yet received.

SITE NAME: Chincoteaque NWR CODE: VA Q

LOCATION: Chincoteague, VA

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond (X), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry ( ). Other: Freshwater impoundments

SIZE: Unknown. Total of 22 mi. of coastal beach, 350 ac. brackish pond, 1,000 ac. salt marsh.

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY: Accessible by vehicle and on foot.

ANNUAL VARIATION IN HABITAT: Annual fluctuation in water levels is 50%. Shorebird numbers vary 25-50% annually. Water source is primarily tidal; impoundments depend on rainfall. Water levels in impoundments can be controlled, but heavy rains can result in water rising beyond the level of attracting shorebirds.

SEASONS OF SHOREBIRD OCCURRENCE: Spring and fall migration

MAJOR SPECIES: See Appendix 6

CENSUS CONSIDERATIONS: Special permission and ATV needed for full coverage.

NUMBER OF OBSERVERS NEEDED: Unknown

COMMENTS:

SITE NAME: Craney Island Landfill CODE: VAAB

LOCATION: Hampton Roads, Norfolk, VA

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ). Other: Landfill juts into river and Chesapeake Bay. Formerly contained impoundments which provided good shorebird habitat. These have been filled. Other good shorebird habitat has been eliminated through operations of landfill.

SIZE: 2,500 ac.

OWNERSHIP, private ( ) or public (?)

ACCESSIBILITY: Readily accessible.

ANNUAL VARIATION IN HABITAT: See above. In addition, drought can seriously affect shorebird usage.

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES: Large numbers of SBDO, LBDO and peep.

CENSUS CONSIDERATIONS: Not suitable for population trend censusing for reasons noted above.

NUMBER OF OBSERVERS NEEDED:

COMMENTS:

SITE NAME: Eastern Shore of Virginia NWR CODE:
(including Fisherman's Island NWR, Thomas Creek and Smith Island Bay Junction)

LOCATION: Cape Charles, VA

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon (X), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond (X), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry ( ). Other: tidal flats

SIZE: Unknown. Thomas Creek and Smith Island Junction comprises ca. 400 ac.

OWNERSHIP: private (X) or public (X).
USF&WS and one private owner

ACCESSIBILITY: The south side of Fisherman's Island is accessible by vehicle; the north side of the island can be reached by boat. Thomas Creek and Smith Island Junction is accessible by boat over one mile of water.

ANNUAL VARIATION IN HABITAT: Annual fluctuation in water levels is less than 50%. Shorebird numbers vary 25-50%. Water source is primarily tidal.

SEASONS OF SHOREBIRD OCCURRENCE: Spring and fall migration

MAJOR SPECIES: See Appendix 6

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED: Unknown

COMMENTS:

SITE NAME: Agassiz NWR CODE: MN Q

LOCATION: Middle River, MN

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir (X), brackish pond ( ), saline lake ( ), freshwater marsh (X), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry ( ). Other: impoundments (20)

SIZE:

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY: Accessible by vehicle and airboat

ANNUAL VARIATION IN HABITAT: Fed by the Moose River from the north. Water levels fluctuate 25-50%, depending upon rainfall. Shorebird numbers vary as much as 50% annually. Only two impoundments are presently water controlled.

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES: See Appendix 6

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED: Unknown

COMMENTS:

SITE NAME: Detroit Wetland Management Area CODE: MN Q

LOCATION: Detroit Lakes, MN

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin (X), freshwater lake (X), freshwater pond (X), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh (X), brackish marsh ( ), salt marsh ( ), sewage treatment site (X), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded (X), or dry (X). Other:

SIZE: Unknown. Vast area, including 182 ac restored marsh

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY: Accessible by vehicle, boat and on foot.

ANNUAL VARIATION IN HABITAT: Water sources, rainfall and snowmelt, are "usually reliable". Shorebird numbers vary 25-50% annually. Restored marsh has water control structures, but can still be adversely effected by heavy rains or extreme drought.

SEASONS OF SHOREBIRD OCCURRENCE: Unknown

MAJOR SPECIES: See Appendix 6

CENSUS CONSIDERATIONS: Requires obtaining permission from numerous private landowners.

NUMBER OF OBSERVERS NEEDED: Unknown

COMMENTS:

SITE NAME: Pea Island NWR CODE: NCAO

LOCATION: Manteo, NC

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond (X), saline lake ( ), freshwater marsh ( ), brackish marsh (X), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ). Other: Salt flats, barrier dune and impoundments (brackish).

SIZE: Refuge totals 5,915 ac., including 328 ac. salt flats, 456 ac. sandy beach, 3,0024 ac. salt marsh, and 940 ac. impoundments. Beach is 12-13 mi in length.

OWNERSHIP, private ( ) or public (X)

ACCESSIBILITY: Accessible by 4-wheel drive, ATV for beach and impoundments, and on foot.

ANNUAL VARIATION IN HABITAT: Annual fluctuation in water level is less than 25% annually. Shorebirds numbers seem to be relatively stable year to year. The three refuge impoundments are water controlled and managed primarily for waterfowl.

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES: Based on one year's census data (1977) there were high fall counts of SAND and WILL, SESA in both seasons and of wintering DUNL.

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED: 3-4 observers would be required to census the refuge simultaneouly.

COMMENTS:

SITE NAME: Folly Beach (north end) CODE: SCAQ

LOCATION: Atlantic coast just south of Charleston, SC

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay (X), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ). Other: Sand and mud flats. Highest numbers of shorebirds were recorded when dredge spoil was being placed on the beach.

SIZE:

OWNERSHIP, private ( ) or public ( ); public access to intertidal areas. Ownership not determined.

ACCESSIBILITY: Readily accessible by car and foot.

ANNUAL VARIATION IN HABITAT: Highest shorebird numbers were recorded during dredging operations.

SEASONS OF SHOREBIRD OCCURRENCE: Spring and winter.

MAJOR SPECIES: REKN

CENSUS CONSIDERATIONS: Not a high priority for PTC because shorebird numbers generally are not high.

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS:

SITE NAME: Sewage Lagoons CODE: TNAQ1
(T.M. Maxson Sewage Treatment Plant)

LOCATION: Memphis, TN

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond (X), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site (X), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded (X), or dry (X). Other: sod banks

SIZE: .5 x .5 miles

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY: On foot and by vehicle

ANNUAL VARIATION IN HABITAT: Permanent lake, seasonal pond. Managed.

SEASONS OF SHOREBIRD OCCURRENCE: Spring and fall migration

MAJOR SPECIES: PESA, LESA, SESA.

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS:

SITE NAME: Belle Glade and vicinity, FL CODE: FLAD

LOCATION: Western Palm Beach Co.

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded (X) or dry ( ). Other: Rice and sugar fields are flooded and later drained in late summer for control of nematode worms, attracting droves of birds. Fields are planted and in crops again by late October.

SIZE: Roughly 20,000 ac. in rice production, 15-20,000 acr. in vegetable row crop (except corn fields which are not used by shorebirds), and 30,000 ac. of sodfields [but acerage of sod is rapidly dropping due to low demand].

OWNERSHIP, private (X) or public ( ). Much of the land is owned by large agriculture companies. Permission to census is difficult to obtain.

ACCESSIBILITY: Access is restricted and permission to enter is not ordinarily granted. Aerial survey would be needed.

ANNUAL VARIATION IN HABITAT: The size of the area used by shorebirds is huge. The birds are patchily distributed, generally found in whatever fields are at a management stage which attracts the birds. Following heavy rains the shorebirds often will switch from using food crop production fields to using sodfields. Longer term, the system is not very stable due to shifting agricultural practices.

SEASONS OF SHOREBIRD OCCURRENCE: August/September

MAJOR SPECIES: PESA, STSA, LEYE, LESA, LBDO, and KILL (up to 80,000) during Dec./January.

CENSUS CONSIDERATIONS: When observations were made from nearby roads many shorebirds were too distant to be identified. Aerial survey is needed for complete coverage unless access permission can be obtained. Ground censusing would need a team of 3-4 people for simultaneous coverage.

NUMBER OF OBSERVERS NEEDED: Ground-truthing of aerial surveys would be needed.

COMMENTS: This region probably has substantially more shorebird usage than the hugh numbers presently indicate.

SITE NAME: Cape Romano, FL CODE: FLAG

LOCATION: Southwest Florida coast south of Marco Island.

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay (X), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ).
Other: Oyster bars, mangrove

SIZE: 80 sq. mi.

OWNERSHIP, private (X) or public (X):

ACCESSIBILITY: Accessible by boat

ANNUAL VARIATION IN HABITAT: none, but water levels can vary day-to-day in an unpredictable fashion depending on wind and tidal stage.

SEASONS OF SHOREBIRD OCCURRENCE: Migration and winter.

MAJOR SPECIES:

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED:

COMMENTS:

SITE NAME: Clear Spring and
Noralyn Phosphate Mine CODE: FLCD

LOCATION: Bartow and Homeland, FL.

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ). Other: Phosphate mining pits with standing water in seasonal man-made ponds, mixed sand/mud flats, sandy beach, and dry fields.

SIZE: Approx. 2-3 sq. mi.

OWNERSHIP, private (X) or public ( )
International Minerals and Chemical Co.

ACCESSIBILITY: Roads sometimes impassable after rainfall.

ANNUAL VARIATION IN HABITAT: Extensive, depending on rainfall.

SEASONS OF SHOREBIRD OCCURRENCE: Spring and fall migrations

MAJOR SPECIES:

CENSUS CONSIDERATIONS: Not suitable for population trend censusing due to high annual variation of habitat availability.

NUMBER OF OBSERVERS NEEDED:

COMMENTS:

SITE NAME: Everglades National Park CODE:

LOCATION: Southwest Florida. Three sites within the park (L. Inghram, Sandy Key, and Snake Bite) are used by high, but unknown numbers of shorebirds during winter. Numbers may approach 6 figures according to Wayne Hoffman. Numbers during migration seasons are unknown.

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon (X), coastal bay (X), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ). Other: Intertidal areas are within 5 miles of each other but are on very different tidal regimes. Little is known of shorebird movement between the sites.

SIZE: L. Inghram ca. 1 x 3 mi, other sites not described.

OWNERSHIP, private ( ) or public (X): National Park Service

ACCESSIBILITY: Readily accessible by boat

ANNUAL VARIATION IN HABITAT: None

SEASONS OF SHOREBIRD OCCURRENCE: High winter shorebird populations, unknown numbers during migration.

MAJOR SPECIES: BBPL, SEPL, WIPL, WESA, LESA, SESA(?), DUNL

CENSUS CONSIDERATIONS: More information required on movement of shorebirds between the 3 sites.

NUMBER OF OBSERVERS NEEDED: Not known. Depends on timing of censuses at 3 sites.

COMMENTS: Site is not listed in our Tables because there is no estimate of shorebird numbers.

SITE NAME: Florida Panther NWR CODE:
(projected to become Thousand Islands NWR in 1992)

LOCATION: Naples, FL

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon (X), coastal bay (X), river estuary (X), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond (X), saline lake ( ), freshwater marsh ( ), brackish marsh (X), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry ( ).
Other:

SIZE: Unknown

OWNERSHIP: private (X) or public ( ).

ACCESSIBILITY: Accessible by airboat

ANNUAL VARIATION IN HABITAT: Annual fluctuation in water levels is less than 25%. No data is available on annual variation in shorebird numbers. Freshwater canals presently empty directly into estuary areas, but plans are to modify these to spreader canals when area becomes NWR.

SEASONS OF SHOREBIRD OCCURRENCE: Spring and fall migration

MAJOR SPECIES: See above

CENSUS CONSIDERATIONS: See above

NUMBER OF OBSERVERS NEEDED: Unknown

COMMENTS:

SITE NAME: Hooker's Point CODE:FLBG

LOCATION: Tampa, FL

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry ( ).
Other:

SIZE:

OWNERSHIP: private ( ) or public ( ).

ACCESSIBILITY:

ANNUAL VARIATION IN HABITAT:

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES:

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED:

COMMENTS:

SITE NAME: National Key Deer NWR CODE:

LOCATION: Big Pine Key, FL
(including Sawyer Key, Boca Grande Key, Marvin Key Flats, Pine Channel Flats)

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry ( ). Other: Tidal flats, exposed grass flats, brackish wash.

SIZE: Unknown

OWNERSHIP: private (X) or public (X).

ACCESSIBILITY: Sawyer Key, Marvin Key and Pine Channel Flats can be reached by 13 ft. whaler. Boca Grande Key is accessible using a 20 ft. boat.

ANNUAL VARIATION IN HABITAT: Annual fluctuation in water level is less than 25%. Annual variation in shorebird numbers is not known. Water sources are primarily tidal. Boca Grande Key, which has many shorebirds, depends upon rainfall.

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES: See Appendix 6

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED: Unknown

COMMENTS:

SITE NAME: N & S Blakely Ponds, Alcoa CODE: ALAR

LOCATION: On Blakely Island near Mobile, AL

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay (X), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh (X), salt marsh ( ), sewage treatment site ( ), salt pond (X), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ). Other: Three major systems of diked ponds used for industrial waste and dredge spoils. Area is directly adjacent to Polecat Bay with large brackish marsh and mudflats area. Polecat Bay is shallow at low tide and viseable from ALCOA and salt ponds.

SIZE: 3 x 1 mi. "ALCOA POND" is 10 ponds of varying size 1.5 x .75 mi.; North Blakely Pond .5 x .25 mi.; S. Blakeley Pond 1 x .75 mi.

OWNERSHIP, private (X) or public ( )

ACCESSIBILITY: Access is 'variable'. ALCOA can be censused by vehicle, N & S Ponds on foot.

ANNUAL VARIATION IN HABITAT: Water levels and vegetation are variable, especially in North and South Ponds.

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES: Large numbers of LESA, WESA, DUNL, BNST and peep.

CENSUS CONSIDERATIONS: High tides in Mobile Bay probably drives birds into the system.

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS: Permission can be obtained for censusing

SITE NAME: Audubon NWR CODE: ND Q

LOCATION: Coleharbor, ND

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond (X), freshwater reservoir (X), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry ( ). Other: grasslands including islands

SIZE: Unknown. Grasslands total 4-5000 ac. Permanent wetlands total 10,000 ac.

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY: Accessible by 4-wheel vehicle, boat and on foot

ANNUAL VARIATION IN HABITAT: Water supply comes from Lake Audubon, a stable body of water not effected by drought. Annual fluctuation in water level is only slight. Shorebird numbers vary 25-50% annually. Able to control water level for 15 ac., but not presently doing so.

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES: See Appendix 6

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED: Unknown

COMMENTS:

SITE NAME: Long Lake NWR CODE: ND Q

LOCATION: Moffit, ND

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake (X), freshwater marsh (X), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry ( ). Other:

SIZE: Unknown

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY: Accessible by boat

ANNUAL VARIATION IN HABITAT: Annual fluctuation in water level can be great. Water area has decreased over 50% since 1987. Shorebird numbers vary 25-50% annually. Historical botulism losses.

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES: See Appendix 6

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED:

COMMENTS:

SITE NAME: Tewaukon NWR CODE:ND Q

LOCATION: Cayuga, ND

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond (X), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh (X), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry ( ). Other: Seasonal potholes

SIZE: Unknown

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY: Wetland areas are accessible by vehicle. Lake Tewaukon can be censused by boat.

ANNUAL VARIATION IN HABITAT: Refuge water source is the Wild Rice River, a seasonal prairie river fed by snowmelt. Annual fluctuation in water level is 50%. Shorebird numbers fluctuate 25-50% annually. Water is controlled on 1,372 ac. of semipermanent wetlands and 1,201 ac. of permanent wetland comprising Tewaukon Lake. Water source is not reliable.

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES:

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED:

COMMENTS:

SITE NAME: J. Clark Salyer NWR CODE: ND Q

LOCATION: Upham, ND

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh (X), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry ( ). Other:

SIZE: Refuge is 45 mi in length

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY: Accessible by vehicle and on foot. (Refuge has an airboat and canoe.)

ANNUAL VARIATION IN HABITAT: Annual fluctuation in water level is usually only slight, but currently in fourth year of drought. Shorebird numbers vary less than 25% annually. Refuge managed primarily for waterfowl, but some pools drawn down to manage vegetation. A series of five dams control water level for most wetland areas.

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES: See Appendix 6

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED:

COMMENTS:

SITE NAME: Sand Lake NWR CODE: WSAN

LOCATION: Columbia, SD

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin (X), freshwater lake ( ), freshwater pond ( ), freshwater reservoir (X), brackish pond ( ), saline lake ( ), freshwater marsh (X), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded (X), or dry (X). Other:

SIZE: Unknown

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY: Accessible by vehicle and by boat

ANNUAL VARIATION IN HABITAT: Refuge is fed by the James River. Annual fluctuation in water level is less than 25%. Shorebird numbers vary 50%. Two large water control pools are flooded in spring to full capacity (approx. 7 ft depth) for waterfowl. Water evaporates from pools throughout the summer season attracting shorebirds in the fall when levels are lower.

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES: See Appendix 6

CENSUS CONSIDERATIONS: Road to refuge closed during winter

NUMBER OF OBSERVERS NEEDED:

COMMENTS:

SITE NAME: Squaw Creek NWR CODE: MO Q

LOCATION: Mound City, MO

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh (X), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry ( ). Other: Moist soil units and permanent impoundments.

SIZE: Unknown

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY:

ANNUAL VARIATION IN HABITAT: Refuge fed by Davis and Squaw Creeks. Annual water levels are relatively stable, but can be effected by prolonged drought. Refuge is presently managed exclusively for waterfowl. Annual variation in shorebird numbers is not known. Impoundments are seasonally drawn down to control cattail and bulrush which happens to coincide with spring and fall shorebird migration periods.

