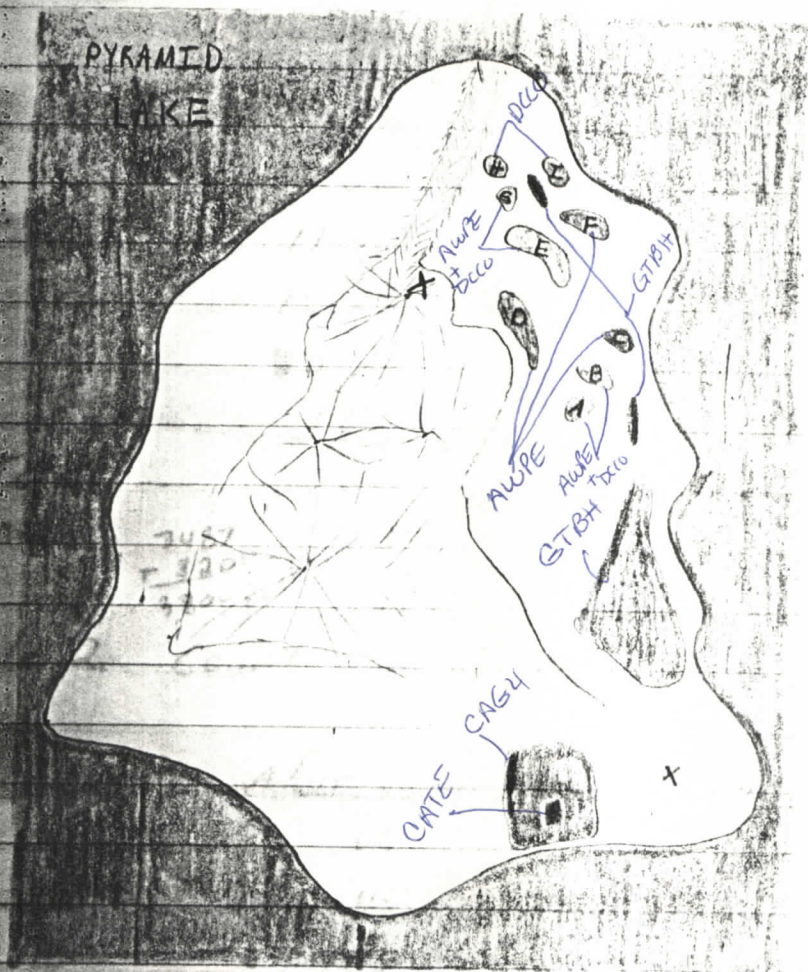


May 27 1981

3

Figure 1. Colony locations on Anaho Island.



- Double-crested cormorants
- White pelicans
- Both cormorants and pelicans
- Great blue herons
- California gulls
- Caspian terns
- x observation points

on a  
 1/2 month  
 10 days  
 1 month  
 4,227 yards  
 1 pelicans  
 1 pelicans

2650 2340  
 2495



Anahe  
May 27 1981

45

Table 1. Counts for each pelican colony. *located*

Colony	Adult Pelicans		Comments
	Count #1	Count #2	
A	525	570	Hatching stage
B	150	130	
C	200	240	+ 320 non-breeders <sup>in a</sup> group
D	1130	980	young at about 3 weeks
E	1020	1220*	1860 young <sup>1 1/2 MON</sup> <del>2 MON</del>
F	375	255	young at about 10 days
G	100	80	100 young over 1 month
Total	3500	3475*	
Ave	3487	3487	* ADULT POPULATION HIGHER AS 1860 SINGLE ADULTS MAY HAVE RAISED 1860 YOUNG. (1860 - 1120 = 740)
	+ 320	740	
	3800 ADULT	4227	
			TOTAL AVE EST TOTAL ADULT INC. COMPLETED NESTING TOTAL NESTING ADULT (1/2 OF PAIR) ON 5/27 = POTENTIAL OF 4,227 YOUNG

Table 2. Counts for each cormorant colony.

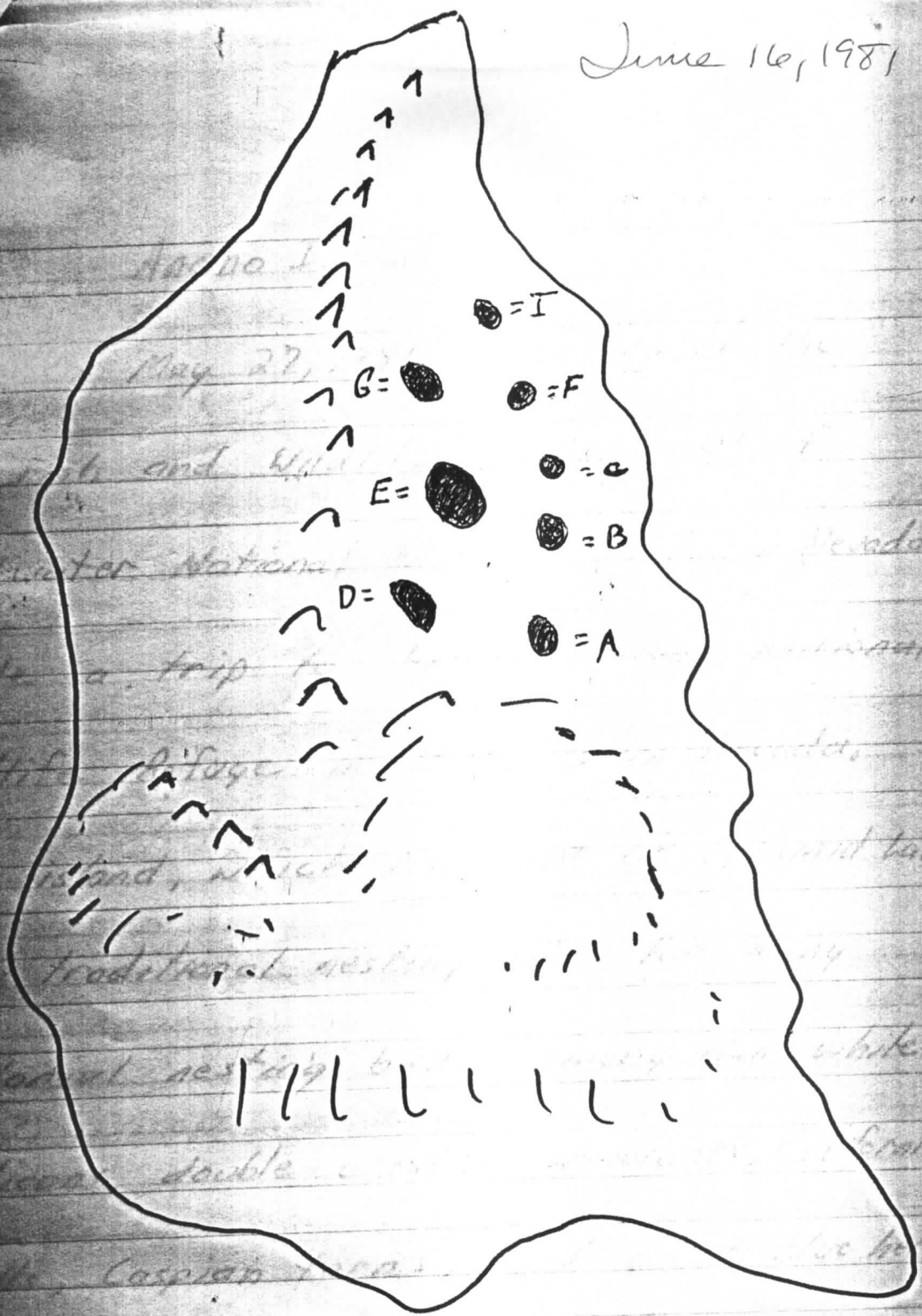
Colony	Adult Cormorants	Comments
A	60	35 young late in hatch
B	45	In with pelicans
E	1060	2.5/3 young per nest. In w/ pelicans
G	45	2/3 young per nest. In w/ pelicans
H	60	1.5 young per nest.
Total	190	
Total	1460	

Table 3. Counts for other colonial nesters present.

California Gulls	Caspian Terns	Great Blue Herons
count #1	count #2	
3650	3340	54
		120



June 16, 1981





June 16 1981

Phone # 359-2234

fishery personnel, Alon Reger (white man) and Steve Ceroche (SP?) they asked if they could visit Onaho on our next trip. I said O.K. - I would notify them at least 1-2 days ahead of time, if windy we would use their patrol boat.

Colony	white Pelican		young & adult Cormorant	comment
	adult	young		
A	40	360	75	young P. small
B	50	50	80	" "
C	45	90	50	young GROWN
D	160	450	0	YOUNG GROWN
E	50	1750	770	YOUNG ADVANCED
F	25	250	280	YOUNG VERY ADVANCED
G	0	70	155	NO COLONY LEFT
H	0	0	0	
I	0	0	100	
TOTAL	370	3020	1510	

species appear in Figure 1 and 2:30 a.m. and



our 1981 counts

Anaho Island Colony Nesting Count

On June 30, 1981, refuge manager Morris Le Fever and YACC biologist Gary Brastrup made a third trip to Anaho Island to observe the nesting pelicans and get a production estimate. Also accompanying them were three employees from the PLITE office at Sutchcliffe. They were; Alan Ryger (Fisheries manager), Steve Ceroke<sup>?</sup> (production manager), and Lee Cunningham<sup>?</sup> (resource manager).

We left Fallon at 7:15 AM and arrived at Sutchcliffe at 8:30 AM where we made arrangements with the PLITE employees for transportation to the island. After delays due to a few boat engine problems, we



traveled by way of a tribal patrol boat and another 14 foot aluminum boat and docked on a beached cove on the west side of the island. We then climbed to our observation post and began our counts at 11:00 AM, Using a 15x-30x spotting scope.

On this trip it was not a necessity that we begin counting early in the morning because most of the adults had left the colonies and only young were left. All of the pelican colonies were still present but many of the cormorants had begun to move to the shore line. Very few adult pelicans were present within each colony but from time to time a



group of adults would return to feed their young and then immediately leave again.

Upon completion of the pelican counts, we returned to the boats and ate lunch before boating around the island to visit the California gull colony. Many adults had left the gull colony and the young were fairly advanced. A ratio of one young per brood was common but we did see two per brood on a few occasions. However there were also many adults still on their nests and we could not see whether they were on eggs or young. The large number of adults on the nests is one reason for the low count of 650 young.



there were also two small groups of Caspian terns along the shoreline which had apparently completed their nesting. Five young terns were counted which is significant due to the fact that Caspian tern young have not been documented on Anaho Island for some time now. (5 years).

A map of the colonies appears in Figure 1 and the counts appear in Tables 1 and 2.

Figure 1. Colony locations on Anaho Island



x - Observation points

■ - Pelican colonies

■ - Gull colony



Table 1. Counts for each pelican colony.

Colony	<u>Young Pelicans</u>	<u>Comments</u>
A	680	7 adults (not feeding)
B	75	no adults
C	0	30 adults
D	690	4 adults (not feeding)
E	2150	Adults feeding young
F	115	no adults
G	0	no colony left
<u>Shoreline</u>	<u>75</u>	460 adults
TOTAL	3785	

Table 2. Counts for gulls and terns.

<u>Young Gulls</u>	<u>Comments</u>
650	many adults still on nests.
<u>Young Terns</u>	
5	20 adults

# Anaho Island count

June 16, 1981

Refuge Manager Le Fever and YACC employee Don Howard arrived at Satchliffe at 8:45 AM. Personnel at the ranger station did not require a boat permit this time. Le Fever notified personnel at PLITE office that a count was being conducted and if FWS people ~~was~~ had not checked back by 3:00 PM to conduct search. No PLITE portable radio was available.

Boat launched at 9:15 but as we forgot to put plug in had to drain and re-launch. Departed 9:35 AM. Loaded at NW side of island and proceeded up w slope of hill out of ~~site~~<sup>right</sup> of colonies. No rattlesnakes encountered this trip. Wind predictions were for 15-20 MPH in late P.M. Wind was 0-5 MPH.

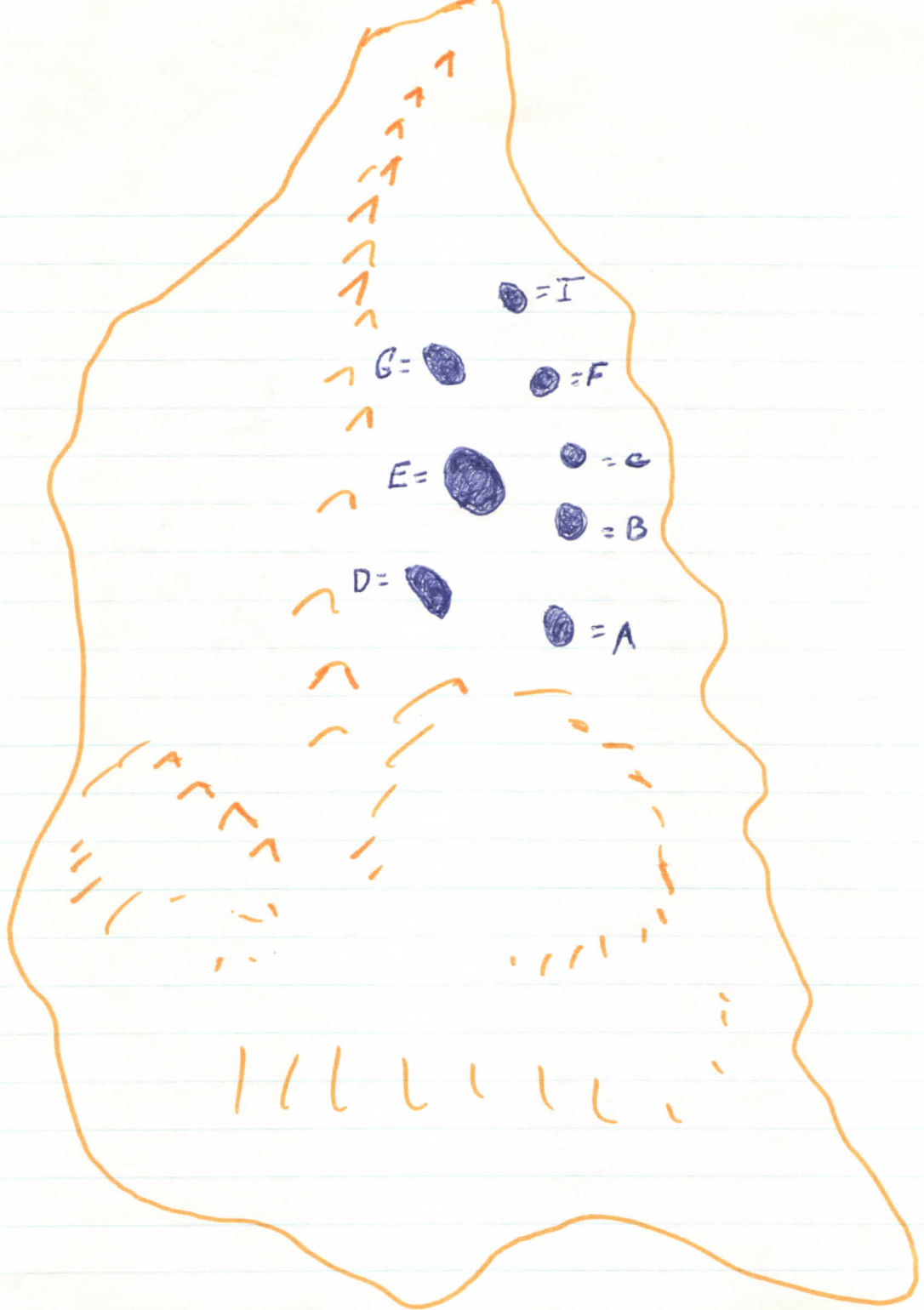
Set up 60 power scope and counted 4 colonies at which time wind suddenly picked up to 15 MPH. Rapidly counted remaining pelicans and cormorants. wind at ~~10:30~~ 10:30 AM was about 20 MPH and white caps were evident on the lake. Luckily, wind was from the WNW so did not sweep down entire length of the lake. Did not take time to ~~eat~~ launch or visit the gull colony, but immediately proceeded to Satchliffe in 3-5' waves. Wind gusting to 30 MPH (40<sup>+</sup> MPH later that day). At slow speed took 1 hr 10 minutes to reach landing. Reported to PLITE and talked with



Phone # 359-2234

fishery personnel, Alon Reger (white man) and Steve Ceroche (SP?) they asked if they could visit Oruho on our next trip. I said O.K. - I would notify them at least 1-2 days ahead of time, if windy we would use their patrol boat.

<u>Colony</u>	<u>white Pelican</u> <u>adult   young</u>		<u>young &amp; adult</u> <u>Cormorant</u>	<u>comment</u>
A	40	360	75	young P. small
B	50	50	80	" "
C	45	90	50	
D	160	450	0	young GROWN
E	50	1750	770	young GROWN
F	25	250	280	young advanced
G	0	70	155	young very advanced
H	0	0	0	no colony left
I	0	0	100	
TOTAL	370	3020	1510	





## Anaho Island Trip

On May 27, 1981, members of the U.S. Fish and Wildlife Service, out of Stillwater National Wildlife in Fallon, Nevada, made a trip to Anaho Island National Wildlife Refuge in Northwestern Nevada. This island, which rises out of Pyramid Lake is a traditional nesting site for many colonial nesting birds, among them white pelicans, double-crested cormorants, California gulls, Caspian terns, and great blue herons. Our objective was to get an estimate of nesting pairs and production of these species along with any other species which maybe nesting on the island.

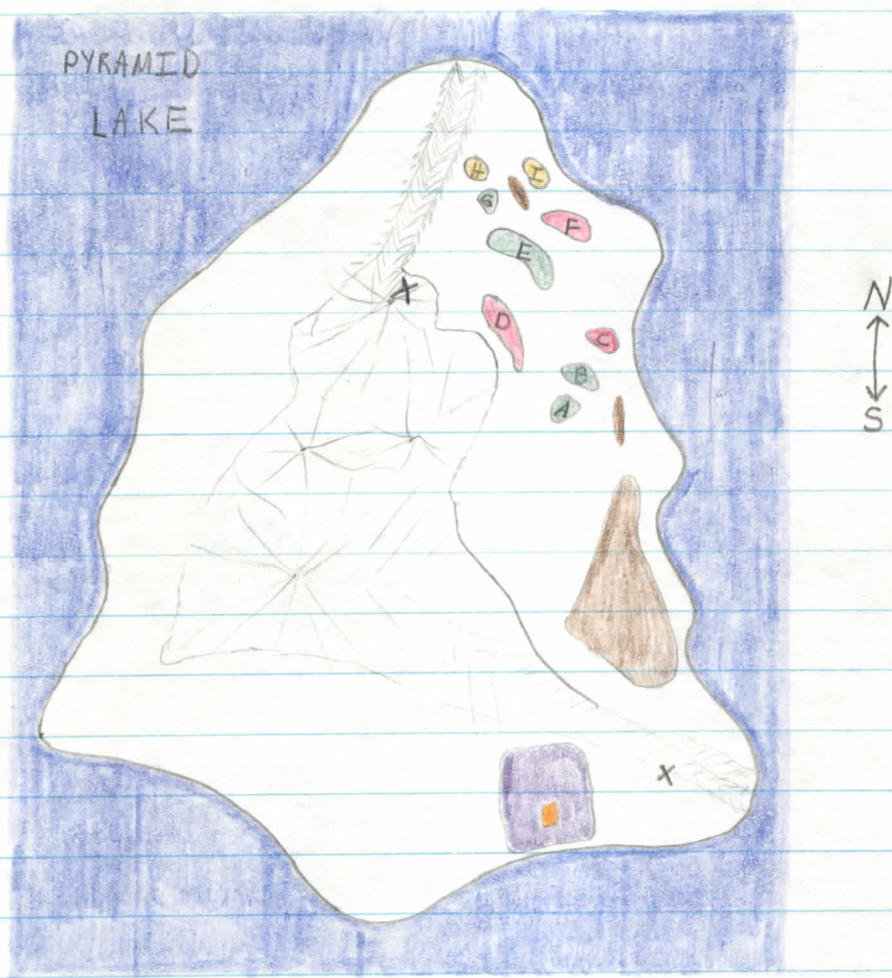
We left Fallon at 7:30 a.m. and arrived at Sutcliffe, along the west

shore of the lake, at 9 a.m. From there we traveled by boat to get to the island. The birds commonly nest on the east side of the island, so we approached from the west, climbing a steep grade to a vantage point which overlooked the colonies. We reached our observation point just before 10 a.m. and then began our counts using a 15x-60x spotting scope mounted on a tripod. Two counts were made by different observers for each of the pelican colonies and one gull colony while one count was made on all other colonies.

A map of the colonies for each of the species appear in figure 1 and the counts for each species are shown in tables 1, 2, and 3.



Figure 1. Colony locations on Anaho Island.



- Double-crested cormorants
- White pelicans
- Both cormorants and pelicans
- Great blue herons
- California gulls
- Caspian terns
- X observation points

Table 1. Counts for each pelican colony.

Colony	Adult Pelicans		Comments
	Count #1	Count #2	
A	525	570	Hatching stage
B	150	130	
C	200	240	+ 320 non-breeders <sup>in a</sup> group
D	1130	980	young at about 3 weeks
E	1020	1220*	1860 young <sup>1 1/2 months</sup> <del>1860</del>
F	375	255	young at about 10 days
G	<u>100</u>	<u>80</u>	100 young over 1 month
Total	3500	3475*	* ADULT POPULATION HIGHER AS 1860 SINGLE ADULTS MAY HAVE RAISED 1860 YOUNG. (1860 - 1120 = 740)
Ave	3487 <u>3320</u> 3800 ADULT	3487 <u>740</u> 4227	TOTAL AVE EST TOTAL ADULT INC. COMPLETED NESTING TOTAL NESTING ADULT (1/2 OF PAIR) ON 5/27 = POTENTIAL OF 4,227 YOUNG

Table 2. Counts for each cormorant colony.

Colony	Adult Cormorants	Comments
A	60	35 young late in hatch
B	45	In with pelicans
E	1060	2.5/3 young per nest. In w/ pelicans
G	45	2/3 young per nest. In w/ pelicans
H	60	1.5 young per nest.
I	<u>190</u>	
Total	1460	

Table 3. Counts for other colonial nesters present.

California Gulls		Caspian Terns	Great Blue Herons
count #1	count #2	54	120
3650	3340		
Ave	3495		

The Caspian tern colony was located in the middle of the large gull colony but neither the gull colony nor the tern colony had any visible young yet. On the other hand, most of the pelican and cormorant colonies were done or in the process of hatching and there seemed to be a definite gradation in the age and size of the young from one end of the colony to the other. The herons were nested in the tops of the greasewood scattered along the east shore of the island. Young were present but we were unable to count them due to lack of visibility into the nests.

When we finished with our counts at our first observation point, we



boated around the east shore of the island and counted an additional 320 California gulls, 175 pelicans, and 300 cormorants. Also, at the mouth of the Truckee river we counted another 1000 pelicans.

Other wildlife seen on the island included numerous lizards, one gopher snake, one great basin rattlesnake, and a marsh hawk. On the lake around the island we also saw coots, eared and western grebes, and 3 pair of common mergansers.

we concluded our counts and then returned to Fallon at 4:30 p.m.





June 30 1981  
1981  
Anaaho  
counts

Table 1. Counts for each pelican colony.

Colony	Young Pelicans	Comments
Refuge Mangrove A	680	7 adults (not feeding)
B	75	no adults
C	0	30 adults
D	690	4 adults (not feeding)
E	2150	Adults feeding young
F	115	no adults
G	0	no colony left
Shoreline	75	460 adults
TOTAL	3785	

Table 2. Counts for gulls and terns.

Young Gulls	Comments
650	many adults still on nests
Young Terns	
5	20 adults



**FISH AND WILDLIFE SERVICE**

August 21, 1981

Refuge Manager, Stillwater Wildlife Management Area  
Fallon, Nevada 89406

Colonial/Sensitive Species Production - ANWA-MR5-#2-700

Regional Director (ANW/MR), Portland, Oregon

Attached are our C.B.R. reports for Anaho National Wildlife Refuge and Stillwater Wildlife Management Area. These are a little late. As I informed R. Bauer (R.O.), data from researchers regarding Carson Pasture and Anaho Island was not immediately available. Output reports for some species will show slightly higher bird numbers, as some scattered nesting occurred outside the main colony areas.

White-faced ibis production in 1980 was estimated at 200. Studies this year indicate that that figure was probably very conservative. Total active nests increased 200% this year (at least 550) and an estimated 1,100 reached flight stage. Stillwater has produced ibis in 1979, 1980 and 1981. No nesting was observed from 1961 through 1978.

We spent some time searching for snowy plover. They were not very common compared to last year when numerous playas contained water. We estimate an early June peak of 110 with possibly 80 produced.

Additional time was spent locating long-billed curlew and a peak of 85 was estimated in early June. Most were actively nesting and possibly 65 young reached flight stage.

On Anaho Island NWR we compared our inventories with those of researcher, John Anderson. Ours are much higher. Using his study and comparisons of counts, we hope to develop a better inventory plan. The first egg laying occurred on March 8th, the earliest record. There were more nesting adults and survival of young was high. Normally, 0.9 to 1.0 young are produced per nest/nesting pair. Apparently, early nesting resulted in less predation by California gulls. Gull production was very poor (I understand survival of young was poor on Mono Lake, California, also).

For the first time in a number of years, caspian tern produced young in the middle of this gull colony.

In Carson Pasture, there were about 2,00 pair of white-faced ibis that produced about 5,800 young.

Morris LaFever

ML:ca

P.S. The required reporting date of August 1 is too early and the C.B.R. people should be asked for a later date.

cc: AM/BN



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Stillwater Wildlife Management Area

P.O. Box 1236

Fallon, Nevada 89406

September 10, 1981

Mr. Roy Garcia, Chairman  
Pyramid Lake Tribal Council  
Nixon, NV 89424

Dear Mr. Garcia:

It was a very good year for white pelicans on Anaho Island. They nested very early and this apparently helped reduce the amount of predation by gulls on eggs and young. Only about 1,370 were produced last year.

Mr. Anderson has not submitted his final study report, but his data is similar to ours. He will provide you this information at some later date.

	<u>Adults</u>	<u>Nesting Pairs</u>	<u>Young*</u>
White Pelicans	9,000	4,230	3,200
Double-Crested Cormorant	1,600	730	1,500
Great Blue Heron	250	120	275
California Gull	4,000	1,750	600
Caspian Tern	60	27	5

\*To flight stage.

Sincerely,

*M.C. LeFever*

Morris LeFever, Refuge Manager

ML:ce

cc: Pyramid Lake Indian Tribal Enterprises, Sutcliffe, Nevada 89510



Save Energy and You Serve America!

*file  
Anaho*

Sutcliffe Wildlife Management Area  
P.O. Box 1236  
Fallon, Nevada 89406

September 10, 1961

Mr. Ray Gervais, Chairman  
Pyramid Lake Tribal Council  
Bishop, NV 89424

Dear Mr. Gervais:

It was a very good year for white pelicans on Anaho Island. They nested very early and this apparently helped reduce the amount of predation by gulls on eggs and young. Only about 1,370 were produced last year.

Mr. Anderson has not submitted his final study report, but his data is similar to ours. He will provide you this information at some later date.

	<u>Adults</u>	<u>Nesting Pairs</u>	<u>Young*</u>
White Pelicans	9,000	4,230	3,200
Double-Crested Cormorant	1,600	730	1,500
Great Blue Heron	230	120	275
California Gull	4,000	1,750	600
California Crow	60	27	3

\*No flight stage.

Sincerely,

*M. C. LaFever*

Morris LaFever, Refuge Manager

Yours,

cc: Pyramid Lake Indian Tribal Enterprises, Sutcliffe, Nevada 89510



## Pyramid Lake - Fact Sheet

by  
Steven Vigg  
November, 1982

Pyramid Lake is the largest lake entirely within the boundries of Nevada.

Pyramid Lake is the deepest remnant of Pleistocene Lake Lahontan, which was at maximum extent some 10,000 years ago. Pyramid Lake has never dired up in contrast with Walker Lake to the south. At the 1976 elevation of 1,157 m (3,795 ft) above sea level, Pyramid Lake has the following dimensions:

Length:	40 km	(25 mi)
Width:	6.5 - 16 km	(4-10 mi)
Surface area:	446.4 km <sup>2</sup>	(109,700 acres)
Average depth:	59 m	(194 ft.)
Maximum depth:	103	(338 ft.)
Volume:	26.4 km <sup>3</sup>	(21,170,000 acre-ft)

The salinity of Pyramid Lake increased from about 3,500 mg/l total dissolved solids (TDS) at the turn of the century to about 5,500 mg/l TDS at present. The lake level dropped about 24 m (80 ft.) from 1909 to 1968.

Cui-ui is a Federally listed "Endangered Species" and is found only in Pyramid Lake; the Lahontan cutthroat trout is "Threatened". The other major species are tui chub (most abundant), Tahoe sucker, Lahontan reddsides, and Sacramento Perch (introduced). One hundred hectares (247 acres) of the 303 ha (749 acres) Anaho Island comprises a National Wildlife Refuge which hosts nesting colonies of white pelicans, double crested cormorants, California gulls, great blue herons, and caspian terns. The total population is about 10,000 birds.

# CHRONOLOGY OF PYRAMID LAKE FISHERY

YEAR	EVENT	REFERENCE
11,000 BP TO PRESENT	NATIVE AMERICANS INHABIT REGION	ORR (1974)
BEFORE 1860	POTENTIAL HARVEST OF HISTORICAL PYRAMID AND WINNEMUCCA LAKE FISHERY ESTIMATED AT $\approx$ 2 MILLION POUNDS/YEAR OF CUTTHROAT TROUT AND CUI-UI (AT LAKE ELEVATION OF 3865-3870 FEET)	BEHNKE (1974)
1844	JOHN FREMONT AND KIT CARSON DISCOVER PYRAMID LAKE AND THE TRUCKEE RIVER	LA RIVERS (1962)
1850	INITIAL IRRIGATION IN TRUCKEE MEADOWS WITH ASSOCIATED DAMS	TOWNLEY (1980a)
1870-1922	COMMERCIAL TROUT FISHERY EXPORTS ESTIMATED AT AN AVERAGE OF 155,000 POUNDS/YEAR-ABOUT HALF OF THE TOTAL CATCH	TOWNLEY (1980a)
1903	NEWLANDS RECLAMATION IRRIGATION PROJECT (RIP) AUTHORIZED BY CONGRESS	USBOR (1961)
1905	DERBY DAM DEDICATED, LIMITED DIVERSIONS COMMENCE VIA TRUCKEE CANAL	TOWNLEY (1980a)
1911-1915	LAHONTAN DAM CONSTRUCTED	KATZER (1971)
1915-1970	ABOUT HALF THE TOTAL FLOW OF THE LOWER TRUCKEE RIVER DIVERTED TO NEWLANDS RIP	USDI (1977)
1913-1944	LITIGATION ON "ORR DITCH" WATER RIGHTS DECREE	TOWNLEY (1980b)
1905-1965	WATER LEVEL OF PYRAMID LAKE DECLINES 80 FEET	HARRIS (1970)
1938	WINNEMUCCA LAKE COMPLETELY DRIES UP (CRITICAL ELEVATION 3863 FT) LAST SPAWNING RUN OF CUTTHROAT TROUT (UNSUCCESSFUL)	SUMNER (1939)
1944	LAHONTAN CUTTHROAT TROUT POPULATION EXTINCT IN PYRAMID LAKE	TOWNLEY (1980a)
1950	LAHONTAN CUTTHROAT TROUT RE-INTRODUCED INTO PYRAMID LAKE	TRELEASE (1969)
1967	CUI-UI OFFICIALLY LISTED AS ENDANGERED SPECIES	FEDERAL REGISTER (1967)
1970 - PRESENT	U.S. DEPARTMENT OF INTERIOR FUNDS RESEARCH AND RESTORATION EFFORTS	

## memorandum

DATE: February 8, 1982

REPLY TO  
ATTN OF: Leader, Pacific Coast Field Station, PWRC

SUBJECT: Recovery of Dead and Moribund White Pelicans during Migration

ASSISTANT

CLERK

BIOLOGIST

*Crew*

TO: Refuge Manager, Stillwater NWR

*Dead  
Pelicans  
FILE*

DESTROY

In 1981, fish, salvaged white pelicans, and white pelican and western grebe eggs were collected at Lower Klamath and Tule Lake NWRs under our study plan entitled, "Effects of contaminants on fish-eating birds, Klamath Basin National Wildlife Refuges". The purpose of this study was to determine the source of organochlorine contamination to which Klamath Basin white pelicans are exposed. Because 17 of 24 white pelicans collected since 1974 by Tule Lake NWR biologist Ed O'Neill apparently died from endrin poisoning, endrin residue concentrations were of special interest.

Chemical analyses of fish and regurgitations collected at Tule Lake and Lower Klamath NWRs showed no detectable residues at 0.1 ppm sensitivity. Therefore, pelicans apparently are not receiving lethal pesticide exposures at Tule Lake or Lower Klamath NWRs. Pelicans may be exposed to organochlorine pesticides on their wintering grounds and, during the stress of migration and breeding, mobilize organochlorine-rich lipids. To determine if white pelicans are dying from pesticide poisoning along the migration route, the National Wildlife Health Lab and Patuxent WRC have agreed to perform necropsies and chemical analyses of birds found dead or moribund by refuge personnel.

Because your refuge lies along the white pelican migration route, we ask that you and your staff make a special effort to obtain pelican carcasses. Are any aerial surveys planned for this spring on which my technician, Diane Boellstorff, might accompany you in order to help locate such carcasses?

To store the pelicans, please put the whole birds in separate plastic bags and freeze them. Any data concerning position of the body when collected, whether the bird had been seen in the area behaving sluggishly, etc. would be helpful.

We will appreciate your assistance, for the success of this project will depend on how much help we can get from National Wildlife Refuge personnel. Please call me (916-752-8414 or FTS: 453-8414) if you have questions concerning the study.

*State  
collect  
fish?**Harry M. Ohlendorf*  
Harry M. Ohlendorf

cc: Diane E. Boellstorff



Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

FEB 16 1982



1982

To: Files

5-13-82

Subj: Anaho Island - Pelican count 5/11/82

On the above date Mrs Luntto and I launched from the east side of the lake about 9 AM arriving on the N.E. shore of Anaho about 9:30 AM. This site was chosen because no colonies were noted on the NE side. Instead, all the pelicans were on the east central point below the largest hill - actually a little further than  $\frac{1}{2}$  of the way down the E. side.

they were easily approached and the foothills used for observation. Pelicans were very calm and did not react to our presence. However, because of lack of elevation, many were hidden from view by rocks or bushes. We did not go to the top of the island as it appeared that the distance would be excessive especially since pelicans were within 200 yds of the E. shoreline.

As my spotting scope was fogged up. I had to use 7x50 binoculars. Temperature reached 30° during the night of 5/10/82 and AM temperatures were in the 50's. Except for the Northernmost

(over)

Colony (70 nesting adult) which had 3-4 week old young, all the rest were sitting very tight over eggs or young. Marble Bluff personnel stated that most pelicans arrived only 3-4 weeks ago (Mid April). there did not appear to be a "changing of the guard" or adults that usually occur from 10 AM till noon. Instead, about 10:15 several hundred adult took flight and left with no apparent replacement. Most of those leaving came from the group of non-breeding "loafers". Many pelicans are feeding at the mouth of the river and at Marble because of the high river counts were as follows: flow and large fish run - and are not making long flights.

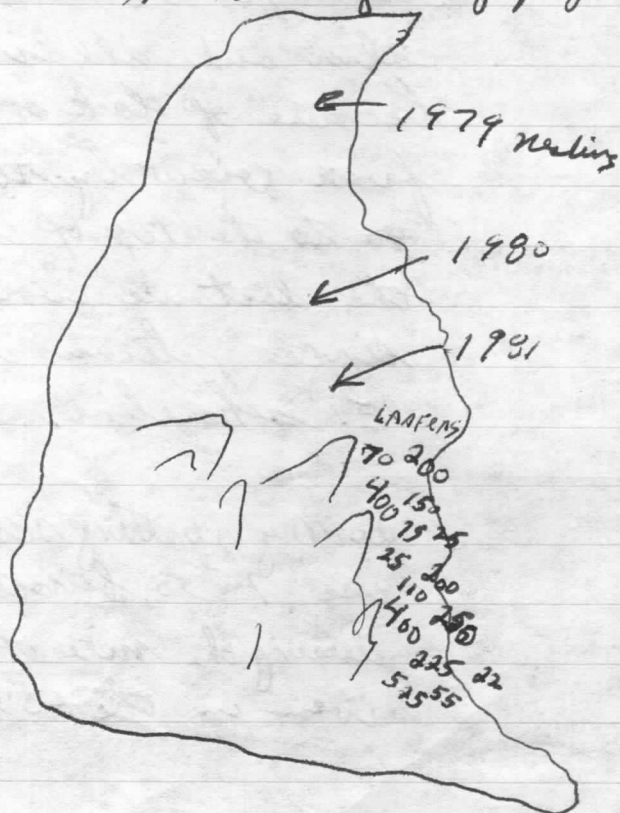
385 loafers

40 "

425 "

#### NESTING

70 (3 wk young)	400	525
200	110	55
400	215	22
150	250	225
110	310	50
75	1,285	877
25		
25	1055	
1055	877	
	1,285	
	3,217	



## Ancho Trip - w. Pelicans

at 7:00 AM on June 11 I met John Anderson and his helper Jennie Enne on the E. side of the Lake at the Pyramid. about 7:30 we launched ~~the~~ in a canoe and reached shore about 8:10 on the NE. side. ~~But~~ While walking up to the saddle, we observed a colony in our path so we had to detour around them crossing the spine on the N. end of the island.