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES: See Appendix 6

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED:

COMMENTS:

SITE NAME: Quivera NWR CODE: KSAI

LOCATION: Stafford, KS

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond (X), freshwater reservoir ( ), brackish pond ( ), saline lake (X), freshwater marsh ( ), brackish marsh ( ), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ).
Other:

SIZE: 1 x 2.5 mi.

OWNERSHIP: private ( ) or public (X)
U.S. Fish & Wildlife Service.

ACCESSIBILITY: Readily Shorebird habitat readily accessible by vehicle.

ANNUAL VARIATION IN HABITAT: Some of the ponds are temporary ponds.

SEASONS OF SHOREBIRD OCCURRENCE: Spring, and to a lesser extent fall migration.

MAJOR SPECIES: BASA, WRSA, SNPL

CENSUS CONSIDERATIONS: Not a high priority for PTC because shorebird numbers generally are not high.

NUMBER OF OBSERVERS NEEDED: 2

COMMENTS:

SITE NAME: Cheyenne Bottoms Wildlife Management Area CODE: KSAA

LOCATION: West central Kansas

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake (X), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh (X), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded (X) or dry (X). Other: Impoundments with managed water levels but insufficient water supplies to meet management goals.

SIZE: ca. 20,000 ac.

OWNERSHIP, private (X) or public (X): Mostly (95%) public under management of Kansas Fish and Game, some (5%) area owned by The Nature Conservancy.

ACCESSIBILITY: Readily accessible by vehicle

ANNUAL VARIATION IN HABITAT: Extensive, depending on water levels in impoundments.

SEASONS OF SHOREBIRD OCCURRENCE: Spring and fall migration

MAJOR SPECIES:

CENSUS CONSIDERATIONS: Annual variation of shorebird habitat makes this an unsuitable site for trend analysis censusing of most species, but very high numbers of shorebirds make this an important site.

NUMBER OF OBSERVERS NEEDED: 3 for a simultaneous census.

COMMENTS: Plans being developed for changing water control capabilities and to include shorebirds in management plans.

SITE NAME: Crescent Lake NWR CODE: NBAA

LOCATION: Ellsworth, NE

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond (X), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh (X), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ). Other: sandhill lakes, saline wetlands and impoundments (9).

SIZE: Total refuge emcompasses 46,000 ac., including impoundment areas totalling 625 ac.

OWNERSHIP: private ( ) or public (X)

ACCESSIBILITY: Accessible by 4-wheel drive , ATV and on foot.

ANNUAL VARIATION IN HABITAT: Refuge principal water source is the Ogallala Aquifer. Lakes are areas where the ground water is at the surface. Shallow lakes often dry up in summer months. The local water cycle results in shallow ponds and other wetland areas becoming more dependent on rainfall as the seasons progress toward fall.

SEASONS OF SHOREBIRD OCCURRENCE: Greatest numbers of shorebirds sighted in the spring. WIPH are slightly more abundant in spring. LBCU, UPSA, and other shorebird species breed on the refuge. An estimated 20,000 to 100,000 shorebirds utilize the refuge annually.

MAJOR SPECIES: AMAV, WIPH, BASA, KILL, LBDO, LBCU, UPSA, LEYE, BNST are found in good numbers. As many as 5,000-6,000 WIPH are present at any given time during the migratory seasons.

CENSUS CONSIDERATIONS: Special permission from refuge manager is required to use roads closed to the public.

NUMBER OF OBSERVERS NEEDED: Refuge manager estimates 6-10 observers would be needed to census the refuge simulteously.

COMMENTS:

SITE NAME: Sheriden County (road census) CODE: NBAB

LOCATION: Sheridan County, NE

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry ( ). Other: Alkali ponds, grasslands, Alkali flats

SIZE: UNknown

OWNERSHIP: private (X) or public ( ).

ACCESSIBILITY:

ANNUAL VARIATION IN HABITAT: Shorebird use of nesting and resting areas has remained constant.

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED:

COMMENTS:

SITE NAME: Texas, Port Aransas, Airport Flats CODE: TXAS

LOCATION: Just west of Port Aransas Airport

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ).

Other: An area of essentially bare, hard-packed sand with scattered depressions and vegetation. Used as a high tide resting area by shorebirds.

SIZE: Unknown, between 5-10 ac.

OWNERSHIP, private ( ) or public (X) Publicly operated small airport.

ACCESSIBILITY: Area closed to public but visible from nearby road.

MAJOR SPECIES: High counts of REKN and DUNL.

ANNUAL VARIATION IN HABITAT: Unknown

SEASONS OF SHOREBIRD OCCURRENCE:

CENSUS CONSIDERATIONS: Tidal conditions strongly influence shorebird numbers.

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS: Several years of counts are already available.

SITE NAME: Anahuac NWR CODE: TXAB

LOCATION: Anahuac, TX

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond (X), freshwater reservoir (X), brackish pond (X), saline lake (X), freshwater marsh (X), brackish marsh (X), salt marsh (X), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded (X), or dry (X). Other:

SIZE: Unknown. Wetland areas total 25,800 ac.

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY: Accessible by vehicle, marsh buggy, boat and on foot

ANNUAL VARIATION IN HABITAT: Water source for refuge depends upon rainfall, but able to purchase water from agricultural fields. Annual fluctuations in water levels only slight. Shorebird numbers vary less than 25%. Refuge managed primarily for waterfowl. Water control capability for 13,730 ac.

SEASONS OF SHOREBIRD OCCURRENCE: Greatest numbers of shorebirds are found in water controlled fields during spring migration.

MAJOR SPECIES: See Appendix 6

CENSUS CONSIDERATIONS: Aerial survey required for comprehensive coverage.

NUMBER OF OBSERVERS NEEDED: Unknown

COMMENTS: XX needs more information

SITE NAME: Bolivar Flats, TX CODE: TXAF

LOCATION: 5 mi. east of Galveston

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary (X), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture wastewater pond ( ), agriculture field, flooded ( ) or dry ( ). Other: Located at the mouth of the Houston Ship Channel, includes an intertidal area used for foraging and a beach used as a resting area. Large tidal flats.

SIZE: 2 x .5 mi.

OWNERSHIP, private ( ) or public (X): Owned by either the City of Galveston or the county (?).

ACCESSIBILITY: Accessible from nearby road and by driving on beach. Vehicular limitations to the beach may be initiated.

ANNUAL VARIATION IN HABITAT: None

SEASONS OF SHOREBIRD OCCURRENCE: Winter and migration seasons

MAJOR SPECIES:

CENSUS CONSIDERATIONS: Easily censused.

NUMBER OF OBSERVERS NEEDED: 1

COMMENTS:

SITE NAME: Laguna Atascosa NWR CODE: NS Q
(including Lower Laguna Madre area)

LOCATION: Rio Hondo, TX

HABITAT: Areas are one of the following: sandy coastal beach (X), rocky coastal beach ( ), coastal lagoon (X), coastal bay ( ), river estuary (X), inland river margin ( ), freshwater lake ( ), freshwater pond (X), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh (X), brackish marsh (X), salt marsh ( ), sewage treatment site (X), salt pond ( ), agriculture waste water pond (X), agriculture field flooded (X), or dry (X). Other:

SIZE: The refuge alone comprises 45,000 ac. Laguna Madre area encompasses 175 sq.mi.

OWNERSHIP: private (X) or public (X).
USF&WS, Texas General Land Office (Laguna Madre), and private owners.

ACCESSIBILITY: Accessible by all-terrain vehicle, airboat and on foot, and by aerial survey.

ANNUAL VARIATION IN HABITAT: Annual fluctuation in water level is 25-50%. Annual variation in shorebird numbers is not known. Laguna Madre, where most shorebirds are found, is tidal with water level strongly influenced by wind. Freshwater areas are fed by sloughs. Parker Lake, subject to drought every 10-20 years, is fed by agricultural run-off.

SEASONS OF SHOREBIRD OCCURRENCE: Spring and fall migration

MAJOR SPECIES:

CENSUS CONSIDERATIONS: Extremely large area to census. Aerial survey needed for comprehensive coverage.

NUMBER OF OBSERVERS NEEDED: Unknown

COMMENTS:

SITE NAME: Upper Texas Coast CODE: TXAY

LOCATION: TX

HABITAT: Areas are one of the following: sandy coastal ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agricultural waste water pond ( ), agriculture field flooded ( ), or dry ( ).
Other:

SIZE:

OWNERSHIP: private ( ) or public ( ).

ACCESSIBILITY:

ANNUAL VARIATION IN HABITAT:

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES:

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED:

COMMENTS:

SITE NAME: Bouque del Apache NWR CODE: NM Q

LOCATION: Socorro, NM

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond (X), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh ( ), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded (X), or dry ( ). Other: Freshwater impoundments

SIZE: Unknown. Total 800 ac. impoundments, 1300 ac. irrigated fields

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY: Accessible by vehicle and on foot.

ANNUAL VARIATION IN HABITAT: Annual fluctuation in water levels is 50%. Shorebird numbers vary 25-50% annually. Water source is the Rio Grande River. Water level drawn down in spring, which happens to coincide with shorebird migration. Drought, on average every 5 yrs., has serious effect on water level.

SEASONS OF SHOREBIRD OCCURRENCE: Spring and fall migration

MAJOR SPECIES: See Appendix 6

CENSUS CONSIDERATIONS: Special permission needed for full access.

NUMBER OF OBSERVERS NEEDED:

COMMENTS:

SITE NAME: Salt Plains NWR CODE:WSAL

LOCATION: Jet, OK

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond (X), freshwater reservoir (x), brackish pond ( ), saline lake ( ), freshwater marsh (X), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded (X), or dry ( ). Other:

SIZE: Unknown. Impounds total 400 ac.

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY: Accessible by 4-wheel ATV and on foot

ANNUAL VARIATION IN HABITAT: Refuge is fed by the Salt Fork of the Arkansas River and Sand Creek. Water is drawn down in impoundments in spring attracting shorebirds. Annual fluctuation in water level is less than 25%. Shorebird numbers vary less than 25%. Moist soil units are used by shorebirds for only a 2-3 day period before they dry up.

SEASONS OF SHOREBIRD OCCURRENCE: Spring and fall migration

MAJOR SPECIES: See Appendix 6

CENSUS CONSIDERATIONS: Large area requiring the use of an ATV for complete coverage.

NUMBER OF OBSERVERS NEEDED: 2-3 observers are needed for simultaneous survey.

COMMENTS:

SITE NAME: Benton Lakes NWR CODE: MT Q
LOCATION: Black Eagle, MT

HABITAT: Areas are one of the following: sandy coastal beach ( ), rocky coastal beach ( ), coastal lagoon ( ), coastal bay ( ), river estuary ( ), inland river margin ( ), freshwater lake ( ), freshwater pond ( ), freshwater reservoir ( ), brackish pond ( ), saline lake ( ), freshwater marsh (X), brackish marsh ( ), salt marsh ( ), sewage treatment site ( ), salt pond ( ), agriculture waste water pond ( ), agriculture field flooded ( ), or dry ( ). Other: saline seep area

SIZE: Unknown. Total of 5,000 ac. marshlands

OWNERSHIP: private ( ) or public (X).

ACCESSIBILITY: Accessible by vehicle or on foot. Observations can be made from a series of dikes.

ANNUAL VARIATION IN HABITAT: Water sources are farm watershed and irrigation returns. Annual water levels fluctuate 25-50%. Shorebird numbers fluctuate less than 25%. Water level can be controlled over entire wetland area. Refuge managed primarily for waterfowl. Botulism can be a servere problem during which time water levels are decreased substantially to let vegetation dry out.

SEASONS OF SHOREBIRD OCCURRENCE:

MAJOR SPECIES: WIPH occur in large numbers.

CENSUS CONSIDERATIONS:

NUMBER OF OBSERVERS NEEDED: Unknown

COMMENTS:

Appendix 8. Estimates of shorebird numbers from questionnaires.

Species	Number of birds Fall	Spring	Summer	Winter	Unknown	Location
AMWO	0	0	0	0	500	AGASSIZ NWR
BASA	50	50	0	0	0	AGASSIZ NWR
BBPL	50	50	0	0	0	AGASSIZ NWR
COSN	0	0	0	0	2000	AGASSIZ NWR
COSN	5000	5000	0	0	0	AGASSIZ NWR
DUNL	50	50	0	0	0	AGASSIZ NWR
GRYE	0	0	0	0	250	AGASSIZ NWR
GRYE	500	500	0	0	0	AGASSIZ NWR
HUGO	0	0	0	0	100	AGASSIZ NWR
HUGO	500	500	0	0	0	AGASSIZ NWR
KILL	0	0	0	0	600	AGASSIZ NWR
KILL	500	5000	0	0	0	AGASSIZ NWR
LBDO	50	50	0	0	0	AGASSIZ NWR
LESA	0	0	0	0	1000	AGASSIZ NWR
LESA	500	5000	0	0	0	AGASSIZ NWR
LEYE	0	0	0	0	250	AGASSIZ NWR
LEYE	500	5000	0	0	0	AGASSIZ NWR
LGPL	50	50	0	0	0	AGASSIZ NWR
MAGO	0	0	0	0	40	AGASSIZ NWR
MAGO	500	500	0	0	0	AGASSIZ NWR
PESA	0	0	0	0	250	AGASSIZ NWR
PESA	500	500	0	0	0	AGASSIZ NWR
SBDO	0	0	0	0	200	AGASSIZ NWR
SBDO	5000	5000	0	0	0	AGASSIZ NWR
SEPL	0	0	0	0	70	AGASSIZ NWR
SEPL	500	500	0	0	0	AGASSIZ NWR
SESA	0	0	0	0	800	AGASSIZ NWR
SESA	500	5000	0	0	0	AGASSIZ NWR
SOSA	5	5	0	0	0	AGASSIZ NWR
SPSA	0	0	0	0	150	AGASSIZ NWR
SPSA	50	500	0	0	0	AGASSIZ NWR
STSA	0	0	0	0	150	AGASSIZ NWR
TOTL	0	0	0	0	6560	AGASSIZ NWR
TOTL	14860	33310	0	0	0	AGASSIZ NWR
WESA	50	50	0	0	0	AGASSIZ NWR
WIPH	0	0	0	0	50	AGASSIZ NWR
WRSA	0	0	0	0	150	AGASSIZ NWR
WRSA	5	5	0	0	0	AGASSIZ NWR
ROSA	0	0	0	0	200000	ALASKA MARITIME NWR
SPSA	0	0	0	0	200000	ALASKA MARITIME NWR
TOTL	0	0	0	0	400000	ALASKA MARITIME NWR
BLOY	0	0	0	0	5600	ALEUTIAN ISLANDS UNI
BTGO	0	0	0	0	200	ALEUTIAN ISLANDS UNI
DUNL	0	0	0	0	500	ALEUTIAN ISLANDS UNI
LGPL	0	0	0	0	800	ALEUTIAN ISLANDS UNI
PESA	0	0	0	0	3000	ALEUTIAN ISLANDS UNI
REPH	0	0	0	0	8000	ALEUTIAN ISLANDS UNI
RNPH	0	0	0	0	3500	ALEUTIAN ISLANDS UNI

Appendix 8. cont.

Species	Number of birds					Location
	Fall	Spring	Summer	Winter	Unknown	
ROSA	0	0	0	0	20000	ALEUTIAN ISLANDS UNI
RUTU	0	0	0	0	600	ALEUTIAN ISLANDS UNI
SAND	0	0	0	0	2500	ALEUTIAN ISLANDS UNI
SEPL	0	0	0	0	100	ALEUTIAN ISLANDS UNI
STSA	0	0	0	0	100	ALEUTIAN ISLANDS UNI
TOTL	0	0	0	0	44900	ALEUTIAN ISLANDS UNI
AMAV	0	0	0	0	300	ANAHUAC NWR
AMAV	5	500	0	500	0	ANAHUAC NWR
BBPL	0	0	0	0	300	ANAHUAC NWR
BBPL	5	500	0	500	0	ANAHUAC NWR
BNST	0	0	0	0	500	ANAHUAC NWR
BNST	500	500	0	500	0	ANAHUAC NWR
COSN	0	0	0	0	1000	ANAHUAC NWR
COSN	5000	5000	0	5000	0	ANAHUAC NWR
DUNL	0	0	0	0	200	ANAHUAC NWR
DUNL	500	5000	0	500	0	ANAHUAC NWR
GRYE	5	50	0	500	0	ANAHUAC NWR
HUGO	0	5	0	0	0	ANAHUAC NWR
KILL	0	0	0	0	600	ANAHUAC NWR
KILL	500	500	0	500	0	ANAHUAC NWR
LBCU	0	0	0	0	100	ANAHUAC NWR
LBDO	0	10000	0	0	10000	ANAHUAC NWR
LBDO	500	5000	0	5000	0	ANAHUAC NWR
LESA	0	0	0	0	400	ANAHUAC NWR
LESA	5	500	0	500	0	ANAHUAC NWR
LEYE	0	2500	0	0	2500	ANAHUAC NWR
LEYE	5	500	0	500	0	ANAHUAC NWR
LGPL	0	50	0	5	0	ANAHUAC NWR
MAGO	0	50	0	0	0	ANAHUAC NWR
PESA	5	5000	0	500	0	ANAHUAC NWR
RUTU	0	500	0	50	0	ANAHUAC NWR
SAND	5	5	0	5	0	ANAHUAC NWR
SBDO	0	5	0	5	0	ANAHUAC NWR
SEPL	0	5	0	50	0	ANAHUAC NWR
SESA	0	800	0	0	800	ANAHUAC NWR
SESA	50	5000	0	5000	0	ANAHUAC NWR
SOSA	5	5	0	50	0	ANAHUAC NWR
SPSA	5	5	0	5	0	ANAHUAC NWR
STSA	0	350	0	0	350	ANAHUAC NWR
STSA	5	500	0	500	0	ANAHUAC NWR
TOTL	7705	40680	0	21225	0	ANAHUAC NWR
TOTL	0	13650	0	0	17550	ANAHUAC NWR
UPSA	0	0	0	0	300	ANAHUAC NWR
UPSA	0	5000	0	0	0	ANAHUAC NWR
WESA	5	500	0	50	0	ANAHUAC NWR
WHIM	0	0	0	5	0	ANAHUAC NWR
WILL	0	0	0	0	200	ANAHUAC NWR
WILL	500	5000	0	500	0	ANAHUAC NWR
AMAV	0	0	0	0	300	ARANSAS
BBPL	600	0	0	0	600	ARANSAS

Appendix 8, cont.

Species	Number of birds Fall	Spring	Summer	Winter	Unknown	Location
BNST	0	0	0	0	250	ARANSAS
DUNL	350	0	0	0	350	ARANSAS
LBDO	0	0	0	0	1000	ARANSAS
LESA	692	0	0	0	692	ARANSAS
SBDO	267	0	0	0	267	ARANSAS
SESA	459	0	0	0	459	ARANSAS
TOTL	2368	0	0	0	6918	ARANSAS
WESA	0	0	0	0	3000	ARANSAS
AMAV	0	0	0	0	1500	AUDUBON NWR
BASA	5	500	0	0	0	AUDUBON NWR
BBPL	0	5	0	0	0	AUDUBON NWR
COSN	0	0	0	0	1000	AUDUBON NWR
COSN	50	50	0	0	0	AUDUBON NWR
DOSP	0	0	0	0	1500	AUDUBON NWR
DUNL	5	50	0	0	0	AUDUBON NWR
GRYE	0	0	0	0	750	AUDUBON NWR
GRYE	500	500	0	0	0	AUDUBON NWR
HUGO	5	50	0	0	0	AUDUBON NWR
KILL	0	0	0	0	4000	AUDUBON NWR
KILL	500	500	0	0	0	AUDUBON NWR
LBDO	50	500	0	0	0	AUDUBON NWR
LESA	5	50	0	0	0	AUDUBON NWR
LEYE	0	0	0	0	2000	AUDUBON NWR
LEYE	500	500	0	0	0	AUDUBON NWR
LGPL	5	50	0	0	0	AUDUBON NWR
MAGO	0	0	0	0	2000	AUDUBON NWR
MAGO	50	500	0	0	0	AUDUBON NWR
PESA	50	500	0	0	0	AUDUBON NWR
PIPL	5	5	0	0	0	AUDUBON NWR
RUTU	5	50	0	0	0	AUDUBON NWR
SAND	0	0	0	0	2500	AUDUBON NWR
SAND	5000	5000	0	0	0	AUDUBON NWR
SBDO	50	500	0	0	0	AUDUBON NWR
SEPL	50	500	0	0	0	AUDUBON NWR
SESA	50	500	0	0	0	AUDUBON NWR
SOSA	5	5	0	0	0	AUDUBON NWR
SPSA	0	0	0	0	1000	AUDUBON NWR
SPSA	500	5000	0	0	0	AUDUBON NWR
STSA	50	50	0	0	0	AUDUBON NWR
TOTL	8090	21415	0	55	0	AUDUBON NWR
TOTL	0	0	0	0	22450	AUDUBON NWR
UPSA	0	0	0	0	3000	AUDUBON NWR
WESA	50	500	0	0	0	AUDUBON NWR
WILL	0	0	0	0	1200	AUDUBON NWR
WILL	50	50	0	0	0	AUDUBON NWR
WIPH	0	0	0	0	2000	AUDUBON NWR
WIPH	500	5000	0	0	0	AUDUBON NWR
WRSA	50	500	0	0	0	AUDUBON NWR
AMOY	0	0	0	500	0	BARNEGAT DIVISION (FORSYTHE NWR)
DUNL	0	0	0	5	0	BARNEGAT DIVISION (FORSYTHE NWR)

Appendix 8, cont.

Species	Number of birds Fall	Spring	Summer	Winter	Unknown	Location
PIPL	0	0	0	50	0	BARNEGAT DIVISION (FORSYTHE NWR)
SAND	0	0	0	5000	0	BARNEGAT DIVISION (FORSYTHE NWR)
TOTL	865	1320	0	5555	0	BARNEGAT DIVISION (FORSYTHE NWR)
BBPL	2250	0	0	0	2250	BELLE GLADE FARM (PALM COUNTY)
BNST	1930	0	0	0	1930	BELLE GLADE FARM (PALM COUNTY)
GRYE	1430	0	0	0	1430	BELLE GLADE FARM (PALM COUNTY)
KILL	392	0	0	0	392	BELLE GLADE FARM (PALM COUNTY)
LESA	19581	0	0	0	19581	BELLE GLADE FARM (PALM COUNTY)
LEYE	23600	0	0	0	23600	BELLE GLADE FARM (PALM COUNTY)
LGPL	160	0	0	0	160	BELLE GLADE FARM (PALM COUNTY)
PESA	3440	0	0	0	3440	BELLE GLADE FARM (PALM COUNTY)
SBDO	4800	0	0	0	4800	BELLE GLADE FARM (PALM COUNTY)
SESA	11049	0	0	0	11049	BELLE GLADE FARM (PALM COUNTY)
STSA	1490	0	0	0	1490	BELLE GLADE FARM (PALM COUNTY)
TOTL	71336	0	0	0	71336	BELLE GLADE FARM (PALM COUNTY)
WESA	1214	0	0	0	1214	BELLE GLADE FARM (PALM COUNTY)
AMAV	0	0	0	0	1500	BENTON LAKE NWR
BBPL	5	5	0	0	0	BENTON LAKE NWR
COSN	50	50	0	0	0	BENTON LAKE NWR
GRYE	5000	5000	0	0	0	BENTON LAKE NWR
KILL	0	0	0	0	300	BENTON LAKE NWR
KILL	500	500	0	0	0	BENTON LAKE NWR
LBDO	0	0	0	0	3500	BENTON LAKE NWR
LBDO	5000	5000	0	0	0	BENTON LAKE NWR
LESA	500	500	0	0	0	BENTON LAKE NWR
LEYE	0	0	0	0	1000	BENTON LAKE NWR
LEYE	500	500	0	0	0	BENTON LAKE NWR
LGPL	5	5	0	0	0	BENTON LAKE NWR
MAGO	0	0	0	0	150	BENTON LAKE NWR
MAGO	5000	5000	0	0	0	BENTON LAKE NWR
SBDO	500	500	0	0	0	BENTON LAKE NWR
SESA	50	50	0	0	0	BENTON LAKE NWR
SOSA	50	50	0	0	0	BENTON LAKE NWR
SPSA	50	50	0	0	0	BENTON LAKE NWR
STSA	50	50	0	0	0	BENTON LAKE NWR
TOTL	0	0	0	0	7150	BENTON LAKE NWR
TOTL	23310	23310	0	50	0	BENTON LAKE NWR
UPSA	50	50	0	0	0	BENTON LAKE NWR
WESA	500	500	0	0	0	BENTON LAKE NWR
WILL	0	0	0	0	200	BENTON LAKE NWR
WILL	500	500	0	0	0	BENTON LAKE NWR
WIPH	0	0	0	0	500	BENTON LAKE NWR
WIPH	5000	5000	0	0	0	BENTON LAKE NWR
AMAV	0	0	0	0	2	BIG QUILL LAKE
BBPL	0	0	0	0	290	BIG QUILL LAKE
PEEP	0	0	0	0	4095	BIG QUILL LAKE
STSA	0	0	0	0	112	BIG QUILL LAKE
AMWO	0	325	0	0	325	BLACKWATER NWR
AMWO	0	0	0	0	300	BLACKWATER NWR
BBPL	20	0	0	0	20	BLACKWATER NWR

Appendix 8, cont.

Species	Fall	Spring	Summer	Winter	Unknown	Location
	Number of birds					
COSN	0	0	0	500	500	BLACKWATER NWR
COSN	0	0	0	0	900	BLACKWATER NWR
DUNL	2500	0	0	0	2500	BLACKWATER NWR
DUNL	0	0	0	0	4000	BLACKWATER NWR
GRYE	1200	0	0	0	1200	BLACKWATER NWR
GRYE	0	0	0	0	1200	BLACKWATER NWR
KILL	250	0	0	0	250	BLACKWATER NWR
KILL	0	0	0	0	300	BLACKWATER NWR
LESA	500	0	0	0	500	BLACKWATER NWR
LESA	0	0	0	0	800	BLACKWATER NWR
LEYE	0	0	0	200	200	BLACKWATER NWR
LEYE	0	0	0	0	200	BLACKWATER NWR
PESA	500	0	0	0	500	BLACKWATER NWR
PESA	0	0	0	0	500	BLACKWATER NWR
SAND	0	0	0	5000	5000	BLACKWATER NWR
SAND	0	0	0	0	3000	BLACKWATER NWR
SBDO	1000	0	0	0	1000	BLACKWATER NWR
SBDO	0	0	0	0	1000	BLACKWATER NWR
SEPL	0	0	0	200	200	BLACKWATER NWR
SEPL	0	0	0	0	100	BLACKWATER NWR
SESA	300	300	0	0	300	BLACKWATER NWR
SESA	0	0	0	0	500	BLACKWATER NWR
TOTL	6270	1025	0	5900	12895	BLACKWATER NWR
TOTL	0	0	0	0	13350	BLACKWATER NWR
WILL	0	400	0	0	400	BLACKWATER NWR
WILL	0	0	0	0	550	BLACKWATER NWR
AMAV	500	50	0	0	0	BOMBAY HOOK NWR
BBPL	0	200	0	0	200	BOMBAY HOOK NWR
BBPL	500	500	0	0	0	BOMBAY HOOK NWR
BNST	500	50	0	0	0	BOMBAY HOOK NWR
COSN	500	500	0	0	0	BOMBAY HOOK NWR
DOSP	5000	5000	0	0	0	BOMBAY HOOK NWR
DUNL	0	740	0	0	3850	BOMBAY HOOK NWR
DUNL	5000	5000	0	0	0	BOMBAY HOOK NWR
GRYE	500	0	0	0	500	BOMBAY HOOK NWR
GRYE	500	50	0	0	0	BOMBAY HOOK NWR
KILL	50	50	0	0	0	BOMBAY HOOK NWR
LESA	0	0	0	0	400	BOMBAY HOOK NWR
LESA	500	50	0	0	0	BOMBAY HOOK NWR
LEYE	0	0	0	0	2500	BOMBAY HOOK NWR
REKN	0	1250	0	0	1250	BOMBAY HOOK NWR
REKN	0	500	0	0	0	BOMBAY HOOK NWR
RUTU	0	8800	0	0	11440	BOMBAY HOOK NWR
RUTU	500	50000	0	0	0	BOMBAY HOOK NWR
SEPL	500	500	0	0	0	BOMBAY HOOK NWR
SESA	0	16000	0	0	16700	BOMBAY HOOK NWR
SESA	5000	50000	0	0	0	BOMBAY HOOK NWR
SPSA	50	50	0	0	0	BOMBAY HOOK NWR
TOTL	500	27340	0	0	39840	BOMBAY HOOK NWR
TOTL	19600	112800	0	1150	0	BOMBAY HOOK NWR

Appendix 8, cont.

Species	Number of birds					Location
	Fall	Spring	Summer	Winter	Unknown	
WILL	0	350	0	0	3000	BOMBAY HOOK NWR
WILL	500	500	0	0	0	BOMBAY HOOK NWR
AMAV	0	0	0	0	57	BOSQUE DEL APACHE NWR
BASA	500	500	0	0	0	BOSQUE DEL APACHE NWR
BBPL	5	5	0	0	0	BOSQUE DEL APACHE NWR
BNST	0	0	0	0	50	BOSQUE DEL APACHE NWR
COSN	50	50	0	0	0	BOSQUE DEL APACHE NWR
DUNL	1260	0	0	0	1260	BOSQUE DEL APACHE NWR
GRYE	0	0	0	0	97	BOSQUE DEL APACHE NWR
GRYE	500	500	0	0	0	BOSQUE DEL APACHE NWR
KILL	0	0	0	0	65	BOSQUE DEL APACHE NWR
KILL	50	50	0	0	0	BOSQUE DEL APACHE NWR
LBDO	0	480	0	0	480	BOSQUE DEL APACHE NWR
LBDO	500	500	0	0	0	BOSQUE DEL APACHE NWR
LESA	208	104	0	0	208	BOSQUE DEL APACHE NWR
LESA	500	500	0	0	0	BOSQUE DEL APACHE NWR
LEYE	500	500	0	0	0	BOSQUE DEL APACHE NWR
LGPL	5	5	0	0	0	BOSQUE DEL APACHE NWR
MAGO	5	5	0	0	0	BOSQUE DEL APACHE NWR
PESA	5	5	0	0	0	BOSQUE DEL APACHE NWR
RUTU	5	5	0	0	0	BOSQUE DEL APACHE NWR
SEPL	5	5	0	0	0	BOSQUE DEL APACHE NWR
SESA	50	50	0	0	0	BOSQUE DEL APACHE NWR
SOSA	50	50	0	0	0	BOSQUE DEL APACHE NWR
SPSA	50	50	0	0	0	BOSQUE DEL APACHE NWR
STSA	5	5	0	0	0	BOSQUE DEL APACHE NWR
TOTL	8300	8300	0	655	0	BOSQUE DEL APACHE NWR
WESA	90	150	0	0	150	BOSQUE DEL APACHE NWR
WESA	5000	5000	0	0	0	BOSQUE DEL APACHE NWR
WHIM	5	5	0	0	0	BOSQUE DEL APACHE NWR
WILL	5	5	0	0	0	BOSQUE DEL APACHE NWR
WIPH	0	0	0	0	795	BOSQUE DEL APACHE NWR
WRSA	500	500	0	0	0	BOSQUE DEL APACHE NWR
TOTL	1200000		500000	0	0	1200000 BOUNDARY BAY
WESA	1200000		500000	0	0	1200000 BOUNDARY BAY
AMAV	0	0	0	0	1600	BOWDOIN
BNST	0	0	0	0	100	BOWDOIN
COSN	0	0	0	0	300	BOWDOIN
LEYE	0	0	0	0	1000	BOWDOIN
MAGO	0	0	0	0	700	BOWDOIN
RNPH	0	0	0	0	1000	BOWDOIN
TOTL	0	0	0	0	13200	BOWDOIN
WIPH	0	0	0	0	8500	BOWDOIN
LBDO	0	5000	0	0	5000	BOWERMAN BASIN
REKN	0	3500	0	0	3500	BOWERMAN BASIN
SAND	20000	400000	22	300	400000	BOWERMAN BASIN
TOTL	20000	658500	22	300	658500	BOWERMAN BASIN
WESA	0	250000	0	0	250000	BOWERMAN BASIN
AMAV	0	0	0	0	225	BRAZORIA NWR
COSN	0	0	0	0	250	BRAZORIA NWR

Appendix 8, cont.

Species	Number of birds Fall	Spring	Summer	Winter	Unknown	Location
DUNL	0	0	0	0	350	BRAZORIA NWR
GRYE	0	0	0	0	300	BRAZORIA NWR
KILL	0	0	0	0	300	BRAZORIA NWR
LBCU	0	0	0	0	250	BRAZORIA NWR
LBDO	0	0	0	0	750	BRAZORIA NWR
LESA	0	0	0	0	1000	BRAZORIA NWR
LEYE	0	0	0	0	200	BRAZORIA NWR
SAND	0	0	0	0	250	BRAZORIA NWR
SBDO	0	0	0	0	400	BRAZORIA NWR
SESA	0	0	0	0	125	BRAZORIA NWR
WESA	0	0	0	0	300	BRAZORIA NWR
AMOY	0	0	0	0	300	BRIGANTINE NWR
AMWO	0	0	0	0	300	BRIGANTINE NWR
BBPL	0	0	0	0	10900	BRIGANTINE NWR
COSN	0	0	0	0	1000	BRIGANTINE NWR
DUNL	0	0	0	0	18000	BRIGANTINE NWR
GRYE	0	0	0	0	2000	BRIGANTINE NWR
LEYE	0	0	0	0	2000	BRIGANTINE NWR
RUTU	0	0	0	0	2160	BRIGANTINE NWR
SAND	0	0	0	0	2000	BRIGANTINE NWR
SBDO	0	0	0	0	7750	BRIGANTINE NWR
SEPL	0	0	0	0	2000	BRIGANTINE NWR
SESA	0	0	0	0	12000	BRIGANTINE NWR
SPSA	0	0	0	0	150	BRIGANTINE NWR
TOTL	0	0	0	0	62950	BRIGANTINE NWR
WHIM	0	0	0	0	790	BRIGANTINE NWR
WILL	0	0	0	0	1600	BRIGANTINE NWR
BBPL	210	0	0	0	210	CAPE HATTERAS NAT. S
RUTU	110	0	0	0	110	CAPE HATTERAS NAT. S
SAND	2100	0	0	0	2100	CAPE HATTERAS NAT. S
WHIM	50	0	0	0	50	CAPE HATTERAS NAT. S
BBPL	177	0	0	0	177	CAPE ROMANO
DUNL	1280	0	0	0	1280	CAPE ROMANO
MAGO	120	0	0	0	120	CAPE ROMANO
REKN	1375	0	0	0	1375	CAPE ROMANO
RUTU	324	0	0	0	324	CAPE ROMANO
SAND	525	0	0	0	525	CAPE ROMANO
SBDO	3750	0	0	0	3750	CAPE ROMANO
TOTL	16413	0	0	0	16413	CAPE ROMANO
WESA	8110	0	0	0	8110	CAPE ROMANO
WILL	752	0	0	0	752	CAPE ROMANO
AMAV	0	239	0	0	239	CHAPLIN LAKE SASK
BASA	0	16733	0	0	16733	CHAPLIN LAKE SASK
MAGO	0	44	0	0	44	CHAPLIN LAKE SASK
PEEP	0	27641	0	0	27641	CHAPLIN LAKE SASK
REKN	0	349	0	0	349	CHAPLIN LAKE SASK
SAND	0	13944	0	0	13944	CHAPLIN LAKE SASK
SESA	0	3590	0	0	3590	CHAPLIN LAKE SASK
STSA	0	821	0	0	821	CHAPLIN LAKE SASK
TOTL	0	63766	0	0	63766	CHAPLIN LAKE SASK

Appendix 8, cont.