John and Jennie then checked out the location used last year for signs of activity this year. I went to the top (by Monument elevation) with spotting scope and began counting.

It was apparent that the earliest nesters I had observed on 5/10 and dispersed with the 7-8 week old young scattered in and E. of the colony.

I first counted nesting adults by groups and ~~then~~ their young. Toward the S. end of the colonies, young were next counted, being 1-2 weeks old.

Results: Nesting adult

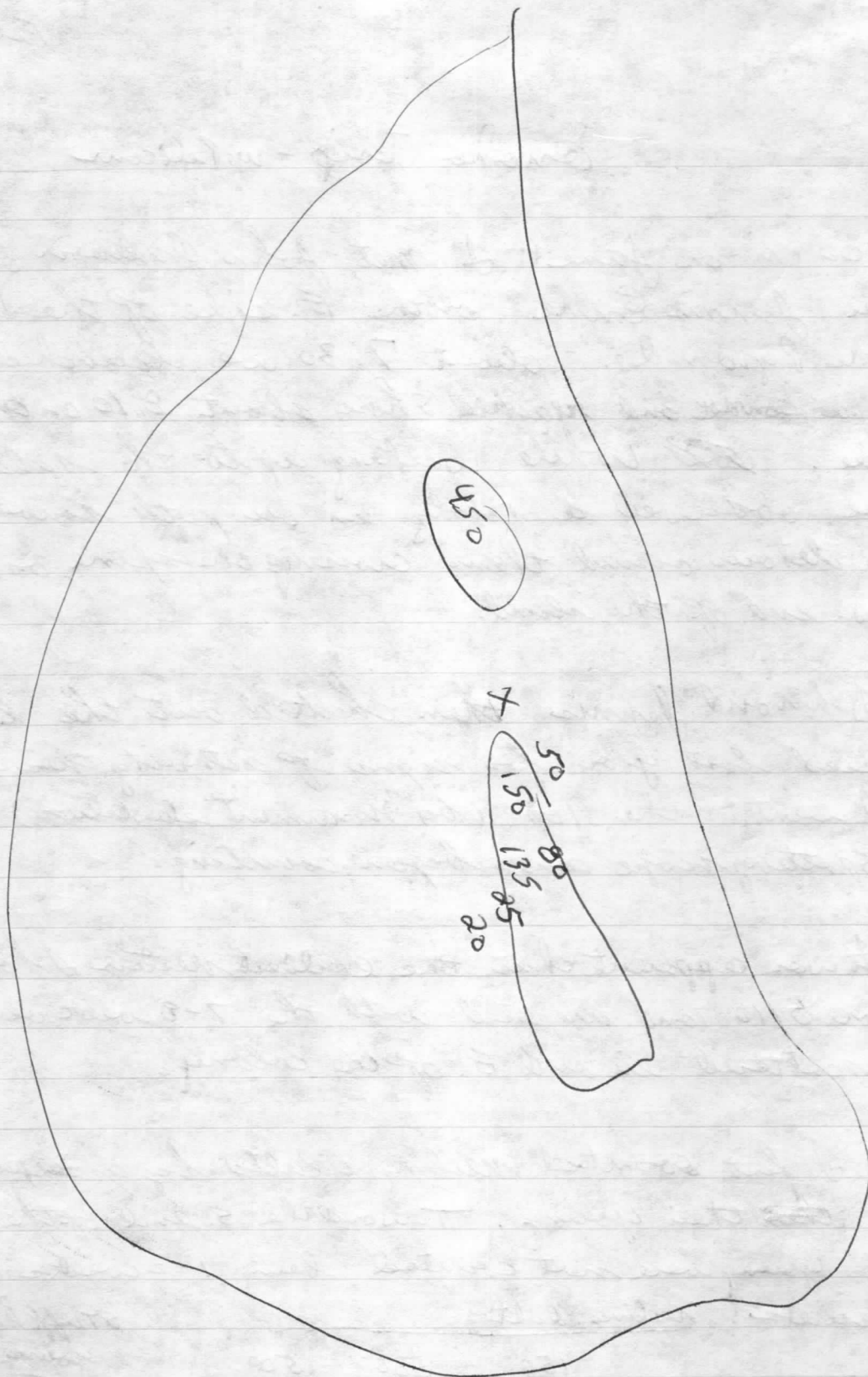
150	500	150
80	575	175
200	90	2900
270	200	+ 450*
450	10	3350

Steff. hanging around

young	adult
135	50
20	25
25	30
120	70
50	50
350	275

\* latest Colony





450

x  
50  
150  
80  
135  
85  
20



Comparison with 5/10 count:

2900  
 350  
 3250 - close

Estimated Total nesting:

2900  
 350 large young  
 450 eggs (nests)  
 3,700

From the 2900 counted that had young with them, it appeared that in each colony there were about 1 young per adult.

— 7/1/82 estimate 3,600 to flight st.

while counting, a boat with 7 people in it came around the N. point about <sup>50 to</sup> 100 yards off the shore. they proceeded along the shore to where non-nesting pelicans were loafing, just east of the colonies (out of sight due to high bank). they pulled up to the shore but did not land.<sup>th</sup>

We did not count heron. Total Gulls were estimated at 1,900 to 2,000.

I called PLITE along Rugea or Carocke on Monday 6/14

As there was a breeze coming up we left the island about 11:15 AM about 3,000 pelicans were along the shore plus 1,000 at Tucker R. mouth.

there was no exchange of pelicans - no flights coming in from high above. about 10:00 AM local "Vorn" "J" flights come in from the N & the S.



20 channel port  
(10 7' finaports)  
(6 ports  
not T's

King Remunior  
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sign

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stop Bancroft  
Director -

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 \hline
 2900 \\
 +450 \\
 \hline
 3350
 \end{array}$$

$$\begin{array}{r}
 \text{young} \\
 135 \\
 20 \\
 25 \\
 120 \\
 50 \\
 \hline
 350
 \end{array}
 \qquad
 \begin{array}{r}
 \text{adults} \\
 50 \\
 25 \\
 30 \\
 20 \\
 40 \\
 50 \\
 50 \\
 \hline
 275
 \end{array}$$

adult  
 25 near  
 grown  
 young

$$\begin{array}{r}
 2900 \\
 350 \\
 \hline
 3250 \\
 450 \\
 \hline
 3700
 \end{array}$$



June 11

new colony by Rocks

235 Birdsett site. all West?

180 cormorants.

eggs seen.

500 or  $\frac{1}{2}$  hidden.

July 1, 1905 +

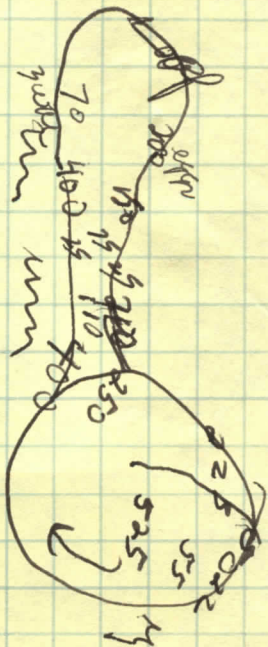
1,200 cormorants.

Louis Enne: 1 July

Louis Enne: 1 July

Put in  
Amor's file

2





385

Loafers

40

425-

70

Nesting

200

"

525

400

"

55

150

"

22

110

"

225

75

"

50

25

"

877

25

"

1055

1055 -1285

400

"

2340

110

"

1877

215

"

250

"

3217

310

"

1285-

200

190

225

210

180

90

Cormorants

1095

1,200 on 6/11

Blue Heron

6

3

6

8

24

4

4

5

3

all in or  
next to  
Pelicans.

63

+ 100 S. side

## ANAHO TALKS

June 12, 1983  
Page 1

- 1) Name/Organization
- 2) Stillwater/Anaho 200,000 AC, Staff, Public use, ect.
- 3) Anaho 1913 Established Colony Nesting Sanctuary 27AC at 3865 ft.  
elevation (Same as Average in 1800)
- 4) WHY ANAHO: Selection of SECURE Breeding Site takes precedence over  
all factors, including Food Access.
- 5) MGT: PLITE, Post, Signs, Monitor-Natural Area, Wilderness Pr. each  
spring (May) go. Describe Trip Disturbance. May, June, July Produc-  
tion estimate, Herons, EGRETS.
- 6) 1979, 1980 Low Population- Human Disturbance. How count? Personnel  
Changeovers, NO WRITTEN INVENTORY-PLAN-1 bird per. nest.
- 7) ANDERSON Want to study - Staff Orient Study to Mgt: Production Factors.
- 8) Our Questions- WHY DECREASE - Occured in the late 50's (before the  
drouth) Suspected reasons: Pesticides, Human- Disturbance, Predation,  
Shooting, Going Elsewhere, Lack of Forage Fish?
- 9) Read Anderson's STUDY TITLE, Purpose
- 10) OBTAINED S.U. Permit, Tribal Council Permission 1981, 1980, 1982
- 11) POPULATION  
Estimated Pre-white man - 16,000-18,000 pelicans  
Jan. 1844 too early (Freemont)  
Jan. 1874 (Ridgeway) "Thousands" (late 1800's Mass Slaughter)  
Jan. 1908 Chapman estimate 3,000 N = 6,00AD Total  
Jan. 1923 4181 Nest, 300 A (20-30% Lower than 1917) (so about  
10,000 to 11,000 Adults)  
Jan. 1924 8,500 A = 1,500 = 10,000 Fisherman Dest. 60% of young



Jan. 1931 6,000 A

Jan. 1932 7,000 A

Jan. 1940 6,000 A

Jan. 1942 7,000 A

General Population Trend - Before 1960 4,667 Average NO Young, 3,052  
Average NO Young, after 1960.

Jan. 1930-40 Decrease

Jan. 1940-58 Increase

Jan. 1958-59 Drastic Decline

Jan. 1944-1950 About 10,000 Adult

Jan. 1953 11,200 AD. then No Record

Jan. 1958 Varies, but Declining to 70's 4,700 A to 3,000 A (before  
1960-61 drouth)

Late 1970's 3,000 AD. Repeated in 1979 My 1st yr. lowest No.  
young 1,400 1977 and 1980

#### SLIDES

### 12) Description : Diamond Shaped

1½ Mi N-S Mi E-W

Mainland 1,500 ft. or 500 yds.

Was central ridge and hills

Decline = gravel and sand bars

Dance floor ... updraft

Sutcliff Distance ... Lucky 4 Mi- 5Mi stormy

W. side is steep

Beach S.E.

Jagged concretions Tufa, Domes

13) Procedure: Launch early AM ect.

Babysit 10 a.m. Thermals Spiral Down

Rattle Snakes 9 ft.

Count Nesting Adult. Document - Disturbance

Wind = Leave Island

14) STUDY: Skull Rock N.W. side Blinds - Early - Spotting Scope-Patience  
Camo Clothing -- No Disturbance.

#### FINDINGS

Pelicans Arrive April or Earlier, Eggs laid 2nd week of April (varies).

Young most sensitive during incubation and 1st and 2nd weeks, so April 1  
to May 15 is critical time. for later nesters.

Feeding Areas Stillwater 60 Mi Pelican-Nested at Pelican Island

Humbolt Sink

Winnemucca (gone)

Honey Lake Nested in past

Walker Lake

Carson Lake

Lahonton R. (new)

Pyramid Lake

Changes may be factor - Fly Farther to Feed

#### WATER LEVELS

1844-1904 3860 ft. average for 60 yrs. ess. unchanged

1905 Derby Dam - 1967.37 A decline of 77 ft. to elevation of 3783 ft.

Highest 1871 3383 ft. or 100 ft. higher then 1967 level

Lowest 1967 3783 ft. or 100 ft. below highest and 77 ft. Derby

Locations Where Nest FWS will Tabulate Total North America Population

RECENT PRODUCTION

1981 2880 y 6,000 AD

1982 3,350 y 6,800 AD + more around

1965 Coyote Tracks

1981 Antelope Squirred found

PRODUCTION LOSS

Clutch size 1.97 1-4 eggs com. Greater survival to flt. than other colonies. Survival, higher than other places and overager 1 per nest.

If 2 in nest = usually 1 dies.

Not Gulls - Inefficient Scavengers

Inter-Sibling competition... Major loss

Dehydration - Related to amount of Fish (#young) and distance Fly.

Other Colonies less young.

Dehydration - Exposure

Adult shade young, eggs cook if unshaded

Food/Moisture need time to Tui chub spawn-Middle of June

Pesticides - Studied, but not known now: High?

HUMAN FACTOR: Boats/planes - then Heat, Gulls, Stress, Dehydration, Abandonment.

ALL PLAY PART BUT HUMANS ARE THE KEY

Actioned Planned: Bouys, Patrol, Public Awareness.



UNITED STATES GOVERNMENT

FISH AND WILDLIFE SERVICE

*Memorandum*

TO : Files

DATE: May 17, 1983

FROM : Refuge Manager, Stillwater W.M.A.  
Fallon, Nevada

SUBJECT: Colony Nesting at Anaho - May, 1983

The first count this year was scheduled for May 10, but it was stormy and Pyramid waters were judged unsafe for our 16' Bell Boat.

About 8:30AM on May 12, 1983, Ed Loth and I launched from the East side of Pyramid. A new site had to be located as a 10 foot rise in the lake since last year put old gravelly launch sites under water.

The weather was calm (light winds) and clear. Day time temperatures reached about 65 degrees and wind picked up to 5-10 MPH later in the day.

Landing was made on the Northwest side at what remained of the old cove. The standard approach was made due south along the west side of the crest out of sight of colonies and up the north facing saddle to the top of Anaho.

Spotting scope observation of colonies began about 9:45AM, not too late, but 9:00AM would have been better.

It was immediately apparent that there were alot more pelicans and fewer cormorants than last year.

The largest colony, (D) was located in the same area as last year's largest colony. Production was well advanced. We had speculated that cool weather this spring would have delayed nesting.

<u>Colony</u>	<u>Nesting Cormorant</u>	<u>Nesting Pelican</u>	<u>Location</u>	<u>Comments</u>
A	35	430	At base of ridge.	Siting tight, can't see eggs
B	85	330	Immediately to S.	On territory, not nesting.
C	160	225	200 Yds. E of Colony A.	1 or 2 eggs visible.
D-1	-	300	N. end of D Colony.	Downy young.
D-2	-	40	N.E. end of D Colony.	Downy young 10 days to 2 wks.
D-3	-	50	E. side of D Colony.	50 young 4-5 wks. old.
D-4	-	100	S.E. side of D Colony.	Downy young 2 wks. old.
<u>D-5</u>	<u>875</u>	<u>3250</u>	W. side of D Colony	Downy young 10-14 days old.
<u>G Total</u>	<u>1155</u>	<u>4725</u>		

About 70 G.B. Heron were observed in tall greasewood on the edge of the D Colony.

The total pelican count (nesting) was 4,725 about 1,000 more than in 1982 and the third year in a row of increase. Production probably will be greater than 4,725 as more pelicans will nest besides those in colony

May 17, 1983

Page 2

B, (which had'nt begun egg laying). About 190 additional pelicans were loafing along Anaho's shoreline.

It should be noted that in contrast to last year, Stillwater has many pelicans feeding there this year. Reason - the Truckee River fish run has not begun because of cool water inflows of a large volume. Nesting pelicans may be under some stress as all waters in Nevada are high and fishing is difficult. Some dead pelicans are being found at Stillwater.

Gull estimates were made also and these averaged 4,000. Counts were completed about 11:15AM and we proceeded to the boat, launched and circled the island. In checking the gull colony about 20 Bonapartes gulls and 65 Caspian tern were seen. Half of the old nesting area was under water and some nesters were up in the grassy area. All recently posted "area closed" signs were under water. Cormorant nesting colonies on banks along the East side were gone also. No nesting was noted. Up to 600 Cormorant were around the shoreline but apparently not nesting. No rattlesnakes were encountered.

The East shoreline will be posted next trip as colony D is visible from boats and accessible.

*Moe LeFever*

Morris C. LeFever

Attachment: Map





UNITED STATES GOVERNMENT

FISH AND WILDLIFE SERVICE

# Memorandum

TO : Regional Director, ARW/RF-ID/NV  
Portland, Oregon

DATE: May 27, 1983

FROM : Asst. Refuge Manager, Stillwater W.M.A.  
Fallon, Nevada

SUBJECT: Report on Dead Pelicans - Stillwater W.M.A.

White pelican use on Stillwater W.M.A. this spring is almost double from normal years with peak numbers near 2,000 birds. During this period in normal years, approximately 10 to 15 dead pelicans are observed. This year, 40 pelicans were found dead in the area.

The first dead pelicans were observed May 2 and most died by May 15. Most of the dead pelicans found were below water control structures. Since visibility into units was poor, an aerial survey was planned.

Summer biologist Carol Evans flew with Nevada Department of Wildlife biologist Norm Saake and observed 30 dead birds on May 19, 1983. Another aerial survey was made by Asst. Manager Ed Loth and mechanic Ernest Lantto on May 23, 1983. Ten additional pelicans were found dead on this flight. On the latter flight, it was evident most pelican feeding had shifted to the mouth of the Truckee River at Pyramid Lake. Almost 1,500 were observed there while less than 25 were observed feeding at Stillwater. This normal pattern indicated fish runs up the Truckee River was initiated due to recent hot weather.

On May 24, 1983, six pelican heads were collected and frozen for pesticide analysis. Whole carcasses were too badly decomposed for collection. In the event additional pelicans are found dead, fresh bodies will be collected and sent to the Madison Health Lab.

The attached map indicates pelican loss by Stillwater units. Following is a list of dead pelicans observed at other areas.

<u>AREA</u>	<u>NUMBER</u>
Soda Lake	0
Sheckler	2
Carson Pasture	2
Harmon Reservoir	0
Canvasback Gun Club	2
Pyramid Lake	2
Fernley Wildlife Area	1
Lahontan Reservoir, Near Dam	0
TOTAL	<hr/> 9

Edward W. Loth,  
Asst. Refuge Mgr.

cc: Cathy Osugi



UNITED STATES GOVERNMENT

FISH AND WILDLIFE SERVICE

*Memorandum*

TO : FILES

DATE: June 14, 1983

FROM : Asst. Refuge Mgr. Stillwater WMA

SUBJECT: Colony Nesting at Anaho - June 14, 1983

The second count of Anaho colonial nesters was made Tuesday June 7, 1983. About 7:15 a.m. Morris LeFever and I met Gary Herron, NDOW and Mitchell Landsberg of Associated Press at Nixon.

Weather conditions included high thin cloud cover early followed by heavier cloud cover and finally sprinkles at 11:45a.m. when we departed from the peak. Winds were calm until we returned to the east shore of Pyramid when it also began to rain.

Due to battery problems Loth, Herron and Landsberg did not launch from the east shore until 9:00 a.m. M. LeFever remained with the vehicles in case of emergency.

Landing on and approach to the peak of Anaho was the same as on May 12, 1983. Observations by spotting scope did not begin until 9:45 a.m., later than expected.

The largest pelican colony on this count was B, 2700 compared to 330 on May 12. Colony D, largest on May 12 count (3740), contained only 2100 adults but 2325 young. An additional 100 young on the east shoreline of Anaho. Colony A count was similar to May 12 and the number of pelicans in colony C decreased from 225 to 90.

Total adult pelican count for all colonies was 5290. About 400 additional adults were loafing on the east shoreline of Anaho. Total young was 2425.

<u>COLONY</u>	<u>CORMORANT</u>	<u>PELICAN</u>	<u>LOCATION</u>	<u>COMMENTS</u>
A	225	400	At base of ridge	Appeared to be on eggs
B	325	2700	Immed. to South	About 1/2 birds standing around
C	115	90	200 yds E. of col. A	Appeared to be on eggs
D	825	2100	E. side near shore	Numerous young
Total=	1490	5290		

## YOUNG PELICANS ON COLONY D

<u>LOCATIONS</u>	<u>NUMBER</u>	<u>COMMENTS</u>
D1	175	10 days to 2 weeks old
D2	225	4-5 weeks old
D2a	500	2-3 weeks old
D3	250	2-3 weeks old
D4	400	10 days to 2 weeks old
D5	225	10 days to 2 weeks old
D6	250	16 days to 3 weeks old
D7	300	4-5 weeks old
E. Shore	100	Loafing with adults
	2425	

June 14, 1983

Page 2

Other pelican observations include: 550 pelicans arrived at 9:00 a.m., 950 pelicans spiraled up from the shoreline at 9:50 a.m., 10-11:00 a.m. 3 groups of pelicans arrive and 1 group of pelicans leave, 11-11:45 a.m. 4 groups arrive and 2 groups leave. Also during the count a military jet flew over Anaho and numerous pelicans in Colony B flapped their wings, but did not fly. Later a boat approached the gull colony then proceeded north along the E. Anaho shore line and flushed most pelicans and cormorants.

Approximately 1490 cormorants were on colonies A through D and 200 additional cormorants were on the shoreline.

About 70 G. B. Herons were observed, some with young 2-3 weeks old.

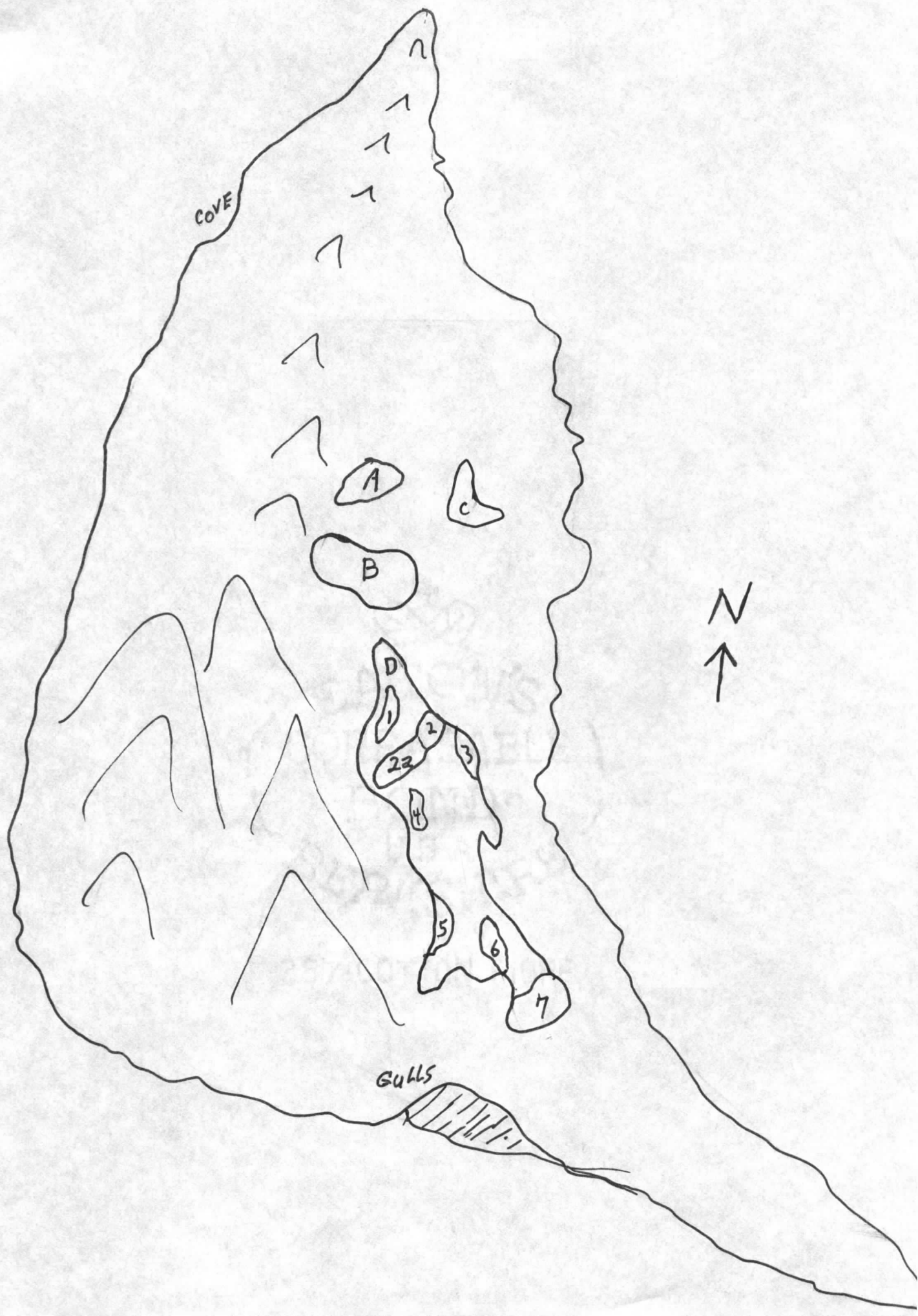
The Californian Gull populations appeared to be up, 4500 compared to 4000 on May 12. No bonaparts gulls or Caspian Terns were observed.

The West shoreline was not posted adjacent to colony D as there was insufficient time due to weather condition. The critical period for most pelican young in the visible colony is over so posting will not be done until later.

One rattlesnake was encountered in sparse vegetation near the shoreline 100 yds. west of the cove used for landing

Ed Loth

Attachment: Map



*Memorandum*

TO : Files

DATE: July 20, 1983

FROM : Assistant Refuge Manager

SUBJECT: Colony Nesting at Anaho - July 12, 1983

The third and last 1983 count of Anaho colonial nesters was made Tuesday, July 12, about 7:30 a.m. Biologist Tech. Carol Evans and I launched from the East shore of Pyramid. Morris LeFever remained on shore in case of emergency.

Weather conditions were ideal with clear skys and only a gentle breeze from the west. High temperatures were in the low to mid 90's.

Landing on and approach to the peak of Anaho was the same as the previous 2 counts this year. Observations began at 8:15 a.m. and were completed on colonies A, B, C, & D about 11:30 a.m.

After descending approximately 1/3 distance down to a small saddle near the cave we walked east on a bench for a better view of colonies A, B, & C. At this time we discovered a new pelican colony about 150 yards South of colony B that terminated at the base and edge of the rocks of Anaho peak.

Pelican and Cormorant counts were as follows:

<u>Colony</u>	<u>Cormorant</u>	<u>Pelicans</u>		<u>Location</u>	<u>Comments</u>
		<u>Ad.</u>	<u>Yg.</u>		
A	275	80	25	At base of ridge	downy 10-14 days
			35		2-3 weeks
			20		4-5 weeks
B	275	500	200	Immed. to South	downy 7-10 days
			80		downy 10-14 days
			50		2-3 weeks
			35		4-5 weeks
C	250	10	65	200 yds. E. of Col. A	3-4 weeks
D	1000	100	700	E. near shore.	5-8 weeks
E	none	295	275	150 yds. S. of Col. B	Less than 10 days
Shoreline	145	175	815		Yg. moving from D to shore.
Totals:	1945	1160	2300		

In colony E, 295 adults were standing and shading 275 chicks. Two eggs were observed in the open and 5 additional eggs were being shaded by adults. There was only 1 incidence of 2 chicks/1 adult. This colony count was made between 11:50 a.m. and 12:25 a.m.

Total adult pelican count was 1160 birds compared to 5290 on the June 14 count. This observation is due to post-breeding dispersal that begins in late June, as indicated by Anderson, 1982. Young pelicans totaled 2,300 compared to 2,425 on the previous count.



Approximately 815 young pelicans were on the East shore of Anaho Island. These young and others were walking between colony D and the shoreline. No distinct pods of young were observed.

About 86 great blue herons were observed in greasewood adjacent to colony D.

After departing from the cove about 1:00p.m. we circled Anaho and stopped at the California gull colony. Only 1200 adults and 1000 young gulls were observed. This compared to 4500 adult gulls observed on June 14, 1983. Most of the gulls had also dispersed as many young had fledged.

We returned to the East Pyramid shore launching area at 2:00 p.m. No rattlesnakes were encountered.

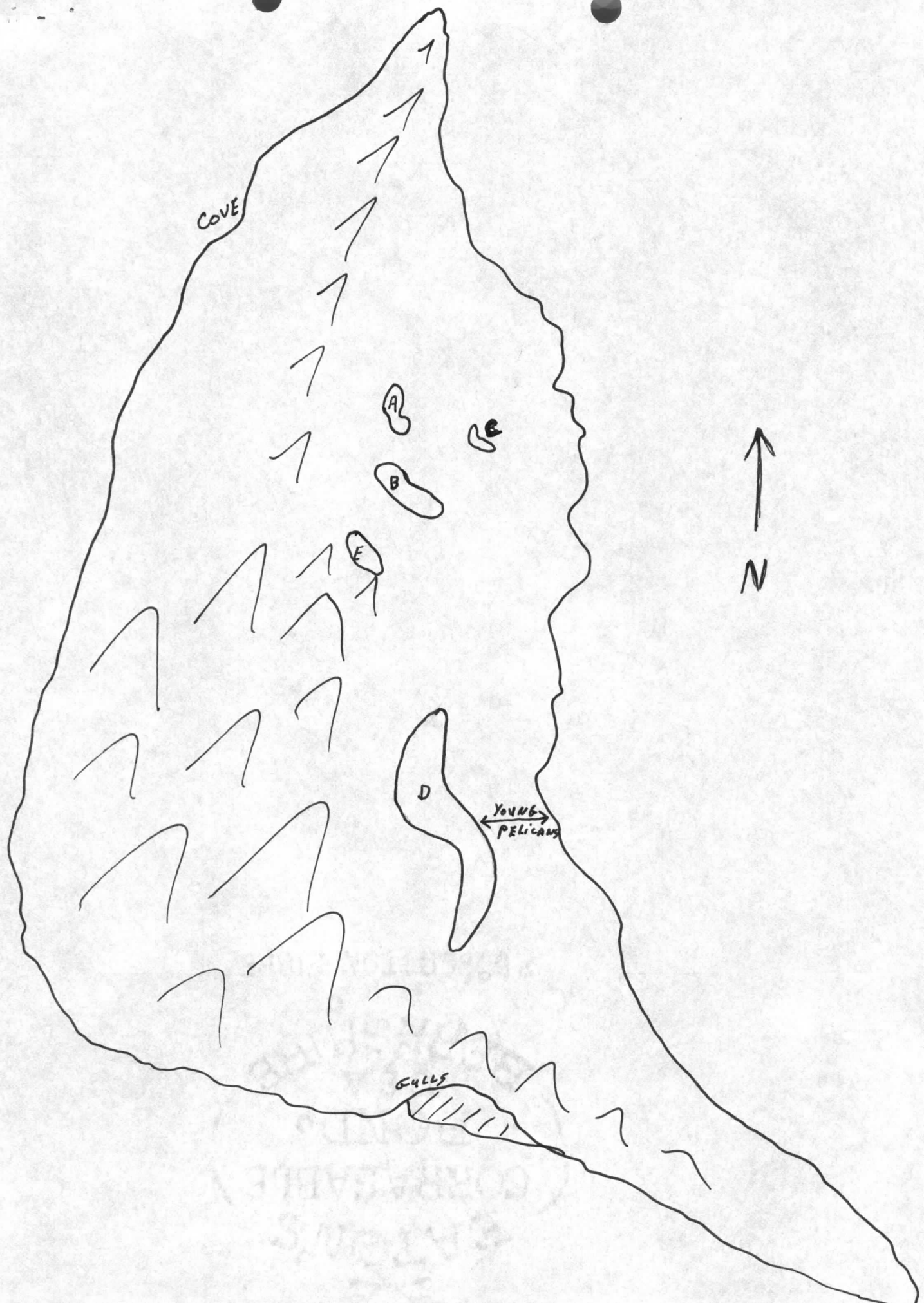
To summarize the 1983 pelican nesting season about 4700 pair made 5700 nest attempts and produced 3330 young. Several factors influenced nesting attempts and hatching success. There was a significant shift in pelicans from colony D to B between May and June. As colony D is near the east Anaho shoreline and because of much higher lake levels making the colony more visible, birds may have moved and/or abandoned nests due to boater disturbance. Also after nesting was initiated normal Pyramid fish runs were delayed which added stress to the birds. This stress was also noted at Stillwater Refuge because normal spring feeding use doubled and spring mortality on the Refuge tripled.

Estimated pelican production by colony:

<u>Colony #</u>	<u>#Produced</u>
A	80
B	500
C	75
D	2425
E	250
Total:	3330

Edward W. Loth

EL:rg



File: anaho

11-13-84

Talked with Ken Foese on phone.  
(847-9400 Reno) re reports  
of African Python (20ft+)  
in Pyramid Lake. Ranger  
Lawry has photo taken  
at the Pyramid 3 yrs ago  
and was in Reno paper last  
weekend. He looking for  
heat source or snake needs  
warmth above 50-55°F

Was interested in geothermal  
vents on anaho and food  
(Birds, mammals on anaho)

No heat anaho, but food  
Told him food and heat vents are available  
at the pyramid.

L. J. J.

*Memorandum*

TO : Files

DATE: May 22, 1984

FROM : Asst. Refuge Mgr. Stillwater W.M.A.  
Fallon, Nevada

SUBJECT: Colony Nesting at Anaho Island - May 16, 1984

The first count of colony nesting birds was made on Wednesday, May 16. About 8:15AM, Mark Coleman FAO - Reno, Kennan Ward and Dan D'Agostini, photographers and I launched near Marble Bluff National Fish Hatchery. Morris LeFever and Ernest Lantto drove around to the pinnacle to place a sign on the east shoreline of Pyramid Lake.

Weather conditions were clear and cool with a light northwest breeze. High temperatures for the day was near 65 degrees. A 5-10MPH wind came up about mid morning.

Landing was made in what remained of the same cove used in previous years. The standard approach was made to the south along the west side of the crest, not visible from the colonies, and up the north facing saddle to the top of Anaho.

Observations by spotting scope began at 9:25AM, about 30 minutes later than optimum starting time.

Colony D, the largest in 1982 and on the initial 1983 count, only contained scattered groups of pelicans. Colony B, the largest in subsequent 1983 counts contained the most pelicans. This shift from colony D to B by nesting pelicans the latter part of 1983 and use this year is probably due to rising lake levels. Pyramid Lake elevation rose 11 feet since May of 1983. Last year, rising lake levels made colony D more visible to boaters which also may have produced significant disturbance.

Colony	Nesting Cormorants	Adult Cormorants	Nesting Pelicans	Adult Pelicans	Comments
A	80	135	1180	1475	Sitting tight, no young or eggs observed.
B	215	375	1940	2450	Sitting tight, no young or eggs observed.
C	82	125	135	200	No young observed.
D	435	1225	650	1100	175 young 7-14 days. 25 young 2-7 days.
E	0	0	775	950	469 young observed 2 days-10 days.
Totals	815	1860	4680	6175	



An additional 225 pelicans and 425 cormorants were counted along the east and south shoreline of Anaho.

Pelican nesting is later compared to the previous year. The first 1983 count occurred one week earlier than this year, however, some young were estimated to be 4-5 weeks old. The oldest chicks were estimated to be 2 weeks of age on the 1984 count.

It is important to note the reduced spring pelican use and losses this year on Stillwater compared to 1983. This reduced use corresponds with earlier initiation of fish runs at Pyramid Lake, however, some Refuge Marsh units were dewatered this spring to provide easier feeding for returning pelicans. Only two dead pelicans have been observed to date on Stillwater.

Gull estimates were made on the colony located on the south side of Anaho. Approximately 3,200 California gulls were counted. No Bonaparte's gulls or Caspian terns were observed this year.

Observations from the peak were completed at 11:45AM. We descended part way down and walked east on a bench to count colony E. This colony is not visible from the peak. We finished the count at 12:30PM and returned to the cove.

Coleman, LeFever and Lantto posted parts of the Island during our morning count. Additional posting was completed about 3:00PM and we returned to the east shoreline.

Although three pairs of Canada geese were observed, none with young, two goose nests were found. Both contained small membrane fragments.

No rattlesnakes were encountered.

*Edward W. Loth*

Edward W. Loth

EWL:tms

Additional Note Added 6/13/84.