Species	Number of birds: Fall	Spring	Summer	Winter	Unknown	Location
WRSA	0	405	0	0	405	CHAPLIN LAKE SASK
BBPL	3000	0	0	0	3000	CHAUTAUQUA NWR
COSN	2000	0	0	0	2000	CHAUTAUQUA NWR
GRYE	5000	0	0	0	5000	CHAUTAUQUA NWR
KILL	3000	0	0	0	3000	CHAUTAUQUA NWR
LBDO	300	0	0	0	300	CHAUTAUQUA NWR
LESA	5000	0	0	0	5000	CHAUTAUQUA NWR
LEYE	20000	0	0	0	20000	CHAUTAUQUA NWR
LGPL	15000	0	0	0	15000	CHAUTAUQUA NWR
PESA	50000	0	0	0	50000	CHAUTAUQUA NWR
SAND	2000	0	0	0	2000	CHAUTAUQUA NWR
SBDO	1000	0	0	0	1000	CHAUTAUQUA NWR
SEPL	2000	0	0	0	2000	CHAUTAUQUA NWR
SESA	1000	0	0	0	1000	CHAUTAUQUA NWR
SOSA	100	0	0	0	100	CHAUTAUQUA NWR
SPSA	100	0	0	0	100	CHAUTAUQUA NWR
STSA	30000	0	0	0	30000	CHAUTAUQUA NWR
TOTL	139600		0	0	0	139600 CHAUTAUQUA NWR
WIPH	100	0	0	0	100	CHAUTAUQUA NWR
AMAV	11819	1642	0	0	11819	CHEYENNE BOTTOMS
BASA	31110	62580	0	0	62580	CHEYENNE BOTTOMS
BBPL	342	64	0	0	342	CHEYENNE BOTTOMS
COSN	942	16	0	0	942	CHEYENNE BOTTOMS
DUNL	1556	211	0	0	1556	CHEYENNE BOTTOMS
GRYE	1625	188	0	0	1625	CHEYENNE BOTTOMS
KILL	7238	244	0	0	7238	CHEYENNE BOTTOMS
LBDO	62122	210000	0	0	210000	CHEYENNE BOTTOMS
LESA	19300	24582	0	0	24582	CHEYENNE BOTTOMS
LEYE	52140	5111	0	0	52140	CHEYENNE BOTTOMS
LGPL	542	57	0	0	542	CHEYENNE BOTTOMS
PESA	28811	16500	0	0	28811	CHEYENNE BOTTOMS
REKN	128	3	0	0	128	CHEYENNE BOTTOMS
RNPH	162	1241	0	0	1241	CHEYENNE BOTTOMS
SAND	411	151	0	0	411	CHEYENNE BOTTOMS
SBDO	888	28	0	0	888	CHEYENNE BOTTOMS
SEPL	1250	488	0	0	1250	CHEYENNE BOTTOMS
SESA	43250	39580	0	0	43250	CHEYENNE BOTTOMS
SNPL	250	61	0	0	250	CHEYENNE BOTTOMS
STSA	29511	21300	0	0	29511	CHEYENNE BOTTOMS
TOTL	320387		619099	0	0	730917 CHEYENNE BOTTOMS
WESA	18311	1552	0	0	18311	CHEYENNE BOTTOMS
WIPH	8519	132000	0	0	132000	CHEYENNE BOTTOMS
WRSA	160	101500	0	0	101500	CHEYENNE BOTTOMS
AMAV	10	4	1	0	10	CHINCOTEAGUE NWR
AMOY	42	73	90	0	90	CHINCOTEAGUE NWR
BASA	3	0	0	0	3	CHINCOTEAGUE NWR
BASA	5	5	0	0	0	CHINCOTEAGUE NWR
BBPL	184	198	153	0	198	CHINCOTEAGUE NWR
BBPL	50	500	0	0	0	CHINCOTEAGUE NWR
BBSA	1	0	0	0	15	CHINCOTEAGUE NWR

Appendix 8, cont.

Species	Number of birds Fall	Spring	Summer	Winter	Unknown	Location
BNST	0	2	0	0	2	CHINCOTEAGUE NWR
COSN	0	10	0	0	10	CHINCOTEAGUE NWR
COSN	5	5	0	0	0	CHINCOTEAGUE NWR
CUSA	0	1	0	0	1	CHINCOTEAGUE NWR
DUNL	2540	8682	1	0	8682	CHINCOTEAGUE NWR
DUNL	500	5000	0	0	0	CHINCOTEAGUE NWR
GRYE	247	69	35	0	250	CHINCOTEAGUE NWR
GRYE	500	50	0	0	0	CHINCOTEAGUE NWR
HUGO	8	0	8	0	8	CHINCOTEAGUE NWR
HUGO	50	0	0	0	0	CHINCOTEAGUE NWR
KILL	8	0	3	0	8	CHINCOTEAGUE NWR
KILL	5	5	0	0	0	CHINCOTEAGUE NWR
LBDO	82	25	37	0	82	CHINCOTEAGUE NWR
LBDO	50	5	0	0	0	CHINCOTEAGUE NWR
LESA	26	3510	330	0	3510	CHINCOTEAGUE NWR
LESA	500	500	0	0	0	CHINCOTEAGUE NWR
LEYE	62	41	109	0	160	CHINCOTEAGUE NWR
LEYE	500	50	0	0	0	CHINCOTEAGUE NWR
LGPL	5	0	0	0	5	CHINCOTEAGUE NWR
LGPL	5	0	0	0	0	CHINCOTEAGUE NWR
MAGO	5	1	1	0	12	CHINCOTEAGUE NWR
MAGO	50	5	0	0	0	CHINCOTEAGUE NWR
PESA	75	1	80	0	130	CHINCOTEAGUE NWR
PESA	500	5	0	0	0	CHINCOTEAGUE NWR
PIPL	11	37	43	0	43	CHINCOTEAGUE NWR
PIPL	50	50	0	0	0	CHINCOTEAGUE NWR
REKN	283	171	305	0	360	CHINCOTEAGUE NWR
REKN	50	500	0	0	0	CHINCOTEAGUE NWR
REPH	0	1	0	0	1	CHINCOTEAGUE NWR
RNPH	0	1	0	0	1	CHINCOTEAGUE NWR
RUFF	1	0	1	0	1	CHINCOTEAGUE NWR
RUTU	47	874	253	0	1420	CHINCOTEAGUE NWR
RUTU	500	500	0	0	0	CHINCOTEAGUE NWR
SAND	1614	2161	2341	0	2341	CHINCOTEAGUE NWR
SAND	5000	5000	0	0	0	CHINCOTEAGUE NWR
SBDO	21	1815	676	0	1815	CHINCOTEAGUE NWR
SBDO	500	500	0	0	0	CHINCOTEAGUE NWR
SEPL	203	1632	411	0	1632	CHINCOTEAGUE NWR
SEPL	5000	5000	0	0	0	CHINCOTEAGUE NWR
SESA	390	20400	856	0	20400	CHINCOTEAGUE NWR
SESA	500	5000	0	0	0	CHINCOTEAGUE NWR
SOSA	0	3	2	0	3	CHINCOTEAGUE NWR
SOSA	5	5	0	0	0	CHINCOTEAGUE NWR
SPSA	2	6	34	0	34	CHINCOTEAGUE NWR
SPSA	5	50	0	0	0	CHINCOTEAGUE NWR
STSA	23	24	40	0	40	CHINCOTEAGUE NWR
STSA	50	5	0	0	0	CHINCOTEAGUE NWR
TOTL	15480	23345	0	2390	0	CHINCOTEAGUE NWR
TOTL	6090	40270	6141	0	42210	CHINCOTEAGUE NWR
WESA	159	12	115	0	390	CHINCOTEAGUE NWR

Appendix 8, cont.

Species	Number of birds: Fall	Spring	Summer	Winter	Unknown	Location
WESA	500	5	0	0	0	CHINCOTEAGUE NWR
WHIM	1	367	103	0	367	CHINCOTEAGUE NWR
WHIM	500	500	0	0	0	CHINCOTEAGUE NWR
WILL	27	104	101	0	115	CHINCOTEAGUE NWR
WILL	50	50	0	0	0	CHINCOTEAGUE NWR
WIPH	1	0	10	0	10	CHINCOTEAGUE NWR
WIPL	0	0	1	0	1	CHINCOTEAGUE NWR
WRSA	9	45	1	0	60	CHINCOTEAGUE NWR
WRSA	50	50	0	0	0	CHINCOTEAGUE NWR
AMAV	0	0	0	0	200	CIBOLA NWR
BNST	0	0	0	0	70	CIBOLA NWR
KILL	0	0	0	0	500	CIBOLA NWR
LBDO	0	0	0	0	325	CIBOLA NWR
LESA	0	0	0	0	400	CIBOLA NWR
PEEP	0	0	0	0	1500	CIBOLA NWR
SPSA	0	0	0	0	300	CIBOLA NWR
AMAV	250	60	0	0	250	CLEAR LAKE NWR
KILL	0	0	0	0	200	CLEAR LAKE NWR
LBDO	1500	200	0	0	1500	CLEAR LAKE NWR
LESA	20000	15000	0	0	20000	CLEAR LAKE NWR
RNPH	0	0	0	0	2000	CLEAR LAKE NWR
TOTL	52050	40260	0	0	54250	CLEAR LAKE NWR
WESA	30000	25000	0	0	30000	CLEAR LAKE NWR
WIPH	300	0	0	0	300	CLEAR LAKE NWR
DUNL	200	0	0	0	200	CONEJOHELA FLATS
KILL	238	0	0	0	238	CONEJOHELA FLATS
LESA	100	0	0	0	100	CONEJOHELA FLATS
LEYE	250	0	0	0	250	CONEJOHELA FLATS
PESA	100	0	0	0	100	CONEJOHELA FLATS
SEPL	113	0	0	0	113	CONEJOHELA FLATS
SESA	600	0	0	0	600	CONEJOHELA FLATS
BASA	0	100000	0	0	100000	COPPER RIVER DELTA
BBPL	0	10000	0	0	10000	COPPER RIVER DELTA
BLTU	0	30000	0	0	30000	COPPER RIVER DELTA
COSN	0	2000	0	0	2000	COPPER RIVER DELTA
DUNL	0	5000000	0	0	5000000	COPPER RIVER DELTA
HUGO	0	200	0	0	200	COPPER RIVER DELTA
LBDO	0	40000	0	0	40000	COPPER RIVER DELTA
LESA	0	1000000	0	0	1000000	COPPER RIVER DELTA
LGPL	0	5000	0	0	5000	COPPER RIVER DELTA
PESA	0	50000	0	0	50000	COPPER RIVER DELTA
REKN	0	100000	0	0	100000	COPPER RIVER DELTA
REPH	0	200000	0	0	200000	COPPER RIVER DELTA
RNPH	0	100000	0	0	100000	COPPER RIVER DELTA
ROSA	0	50000	0	0	50000	COPPER RIVER DELTA
RUTU	0	100000	0	0	100000	COPPER RIVER DELTA
SAND	0	60000	0	0	60000	COPPER RIVER DELTA
SBDO	0	25000	0	0	25000	COPPER RIVER DELTA
SEPL	0	0	0	0	5000	COPPER RIVER DELTA
SESA	0	1000000	0	0	1000000	COPPER RIVER DELTA

Appendix 8, cont.

Species	Fall	Spring	Summer	Winter	Unknown	Location
	Number of birds					
SPSA	0	200	0	0	200	COPPER RIVER DELTA
SURF	0	60000	0	0	60000	COPPER RIVER DELTA
TOTL	0	14937400	0	0	14942400	COPPER RIVER DELTA
WESA	0	7000000	0	0	7000000	COPPER RIVER DELTA
WHIM	0	5000	0	0	5000	COPPER RIVER DELTA
AMAV	15	125	0	0	125	CRESCENT LAKE NWR
BASA	90	40	0	0	90	CRESCENT LAKE NWR
KILL	100	175	0	0	175	CRESCENT LAKE NWR
LBCU	0	125	0	0	125	CRESCENT LAKE NWR
LBDO	75	100	0	0	100	CRESCENT LAKE NWR
LEYE	75	10	0	0	75	CRESCENT LAKE NWR
STSA	35	55	0	0	55	CRESCENT LAKE NWR
TOTL	440	8685	0	0	8800	CRESCENT LAKE NWR
WIPH	50	8055	0	0	8055	CRESCENT LAKE NWR
AMWO	5000	5000	0	0	0	DETROIT LAKES WMD
BASA	500	500	0	0	0	DETROIT LAKES WMD
BBPL	500	500	0	0	0	DETROIT LAKES WMD
COSN	50000	50000	0	0	0	DETROIT LAKES WMD
DUNL	50	50	0	0	0	DETROIT LAKES WMD
GRYE	5000	5000	0	0	0	DETROIT LAKES WMD
HUGO	500	500	0	0	0	DETROIT LAKES WMD
KILL	5000	5000	0	0	0	DETROIT LAKES WMD
LBDO	500	500	0	0	0	DETROIT LAKES WMD
LESA	500	500	0	0	0	DETROIT LAKES WMD
LEYE	5000	5000	0	0	0	DETROIT LAKES WMD
LGPL	500	500	0	0	0	DETROIT LAKES WMD
MAGO	500	500	0	0	0	DETROIT LAKES WMD
SBDO	50	50	0	0	0	DETROIT LAKES WMD
SEPL	5	5	0	0	0	DETROIT LAKES WMD
SOSA	500	500	0	0	0	DETROIT LAKES WMD
SPSA	500	500	0	0	0	DETROIT LAKES WMD
TOTL	80605	80605	0	0	0	DETROIT LAKES WMD
UPSA	500	500	0	0	0	DETROIT LAKES WMD
WIPH	500	500	0	0	0	DETROIT LAKES WMD
WRSA	5000	5000	0	0	0	DETROIT LAKES WMD
AMAV	0	0	0	0	100000	DEVIL'S LAKE
BASA	0	0	0	0	13000	DEVIL'S LAKE
BBPL	0	0	0	0	30000	DEVIL'S LAKE
COSN	0	0	0	0	38000	DEVIL'S LAKE
GRYE	0	0	0	0	50000	DEVIL'S LAKE
KILL	0	0	0	0	70000	DEVIL'S LAKE
LBDO	0	0	0	0	17000	DEVIL'S LAKE
LESA	0	0	0	0	12000	DEVIL'S LAKE
LEYE	0	0	0	0	45000	DEVIL'S LAKE
LGPL	0	0	0	0	45000	DEVIL'S LAKE
MAGO	0	0	0	0	10000	DEVIL'S LAKE
PESA	0	0	0	0	18000	DEVIL'S LAKE
SBDO	0	0	0	0	17000	DEVIL'S LAKE
SEPL	0	0	0	0	500	DEVIL'S LAKE
SESA	0	0	0	0	12000	DEVIL'S LAKE

Appendix 8, cont.

Species	Number of birds: Fall	Spring	Summer	Winter	Unknown	Location
SOSA	0	0	0	0	14000	DEVIL'S LAKE
SPSA	0	0	0	0	11000	DEVIL'S LAKE
TOTL	0	0	0	0	653500	DEVIL'S LAKE
UPSA	0	0	0	0	6000	DEVIL'S LAKE
WILL	0	0	0	0	40000	DEVIL'S LAKE
WIPH	0	0	0	0	90000	DEVIL'S LAKE
WRSA	0	0	0	0	15000	DEVIL'S LAKE
DUNL	0	0	0	0	3000	EASTERN ALEUTIANS
LESA	0	0	0	0	3000	EASTERN ALEUTIANS
ROSA	0	0	0	0	30000	EASTERN ALEUTIANS
RUTU	0	0	0	0	1000	EASTERN ALEUTIANS
SEPL	0	0	0	0	1000	EASTERN ALEUTIANS
TOTL	0	0	0	0	39000	EASTERN ALEUTIANS
WATA	0	0	0	0	1000	EASTERN ALEUTIANS
AMAV	548	0	0	0	548	ELKHORN SLOUGH
BBPL	265	0	0	0	265	ELKHORN SLOUGH
BNST	144	0	0	0	144	ELKHORN SLOUGH
DOSP	2015	0	0	0	2015	ELKHORN SLOUGH
GRYE	45	0	0	0	45	ELKHORN SLOUGH
KILL	46	0	0	0	46	ELKHORN SLOUGH
LBCU	129	0	0	0	129	ELKHORN SLOUGH
LESA	6075	0	0	0	6075	ELKHORN SLOUGH
LEYE	31	0	0	0	31	ELKHORN SLOUGH
MAGO	914	0	0	0	914	ELKHORN SLOUGH
PEEP	3310	0	0	0	3310	ELKHORN SLOUGH
RNPH	172	0	0	0	172	ELKHORN SLOUGH
RUTU	74	0	0	0	74	ELKHORN SLOUGH
SAND	396	0	0	0	396	ELKHORN SLOUGH
SEPL	62	0	0	0	62	ELKHORN SLOUGH
TOTL	30854	0	0	0	30854	ELKHORN SLOUGH
WESA	16196	0	0	0	16196	ELKHORN SLOUGH
WILL	432	0	0	0	432	ELKHORN SLOUGH
BASA	27	2	0	0	27	EUFALA NWR
BBPL	11	2	0	0	11	EUFALA NWR
COSN	116	562	0	0	562	EUFALA NWR
DUNL	285	59	0	0	285	EUFALA NWR
GRYE	35	53	0	0	53	EUFALA NWR
KILL	110	43	0	0	110	EUFALA NWR
LBDO	12	24	0	0	24	EUFALA NWR
LESA	3544	381	0	0	3544	EUFALA NWR
LEYE	21	101	0	0	101	EUFALA NWR
LGPL	7	4	0	0	7	EUFALA NWR
PESA	281	505	0	0	505	EUFALA NWR
PIPL	3	0	0	0	3	EUFALA NWR
SBDO	6	1	0	0	6	EUFALA NWR
SEPL	13	9	0	0	13	EUFALA NWR
SESA	56	112	0	0	112	EUFALA NWR
SOSA	2	4	0	0	4	EUFALA NWR
STSA	6	4	0	0	6	EUFALA NWR
TOTL	4551	1951	0	0	5469	EUFALA NWR

Appendix 8, cont.