Five great-blue herons were counted adjacent to colony A. All heron nests were along the east side of colony D. A total of 135 herons and 85 nests were observed.

# Memorandum

TO : Files

DATE: June 20, 1984

FROM : Asst. Refuge Mgr. Stillwater W.M.A.  
Fallon, Nevada

SUBJECT: Colony Nesting at Anaho Island - June 19, 1984

The second count of colony nesting birds was made on Wednesday, June 19. About 8:40AM, Morris LeFever and I launched near Marble Bluff National Fish Hatchery.

Weather conditions were mostly clear, and calm. During the PM, winds were varied to 15MPH. High temperature was 75°.

Landing on and approach to the peak of Anaho was the same as May 16, 1984. Observations by spotting scope began about 9:25AM.

The number of young and adults still on eggs were down in most colonies from the previous May count. Colony A was down 23.7%, colony B down 6.2%, colony C is down 7.4%, and colony D down 3.8%. Colony E increased 6.6% from 775 nesting pelicans to 830 young observed.

Adult pelicans in colonies were all down from the previous count but additional adults were around the Island and several incoming feeding flights were observed during late morning.

<u>Colony</u>	<u>Cormorant Nests</u>	<u>Adult Cormorants</u>	<u>Adult Pelicans</u>	<u>Young Pelicans</u>	<u>Comments</u>
A	115	175			Estimated 2 per nest
			1000	700	2-5 weeks old
				150	2-5 days old
			50		Adults on eggs
B	230	335			Estimated 2 per nest
			900	1500	2-4 weeks old
			300		Adults on eggs
C	85	125			Estimated 1.8 per nest
			35	125	3-5 weeks old
D	525	875			Estimated 1.7 per nest
			525	625	3-6 weeks old
E			136	830	4-6 weeks old
TOTALS	955	1510	2946	4080*	

June 20, 1984

Page 2

\*This total includes 80 young pelicans along the east shoreline and 70 young between colony D and the east shore.

The 300 adult pelicans sitting on eggs in colony B were concentrated along the north and east edges of the colony.

Additional pelicans and cormorants were counted around Anaho's shoreline. Respective totals were 970 and 385. Another 440 pelicans were observed in Pyramid Lake northeast of Anaho. This compares to 225 pelicans and 425 cormorants counted on Anaho's shoreline the previous month.

There were 80 great blue heron nests counted in greasewood between colony D and the east shoreline. An estimate of young/nest was 1.8. Approximately 115 adult herons were also observed.

Counts from the peak were completed at 11:30AM. Colony E was observed from the same bench as in May. The colony is not visible from the peak. This count was completed at 12:10PM and returned to the cove at 12:30PM.

After leaving the cove, we circled Anaho to the south shore and conducted an off-shore count of California gulls. Almost 5,000 (350) adults and 830 young were counted. No Boneparte's gulls or Caspian terns were observed.

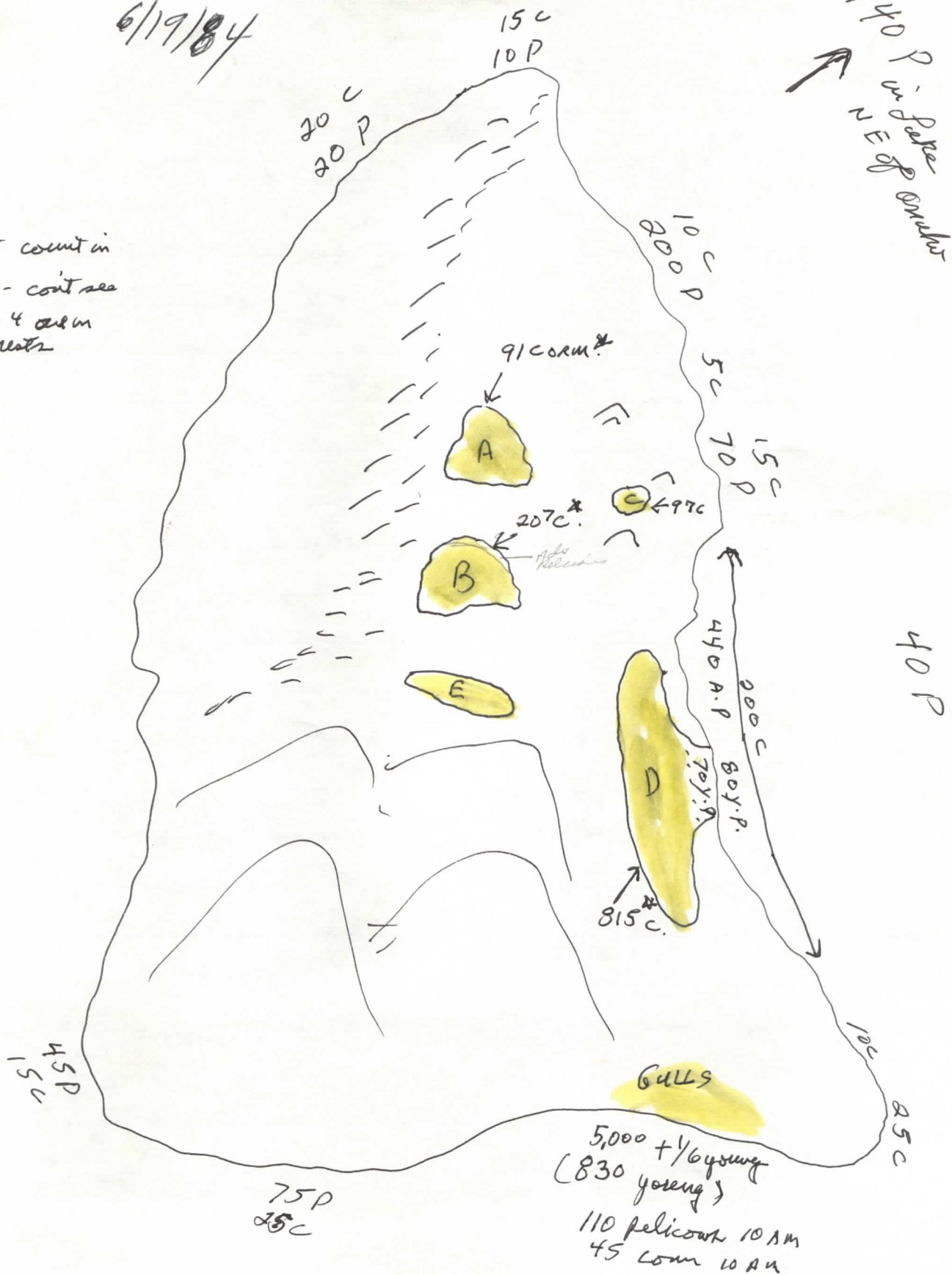
No rattlesnakes were encountered.

'Moe' for Ed

Le Jeune obs/counts

6/19/84

\* cormorant count in colonies - can't see if 2, 3 or 4 are in some nests





1985 Pelicans

as of April 16

Birds show up end of Feb. 26th only a few  
started nesting

Edge colony - 700 mid March form

E. flat possibly ~~end~~ port of March. start 900

Hill Bone colony ~~not~~ just forming (a few older)

A & B just forming.

Gulls there but not eggs yet 1,000

Pteron 75 in E Break

UNITED STATES GOVERNMENT

FISH AND WILDLIFE SERVICE

# Memorandum

STL - Anaho - PM

TO : Files

DATE: June 19, 1985

FROM : Refuge Manager, Stillwater W.M.A.  
Fallon, NV

SUBJECT: June 13, 1985 Anaho Count

Arrangements were made to travel to Anaho using Pyramid Lake Fisheries BIA Boston whaler boat. I met Steve Cerocke (PLF) and Kenneth Miller (Photographer/Archaeologist) and his friend Mariam at the PLF office at 7:00 a.m. We proceeded to the new launch site at Warrior Point (our sign is still up), launched at 7:45 a.m., arriving at the island 8:15 a.m. Reached the top via the normal route from the cove on the N.W. side through the draw to the top. Counting commenced at 9:00 a.m.

It became evident that nesting was ahead of schedule this year. There were a lot of 3/4 plus growth young along the shore opposite Colony A (the largest and nearest to the shore). This was unexpected. May count was not conducted because of Anderson's studies and no report was yet received from him.

First I attempted a count of all pelicans along the shoreline. These were broken down to adult/young ratios. Along the south shore and the N.E. shore almost all were adults. Opposite Colony A, only 10% were adults.

Secondly, Colony A was counted. Most young were 3/4 grown and of the total count only about 1/3 were adults. Clumps of young were in the shade of greasewood bushes making counts difficult (counts ranged from 4,400 to 5,900 by counting in hundreds. With attention to a slower count and attention to estimates of "pods" of young in bushes, later counts averaged 5,000 to 5,500.

In Colony B many adults were absent and many remaining adults were on the west side of the Colony. Colony C was in two sections. On the east side all adults were on small young or eggs. Colony D had one adult per nest as is usual for June. Colony E at the base of the high hill was 90% young 1/2 to 2/3 grown. Colony F had few (25%) adults present.

Temperatures were about 90 degrees by 11:00 a.m. with no wind. We proceeded off the hill arriving at the boat at 11:30 a.m. No snakes were encountered. Two of our four buoys along the east shore were missing.

After lunch we proceeded to the gull colony where about 3,800 gulls were observed, about 1/3 of that total was matched by young chicks (many more than I have observed for the past five years). No Caspian terns were observed in the colony. It was too late for other species, but some young great blue heron and a few black-crowned night herons were observed.

Assuming that 8,000 young will be produced in 1985 around 8,000-9,000 adults should have been present on or around the island. Only 4,725 were present. Production of this magnitude indicates a breeding colony of 16,000-17,000 adults plus some 1,000-2,000 non-breeders or 17,000 to 19,000 adults.

Production increases apparently are too high to be related to recruitment. It is recommended very thorough counts be conducted in 1986. Colony E (against the base of the hill, might have been missed in 1984).

#### PRODUCTION

1985	8,100	
1984	4,800	
1983	3,300	Poor fish run
1982	3,600	
1981	3,200	Good water from '80
1980	1,370	
1979	1,575	

#### COUNTS

AREA	TOTAL COLONY - COMPOSITION	NO. ADULT	NO. YOUNG
I. Shoreline - 1	1025 (10-15% adult) 3/4 grown	130	900
Shoreline - 2	35,000, 25 young 3/4 grown	135	25
N.E. Shoreline	200 adult	200	-0-
Gull Colony	165 90% adult	150	15
II. Colony A	5 count average 5,200, 33% adult	1,700	3,400
III. Colony B-east	1800 (1/3 adult) 1/2 grown	600	1,200
Colony B-west	90, 240, 30 adult on w. side	360	-0-
IV. Colony C-east	350 adults on eggs or small young	350	350 EST.
Colony C-west	250 adult, 350 young 1/2 grown	250	350
V. Colony D	550 adult with 2 week old young	550	550 EST.
VI. Colony E	600, 90% young 2/3 grown	50	550
VII. Colony F	1,000, 25% adult 1/2 to 2/3 grown	250	750
TOTAL		4,725	8,090
GULLS		3,800	1,250
CORMORANTS		3,100	1,600

*Moe*  
Morris C. LeFever

MCLeFever:ls





Files

August 12, 1985

Refuge Manager, Stillwater W.M.A.  
Fallon, NV

Anaho Count - July 10, 1985

Met Mark Coleman (GBC) at Popcorn Beach (SW side) of Pyramid Lake at 7:45 a.m., arrived at the N.W. cove of Anaho Island at 8:15 a.m., began ascending the slope at 8:25 a.m. and reached the E. hillside above colonies at 8:45 a.m. Clear skies with haze from fires and 10 m.p.h. breeze. Hot. 85°F at 10 a.m. and 95°F by noon.

Colony C on the north ridge contained 1,000 pelicans; 625 young, 3/4 to 2/3 grown and only 375 adults.

Colony D had 270 young and 130 adult (60 on one side), most young 3/4 grown.

Colony B had 1,250 pelicans (20% adult) or 825 young 3/4 grown and 425 adult.

Colony F contained 430 pelicans; 130 adult and 300 young, 3/4 to 5/6 grown.

The large colony (a) still contained 700 pelicans but obviously most previous residents were on the adjacent beach. About 25% were adults (175 adult, 525 young).

Colony E had only 25 young left in it.

At 1:10 p.m. a count was made of young pelicans along the shoreline: 200 on N.W. side, 100 along the gull colony, 800 on the S.E. beach (opposite colony), 200 in the mid beach area and 260 on the N.E. side. As most adults flew off, 95% of the birds were young. Some young flew off also so 100% of totals can be counted as young.

#### COUNTS

<u>Colony/Area</u>	<u>Size</u>	<u>No. Young 7/9</u>	<u>No. Young 6/13</u>
N.W. Beach	Grown	200	0
Gull Colony Beach	Grown	200	15
S.E. Beach	Grown	800	90
Mid Beach	Grown	200	25
N.E. Beach	Grown	260	0
A	Most 3/4 to 5/6	700	1,800
B	3/4 grown	725	900
C	2/3 to 3/4 grown	725	700
D	1/2 to 3/4 grown	270	550
E	3/4 grown	25	200
F	3/4 to 5/6 grown	300	350
TOTAL		<del>4,805</del> 4,305	5,030

see  
note  
back page

Changes in colony numbers were consistent with loss (moving) of young pelicans to the shorelines, except for colony C. Apparently there was some movement of young from colony B to C. As this area gets more breeze some birds from D, B, and F may have moved there also. (movement to C was observed).

In this count many adults were absent. As many young are nearing or at flight stage, this was normal. Appreciable numbers of adults did not arrive until about 1:30 p.m. No attempt was made to count all adults on or around the island.

Some young were observed flying and it is assumed that many have already left the island area. A total count of 4,305 at this date when nesting was early this year, would indicate that between 4,000 to 4,300 will be raised to flight stage in 1985.

Some losses of adults occurred this spring in May as foraging was difficult at the delta due to water depth. This may account for lower (4,150 young) than estimated in 1984 (4,800). The 1984 count may have been high as only the July count indicated this many young.

Mr. Anderson's counts (7-31-85 letter) indicated production of 4,171 young to flight stage.

He recorded 19900 gulls on May 30 and 1,140 double crested cormorants.

Morris C. LeFever

MCLeFever:ls

1st count July 10 was 6,100 total, not 4,305 - A lowered my count to his as supposedly he spent more time counting. Am now convinced that he used 1.0 young per nesting adult when 1.2 might have been the case. M.K. 6/16/86

Report on fieldtrip to Anaho Island, Pyramid Lake, 13 June 1986.  
Steve Thompson, Delvan Lee, Karen Platou (USFWS), Robin Tausch (UNR)  
and Cliff and Carroll Glover (Nevada Magazine)

Beautiful day, warm and not too windy until later in the afternoon. Lots of pelicans. Steve's estimate is 7,000 nests. This is a record number of nesting birds or close to it. I was most impressed with the fact that all the parent birds switch off duties at 11:18 AM almost on the nose. The nesting areas were quiet until 11:18, then suddenly waves of birds were seen flying in from the direction of the Carson Sink. Within one hour the birds had traded off, gone for water at the lake and flown back out toward Carson Sink.

Robin Tausch (professor of range management at UNR) and I surveyed the vegetation as we walked from the northwest side of the island, up to the top of the central peaks, then down the south-east ridge back to the shoreline. In our cursory search we found four species not listed in Verne Woodbury's 1966 thesis. Bud sage (Artemisia spinescens) was seen in a narrow band occupying the base of the "ravine" leading to the summit on the northwest side. Sandberg bluegrass (Poa sandbergii or segunda) was seen frequently in the rocks on the upper portion of the island as was Fendler's bluegrass (Poa fendleriana). Green rabbitbrush (Chrysothamnus viscidiflorus, subspecies unknown) was also scattered among the rocks, high on the east end of the island. Many of the other species on Woodbury's list were observed including the three big sagebrush plants (Artemisia tridentata ssp tridentata) at the island summit. Both Robin and I were impressed by the condition of the plants on the island. With little or no grazing pressure, the annuals have built up a thick duff layer and the shrubs have long leader growth-forms. Bud sage in particular was almost unrecognizable because of its tall growth form.

Robin reported that sites with similar elevation and topography on the island were visibly much different from those on the mainland east lakeshore. Although shrubs were well spaced on the island, density appeared even lower on shore. Most striking was the difference in shrub size with those on the island considerably larger. Dominance in the annual grass community was also much different between island and shore. Red brome (Bromus rubens) was by far the dominant on the island and cheat grass (Bromus tectorum) had only scattered occurrence. On the shore the opposite situation existed. Total vegetation cover on the shore was less than half that on the island. Differences appear to be largely due to the heavy grazing of domestic livestock on the mainland.

The island was found not to be entirely devoid of grazing however. At the top of the island some deer pellet groups were observed and some collected. On the south side of the island, near the beach, Dr. Tausch found a large antler from an older deer. Deer age was judged from the width of the antler beam. Deer evidently then do swim out to the island on occasion.

The island presents several interesting questions for further research:  
How does the vegetation on the island differ from that on the mainland?  
How do the vegetation communities develop with changing lake water levels?

Karen Platou

Biological Technician, USFWS  
Patuxent Lab, c/o Chuck Henny



AMERICAN WHITE PELICAN  $6950 \times 2 = 13,900$  NESTING ADULTS  
 $13,900 + 1200$  LOAFERS = 15,100 TOTAL BIRDS

DOUBLE-CRESTED CORMORANTS ~~2600~~ TOTAL BIRDS ~~2300~~ ~~2600~~  $3000 / 1.2 = 2500$  NESTS  
 1.2 BIRDS/NEST

GREAT BLUE HERON 135 BIRDS  $\pm 1$  BIRD/NEST

CALIFORNIA GULL 3550 TOTAL BIRDS  
 $3550 \times .75$  NESTS = 2660 NESTS

BLACK-CROWNED NIGHT HERON 1 BIRD

5.13.86  
ANAHU IS NWR

TOTAL

LOCATION	#'S		
A		+25+20	
	A.W. PELICAN	100 - 225 - 96 - 100 - 75 =	<del>596</del>
	DCC	110 - 97 =	(207)
B		+25+20	
	AWP	50 - 140 - 52 - 28 - 140 - 50 - 120 - 310 - 90 =	(980)
	AWP LOAFERS	500 - 400 =	(900) + 100 + 100 + 100
	DCC	45 - 200 - 96 -	(341)
C	AWP	148 - 91 - 70 - 40 - 31 - 135 - 30 =	(545)
	DCC	17 - 21 - 35 - 25 - 1 =	(99)
D	AWP	140 - 180 - 110 - 400 - 400 - 500 - 500 - 600 - 370	3200
	DCC	400 - 370 - 90	4100?
	GBH	46 - 41 - 43 - 5 =	(135)
	BCNH - 1		
	C. GULL	220 - 500 - 460 - 170 -	(1350) 75% NESTS
E	OCC	800	

# COMMENTS

COLONY A MOST OF YOUNG 7-12 DAYS OLD

COLONY B MIXTURE FROM EGGS TO 7 DAYS, MAJORITY ARE PINK VERY YOUNG.