Species	Number of birds Fall	Spring	Summer	Winter	Unknown	Location
WESA	9	3	0	0	9	EUFALA NWR
WILL	1	2	0	0	2	EUFALA NWR
WIPH	5	0	0	0	5	EUFALA NWR
WRSA	1	80	0	0	80	EUFALA NWR
COSN	1000	0	0	0	1000	FLINT HILLS NWR
KILL	0	0	1300	0	1500	FLINT HILLS NWR
LBDO	2000	0	0	0	2000	FLINT HILLS NWR
LEYE	2000	0	0	0	2000	FLINT HILLS NWR
TOTL	5000	300	1400	0	6900	FLINT HILLS NWR
UPSA	0	0	100	0	100	FLINT HILLS NWR
WIPH	0	300	0	0	300	FLINT HILLS NWR
RNPH	200000		0	0	0	200000 GREAT SALT LAKE
TOTL	600000		0	0	0	600000 GREAT SALT LAKE
WIPH	400000		0	0	0	400000 GREAT SALT LAKE
AMAV	0	0	0	0	250	HAVASU NWR
BNST	0	0	0	0	150	HAVASU NWR
LBCU	0	0	0	0	60	HAVASU NWR
WILL	0	0	0	0	75	HAVASU NWR
AMWO	0	0	0	0	100	HORICON
COSN	0	0	0	0	300	HORICON
DUNL	0	0	0	0	300	HORICON
GRYE	0	0	0	0	500	HORICON
KILL	0	0	0	0	500	HORICON
LBDO	0	0	0	0	500	HORICON
LESA	0	0	0	0	1000	HORICON
LEYE	0	0	0	0	500	HORICON
PESA	0	0	0	0	1000	HORICON
SESA	0	0	0	0	200	HORICON
SOSA	0	0	0	0	100	HORICON
SPSA	0	0	0	0	100	HORICON
TOTL	0	0	0	0	5200	HORICON
WIPH	0	0	0	0	100	HORICON
HUGO	0	0	0	0	1585	HUDSON BAY
REKN	0	0	0	0	1228	HUDSON BAY
SESA	0	0	0	0	4201	HUDSON BAY
TOTL	0	0	0	0	7014	HUDSON BAY
AMAV	602	0	0	0	602	HUMBOLDT BAY NWR
BBPL	1521	0	0	0	1521	HUMBOLDT BAY NWR
BLTU	35	0	0	0	35	HUMBOLDT BAY NWR
DOSP	1581	0	0	0	1581	HUMBOLDT BAY NWR
DUNL	491	0	0	0	491	HUMBOLDT BAY NWR
KILL	14	0	0	0	14	HUMBOLDT BAY NWR
LBCU	211	0	0	0	211	HUMBOLDT BAY NWR
LESA	1886	0	0	0	1886	HUMBOLDT BAY NWR
MAGO	5808	0	0	0	5808	HUMBOLDT BAY NWR
PEEP	1603	0	0	0	1603	HUMBOLDT BAY NWR
REKN	70	0	0	0	70	HUMBOLDT BAY NWR
RNPH	31	0	0	0	31	HUMBOLDT BAY NWR
RUTU	10	0	0	0	10	HUMBOLDT BAY NWR
SAND	2498	0	0	0	2498	HUMBOLDT BAY NWR

Appendix 8, cont.

Species	Number of birds: Fall	Spring	Summer	Winter	Unknown	Location
SEPL	308	0	0	0	308	HUMBOLDT BAY NWR
TOTL	34763	0	0	0	34763	HUMBOLDT BAY NWR
WESA	15985	0	0	0	15985	HUMBOLDT BAY NWR
WILL	2109	0	0	0	2109	HUMBOLDT BAY NWR
RUTU	0	0	0	0	10000	ILE ROUGE QUE.
AMAV	0	0	0	0	400	IMPERIAL NWR
BNST	0	0	0	0	550	IMPERIAL NWR
GRYE	0	0	0	0	130	IMPERIAL NWR
KILL	0	0	0	0	900	IMPERIAL NWR
LBDO	0	0	0	0	100	IMPERIAL NWR
LESA	0	0	0	0	300	IMPERIAL NWR
SPSA	0	0	0	0	275	IMPERIAL NWR
WESA	0	0	0	0	320	IMPERIAL NWR
WILL	0	0	0	0	400	IMPERIAL NWR
LESA	0	0	0	0	38000	IZEMBEK NWR
LGPL	0	0	0	0	1000	IZEMBEK NWR
PEEP	0	0	0	0	300000	IZEMBEK NWR
RNPH	0	0	0	0	3500	IZEMBEK NWR
ROSA	0	0	0	0	100000	IZEMBEK NWR
RUTU	0	0	0	0	20000	IZEMBEK NWR
SAND	0	0	0	0	11000	IZEMBEK NWR
SEPL	0	0	0	0	7000	IZEMBEK NWR
TOTL	0	0	0	0	491500	IZEMBEK NWR
WESA	0	0	0	0	10000	IZEMBEK NWR
WHIM	0	0	0	0	1000	IZEMBEK NWR
AMAV	0	0	0	0	1500	J. CLARK SALYER NWR
BASA	0	0	0	0	1200	J. CLARK SALYER NWR
BASA	5000	500	0	0	0	J. CLARK SALYER NWR
BBPL	0	0	0	0	500	J. CLARK SALYER NWR
BBPL	500	500	0	0	0	J. CLARK SALYER NWR
COSN	0	0	0	0	1700	J. CLARK SALYER NWR
COSN	5000	5000	0	0	0	J. CLARK SALYER NWR
DUNL	500	500	0	0	0	J. CLARK SALYER NWR
GRYE	0	0	0	0	1200	J. CLARK SALYER NWR
GRYE	500	5000	0	0	0	J. CLARK SALYER NWR
HUGO	0	0	0	0	100	J. CLARK SALYER NWR
HUGO	50	50	0	0	0	J. CLARK SALYER NWR
KILL	0	0	0	0	2000	J. CLARK SALYER NWR
KILL	5000	5000	0	0	0	J. CLARK SALYER NWR
LBDO	0	0	0	0	5000	J. CLARK SALYER NWR
LBDO	5000	500	0	0	0	J. CLARK SALYER NWR
LESA	0	0	0	0	20000	J. CLARK SALYER NWR
LESA	50000	5000	0	0	0	J. CLARK SALYER NWR
LEYE	0	0	0	0	2000	J. CLARK SALYER NWR
LEYE	5000	500	0	0	0	J. CLARK SALYER NWR
LGPL	0	0	0	0	200	J. CLARK SALYER NWR
LGPL	500	50	0	0	0	J. CLARK SALYER NWR
MAGO	0	0	0	0	1300	J. CLARK SALYER NWR
MAGO	5000	5000	0	0	0	J. CLARK SALYER NWR
PESA	0	0	0	0	1000	J. CLARK SALYER NWR

Appendix 8, cont.

Species	Number of birds: Fall	Spring	Summer	Winter	Unknown	Location
PESA	5000	5000	0	0	0	J. CLARK SALYER NWR
PIPL	50	50	0	0	0	J. CLARK SALYER NWR
RUTU	0	0	0	0	250	J. CLARK SALYER NWR
RUTU	500	500	0	0	0	J. CLARK SALYER NWR
SAND	500	500	0	0	0	J. CLARK SALYER NWR
SBDO	50	50	0	0	0	J. CLARK SALYER NWR
SEPL	50	50	0	0	0	J. CLARK SALYER NWR
SESA	0	0	0	0	5000	J. CLARK SALYER NWR
SESA	5000	50	0	0	0	J. CLARK SALYER NWR
SOSA	0	0	0	0	500	J. CLARK SALYER NWR
SOSA	500	50	0	0	0	J. CLARK SALYER NWR
SPSA	0	0	0	0	500	J. CLARK SALYER NWR
SPSA	500	500	0	0	0	J. CLARK SALYER NWR
STSA	500	500	0	0	0	J. CLARK SALYER NWR
TOTL	0	0	0	0	50950	J. CLARK SALYER NWR
TOTL	95700	35350	0	0	0	J. CLARK SALYER NWR
UPSA	0	0	0	0	500	J. CLARK SALYER NWR
WESA	500	0	0	0	0	J. CLARK SALYER NWR
WILL	0	0	0	0	500	J. CLARK SALYER NWR
WILL	500	500	0	0	0	J. CLARK SALYER NWR
WIPH	0	0	0	0	6000	J. CLARK SALYER NWR
AMAV	1	0	0	0	1	JAMAICA BAY WR NPS
AMOY	125	0	0	0	125	JAMAICA BAY WR NPS
AMWO	12	0	0	0	12	JAMAICA BAY WR NPS
BASA	1	0	0	0	1	JAMAICA BAY WR NPS
BBPL	796	0	0	0	796	JAMAICA BAY WR NPS
BBSA	1	0	0	0	1	JAMAICA BAY WR NPS
COSN	1	0	0	0	1	JAMAICA BAY WR NPS
CUSA	1	0	0	0	1	JAMAICA BAY WR NPS
DUNL	0	0	0	999	999	JAMAICA BAY WR NPS
GRYE	394	0	0	0	394	JAMAICA BAY WR NPS
HUGO	3	0	0	0	3	JAMAICA BAY WR NPS
KILL	53	0	0	0	53	JAMAICA BAY WR NPS
LBDO	32	0	0	0	32	JAMAICA BAY WR NPS
LESA	92	0	0	0	92	JAMAICA BAY WR NPS
LEYE	0	0	77	0	77	JAMAICA BAY WR NPS
LGPL	2	0	0	0	2	JAMAICA BAY WR NPS
MAGO	0	0	0	1	1	JAMAICA BAY WR NPS
PESA	19	0	0	0	19	JAMAICA BAY WR NPS
REKN	495	0	0	0	495	JAMAICA BAY WR NPS
RNST	0	0	1	0	1	JAMAICA BAY WR NPS
RUFF	1	0	0	0	1	JAMAICA BAY WR NPS
RUTU	114	0	0	0	114	JAMAICA BAY WR NPS
SAND	156	0	0	0	156	JAMAICA BAY WR NPS
SBDO	0	0	573	0	573	JAMAICA BAY WR NPS
SEPL	994	0	0	0	994	JAMAICA BAY WR NPS
SESA	2291	0	0	0	2291	JAMAICA BAY WR NPS
SOSA	1	0	0	0	1	JAMAICA BAY WR NPS
STSA	27	0	0	0	27	JAMAICA BAY WR NPS
TOTL	5660	0	663	1000	7323	JAMAICA BAY WR NPS

Appendix 8, cont.

Species	Number of birds: Fall	Spring	Summer	Winter	Unknown	Location
UPSA	1	0	0	0	1	JAMAICA BAY WR NPS
WESA	16	0	0	0	16	JAMAICA BAY WR NPS
WHIM	1	0	0	0	1	JAMAICA BAY WR NPS
WILL	0	0	12	0	12	JAMAICA BAY WR NPS
WIPH	1	0	0	0	1	JAMAICA BAY WR NPS
WRSA	29	0	0	0	29	JAMAICA BAY WR NPS
HUGO	0	0	0	0	2061	JAMES BAY
REKN	0	0	0	0	6110	JAMES BAY
SESA	0	0	0	0	12668	JAMES BAY
TOTL	0	0	0	0	20839	JAMES BAY
BNST	0	0	0	0	322	KERN
COSN	0	0	0	0	250	KERN
DUNL	0	0	0	0	1100	KERN
GRYE	0	0	0	0	50	KERN
KILL	0	0	0	0	200	KERN
LBCU	0	0	0	0	150	KERN
LBDO	0	0	0	0	12700	KERN
LESA	0	0	0	0	5300	KERN
SPSA	0	0	0	0	115	KERN
TOTL	0	0	0	0	25217	KERN
WESA	0	0	0	0	5000	KERN
WIPH	0	0	0	0	30	KERN
AMOY	0	0	0	0	1000	KODIAK
BLTU	0	0	0	0	1000	KODIAK
COSN	0	0	0	0	2000	KODIAK
DUNL	0	0	0	0	1000	KODIAK
ROSA	0	0	0	0	5000	KODIAK
TOTL	0	0	0	0	10000	KODIAK
AMAV	0	0	0	0	4000	KULM W.M.D.
COSN	0	0	0	0	1200	KULM W.M.D.
KILL	0	0	0	0	15000	KULM W.M.D.
LEYE	0	0	0	0	4000	KULM W.M.D.
MAGO	0	0	0	0	1500	KULM W.M.D.
TOTL	0	0	0	0	38700	KULM W.M.D.
UPSA	0	0	0	0	5000	KULM W.M.D.
WILL	0	0	0	0	4000	KULM W.M.D.
WIPH	0	0	0	0	4000	KULM W.M.D.
BNST	150	200	300	200	300	LACASSINE NWR
COSN	300	1000	1000	1000	1000	LACASSINE NWR
GRYE	50	0	0	10	50	LACASSINE NWR
HUGO	0	50	0	0	50	LACASSINE NWR
KILL	125	300	100	300	300	LACASSINE NWR
LEYE	0	0	200	0	200	LACASSINE NWR
LGPL	0	200	0	0	200	LACASSINE NWR
PESA	0	0	50	0	50	LACASSINE NWR
SEPL	0	500	0	0	500	LACASSINE NWR
STSA	0	0	75	0	75	LACASSINE NWR
AMAV	0	0	0	0	1202	LAGUNA ATASCOSA NWR
AMAV	50000	50000	0	50000	0	LAGUNA ATASCOSA NWR
BASA	50000	50000	0	5	0	LAGUNA ATASCOSA NWR

Appendix 8, cont.

Species	Fall	Spring	Summer	Winter	Unknown	Location
	Number of birds					
BBPL	0	0	0	0	355	LAGUNA ATASCOSA NWR
BBPL	5000	5000	0	5000	0	LAGUNA ATASCOSA NWR
BNST	0	0	0	0	100	LAGUNA ATASCOSA NWR
BNST	50	500	0	500	0	LAGUNA ATASCOSA NWR
DUNL	0	0	0	0	552	LAGUNA ATASCOSA NWR
DUNL	50000	50000	0	50000	0	LAGUNA ATASCOSA NWR
GRYE	0	0	0	0	200	LAGUNA ATASCOSA NWR
GRYE	5000	5000	0	50	0	LAGUNA ATASCOSA NWR
HUGO	0	50	0	0	0	LAGUNA ATASCOSA NWR
KILL	500	500	0	500	0	LAGUNA ATASCOSA NWR
LBCU	0	0	0	0	259	LAGUNA ATASCOSA NWR
LBDO	0	0	0	0	1800	LAGUNA ATASCOSA NWR
LBDO	100000		100000	0	100000	0 LAGUNA ATASCOSA NWR
LESA	0	0	0	0	240	LAGUNA ATASCOSA NWR
LESA	100000		100000	0	100000	0 LAGUNA ATASCOSA NWR
LEYE	0	0	0	0	164	LAGUNA ATASCOSA NWR
LEYE	5000	5000	0	50	0	LAGUNA ATASCOSA NWR
LGPL	0	500	0	0	0	LAGUNA ATASCOSA NWR
MAGO	500	5000	0	50	0	LAGUNA ATASCOSA NWR
PEEP	0	0	0	0	14600	LAGUNA ATASCOSA NWR
PESA	5000	5000	0	50	0	LAGUNA ATASCOSA NWR
PIPL	500	500	0	500	0	LAGUNA ATASCOSA NWR
REKN	5000	50000	0	0	0	LAGUNA ATASCOSA NWR
RUTU	500	500	0	500	0	LAGUNA ATASCOSA NWR
SAND	0	0	0	0	100	LAGUNA ATASCOSA NWR
SAND	100000		100000	0	100000	0 LAGUNA ATASCOSA NWR
SBDO	50000	50000	0	50000	0	LAGUNA ATASCOSA NWR
SEPL	0	0	0	0	215	LAGUNA ATASCOSA NWR
SEPL	5000	5000	0	500	0	LAGUNA ATASCOSA NWR
SESA	50000	50000	0	0	0	LAGUNA ATASCOSA NWR
SNPL	5000	500	0	5000	0	LAGUNA ATASCOSA NWR
STSA	0	0	0	0	550	LAGUNA ATASCOSA NWR
STSA	5000	5000	0	50	0	LAGUNA ATASCOSA NWR
TOTL	743050		803550	0	617805	0 LAGUNA ATASCOSA NWR
TOTL	0	0	0	0	22222	LAGUNA ATASCOSA NWR
WESA	0	0	0	0	1520	LAGUNA ATASCOSA NWR
WESA	100000		100000	0	100000	0 LAGUNA ATASCOSA NWR
WHIM	500	500	0	50	0	LAGUNA ATASCOSA NWR
WILL	0	0	0	0	150	LAGUNA ATASCOSA NWR
WILL	50000	5000	0	50000	0	LAGUNA ATASCOSA NWR
WIPH	0	50000	0	0	0	LAGUNA ATASCOSA NWR
WIPL	500	5000	0	5000	0	LAGUNA ATASCOSA NWR
WRSA	0	5000	0	0	0	LAGUNA ATASCOSA NWR
AMAV	15000	25000	0	0	25000	LAHONTAN VALLEY WETL
BNST	5000	5000	0	0	5000	LAHONTAN VALLEY WETL
LBDO	125000		150000	0	0	150000 LAHONTAN VALLEY WETL
TOTL	195000		230000	0	0	230000 LAHONTAN VALLEY WETL
WESA	50000	50000	0	0	50000	LAHONTAN VALLEY WETL
COSN	0	0	0	0	2000	LAKE ANDES
KILL	0	0	0	0	1500	LAKE ANDES

Appendix 8, cont.