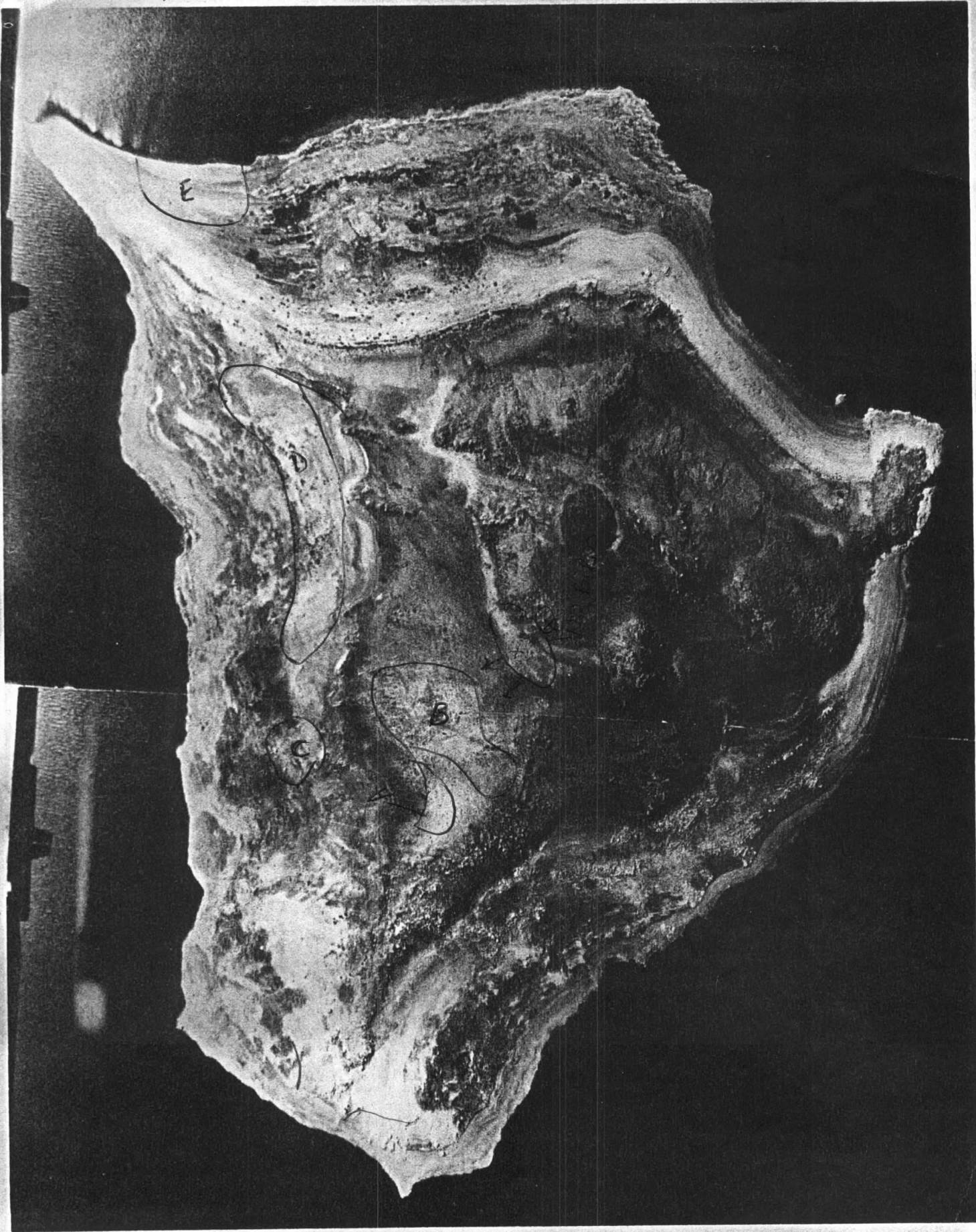
COLONY C YOUNG APPEAR TO BE ABOUT 10-14 DAYS OLD

COLONY D AWP YOUNG - SOME 3-4 WEEKS OLD.

GBH - YOUNG 1/3-2/3 ADULTS SIZE

GULLS - 75% NESTING

5.12.86  
ANAKO IS. NWIR



1986 additional colony in Carson Sink  
(part of Stillwater WMA) - Pelican island.

6-17-86 300+ pelican nests

7-1-86 300-400 nests, most with  
eggs or small pink young.

8-6-86 300-350 young produced (to  
fledging) maximum.

1986 - was the only year water  
occurred in this area - there was a  
tremendous amount of invading fish  
which provided abundant food.

This part of the Carson Sink is a  
alkali playa which is an evap.  
pond during high flood years.



GROUND  
COUNT  
FROM  
OBSERVATION  
POINT

6/2/86  
STEVE THOMPSON

☐ = NESTING  
AREAS

A. AM. PELICAN 1600 ADULTS  
800 NESTS

DOUBLE-CRESTED  
CORMORANTS 225  
NESTS

B. AM. PELICAN 1400  
YOUNG

2100 ADULTS + 500  
= 2600 TOT. ADULTS

DOUBLE-CRESTED  
CORMORANTS 330  
NESTS

C. AM. PELICAN - 500  
NESTS

500 ADULTS, 200 YOUNG

DOUBLE-CRESTED  
CORMORANTS - 135  
NESTS

D. AM. PELICAN - 6000  
NESTS

6000 ADULTS  
5500 YOUNG

D. C. CORMORANT - 1700  
NESTS

GREAT BLUE HERON - 75 NESTS

B. C. N. HERON - 25 BIRDS

CALIFORNIA - 2100 BIRDS  
GULL

E. CALIFORNIA 2300 BIRDS  
GULL

⊗ = OBSERVATION POINT - USING 20X SPOTTING SCOPE

C. GULLS 4500

684

DEC

AMT

ISLAND

ADULT BIRDS

YOUNG

10,700

7,500

0.

ANPHO L STANN - HERON

6/12/86

A = AWP 800N

DCC 225N

B AWP 2600N?

DCC 330N

C AWP 500N

DCC 135N

B

D AWP - 6000N

DCC 1700

GBH 75N

BCNH 25B

C.Gull 2100B

E. Gull 2300B

ANAHU ISLAND - Aerial



6/12/86 ANAHO ISLAND NWR

S. THOMPSON

ADULT BIRDSYOUNGEST. BIRDSNESTSA.W. PELICAN

A	1600	400	3200	1600
B	2600	1400	5200	<del>2600</del> 2600
C	500	200	1000	500
D	6000	5500	12,000	6000
E	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
TOTAL	<del>10,700</del> 10,700	7500	21,400	10,700

DOUBLE-CRESTED CORMORANTS

A	450	225
B	660	330
C	270	135
D	3400	1700
E	—	—
	4780	2390
	+ 4800	+ 2400

GREAT BLUE HERON

150 75

BLACK-CROWNED NIGHT HERON

50 25



6/12/86

6/14/86 ANAHO IS. NWR

<u>CALIFORNIA GULL</u>	<u>ADULT BIRDS</u>	<u>YOUNG</u>	<u>EST. BIRDS</u>	<u>NESTS</u>
A				
B				
C				
D	2100			
E	<u>2300</u>			
TOTAL	<u>4400</u>			<u>3300</u>

$$4400 \times .75 = 3300$$



Adult

A B C D E

A.W.P.

COLONY	AD A YG	AD B YG	AD C YG	AD D YG	AD E YG	H2O EDGE AD YG
A.W.P.	1600 400	2600 1400	500 375	6000		200,500

x2

x2

JUNE TOT.

3200 400 5200 1400 1000 375 12,000 5500

MAY

NESTS

OCC

225

x2

450 BIRDS

330

660 BIRDS

135

270 BIRDS

1700

3400

1700  
135  
1835  
330  
2165  
225  
2390

CALIF GULL

⊖

⊖

⊖

2100

~~1000~~  
4200

2300

(4500) x .75 =  
3375 NESTS

A.W.P. YG 400  
1400

75 NESTS

150 BIRDS

25 NESTS

50 BIRDS

12,000  
1000  
5200  
3200  
21400

21,400 ADULTS

7,675 YG.

400

1400

375

5500

7675 YG

GBH

BCNH

FOOD EXCHANGE- BIRD AT NEST GOES OUT TO GET  
DRINK OF WATER, THEN FLIES OFF TO THE SOUTHEAST

① 2 MEN WHITE/BROWN CABIN 16' - OUTBOARD 1100

② GREEN? FORD? PU WITH RED COLEMAN CANOE 1154  
JEEP?  
wt. tool box.

1215-  
1233A

AWP SOME VERY BIG  $\frac{2}{3}$  OF ADULTS SIZE MOST  $\leq \frac{1}{2}$  ADULT  
- 1400 YOUNG - 2100 ADULTS  
500 NEST W/ EGGS OR VERY SMALL YOUNG  
MOST OF THESE ARE PROBABLY RE-NEST - ADULTS INCUBATING  
W/ BLACK NAPES

DCC 330 NEST 80% WITH YOUNG OF THOSE NESTS  
WITH YOUNG 50%  $\frac{2}{3}$  AD. SIZE 25%  $\frac{1}{3}$  -  $\frac{2}{3}$  25%  $< \frac{1}{3}$ .  
SOME NESTS STILL HAVE EGGS OR VERY SMALL YOUNG.

1239-1249

A 400 YOUNG - AWP  
1600 ADULTS TOTAL  
- 800 NESTS WITH EGGS  
800 NEST WITH YOUNG

DCC 225 NEST W/ LARGE YOUNG  $\frac{2}{3}$  AD. SIZE

1249-1300

AWP  
C 500 ADULTS  
125 NESTS W/O YOUNG  
375 - 375 YOUNG  $\frac{2}{3}$  - AD. SIZE

DCC  
135 NEST YOUNG  $\frac{3}{4}$  - AD SIZE

AWP 200 YOUNG ON H<sub>2</sub>O'S EDGE.

1300-1330

D

ALUP

5500 YOUNG - INCLUDES 1500 YG ON SHORE

6000 ADULTS - NONE SEEN INCUBATING

BIRDS ON SHORE <sup>ALUP</sup> 600 ADULTS ~~ALUP~~  
~~2400 YOUNG~~  
 OCC 300

## OCC FOD NESTS

YOUNG EVERYWHERE - MANY OFF THEIR NESTS

CALIF. GULLS 2100 ADULTS ~~1~~ NEST  
 MOST HAVE YOUNG  $\frac{1}{3}$ - $\frac{2}{3}$  ADULT SIZE

BCNH 25 NESTS

GBH 75 NESTS - HARD TO COUNT - VERY  
 LARGE YOUNG

1330-1340

E CALIF. GULL

E 2300 YOUNG  $\frac{1}{3}$ - $\frac{2}{3}$  ADULT SIZE

1315 SOUNDS LIKE A DISTANT JET WHEN THEY

BEGIN TO ARRIVE. WINDS RUSHING ~~BETWEEN~~ THROUGH THEIR FEATHERSDO CHICK RAISING ~~YOUNG~~ ADULTS USUALLY RE-NEST

6/12/86

6/12/86

ANAAHO ISLAND NWR

S. THOMPSON

	<u>BIRDS - ADULTS</u>	<u>YOUNG</u>	<u>NESTS</u>
AMERICAN WHITE PELICAN	21,500	7,675	
	<u>NESTS</u>	<u>BIRDS</u>	
DOUBLE-CRESTED CORMORANTS	<del>2500</del> 2380	<del>4760</del> 5000	
	<u>NESTS</u>	<u>BIRDS</u>	
GREAT BLUE HERON	75	150 <del>500</del>	
	<u>NESTS</u>	<u>BIRDS</u>	
CALIFORNIA GULL	*	4500 x .75	
BLACK-CROWNED NIGHT HERON	25 *		

	<u>AWP</u>			<u>DCC</u>	
	<u>13 June</u>	<u>13 May</u>		<u>13 May</u>	
A	1600	641	2.5	207	225
B	2600	1025	2.5	341	330
C	500	545		99	135
D	6000	4100	1.4	1660	1700
E	_____	_____			
	10,700	6311			

\* ESTIMATE



## AWAHO ISLAND NWR

1986 COUNTS

<u>AMERICAN WHITE PELICANS</u>	<u>ADULT BIRDS</u>	<u>YOUNG</u>	<u>ESTIMATED BIRDS</u>	<u>NESTS</u>
MAY 13, 1986	6950	*	13,900	<del>6950</del> 7000
JUNE 12, 1986	10,700	7,500	21,500	10,700
JULY 10, 1986	8500	4,000 <sup>(4)</sup>	16,000	5000

DOUBLE-CRESTED CORMORANTS

MAY 13, 1986	3000 <sup>*</sup>	*	5000	2500 <sup>2 1</sup>
JUNE 12, 1986			4800	2400
JULY 10, 1986			2000	0 <sup>(4)</sup>

GREAT BLUE HERON

MAY 13, 1986	135		270	135 <sup>(4)</sup>
JUNE 12, 1986	75		150	75 <sup>(4)</sup>
JULY 10, 1986	25		25	0 <sup>4</sup>

CALIFORNIA GULLS

MAY 13, 1986	3550		5320	2660 <sup>3</sup>
JUNE 12, 1986	4500		4500	<del>2660</del>
JULY 10, 1986	0		—	— <sup>4</sup>

BLACK-CROWNED NIGHT HERON

MAY 13, 1986	1			
JUNE 12, 1986	25		50	25
JULY 10, 1986	0		—	—

\* YOUNG TOO SMALL TO COUNT.

1<sup>2</sup> ADULT BIRDS % 1.2 ADULTS/NESTS2<sup>3</sup> BIRDS HAVE RECENTLY FLEDGED.

+ 3 ADULTS X .75 = NESTS ESTIMATE  
 (4) MANY HAVE RECENTLY FLEDGED.

Nesting Population Estimates for Birds at  
Anaho Island National Wildlife Refuge, 1987

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	Nests	Adults at nest	Young
<b>American White Pelicans</b>			
5-12 and 5-13	5328	6900	4644
6-18		228	5250
<b>Double-crested Cormorant</b>			
5-12 and 5-13	1345	460	0
6-18			5400
<b>Great Blue Heron</b>			
5-12 and 5-13	140	15	
6-18			175
<b>California Gull</b>			
5-12 and 5-13	2800	173	
6-18			
<b>Black-crowned Night Heron</b>			
6-18	20		

5.12.87

AWP 5,328 NESTS + 146/NESTS = 6,225 NESTS ↘

5,328 NESTS  
\*\* 3,489 46 146/NESTS  
8,817 TOTAL NESTS

BIG FAILURE IN COLONIES - A B C D

3 427 NESTS 5.12.87

-153 succ. 6.18.87

3,274 FAILED?

APRIL

FEB. 1

OCS: S. THOMPSON, L. NEEL, T. BOWMAN

DATE: 5-12/13-87

ANAKO ISLAND - FIELD FORM

Colony #

AWP

NESTS

ADULTS

YOUNG

DCC

NESTS

ADULTS

YOUNG

GBH

NESTS

ADULTS

YOUNG

C. GULL

NESTS

ADULTS

YOUNG

DATA TIME:

SHORE-  
LINE  
LOADERS

TOTALS

5328

6900

4619

1345

230

140

2800

173

1700

1100

150

\* = LARGE YOUNG - MANY IN BIG POOLS

\*\* = MOST ON EGGS



ANAKHO IS.  
5/12-13/87  
SPT

		**	**	**	**		*	*	*	*					SHORE LAFRA
		A	B	C	D	E <sub>1</sub>	E <sub>2</sub>	F	G <sub>1</sub>	G <sub>2</sub>	H	J	J	K	
Awp	NESTS	380	89	1008	1950	172	54	?	?	?	?	1435	240	—	—
	ADULTS	380	89	1008	<del>2300</del>	172	54	190	40	577	90	1435	240	325	—
	YOUNG	—	—	—	—	123	28	400	526	563	2000	932	47	25	—
DCC	NESTS	70	—	250	150	65	20					790	—	—	230
	BIRDS	151	—	—	—	79	—					—		—	—
															—
GBH	NESTS	—	—	—	—		—					140			15
	BIRDS	—	—	—	—		—					—			—
															—
C	BIRDS	23	—	—	—		—					—		—	150
	NESTS	—	—	—	—		—					1700		1100	—
															—
* = LARGE YOUNG - MANY IN PODS															C. GULL 10

\* = LARGE YOUNG - MANY IN PODS  
\*\* = MOST ON EGGS

5.13.87

ANATO IS.

SHORELINE LOAFERS

AWP 325

DCC 230

C. GOOSE 10

GBH 15

C - LARRY

AWP 628  
385  
1008

1008 ADULTS - <sup>NESTS</sup> ~~VERY FEW~~ ON EGGS, NO YOUNG  
0 ~~YOUNG~~

DCC

250 NESTS

D

AWP - 2300 ADULTS (350 LOAFERS P) 1950 N + 350 LOAFER

DCC - 148 NESTS

I - STEVE

AWP 835 N, 150 N, 130 N, 320 N, - 932 YOUNG

DCC 366 N, 420 N = 786

GBH 28 N, 50 N, 60 N (100 N) CG - 1700 N

1435  
835  
150  
130  
320  
1435  
420  
366  
786

J AWP 240 N, 47 YOUNG

DCC

GBH 5 N

H

AW

ADULTS 20

YOUNG 2000

5.13-87

ANATTO IS.

0830-1030

BATTING - HONKING HARD TO GET GOOD PICTURES  
OF AWP. VIDEO

F

AWP

✓ 16.

400

5% ON EGGS  
MOST YOUNG ARE 2/3 OF ADULTS SIZE

ADULTS

190

G-1 (tim)

ADULTS AWP - 40

✓ 16 526

G-2

# ADULTS 577

40% OF COLONY 1 BIRD/NEST ON EGGS  
REST ADULTS WITH YOUNG

1/3 - 2/3 ADULTS SIZE 35%

2/3+ 65%

# ~~526~~ YOUNG 563

A

AWP

380 N - ON EGGS?

OCC

151 BIRDS - THESE INCLUDE LARGE YOUNG  
70 NESTS

C. Gull

23 BIRDS PROBABLY NOT NESTING JUST HANGING AROUND

B

AWP

89 N - ON EGGS?

E<sub>2</sub>

AWP 54 ADULTS, 28 YOUNG

OCC

20 NESTS

E<sub>1</sub>

AWP 172 ADULTS : 123 YOUNG

OCC

79 B

5-12-87

ANCHO IS.