Species	Fall	Spring	Summer	Winter	Unknown	Location
	Number of birds					
LBDO	0	0	0	0	5000	LAKE ANDES
LESA	0	0	0	0	4000	LAKE ANDES
TOTL	0	0	0	0	13400	LAKE ANDES
UPSA	0	0	0	0	150	LAKE ANDES
WIPH	0	0	0	0	750	LAKE ANDES
AMWO	0	0	0	0	100	LITCHFIELD WMD
COSN	0	0	0	0	400	LITCHFIELD WMD
KILL	0	0	0	0	3000	LITCHFIELD WMD
LEYE	0	0	0	0	350	LITCHFIELD WMD
PEEP	0	0	0	0	4000	LITCHFIELD WMD
RUTU	0	0	0	0	400	LITCHFIELD WMD
SESA	0	0	0	0	1200	LITCHFIELD WMD
SPSA	0	0	0	0	100	LITCHFIELD WMD
TOTL	0	0	0	0	9700	LITCHFIELD WMD
WIPH	0	0	0	0	150	LITCHFIELD WMD
AMAV	1500	0	0	0	1500	LONG LAKE NWR
COSN	50	0	0	0	0	LONG LAKE NWR
GRYE	50	0	0	0	0	LONG LAKE NWR
HUGO	5	0	0	0	0	LONG LAKE NWR
KILL	0	0	8	0	8	LONG LAKE NWR
KILL	500	0	0	0	0	LONG LAKE NWR
LBDO	250	0	0	0	250	LONG LAKE NWR
LBDO	5000	0	0	0	0	LONG LAKE NWR
LESA	50	0	0	0	0	LONG LAKE NWR
LEYE	5000	0	0	0	0	LONG LAKE NWR
LGPL	5	0	0	0	0	LONG LAKE NWR
MAGO	359	0	0	0	359	LONG LAKE NWR
MAGO	500	0	0	0	0	LONG LAKE NWR
PESA	50	0	0	0	0	LONG LAKE NWR
PIPL	5	0	0	0	0	LONG LAKE NWR
RNPH	50	0	0	0	0	LONG LAKE NWR
RUTU	4	0	0	0	4	LONG LAKE NWR
SAND	5	0	0	0	0	LONG LAKE NWR
SBDO	5000	0	0	0	0	LONG LAKE NWR
SEPL	5	0	0	0	0	LONG LAKE NWR
SESA	500	0	0	0	0	LONG LAKE NWR
SPSA	50	0	0	0	0	LONG LAKE NWR
STSA	5	0	0	0	0	LONG LAKE NWR
TOTL	16980	2905	0	50	0	LONG LAKE NWR
WILL	29	0	0	0	29	LONG LAKE NWR
WILL	50	0	0	0	0	LONG LAKE NWR
WIPH	71	0	0	0	71	LONG LAKE NWR
WIPH	50	0	0	0	0	LONG LAKE NWR
WRSA	50	0	0	0	0	LONG LAKE NWR
AMAV	2280	370	0	0	2280	LOWER KLAMATH NWR
BNST	1200	300	0	0	1200	LOWER KLAMATH NWR
COSN	0	0	0	0	250	LOWER KLAMATH NWR
GRYE	20	150	0	0	150	LOWER KLAMATH NWR
KILL	350	600	0	0	600	LOWER KLAMATH NWR
LBDO	8000	6000	0	0	8000	LOWER KLAMATH NWR

Appendix 8, cont.

Species	Fall	Spring	Summer	Winter	Unknown	Location
	Number of birds					
LESA	120000		30600	0	0	120000 LOWER KLAMATH NWR
LEYE	200	350	0	0	350	LOWER KLAMATH NWR
RNPH	14000	3000	0	0	14000	LOWER KLAMATH NWR
TOTL	189050		90370	0	0	195830 LOWER KLAMATH NWR
WESA	40000	45000	0	0	45000	LOWER KLAMATH NWR
WIPH	3000	4000	0	0	4000	LOWER KLAMATH NWR
COSN	0	0	0	0	1200	MADISON W.M.D.
GRYE	0	0	0	0	2000	MADISON W.M.D.
KILL	0	0	0	0	3200	MADISON W.M.D.
LEYE	0	0	0	0	1700	MADISON W.M.D.
MAGO	0	0	0	0	1800	MADISON W.M.D.
TOTL	0	0	0	0	13400	MADISON W.M.D.
UPSA	0	0	0	0	500	MADISON W.M.D.
WIPH	0	0	0	0	3000	MADISON W.M.D.
AMAV	20000	0	0	0	20000	MALHEUR NATL. WILDLI
BASA	500	0	0	0	500	MALHEUR NATL. WILDLI
BBPL	50	0	0	0	50	MALHEUR NATL. WILDLI
BNST	600	0	0	0	600	MALHEUR NATL. WILDLI
COSN	1000	0	0	0	1000	MALHEUR NATL. WILDLI
DUNL	300	0	0	0	300	MALHEUR NATL. WILDLI
GRYE	500	0	0	0	500	MALHEUR NATL. WILDLI
LBCU	300	300	200	0	300	MALHEUR NATL. WILDLI
LBDO	30000	0	0	0	30000	MALHEUR NATL. WILDLI
LESA	1500	0	0	0	1500	MALHEUR NATL. WILDLI
LEYE	200	0	0	0	200	MALHEUR NATL. WILDLI
MAGO	300	0	0	0	300	MALHEUR NATL. WILDLI
PESA	500	0	0	0	500	MALHEUR NATL. WILDLI
RNPH	1000	0	0	0	1000	MALHEUR NATL. WILDLI
SAND	300	0	0	0	300	MALHEUR NATL. WILDLI
SOSA	75	0	0	0	75	MALHEUR NATL. WILDLI
SPSA	100	0	0	0	100	MALHEUR NATL. WILDLI
TOTL	103225		1300	200	0	103225 MALHEUR NATL. WILDLI
WESA	23000	0	0	0	23000	MALHEUR NATL. WILDLI
WILL	3000	0	0	0	3000	MALHEUR NATL. WILDLI
WIPH	20000	1000	0	0	20000	MALHEUR NATL. WILDLI
AMAV	0	0	0	0	250	MCFADDIN NWR
BNST	0	0	0	0	200	MCFADDIN NWR
COSN	0	0	0	0	300	MCFADDIN NWR
GRYE	0	0	0	0	100	MCFADDIN NWR
KILL	0	0	0	0	350	MCFADDIN NWR
LBDO	0	0	0	0	300	MCFADDIN NWR
LESA	0	0	0	0	100	MCFADDIN NWR
LEYE	0	0	0	0	200	MCFADDIN NWR
SAND	0	0	0	0	250	MCFADDIN NWR
WILL	0	0	0	0	250	MCFADDIN NWR
AMAV	0	0	0	0	1000	MEDICINE LAKE
COSN	0	0	0	0	200	MEDICINE LAKE
DOSP	0	0	0	0	2000	MEDICINE LAKE
GRYE	0	0	0	0	500	MEDICINE LAKE
KILL	0	0	0	0	400	MEDICINE LAKE

Appendix 8, cont.

Species	Fall	Spring	Summer	Winter	Unknown	Location
	Number of birds					
LEYE	0	0	0	0	100	MEDICINE LAKE
MAGO	0	0	0	0	3000	MEDICINE LAKE
PEEP	0	0	0	0	5000	MEDICINE LAKE
TOTL	0	0	0	0	17900	MEDICINE LAKE
UPSA	0	0	0	0	400	MEDICINE LAKE
WILL	0	0	0	0	300	MEDICINE LAKE
WIPH	0	0	0	0	5000	MEDICINE LAKE
AMAV	0	0	0	0	46	MERCED
BBPL	0	0	0	0	250	MERCED
BNST	0	0	0	0	200	MERCED
DUNL	0	0	0	0	1304	MERCED
LBCU	0	0	0	0	100	MERCED
LBDO	0	0	0	0	3930	MERCED
LESA	0	0	0	0	2390	MERCED
TOTL	0	0	0	0	8595	MERCED
WESA	0	0	0	0	250	MERCED
WHIM	0	0	0	0	125	MERCED
BBPL	0	0	0	0	1278	MINAS BASIN
LESA	0	0	0	0	346	MINAS BASIN
SBDO	0	0	0	0	968	MINAS BASIN
SEPL	0	0	0	0	735	MINAS BASIN
SESA	0	0	0	0	31000	MINAS BASIN
TOTL	0	0	0	0	34463	MINAS BASIN
WRSA	0	0	0	0	136	MINAS BASIN
AMAV	0	0	0	0	3950	MONO LAKE
BBPL	0	0	0	0	100	MONO LAKE
DUNL	0	0	0	0	802	MONO LAKE
KILL	0	0	0	0	314	MONO LAKE
LBDO	0	0	0	0	44	MONO LAKE
LESA	0	0	0	0	2000	MONO LAKE
RNPH	0	0	0	0	40000	MONO LAKE
SBDO	0	0	0	0	135	MONO LAKE
SEPL	0	0	0	0	268	MONO LAKE
SNPL	0	0	0	0	400	MONO LAKE
TOTL	0	0	0	0	143238	MONO LAKE
WESA	0	0	0	0	2025	MONO LAKE
WHIM	0	0	0	0	200	MONO LAKE
WIPH	0	0	0	0	93000	MONO LAKE
BBPL	8000	2000	0	0	8000	MONOMOY NWR
DUNL	8000	3500	0	0	8000	MONOMOY NWR
GRYE	500	7	0	0	500	MONOMOY NWR
HUGO	200	0	0	0	200	MONOMOY NWR
LESA	4000	500	0	0	4000	MONOMOY NWR
LEYE	300	0	0	0	300	MONOMOY NWR
PIPL	100	50	0	0	100	MONOMOY NWR
REKN	3000	100	0	0	3000	MONOMOY NWR
RUTU	500	300	0	0	500	MONOMOY NWR
SAND	5000	3500	0	0	5000	MONOMOY NWR
SBDO	4000	60	0	0	4000	MONOMOY NWR
SEPL	2000	25	0	0	2000	MONOMOY NWR

Appendix 8, cont.

Species	Number of birds: Fall	Spring	Summer	Winter	Unknown	Location
SESA	8000	2500	0	0	8000	MONOMOY NWR
TOTL	43765	12545	0	0	43765	MONOMOY NWR
WHIM	165	3	0	0	165	MONOMOY NWR
AMWO	0	0	0	0	2140	MORRIS WETLAND MGT.
BBPL	0	0	0	0	300	MORRIS WETLAND MGT.
GRYE	0	0	0	0	1000	MORRIS WETLAND MGT.
KILL	0	0	0	0	2500	MORRIS WETLAND MGT.
LEYE	0	0	0	0	1500	MORRIS WETLAND MGT.
LGPL	0	0	0	0	1250	MORRIS WETLAND MGT.
MAGO	0	0	0	0	140	MORRIS WETLAND MGT.
PESA	0	0	0	0	175	MORRIS WETLAND MGT.
SESA	0	0	0	0	250	MORRIS WETLAND MGT.
SPSA	0	0	0	0	750	MORRIS WETLAND MGT.
TOTL	0	0	0	0	10645	MORRIS WETLAND MGT.
UPSA	0	0	0	0	490	MORRIS WETLAND MGT.
WIPH	0	0	0	0	150	MORRIS WETLAND MGT.
BBPL	284	0	0	0	284	MORRO BAY
DOSP	699	0	0	0	699	MORRO BAY
GRYE	26	0	0	0	26	MORRO BAY
KILL	28	0	0	0	28	MORRO BAY
LBCU	222	0	0	0	222	MORRO BAY
LESA	1990	0	0	0	1990	MORRO BAY
MAGO	2403	0	0	0	2403	MORRO BAY
PEEP	3420	0	0	0	3420	MORRO BAY
SEPL	45	0	0	0	45	MORRO BAY
TOTL	12588	0	0	0	12588	MORRO BAY
WESA	967	0	0	0	967	MORRO BAY
WHIM	41	0	0	0	41	MORRO BAY
WILL	2463	0	0	0	2463	MORRO BAY
AMAV	40	45	195	15	195	MULESHOE NWR
BASA	75	65	460	4	460	MULESHOE NWR
BBPL	25	2	0	0	25	MULESHOE NWR
COSN	1	1	0	3	3	MULESHOE NWR
GRYE	8	3	60	5	60	MULESHOE NWR
KILL	50	40	55	50	55	MULESHOE NWR
LBCU	0	10	9	0	10	MULESHOE NWR
LBDO	35	25	60	0	60	MULESHOE NWR
LESA	65	65	500	10	500	MULESHOE NWR
LEYE	100	5	130	1	130	MULESHOE NWR
MAGO	0	0	1	0	1	MULESHOE NWR
PESA	0	0	1	0	1	MULESHOE NWR
RNPH	25	0	4	0	25	MULESHOE NWR
SAND	5	4	0	0	5	MULESHOE NWR
SEPL	0	2	7	0	7	MULESHOE NWR
SESA	30	10	300	5	300	MULESHOE NWR
SNPL	5	12	15	5	15	MULESHOE NWR
SOSA	0	0	2	0	2	MULESHOE NWR
SPSA	1	6	4	0	6	MULESHOE NWR
STSA	0	4	200	0	200	MULESHOE NWR
TOTL	670	779	7414	102	7541	MULESHOE NWR

Appendix 8, cont.

Species	Number of birds Fall	Spring	Summer	Winter	Unknown	Location
WESA	40	80	10	0	80	MULESHOE NWR
WILL	0	0	1	0	1	MULESHOE NWR
WIPH	165	400	5400	4	5400	MULESHOE NWR
AMAV	0	0	0	0	500	N.E. MONTANA WETLAND
COSN	0	0	0	0	100	N.E. MONTANA WETLAND
DOSP	0	0	0	0	500	N.E. MONTANA WETLAND
GRYE	0	0	0	0	250	N.E. MONTANA WETLAND
KILL	0	0	0	0	400	N.E. MONTANA WETLAND
LEYE	0	0	0	0	100	N.E. MONTANA WETLAND
MAGO	0	0	0	0	200	N.E. MONTANA WETLAND
PEEP	0	0	0	0	3000	N.E. MONTANA WETLAND
TOTL	0	0	0	0	10250	N.E. MONTANA WETLAND
WILL	0	0	0	0	200	N.E. MONTANA WETLAND
WIPH	0	0	0	0	5000	N.E. MONTANA WETLAND
BBPL	15	15	0	0	15	NINIGRET NWR
COSN	0	20	0	0	20	NINIGRET NWR
DUNL	15	15	0	0	15	NINIGRET NWR
GRYE	25	25	0	0	25	NINIGRET NWR
LESA	200	200	0	0	200	NINIGRET NWR
LEYE	15	15	0	0	15	NINIGRET NWR
PESA	0	1	0	0	1	NINIGRET NWR
PIPL	0	0	6	0	6	NINIGRET NWR
REKN	0	10	0	0	10	NINIGRET NWR
RUTU	10	10	0	0	10	NINIGRET NWR
SAND	35	35	0	0	35	NINIGRET NWR
SBDO	0	50	0	0	50	NINIGRET NWR
SEPL	40	40	0	0	40	NINIGRET NWR
SESA	300	0	0	0	300	NINIGRET NWR
SPSA	0	0	5	0	5	NINIGRET NWR
WESA	0	5	0	0	5	NINIGRET NWR
WHIM	0	3	0	0	3	NINIGRET NWR
AMAV	0	0	0	0	555	OLD WIVES LAKE
BASA	0	0	0	0	54	OLD WIVES LAKE
MAGO	0	0	0	0	3	OLD WIVES LAKE
PEEP	0	0	0	0	54822	OLD WIVES LAKE
REKN	0	0	0	0	20	OLD WIVES LAKE
SAND	0	0	0	0	1541	OLD WIVES LAKE
SESA	0	0	0	0	1541	OLD WIVES LAKE
TOTL	0	0	0	0	58589	OLD WIVES LAKE
WRSA	0	0	0	0	53	OLD WIVES LAKE
BBPL	1668	1075	0	0	1668	PARKER RIVER NWR
BBPL	500	0	0	0	0	PARKER RIVER NWR
DUNL	3300	5	0	0	3300	PARKER RIVER NWR
DUNL	50	0	0	0	0	PARKER RIVER NWR
GRYE	400	53	0	0	400	PARKER RIVER NWR
GRYE	50	0	0	0	0	PARKER RIVER NWR
HUGO	5	0	0	0	0	PARKER RIVER NWR
KILL	50	0	0	0	0	PARKER RIVER NWR
LBDO	0	0	0	0	100	PARKER RIVER NWR
LBDO	5	0	0	0	0	PARKER RIVER NWR

Appendix 8, cont.