RST

AWP

1206-1251 PELICANS COMING BACK

A 2/3-ADULT SIZE

DEAD YG. PELICANS  $\square \square \square \square \square$   
12-14", FEW 18"-20"

ADULTS

AD

CALIF GULL DEPTD

FISH - CARP, Chum (1), Tui chub

~~GBH~~

GBH

DCE

AWP

C. Gull  
~~EGG~~

SCRAPE

1 EGG

2 EGG

3 EGG

4 EGG

5 EGGS

~~146~~ 146

~~246~~ 246

346

446

546

246/1 EGG

346/2 EGGS

346-1 EGG

CAL

COLLECTED 20 AWP. EGGS MOST NESTING AREAS HAD LARGE

YOUNG 2/3 OF ADULT SIZE, THEY APPEARED TO BE 1 MONTH-6 WEEKS  
AHEAD OF LAST YEAR.



# Calif. Gull Count

SCRAPE : (2)

1 EGG (12)

2 EGGS (90)

3 EGGS

200

2 chick

1 chick

2 chicks/Egg(1)

1 chick/2 eggs

1 chick/1 egg

NO CASPIAN TERNS

~~1000~~ -

~~1000~~ - CALIF. GULLS

(100 GULL NESTS)

1507  
LARRY

$$4 + 0 = 4$$

$$4 + 3 = 7$$

$$27 + 16 = 43$$

$$61 + 35 = 96$$

$$\frac{714}{2+4} = 6$$

$$12 + 4 = 16$$

$$44 + 25 = 69$$

$$98 + 80 = 178$$

## PARTIAL NEST SURVEY

(12)

(37)

(202)

(474)

12  
37  
202  
474  
725

COLLECTED 15 CALIF. GULL EGGS  
STAGE 5

Comm. Merganser 37, 107

W. GREBE 2, 2, 3

SPOTTED SANDPIPER 1

TURKEY VULTURE 1

HAREQUIN DUCK - 1 ♀ AT PYRAMID 1545

C. RAVEN - 2 NESTING

MALLARD 1 PR.

C. GOOSE 5, 2, 2.

5-13-87

● = BOAT  
LANDING

⊗ = OBSERVATION  
POINTS

--- = WALKING  
ROUTE

BIRD COUNTS

0830-1030

CLEAR

WIND - 5-15 MPH

CUT OF SOUTH

STHOUVSSO  
LAKE NEAR  
TIN BOUNAD

COLLECTED  
AND. PERIAND &  
EGGS (20)

COLLECTED  
EGGS  
6/12/87



NY

6/18/87

6/18/87 ANATO ISLAND

RAMON VEGA, LARRY NEEL & S.P. THOMPSON

A (C)

A.W. PELICANS

ADULTS - WITH OUT NESTS

446 B

ADULTS AT NESTS

115 N

YOUNG

1225 YG.

550 YG

DEAD

14

D.C. CORMORANTS

B (D & E)

A.W. PELICANS

ADULTS 38

YOUNG 515 YG

DEAD 10

~~A~~ C (A)

A.W. PELICANS

ADULTS 13

YOUNG 200

DEAD

D.C. CORMORANTS

G.B. HERON

~~46.75~~ 150 YG

15 YG.

D (F & G)

A.W. PELICAN

ADULT 24

YOUNG 1250

DEAD 52

(I)

E A.W. PELICANS

ADULT 38

YOUNG 1900

DEAD

NESTS

D.C. CORMORANTS

4700

G.B. HERON

160

B.C.N. HERON

Z

20W



F (I) A.W. PELICANS

ADULT

YOUNG 160

(K) C. Gulls USE LAST COUNT MOST PAIRS HAVE 2-3 YOUNG ABOUT  $1\frac{2}{3}$  OF ADULT SIZE, LOOKS LIKE GOOD PRODUCTION OF YOUNG CHICKS

A B C D E F G

EDWARD LIZARD PICTURES

♂ N. WARRIER

GOLDEN EAGLE

ROVEN 3 YOUNG



6-18-87 Anaho Island

SHORELINE: 90% young 800

BIRDS ARRIVING ALL MORNING IN SMALL GROUPS 2-3 FROM 0800 ON.

D

Adult: 24  
Young: 1,250  
Dead: 52

1020  
47  
42  
38  
1197  
9  
15  
9  
6  
1226

1225 y6

75  
65  
140  
60  
200

281

331  
65  
396  
35  
431

431  
57  
488

50% ON NESTS

265  
35  
57  
55  
17  
229  
1/2

ALOT OF  
NESTING  
IN SMALL  
YOUNG

Adult: 75, 65, 60, 81, 50, 65, 35, 57, 55, 17,  
Young: 1,020; 47, 42, 38, 9, 15, 9, 6,  
Dead: 10, 1, 2, 1

AD: 331, + 115 BIRDS 446 B  
115 NESTS 115 NEW ADULT

OCC

550 YOUNG

B  
ADULT

200

156

154

315  
200  
515

YG: 41, 26, 53, 82, 75, 25, 21, 35, 40, 27, 37, 55  
AD: 1, 5, 2, 5, 13, 7, 2, 1, 2  
DEAD 4, 3, 2, 1

(55)  
(39)  
(10)

6-18-87

ANATO ISLAND

D

ADULT : 24  
YOUNG : 1250  
Dead 52

A

Adult: 75 65 ~~40~~ 60 81/50 65 (35) 57  
Young: 1020/47/42/38/9/15/9 1  
Dead: 10 1 2

C

AWP

AD:

YG:

DEAD:

DCC

YOUNG:

H - 178 YOUNG

19 ADULTS

C - YOUNG 170, 30

ADULT 13

GBH 5, 10

DCC 150 YOUNG

E - YOUNG (MOSTLY DOWNIES) 1900

ADULT 38

GBH YOUNG 160

DCC YOUNG 4700

BCNH 20N

F - YOUNG - 160

ADULTS - ORANGE-YELLOW FEET & BILL

SOMETIMES BLACK NAPE

RUST RING AROUND NECKS

RUST UPPER WINGS

YOUNG - DOWNY HEADS

<sup>a</sup>  
~~BAISE~~ BEIGE UPPER WINGS

DULL FEET & BILLS

# Anaho Island 6-18-87

	Colony											Totals
	A	B	C	D	E	F	G	H	I	J	K	
<u>Pelicans</u> Adults not on nests	446		13									446
Adults at nests	115	38	13	24	38							228
Young	1225	515	200	1250	1900	160						5250
Dead	14	10		52								76
<u>D.C. Cormorants</u>												
Young	550		150		4700							5400
<u>G.B. Heron</u>												
Young			15		160							175
<u>B.C. Nite Heron</u>												
Nests					20							20



OBS: S. Thompson, L. NEEL, R. VEGA

ANAKO ISLAND - FIELD FORM FOR SUMMARY DATA TIME: 0800-1100 DATE: 6-18-87

TOTALS

SHARE  
LINE  
LARGE

153

609

5840

66

5400

175

20

A

38

1900

4700

160

\*

20

NESTS

ADULTS

YOUNG

DEAD

NESTS

ADULTS

YOUNG

NESTS

ADULTS

YOUNG

NESTS

ADULTS

YOUNG

NESTS

ADULTS

YOUNG

1 = ADULTS APPARENTLY WITHOUT NESTS - ON EDGE OF COLONY MAY HAVE YOUNG OR NON-BREEDERS.  
 \* = USE 5-12/87 COUNT FOR NESTS, AGT OF YOUNG 2-3 YEARS. MOST YOUNG ARE  $\frac{1}{3}$ - $\frac{2}{3}$  OF ADULT SIZE.

6-18-87

~~SECRET~~

X = OBSERVATION

POINT

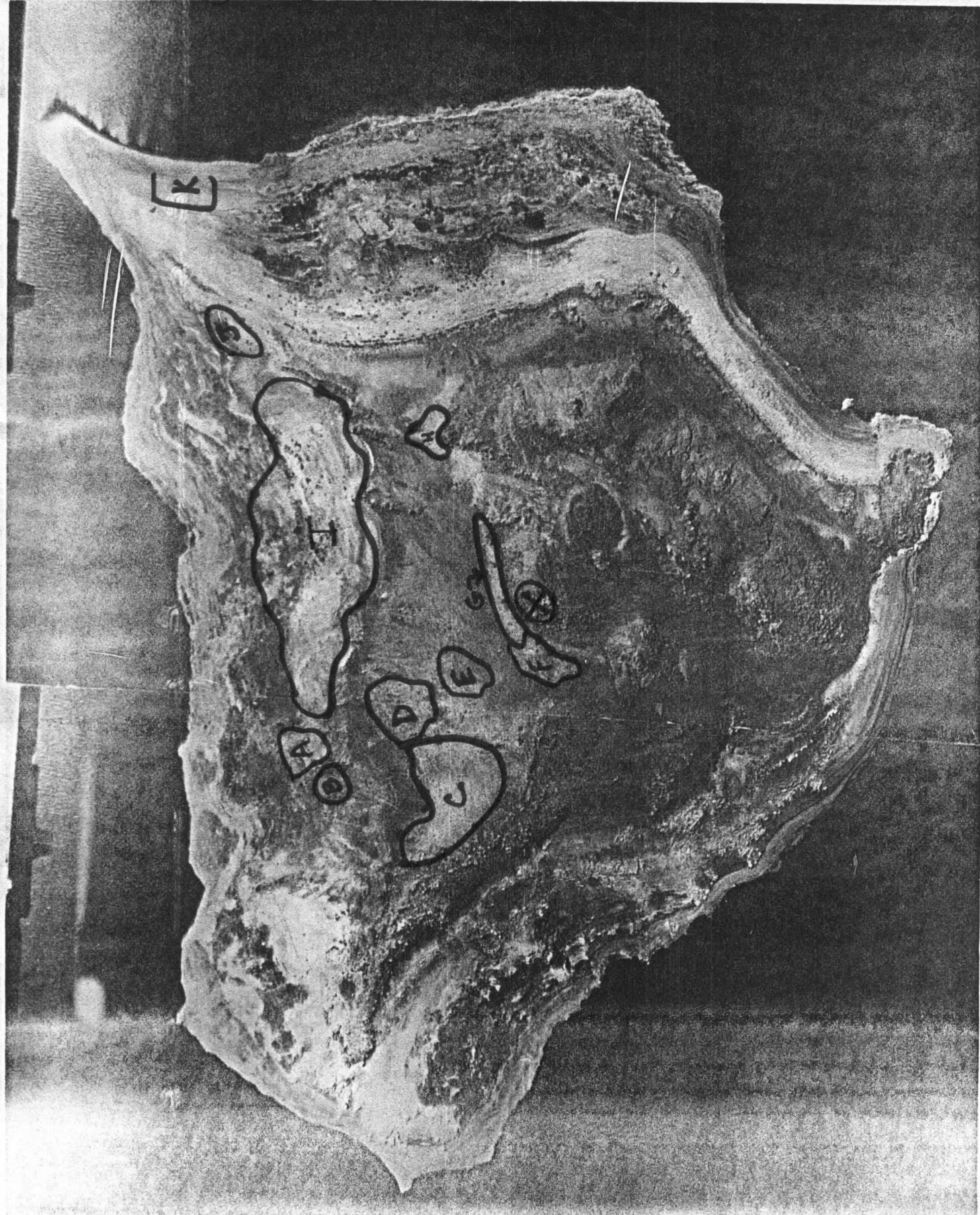
● = LANDING  
SPOT

-- = WALKING  
ROUTE

S. THOMPSON

L. NEEL

R. VEGA



7/14/87

LOWER BIG COLONY - PANCAKE PATROL

<del>DEAD</del>	7/15		
<del>LOWER</del>	UPPER COLONIES	PARTIAL BEACH	MINIMUM PANCAKE COUNT
AWP $248 + 216 = 464$	$132 + 103 = 235$	44	= 743
DCC $130 + 105 = 235$	95	11	= 436
CG $38 + 11 = 49$	-	7	= 56
GBH $4 + 1 = 5$	-	-	= 5

BANDED BIRDS

ASS. MANAGER

TOP 4

- JOHN LAYLOR

PRIMARY ASSISTANT - WETLAND MANAGEMENT DISTRICT

NISQUALLY

65

Seattle

ERNIE

ERNIE

COOL

STRONG



Pyramid →

Declining Stillwater NWR →

MOBILE

102°F

Ramon



LEAD LAKE

12.6

200%

GOOSE

100°F

Stillwater

Stillwater NWR ANAHO

CARSON SINK →

50 50 50

\$200,000  
100,000

7/14/87

Anaho Is. Pancakes

TIM

Pelican - 248 -

Cormorant - 130 -

Gull - 38 -

GBH - 1 -

@



\*SEE OVERLAY IN BACK OF NOTEBOOK  
(w/ AERIAL PHOTO)

OBS: J. Thompson, R. Ueda, T. Bourlamba

Avonho Island - Field Form For Summary DATA TIME: 0845-0930 DATE: 7.15-87

ADULT NESTS A B C D E F G H I J K  
D C/B Bluff A

ADULTS

YOUNG

DEAD

DCE

ADULTS

YOUNG

DEAD

GBH

ADULTS

YOUNG

DEAD

CGL

ADULTS

YOUNG

DEAD

BCH

ADULTS

YOUNG

S. EGRET

ADULTS

YOUNG

1 = Counties A, B, I, J (7.14.87)

2 = Parental Spawning Count (25%h)

3 = Counties H, G, F, E, D, C (7.15.87)

STATE-  
LINE  
LATERAL

TOTALS

DATE: 7.15-87

AWP

ANAHU ISLAND

7/15/87

TIM, STEVE  
CHUCK HENRY

0815-0930

SHORELINE BIRDS

90% YOUNG

(C&D)  
(E) A) AWP YOUNG 480, 300  
DCC 291

(I) B) AWP YOUNG 440  
DCC 1020

YOUNG  
GBH 50  
BCNH 25

SECRET ZNEST  
346, 146

C)

D)

AWP  
SHORELINE ADULTS 35, 50, 30 / = 115  
YOUNG 330, 160 490  
DCC YOUNG 350

BCNH 46.

GBH

DCC

JUST ABOUT EVERYONE HAS FLEDGED, EXCEPT A FEW VERY SMALL  
BCNH. TIM SAW SOME SNOW EGGS YESTERDAY, 46 IN THE  
NEST

7/15/87

TIM BOWMAN

270

APPARENTLY

C. GULLS - GOOD PRODUCTION YOUNG ARE FLYING BUT SOME STILL IN THE NESTING AREA.

DCC GOOD PRODUCTION, MOST HAVE FLEDGED  
300+ PERCHED ON END PENINSULA N.E. END.

GBH - MOST FLEDGED, 100 BIRDS STANDING ALL AROUND THE ISLAND.

AWP BANNED 65, YOUNG THAT ARE AROUND ARE FLAPPING PRACTICING FLYING, VERY FEW SMALL YOUNG.

SNOWY EGRET - 1<sup>ST</sup> RECORD?

N. HARRIER

C. RAVEN

- PICKED UP ELEPHANT MAN 2<sup>ND</sup> DEFORMED BIRD

- SMALL FOOT PRINTS - WOMAN SHOES IN CAVES, HUMAN DISTURBANCE.

NEW SIGNS; BOUNS BEFORE NEXT YEARS BOATING SEASON  
PROTECTION FROM MARCH - AUGUST.

TUES

RON SARNO - GBC

CHUCK HENNY - DARTX

MIKE SEWN (NDOW)

STEVE ?



ANAHU ISLAND - AERIAL



E-300

C-480

A-350

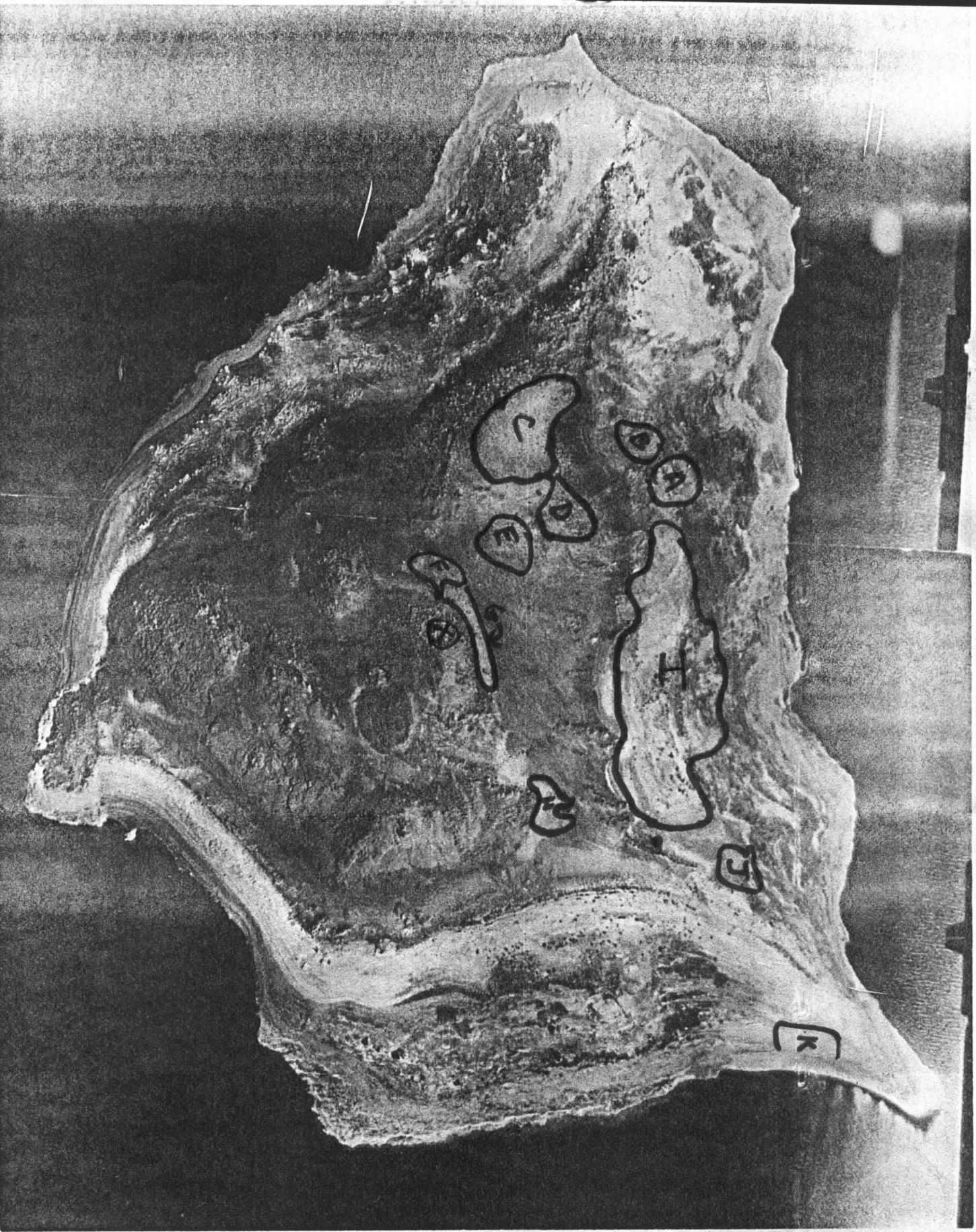
S. THOMPSON

7-15-87



⑩ = OBS.  
POINT

S. THOMPSON  
R. UEGA  
T. BOUMAN



### Double-crested Cormorants

On April 22, 1988, most of the cormorants were paired and going through courtship behavior at their nest. In colony "B" some birds were on eggs, about 10 nests had fresh clutches of 1-4 eggs. By May 11, 1988, approximately 20% of the cormorants using the island appeared to be on eggs. Numbers still appear very low when compared to 1986 & 1987.