Species	Fall	Spring	Summer	Winter	Unknown	Location
	Number of birds					
LESA	154	1509	0	0	1509	PARKER RIVER NWR
LESA	500	0	0	0	0	PARKER RIVER NWR
LEYE	376	71	0	0	376	PARKER RIVER NWR
LEYE	500	0	0	0	0	PARKER RIVER NWR
LGPL	5	0	0	0	0	PARKER RIVER NWR
PESA	5	0	0	0	0	PARKER RIVER NWR
PIPL	50	0	0	0	0	PARKER RIVER NWR
REKN	100	0	0	0	100	PARKER RIVER NWR
REKN	500	0	0	0	0	PARKER RIVER NWR
RUTU	75	15	0	0	75	PARKER RIVER NWR
RUTU	50	0	0	0	0	PARKER RIVER NWR
SAND	644	450	0	0	644	PARKER RIVER NWR
SAND	500	0	0	0	0	PARKER RIVER NWR
SBDO	588	0	0	0	588	PARKER RIVER NWR
SBDO	500	0	0	0	0	PARKER RIVER NWR
SEPL	1329	128	0	0	1329	PARKER RIVER NWR
SEPL	5000	0	0	0	0	PARKER RIVER NWR
SESA	3120	1984	0	0	3120	PARKER RIVER NWR
SESA	5000	0	0	0	0	PARKER RIVER NWR
SPSA	5	0	0	0	0	PARKER RIVER NWR
STSA	5	0	0	0	0	PARKER RIVER NWR
TOTL	11754	5290	0	0	13209	PARKER RIVER NWR
TOTL	13790	885	0	770	0	PARKER RIVER NWR
WESA	5	0	0	0	0	PARKER RIVER NWR
WILL	5	0	0	0	0	PARKER RIVER NWR
WRSA	500	0	0	0	0	PARKER RIVER NWR
COSN	0	0	0	0	500	PAVLOF UNIT
LESA	0	0	0	0	32000	PAVLOF UNIT
ROSA	0	0	0	0	30000	PAVLOF UNIT
SAND	0	0	0	0	200	PAVLOF UNIT
SEPL	0	0	0	0	600	PAVLOF UNIT
TOTL	0	0	0	0	63300	PAVLOF UNIT
AMOY	5	0	0	0	0	PETIT MANAN NWR OVER PT.
BASA	5	0	0	0	0	PETIT MANAN NWR OVER PT.
BBPL	50	0	0	0	0	PETIT MANAN NWR OVER PT.
COSN	5	0	0	0	0	PETIT MANAN NWR OVER PT.
DUNL	500	0	0	0	0	PETIT MANAN NWR OVER PT.
GRYE	50	0	0	0	0	PETIT MANAN NWR OVER PT.
HUGO	5	0	0	0	0	PETIT MANAN NWR OVER PT.
KILL	5	0	0	0	0	PETIT MANAN NWR OVER PT.
LESA	50	0	0	0	0	PETIT MANAN NWR OVER PT.
LEYE	50	0	0	0	0	PETIT MANAN NWR OVER PT.
LGPL	5	0	0	0	0	PETIT MANAN NWR OVER PT.
PESA	5	0	0	0	0	PETIT MANAN NWR OVER PT.
PIPL	5	0	0	0	0	PETIT MANAN NWR OVER PT.
REKN	50	0	0	0	0	PETIT MANAN NWR OVER PT.
RUTU	50	0	0	0	0	PETIT MANAN NWR OVER PT.
SAND	5	0	0	0	0	PETIT MANAN NWR OVER PT.
SBDO	500	0	0	0	0	PETIT MANAN NWR OVER PT.
SEPL	5000	0	0	0	0	PETIT MANAN NWR OVER PT.

Appendix 8, cont.

Species	Number of birds Fall	Spring	Summer	Winter	Unknown	Location
SESA	500	0	0	0	0	PETIT MANAN NWR OVER PT.
SPSA	5	0	0	0	0	PETIT MANAN NWR OVER PT.
TOTL	6900	450	0	180	0	PETIT MANAN NWR OVER PT.
WESA	5	0	0	0	0	PETIT MANAN NWR OVER PT.
WHIM	5	0	0	0	0	PETIT MANAN NWR OVER PT.
WILL	50	0	0	0	0	PETIT MANAN NWR OVER PT.
WRSA	50	0	0	0	0	PETIT MANAN NWR OVER PT.
AMAV	0	0	0	0	800	PLATTE RIVER-RAINWAT
COSN	0	0	0	0	4500	PLATTE RIVER-RAINWAT
KILL	0	0	0	0	3000	PLATTE RIVER-RAINWAT
LBDO	0	0	0	0	1500	PLATTE RIVER-RAINWAT
LESA	0	0	0	0	1000	PLATTE RIVER-RAINWAT
LEYE	0	0	0	0	1200	PLATTE RIVER-RAINWAT
PESA	0	0	0	0	250	PLATTE RIVER-RAINWAT
SEPL	0	0	0	0	400	PLATTE RIVER-RAINWAT
SESA	0	0	0	0	400	PLATTE RIVER-RAINWAT
SOSA	0	0	0	0	300	PLATTE RIVER-RAINWAT
SPSA	0	0	0	0	425	PLATTE RIVER-RAINWAT
TOTL	0	0	0	0	15500	PLATTE RIVER-RAINWAT
UPSA	0	0	0	0	325	PLATTE RIVER-RAINWAT
WILL	0	0	0	0	400	PLATTE RIVER-RAINWAT
WIPH	0	0	0	0	1000	PLATTE RIVER-RAINWAT
AMAV	180	320	0	578	578	POINT REYES NATIONAL
BBPL	490	580	0	410	580	POINT REYES NATIONAL
BLTU	320	400	0	190	400	POINT REYES NATIONAL
COSN	60	150	0	140	150	POINT REYES NATIONAL
DOSP	190	2000	0	120	2000	POINT REYES NATIONAL
DUNL	5400	5300	0	5500	5500	POINT REYES NATIONAL
KILL	140	170	0	220	220	POINT REYES NATIONAL
LBCU	65	65	0	60	65	POINT REYES NATIONAL
LESA	4114	1900	0	1300	4114	POINT REYES NATIONAL
MAGO	320	270	0	390	390	POINT REYES NATIONAL
RNPH	800	140	0	0	800	POINT REYES NATIONAL
SAND	800	220	0	100	800	POINT REYES NATIONAL
SEPL	100	220	0	0	220	POINT REYES NATIONAL
SNPL	45	0	0	25	45	POINT REYES NATIONAL
TOTL	16104	45455	0	10193	49912	POINT REYES NATIONAL
WESA	2200	33000	0	600	33000	POINT REYES NATIONAL
WHIM	0	170	0	0	170	POINT REYES NATIONAL
WILL	880	550	0	560	880	POINT REYES NATIONAL
AMWO	0	240	0	0	240	PRIME HOOK NWR
BBPL	0	275	0	0	275	PRIME HOOK NWR
COSN	0	575	0	0	575	PRIME HOOK NWR
DUNL	0	2500	0	0	10000	PRIME HOOK NWR
GRYE	0	310	0	0	310	PRIME HOOK NWR
KILL	0	160	0	0	160	PRIME HOOK NWR
LESA	0	3150	0	0	3150	PRIME HOOK NWR
LEYE	0	200	0	0	200	PRIME HOOK NWR
PESA	0	110	0	0	110	PRIME HOOK NWR
REKN	0	3000	0	0	3000	PRIME HOOK NWR

Appendix 8, cont.

Species	Number of birds: Fall	Spring	Summer	Winter	Unknown	Location
RUTU	0	1140	0	0	1140	PRIME HOOK NWR
SAND	0	1200	0	0	3500	PRIME HOOK NWR
SBDO	0	370	0	0	4250	PRIME HOOK NWR
SEPL	0	1100	0	0	1500	PRIME HOOK NWR
SESA	0	1700	0	0	1700	PRIME HOOK NWR
SOSA	0	35	0	0	35	PRIME HOOK NWR
SPSA	0	20	0	0	20	PRIME HOOK NWR
STSA	0	1	0	0	1	PRIME HOOK NWR
TOTL	0	18806	0	0	32886	PRIME HOOK NWR
WESA	0	20	0	0	20	PRIME HOOK NWR
WILL	0	1200	0	0	1200	PRIME HOOK NWR
WRSA	0	1500	0	0	1500	PRIME HOOK NWR
AMAV	133	30	0	0	133	QUIVIRA NWR
BASA	453	0	0	0	453	QUIVIRA NWR
BBPL	4	2	0	0	4	QUIVIRA NWR
GRYE	110	0	0	0	110	QUIVIRA NWR
KILL	62	12	0	0	62	QUIVIRA NWR
LBDO	261	0	0	0	261	QUIVIRA NWR
LESA	354	0	0	0	354	QUIVIRA NWR
LEYE	224	3	0	0	224	QUIVIRA NWR
PESA	249	0	0	0	249	QUIVIRA NWR
SESA	362	0	0	0	362	QUIVIRA NWR
SNPL	313	230	0	0	313	QUIVIRA NWR
STSA	247	0	0	0	247	QUIVIRA NWR
WESA	311	0	0	0	311	QUIVIRA NWR
WIPH	77	83	0	0	83	QUIVIRA NWR
WRSA	0	650	0	0	650	QUIVIRA NWR
REKN	0	6000	0	0	6000	REEDS BEACH
RUTU	0	4500	0	0	4500	REEDS BEACH
SAND	0	4500	0	0	4500	REEDS BEACH
TOTL	0	15000	0	0	15000	REEDS BEACH
AMAV	0	0	0	0	200	RIO GRANDE VALLEY
BNST	0	0	0	0	400	RIO GRANDE VALLEY
GRYE	0	0	0	0	200	RIO GRANDE VALLEY
KILL	0	0	0	0	500	RIO GRANDE VALLEY
LBCU	0	0	0	0	100	RIO GRANDE VALLEY
LBDO	0	0	0	0	300	RIO GRANDE VALLEY
LESA	0	0	0	0	300	RIO GRANDE VALLEY
LEYE	0	0	0	0	100	RIO GRANDE VALLEY
SPSA	0	0	0	0	100	RIO GRANDE VALLEY
WESA	0	0	0	0	200	RIO GRANDE VALLEY
WILL	0	0	0	0	600	RIO GRANDE VALLEY
WIPH	0	0	0	0	12000	RIO GRANDE VALLEY
AMAV	0	0	0	0	125	SACRAMENTO NWR
BBPL	0	0	0	0	2200	SACRAMENTO NWR
BNST	0	0	0	0	425	SACRAMENTO NWR
DUNL	0	0	0	0	1500	SACRAMENTO NWR
LBCU	0	0	0	0	2400	SACRAMENTO NWR
LBDO	0	0	0	0	1500	SACRAMENTO NWR
LESA	0	0	0	0	2200	SACRAMENTO NWR

Appendix 8, cont.

Species	Fall	Spring	Summer	Winter	Unknown	Location
	Number of birds					
RNPH	0	0	0	0	40	SACRAMENTO NWR
TOTL	0	0	0	0	11860	SACRAMENTO NWR
WESA	0	0	0	0	1470	SACRAMENTO NWR
AMAV	1548	480	0	0	1548	SALT PLAINS NWR
AMAV	5000	500	0	0	0	SALT PLAINS NWR
BASA	2929	2458	0	0	2929	SALT PLAINS NWR
BASA	500	5000	0	0	0	SALT PLAINS NWR
BBPL	36	105	0	0	105	SALT PLAINS NWR
BBPL	500	5	0	0	0	SALT PLAINS NWR
BNST	5	5	0	0	0	SALT PLAINS NWR
COSN	8	8	0	0	8	SALT PLAINS NWR
COSN	5	5	0	0	0	SALT PLAINS NWR
DUNL	0	7	0	0	7	SALT PLAINS NWR
DUNL	0	50	0	0	0	SALT PLAINS NWR
GRYE	149	45	0	0	149	SALT PLAINS NWR
GRYE	500	50	0	0	0	SALT PLAINS NWR
HUGO	0	22	0	0	22	SALT PLAINS NWR
KILL	311	41	0	0	311	SALT PLAINS NWR
KILL	500	50	0	0	0	SALT PLAINS NWR
LBDO	686	545	0	0	696	SALT PLAINS NWR
LBDO	5000	500	0	0	0	SALT PLAINS NWR
LESA	8956	223	0	0	8956	SALT PLAINS NWR
LESA	5000	50	0	0	0	SALT PLAINS NWR
LEYE	242	42	0	0	242	SALT PLAINS NWR
LEYE	500	5	0	0	0	SALT PLAINS NWR
MAGO	9	3	0	0	9	SALT PLAINS NWR
MAGO	50	50	0	0	0	SALT PLAINS NWR
PESA	66	30	0	0	66	SALT PLAINS NWR
PESA	500	5	0	0	0	SALT PLAINS NWR
PIPL	5	5	0	0	0	SALT PLAINS NWR
RUTU	0	5	0	0	0	SALT PLAINS NWR
SAND	22	260	0	0	260	SALT PLAINS NWR
SAND	500	50	0	0	0	SALT PLAINS NWR
SEPL	7219	849	0	0	7219	SALT PLAINS NWR
SEPL	50	500	0	0	0	SALT PLAINS NWR
SESA	500	5000	0	0	0	SALT PLAINS NWR
SNPL	627	36	0	0	627	SALT PLAINS NWR
SNPL	500	500	0	0	0	SALT PLAINS NWR
SOSA	0	5	0	0	0	SALT PLAINS NWR
SPSA	11	84	0	0	84	SALT PLAINS NWR
SPSA	0	5	0	0	0	SALT PLAINS NWR
STSA	603	180	0	0	603	SALT PLAINS NWR
STSA	500	50	0	0	0	SALT PLAINS NWR
TOTL	21115	17495	0	610	0	SALT PLAINS NWR
TOTL	38394	6623	0	0	39176	SALT PLAINS NWR
UPSA	22	8	0	0	22	SALT PLAINS NWR
WESA	7219	350	0	0	7219	SALT PLAINS NWR
WESA	500	50	0	0	0	SALT PLAINS NWR
WILL	7	17	0	0	17	SALT PLAINS NWR
WILL	500	50	0	0	0	SALT PLAINS NWR

Appendix 8, cont.

Species	Number of birds Fall	Spring	Summer	Winter	Unknown	Location
WIPH	127	480	0	0	480	SALT PLAINS NWR
WRSA	7597	350	0	0	7597	SALT PLAINS NWR
WRSA	0	5000	0	0	0	SALT PLAINS NWR
AMAV	15230	1780	0	0	15230	SALTON SEA NWR
BBPL	640	165	0	0	640	SALTON SEA NWR
BNST	11540	2830	0	0	11540	SALTON SEA NWR
GRYE	75	35	0	0	75	SALTON SEA NWR
KILL	0	0	0	0	275	SALTON SEA NWR
LBCU	1265	360	0	0	1265	SALTON SEA NWR
LBDO	4955	3630	0	0	4955	SALTON SEA NWR
LESA	2800	1225	0	0	2800	SALTON SEA NWR
LEYE	125	20	0	0	125	SALTON SEA NWR
MAGO	650	840	0	0	840	SALTON SEA NWR
MOPL	100	0	0	125	125	SALTON SEA NWR
RNPH	10125	0	0	0	10125	SALTON SEA NWR
SNPL	10	10	0	0	10	SALTON SEA NWR
SPSA	10	5	0	0	10	SALTON SEA NWR
TOTL	71535	17840	0	665	72345	SALTON SEA NWR
WESA	10900	5075	0	0	10900	SALTON SEA NWR
WHIM	500	545	0	0	545	SALTON SEA NWR
WILL	265	200	0	540	540	SALTON SEA NWR
WIPH	12345	1120	0	0	12345	SALTON SEA NWR
AMAV	0	0	0	0	450	SAN BERNARD NWR
COSN	0	0	0	0	500	SAN BERNARD NWR
DUNL	0	0	0	0	350	SAN BERNARD NWR
GRYE	0	0	0	0	450	SAN BERNARD NWR
KILL	0	0	0	0	600	SAN BERNARD NWR
LBCU	0	0	0	0	350	SAN BERNARD NWR
LBDO	0	0	0	0	1100	SAN BERNARD NWR
LESA	0	0	0	0	1000	SAN BERNARD NWR
LEYE	0	0	0	0	300	SAN BERNARD NWR
SAND	0	0	0	0	250	SAN BERNARD NWR
SBDO	0	0	0	0	400	SAN BERNARD NWR
SESA	0	0	0	0	125	SAN BERNARD NWR
SPSA	0	0	0	0	300	SAN BERNARD NWR
TOTL	0	0	0	0	6475	SAN BERNARD NWR
WESA	0	0	0	0	300	SAN BERNARD NWR
DUNL	0	139713	0	0	139713	SAN FRANCISCO BAY NW
LESA	0	16763	0	0	16763	SAN FRANCISCO BAY NW
MAGO	0	32353	0	0	32353	SAN FRANCISCO BAY NW
SBDO	0	62458	0	0	62458	SAN FRANCISCO BAY NW
TOTL	0	807218	0	0	807218	SAN FRANCISCO BAY NW
WESA	0	555931	0	0	555931	SAN FRANCISCO BAY NW
AMAV	0	0	0	0	500	SAND LAKE NWR
BASA	0	0	0	0	250	SAND LAKE NWR
BASA	500	500	0	0	0	SAND LAKE NWR
BBPL	5	5	0	0	0	SAND LAKE NWR
COSN	0	0	0	0	650	SAND LAKE NWR
COSN	500	500	0	0	0	SAND LAKE NWR
DUNL	0	0	0	0	1500	SAND LAKE NWR

Appendix 8, cont.

Species	Number of birds Fall	Spring	Summer	Winter	Unknown	Location
DUNL	500	500	0	0	0	SAND LAKE NWR
GRYE	0	0	0	0	400	SAND LAKE NWR
GRYE	500	500	0	0	0	SAND LAKE NWR
HUGO	50	50	0	0	0	SAND LAKE NWR
KILL	0	0	0	0	1900	SAND LAKE NWR
KILL	500	500	0	0	0	SAND LAKE NWR
LBDO	0	0	0	0	1100	SAND LAKE NWR
LBDO	5000	5000	0	0	0	SAND LAKE NWR
LESA	0	0	0	0	400	SAND LAKE NWR
LESA	500	500	0	0	0	SAND LAKE NWR
LEYE	0	0	0	0	2500	SAND LAKE NWR
LEYE	5000	5000	0	0	0	SAND LAKE NWR
LGPL	0	0	0	0	500	SAND LAKE NWR
LGPL	50	50	0	0	0	SAND LAKE NWR
MAGO	0	0	0	0	550	SAND LAKE NWR
MAGO	50	50	0	0	0	SAND LAKE NWR
PESA	0	0	0	0	600	SAND LAKE NWR
PESA	500	500	0	0	0	SAND LAKE NWR
RUTU	0	0	0	0	100	SAND LAKE NWR
RUTU	500	500	0	0	0	SAND LAKE NWR
SBDO	0	0	0	0	250	SAND LAKE NWR
SBDO	500	500	0	0	0	SAND LAKE NWR
SEPL	50	50	0	0	0	SAND LAKE NWR
SESA	0	0	0	0	450	SAND LAKE NWR
SESA	500	500	0	0	0	SAND LAKE NWR
SOSA	0	0	0	0	125	SAND LAKE NWR
SOSA	500	500	0	0	0	SAND LAKE NWR
SPSA	0	0	0	0	600	SAND LAKE NWR
SPSA	500	5000	0	0	0	SAND LAKE NWR
STSA	0	0	0	0	200	SAND LAKE NWR
TOTL	16810	21755	0	0	0	SAND LAKE NWR
TOTL	0	0	0	0	16195	SAND LAKE NWR
UPSA	0	0	0	0	750	SAND LAKE NWR
WESA	0	0	0	0	120	SAND LAKE NWR
WESA	50	50	0	0	0	SAND LAKE NWR
WHIM	5	0	0	0	0	SAND LAKE NWR
WILL	0	0	0	0	450	SAND LAKE NWR
WILL	50	500	0	0	0	SAND LAKE NWR
WIPH	0	0	0	0	2000	SAND LAKE NWR
WRSA	0	0	0	0	300	SAND LAKE NWR
WRSA	500	500	0	0	0	SAND LAKE NWR
AMAV	0	0	0	0	150	SHELDON
COSN	0	0	0	0	500	SHELDON
KILL	0	0	0	0	200	SHELDON
LBDO	0	0	0	0	500	SHELDON
LESA	0	0	0	0	2000	SHELDON
TOTL	0	0	0	0	5700	SHELDON
WESA	0	0	0	0	2000	SHELDON
WIPH	0	0	0	0	350	SHELDON
BBPL	0	0	0	0	1209	SHEPODY BAY

Appendix 8, cont.

Species	Number of birds					Location
	Fall	Spring	Summer	Winter	Unknown	
DUNL	0	0	0	0	1591	SHEPODY BAY
LESA	0	0	0	0	692	SHEPODY BAY
REKN	0	0	0	0	708	SHEPODY BAY
SAND	0	0	0	0	697	SHEPODY BAY
SBDO	0	0	0	0	957	SHEPODY BAY
SEPL	0	0	0	0	932	SHEPODY BAY
SESA	279667		0	0	0	279667 SHEPODY BAY
TOTL	279667		0	0	0	286725 SHEPODY BAY
WRSA	0	0	0	0	272	SHEPODY BAY
AMWO	0	0	0	0	900	SHERBURNE
COSN	0	0	0	0	1500	SHERBURNE
GRYE	0	0	0	0	120	SHERBURNE
KILL	0	0	0	0	700	SHERBURNE
LEYE	0	0	0	0	300	SHERBURNE
PEEP	0	0	0	0	4000	SHERBURNE
SOSA	0	0	0	0	400	SHERBURNE
TOTL	0	0	0	0	7920	SHERBURNE
DUNL	30	9000	0	0	9000	SHIAWASSEE NWR
KILL	115	100	0	0	115	SHIAWASSEE NWR
LESA	228	2000	0	0	2000	SHIAWASSEE NWR
LEYE	300	700	0	0	700	SHIAWASSEE NWR
PESA	124	13000	0	0	13000	SHIAWASSEE NWR
SBDO	400	0	0	0	400	SHIAWASSEE NWR
SESA	149	300	0	0	300	SHIAWASSEE NWR
SOSA	25	0	0	0	25	SHIAWASSEE NWR
TOTL	1371	25100	0	0	25540	SHIAWASSEE NWR
AMAV	2589	0	0	0	2589	SPRINGFIELD BOTTOMS
BASA	2675	0	0	0	2675	SPRINGFIELD BOTTOMS
KILL	960	0	0	0	960	SPRINGFIELD BOTTOMS
LBDO	1025	0	0	0	1025	SPRINGFIELD BOTTOMS
LEYE	380	0	0	0	380	SPRINGFIELD BOTTOMS
MAGO	153	0	0	0	153	SPRINGFIELD BOTTOMS
PESA	93	0	0	0	93	SPRINGFIELD BOTTOMS
RNPH	548	0	0	0	548	SPRINGFIELD BOTTOMS
SESA	175	0	0	0	175	SPRINGFIELD BOTTOMS
TOTL	13922	0	0	0	13922	SPRINGFIELD BOTTOMS
WESA	4884	0	0	0	4884	SPRINGFIELD BOTTOMS
WIPH	440	0	0	0	440	SPRINGFIELD BOTTOMS
BASA	0	50	0	0	0	SQUAW CREEK NWR
BNST	0	5	0	0	0	SQUAW CREEK NWR
COSN	0	500	0	0	0	SQUAW CREEK NWR
DUNL	0	50	0	0	0	SQUAW CREEK NWR
GRYE	0	50	0	0	0	SQUAW CREEK NWR
HUGO	0	50	0	0	0	SQUAW CREEK NWR
KILL	0	500	0	0	0	SQUAW CREEK NWR
LBDO	0	500	0	0	0	SQUAW CREEK NWR
LESA	0	500	0	0	0	SQUAW CREEK NWR
LEYE	0	500	0	0	0	SQUAW CREEK NWR
LGPL	0	50	0	0	0	SQUAW CREEK NWR
MAGO	0	5	0	0	0	SQUAW CREEK NWR

Appendix 8, cont.

Species	Number of birds Fall	Spring	Summer	Winter	Unknown	Location
PESA	0	5000	0	0	0	SQUAW CREEK NWR
RUTU	0	5	0	0	0	SQUAW CREEK NWR
SAND	0	5	0	0	0	SQUAW CREEK NWR
SBDO	0	500	0	0	0	SQUAW CREEK NWR
SEPL	0	50	0	0	0	SQUAW CREEK NWR
SESA	0	500	0	0	0	SQUAW CREEK NWR
SOSA	0	50	0	0	0	SQUAW CREEK NWR
SPSA	0	50	0	0	0	SQUAW CREEK NWR
STSA	0	50	0	0	0	SQUAW CREEK NWR
TOTL	555	10080	0	100	0	SQUAW CREEK NWR
WESA	0	50	0	0	0	SQUAW CREEK NWR
WILL	0	50	0	0	0	SQUAW CREEK NWR
WIPH	0	500	0	0	0	SQUAW CREEK NWR
WRSA	0	500	0	0	0	SQUAW CREEK NWR
BBPL	0	0	0	0	225	ST. MARKS
COSN	0	0	0	0	275	ST. MARKS
DUNL	0	0	0	0	4500	ST. MARKS
GRYE	0	0	0	0	175	ST. MARKS
KILL	0	0	0	0	125	ST. MARKS
LESA	0	0	0	0	625	ST. MARKS
RUTU	0	0	0	0	150	ST. MARKS
SBDO	0	0	0	0	950	ST. MARKS
SEPL	0	0	0	0	125	ST. MARKS
SESA	0	0	0	0	325	ST. MARKS
TOTL	0	0	0	0	8325	ST. MARKS
WESA	0	0	0	0	300	ST. MARKS
WILL	0	0	0	0	550	ST. MARKS
BBPL	500	0	0	0	500	STE. ANNE DE PORTNEU
RUTU	100	0	0	0	100	STE. ANNE DE PORTNEU
SESA	8600	0	0	0	8600	STE. ANNE DE PORTNEU
TOTL	15200	0	0	0	15200	STE. ANNE DE PORTNEU
WRSA	6000	0	0	0	6000	STE. ANNE DE PORTNEU
AMAV	1050	130	0	0	1050	TAMPA HOOKER'S POINT
BBPL	800	450	0	0	800	TAMPA HOOKER'S POINT
BNST	184	89	0	0	184	TAMPA HOOKER'S POINT
DUNL	1450	0	0	0	1450	TAMPA HOOKER'S POINT
LBDO	18	166	0	0	166	TAMPA HOOKER'S POINT
LESA	6636	987	0	0	6636	TAMPA HOOKER'S POINT
LEYE	128	800	0	0	800	TAMPA HOOKER'S POINT
REKN	200	300	0	0	300	TAMPA HOOKER'S POINT
SAND	6145	0	0	0	6145	TAMPA HOOKER'S POINT
SBDO	1476	1849	0	0	1849	TAMPA HOOKER'S POINT
SEPL	412	273	0	0	412	TAMPA HOOKER'S POINT
SESA	1474	130	0	0	1474	TAMPA HOOKER'S POINT
STSA	24	260	0	0	260	TAMPA HOOKER'S POINT
TOTL	23159	6443	0	0	24688	TAMPA HOOKER'S POINT
WESA	2912	979	0	0	2912	TAMPA HOOKER'S POINT
WILL	250	30	0	0	250	TAMPA HOOKER'S POINT
AMAV	0	0	0	0	100	TEWAUKON NWR
AMAV	5	0	0	0	0	TEWAUKON NWR

Appendix 8, cont.

Species	Number of birds Fall	Spring	Summer	Winter	Unknown	Location
BBPL	50	0	0	0	0	TEWAUKON NWR
COSN	0	0	0	0	250	TEWAUKON NWR
DUNL	500	0	0	0	0	TEWAUKON NWR
GRYE	0	0	0	0	100	TEWAUKON NWR
GRYE	50	0	0	0	0	TEWAUKON NWR
KILL	0	0	0	0	300	TEWAUKON NWR
KILL	500	0	0	0	0	TEWAUKON NWR
LBDO	5000	0	0	0	0	TEWAUKON NWR
LESA	500	0	0	0	0	TEWAUKON NWR
LEYE	0	0	0	0	1000	TEWAUKON NWR
LEYE	500	0	0	0	0	TEWAUKON NWR
MAGO	50	0	0	0	0	TEWAUKON NWR
PESA	500	0	0	0	0	TEWAUKON NWR
RNPH	0	0	0	0	100	TEWAUKON NWR
SPSA	50	0	0	0	0	TEWAUKON NWR
TOTL	7805	2410	0	0	0	TEWAUKON NWR
UPSA	50	0	0	0	0	TEWAUKON NWR
WILL	50	0	0	0	0	TEWAUKON NWR
WIPH	0	0	0	0	600	TEWAUKON NWR
AMAV	0	0	0	0	150	TEXAS POINT NWR
BNST	4	0	0	0	200	TEXAS POINT NWR
COSN	0	0	0	0	200	TEXAS POINT NWR
LBDO	0	0	0	0	200	TEXAS POINT NWR
LESA	0	0	0	0	100	TEXAS POINT NWR
AMOY	50	50	0	50	0	THOMAS CREEK & SMITH I. BAY JUNCTION
BBPL	500	500	0	500	0	THOMAS CREEK & SMITH I. BAY JUNCTION
COSN	0	5	0	0	0	THOMAS CREEK & SMITH I. BAY JUNCTION
DUNL	5000	5000	0	5000	0	THOMAS CREEK & SMITH I. BAY JUNCTION
GRYE	50	5	0	5	0	THOMAS CREEK & SMITH I. BAY JUNCTION
KILL	0	5	0	50	0	THOMAS CREEK & SMITH I. BAY JUNCTION
LBDO	50	50	0	5	0	THOMAS CREEK & SMITH I. BAY JUNCTION
LESA	50	50	0	5	0	THOMAS CREEK & SMITH I. BAY JUNCTION
LEYE	50	50	0	5	0	THOMAS CREEK & SMITH I. BAY JUNCTION
LGPL	5	5	0	0	0	THOMAS CREEK & SMITH I. BAY JUNCTION
MAGO	50	5	0	50	0	THOMAS CREEK & SMITH I. BAY JUNCTION
PESA	0	5	0	0	0	THOMAS CREEK & SMITH I. BAY JUNCTION
PIPL	5	5	0	0	0	THOMAS CREEK & SMITH I. BAY JUNCTION
REKN	500	500	0	0	0	THOMAS CREEK & SMITH I. BAY JUNCTION
RUTU	500	500	0	500	0	THOMAS CREEK & SMITH I. BAY JUNCTION
SAND	5000	500	0	50	0	THOMAS CREEK & SMITH I. BAY JUNCTION
SBDO	500	500	0	50	0	THOMAS CREEK & SMITH I. BAY JUNCTION
SEPL	50	50	0	50	0	THOMAS CREEK & SMITH I. BAY JUNCTION
SESA	50	50	0	5	0	THOMAS CREEK & SMITH I. BAY JUNCTION
SPSA	50	50	0	0	0	THOMAS CREEK & SMITH I. BAY JUNCTION
TOTL	12570	7945	0	6430	0	THOMAS CREEK & SMITH I. BAY JUNCTION
WESA	50	50	0	50	0	THOMAS CREEK & SMITH I. BAY JUNCTION
WHIM	5	5	0	5	0	THOMAS CREEK & SMITH I. BAY JUNCTION
WILL	50	0	0	50	0	THOMAS CREEK & SMITH I. BAY JUNCTION
WRSA	5	5	0	0	0	THOMAS CREEK & SMITH I. BAY JUNCTION
COSN	51	0	0	0	51	TINICUM NWR

Appendix 8, cont.

Species	Fall	Spring	Summer	Winter	Unknown	Location
	Number of birds					
DUNL	500	0	0	0	500	TINICUM NWR
GRYE	300	0	0	0	300	TINICUM NWR
KILL	103	0	0	0	103	TINICUM NWR
LESA	230	0	0	0	230	TINICUM NWR
LEYE	600	0	0	0	600	TINICUM NWR
PESA	150	0	0	0	150	TINICUM NWR
SBDO	100	0	0	0	100	TINICUM NWR
SEPL	35	0	0	0	35	TINICUM NWR
SESA	15000	0	0	0	15000	TINICUM NWR
TOTL	17069	0	0	0	17069	TINICUM NWR
AMAV	3000	600	0	0	3000	TULE LAKE NWR
COSN	0	250	0	0	250	TULE LAKE NWR
LBDO	3450	2000	0	0	3450	TULE LAKE NWR
LESA	11600	11000	0	0	11600	TULE LAKE NWR
RNPH	8000	2000	0	0	8000	TULE LAKE NWR
TOTL	43150	37550	0	0	49400	TULE LAKE NWR
WESA	15000	21000	0	0	21000	TULE LAKE NWR
WIPH	2100	700	0	0	2100	TULE LAKE NWR
AMAV	0	0	0	0	140	UMATILLA
COSN	0	0	0	0	100	UMATILLA
KILL	0	0	0	0	6900	UMATILLA
LBDO	0	0	0	0	140	UMATILLA
LESA	0	0	0	0	2300	UMATILLA
TOTL	0	0	0	0	12980	UMATILLA
WESA	0	0	0	0	3300	UMATILLA
WIPH	0	0	0	0	100	UMATILLA
AMAV	0	0	0	0	100	WAUBAY NWR
BASA	0	0	0	0	300	WAUBAY NWR
COSN	0	0	0	0	2000	WAUBAY NWR
DUNL	0	0	0	0	100	WAUBAY NWR
GRYE	0	0	0	0	250	WAUBAY NWR
KILL	0	0	0	0	1100	WAUBAY NWR
LESA	0	0	0	0	100	WAUBAY NWR
LEYE	0	0	0	0	1500	WAUBAY NWR
MAGO	0	0	0	0	300	WAUBAY NWR
PESA	0	0	0	0	250	WAUBAY NWR
RNPH	0	0	100	0	100	WAUBAY NWR
SAND	0	0	0	0	125	WAUBAY NWR
SESA	0	0	0	0	1000	WAUBAY NWR
SOSA	0	0	0	0	100	WAUBAY NWR
SPSA	0	0	0	0	100	WAUBAY NWR
TOTL	0	0	100	0	8875	WAUBAY NWR
UPSA	0	0	0	0	900	WAUBAY NWR
WIPH	0	0	0	0	350	WAUBAY NWR
WRSA	0	0	0	0	200	WAUBAY NWR
BBPL	0	0	0	0	5000	WILLAPA BAY
BLTU	0	0	0	0	100	WILLAPA BAY
GRYE	0	0	0	0	100	WILLAPA BAY
KILL	0	0	0	0	100	WILLAPA BAY
LBDO	0	0	0	0	3000	WILLAPA BAY

Appendix 8, cont.

Species	Number of birds: Fall	Spring	Summer	Winter	Unknown	Location
PEEP	0	0	0	0	150000	WILLAPA BAY
RNPH	0	0	0	0	200	WILLAPA BAY
SBDO	0	0	0	0	5000	WILLAPA BAY
SESA	0	0	0	0	5000	WILLAPA BAY
TOTL	0	0	0	0	168775	WILLAPA BAY
WHIM	0	0	0	0	75	WILLAPA BAY
WIPH	0	0	0	0	200	WILLAPA BAY
BBPL	635	0	0	0	635	YUKON DELTA NWR
BTGO	14659	0	0	0	14659	YUKON DELTA NWR
LBDO	200	0	0	0	200	YUKON DELTA NWR
LGPL	147	0	0	0	147	YUKON DELTA NWR
PEEP	272683		0	0	0	272683 YUKON DELTA NWR
REKN	856	0	0	0	856	YUKON DELTA NWR
TOTL	289180		0	0	0	289180 YUKON DELTA NWR