By May 26, 1988, we had 975 adult birds at nests, but over 1,450 adult birds loafing on the shoreline. Our next visit to the island was on June 14 & 15, 1988. Night-lighting with large flashlights we looked at around 500 nests. Approximately 80% were incubating three egg clutches with a few fours and one egg clutches. About 15% of the nests had small chicks,  $<1/3$  of adult size; many of the chicks were less than one week old. The remaining active nests contained large,  $1/3$ - $2/3$  adult size young. We captured several adults on the nests, they were aggressive and bit hard!

By June 21, 1988, most of the cormorants had young which had just hatched, less than one week old. There seemed to be pretty good hatching success for those that did nest.

### 5. Shorebirds, Gulls, Terns, and Allied Species

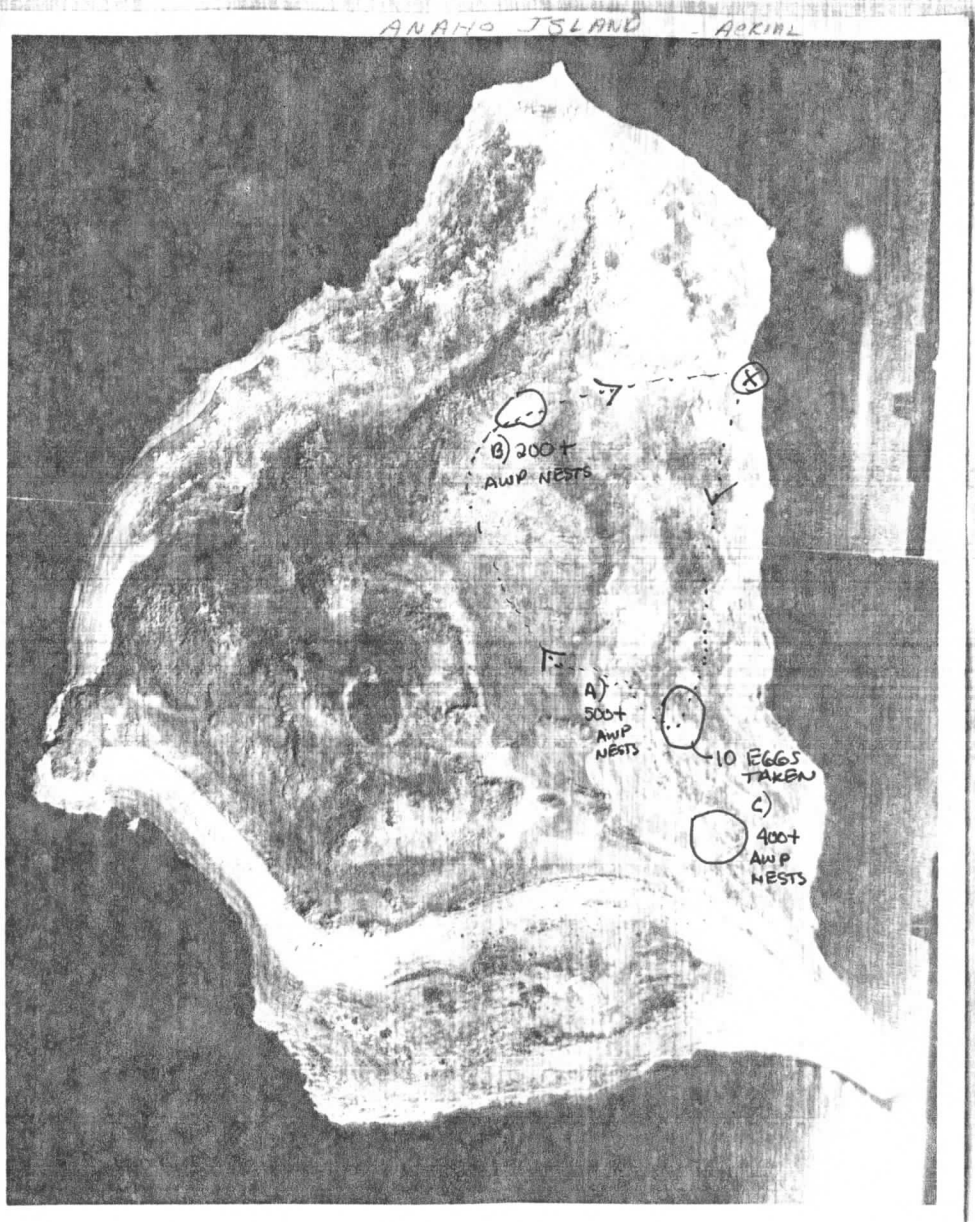
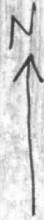
#### California Gulls

We found gulls back at the same nesting colonies as in 1986 and 1987 on our first visit (April 22, 1988). The numbers appeared comparable to 1986 and 1987. On May 11, 1988, the gulls appeared to be well synchronized with previous years. About 25% of the gulls were incubating eggs. We noted two single egg clutches, 12 two egg clutches, and nine three egg clutches. It appears that 1,500-2,000 birds are using the north colony. We floated a few eggs (5), to determine incubation stage, they appeared to be about 80% complete. One colony along the south contained only California gulls. The other colony was mixed with double-crested cormorants, great blue herons, and American white pelicans. Gulls that nested among the other colonial birds seemed to be at about the same incubation stage as the southern colony. On May 26, 1988, we counted 1,900 birds at the northern colony "A" and 1,400 birds at the southern colony "B". The island total then was about 3,300 *(adults + chicks)*  
*(2500 chicks)* nesting birds.

We night-lighted several thousand gulls on June 14, 1988. It was easy to capture adults and chicks. Most (80%) of the gulls had two chicks or one chick about  $1/3$  of adult size. Approximately 15% of the nests had two or three egg clutches.

#### Caspian Terns

Caspian tern nesting was not noted in 1988.



4/22/80 1200-1315 visit to ANAHU ISLAND TO COLLECT 20 AMERICAN WHITE PELICAN EGGS.

1200-1315 WITH STEVE THOMPSON, LESLIE DUBUC, TIM BOWMAN, KEN MERRITT AND AWAN RAYMOND.

(X) = LANDING SPOT

- - - = PATH WALKED



OBS: STEVE THOMPSON, LESLIE DUBUC, TIM BOWMAN, AVAN RAYMOND, KEN MERRITT

Anaho Island - Field form for summary data

TIME: 1200-1315

DATE: 4/22/88

[illegible]

-ROUGH ESTIMATES, TRIP TAKEN TO COLLECT A.W. PELICAN EGGS FOR CONTAMINANTS.



4-22-88

GBH

	<u>NEST #</u>	<u>CLUTCH</u>	<u>EGGS TAKEN</u>	<u>LEFT</u>
GBH -	1	-		
	2	-		
	3	-		
	4	-		
	5	-		
	6	-		
	7	-		
	8	-		
	9	-		
	10	-		

DCC

	<u>NEST #</u>	<u>CLUTCH</u>	<u>EGGS TAKEN</u>	<u>LEFT</u>
DCC -	1	-		
	2	-		
	3	-		
	4	-		
	5	-		
	6	-		
	7	-		
	8	-		
	9	-		
	10	-		

AWP

	<u>NEST #</u>	<u>CLUTCH</u>	<u>EGGS TAKEN</u>	<u>LEFT</u>
AWP -	1	2	1	1
	2	2	1	1
	3	2	1	1
	4	2	1	1
	5	2	1	1
	6	2	1	1
	7	2	1	1
	8	2	1	1
	9	2	1	1
	10	2	1	1
	11	2	1	1
	12	2	1	1
	13	2	1	1
	14	2	1	1
	15	2	1	1
	16	2	1	1
	17	2	1	1
	18	2	1	1
	19	2	1	1
	20	2	1	1

REST SURVEY

~~29 April 1984~~

Observers: ~~Steve [unclear]~~  
~~[unclear]~~

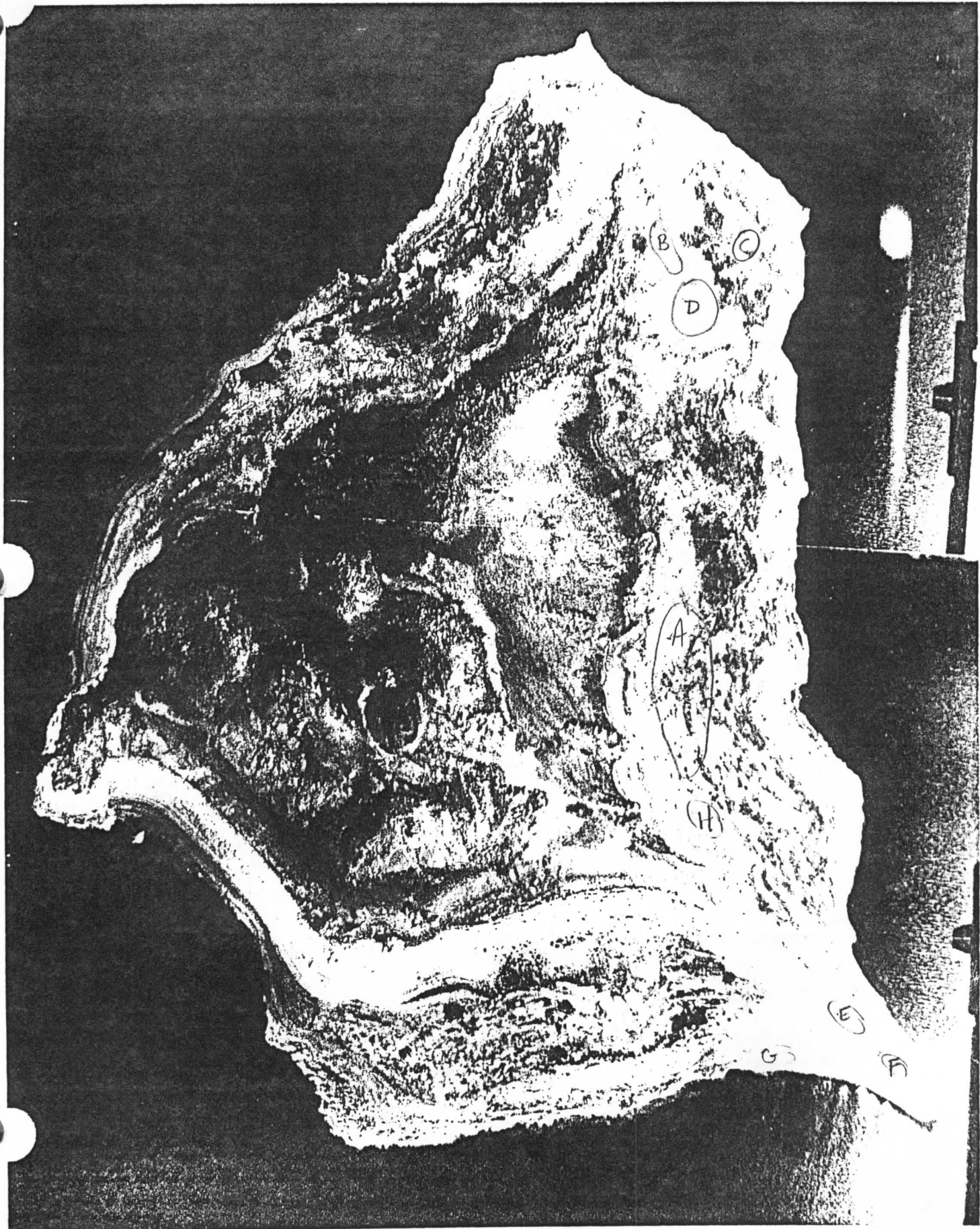
↑ N  
↑ N



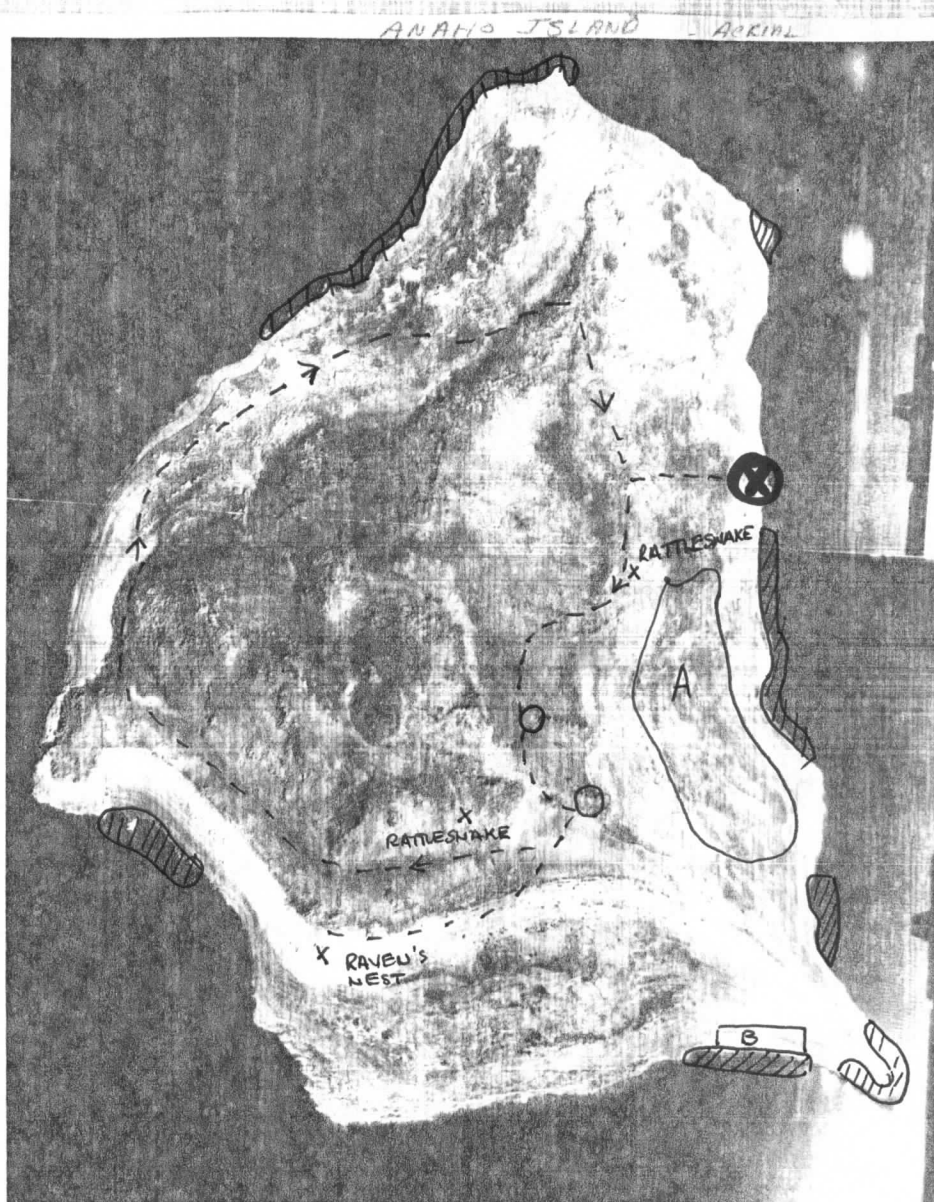
BOAT Census

~~May 1982~~

~~1. Brownstone / G. D. Smith~~







(X) = LANDING SPOT

(Hatched line) = SHORELINE LOAFING SPOTS FOR A.W. PELICANS & D.C. CORMORANTS

(O) = OBSERVATION POINT

5-26-88 STEVE THOMPSON, TIM BOWMAN, KEN HERRITT 0830-1100

A) DCC 975 B  
— N  
AWP 325 B  
50 N  
GBH 22 B  
15 N  
C. GULL 1900 B  
— N

B) ~~1400~~ CALIF. GULL 1400 B

SHORELINE LOAFERS

DCC 1450  
AWP 1370  
GAGU 100

B = BIRDS

N = NESTS



Anaho Island - Field form for summary data

TIME: 0830-1100

DATE: 5/26/88

	COUNT		LOAFERS		TOTAL ESTIMATE	
	A	B				
AMP NESTS	50				50	
ADULTS	325		1370		325	
YOUNG						
DCC NESTS						
ADULTS	975		1450		975	
YOUNG						
GBH NESTS	15				15	
ADULTS	22				25	
YOUNG						
C. GULL NESTS					3200	
ADULTS	1900	1400	100		3200	
YOUNG						



6-15-88 Tim Bowman, John Stanton, Harriet Hill, Johnathan, Liz  
Steve Thompson

A

30 AWP NESTS, 350 BIRDS

48% DCL NESTS, 568 BIRDS

21 GBH NESTS, 35 BIRDS

2 CAGULL NESTS, 1800 BIRDS

3 S. EGRET NESTS, 5 BIRDS

- B.C.N. HERON NESTS, 25 BIRDS

B

1250 ~~1500~~ Calif. Gull BIRDS

OBS: TIM BOWMAN, STEVE THOMPSON, JOHN STANTON

## Anaho Island - Field form for summary data

TIME: 1000-1058DATE: 6/15/88

	A	B	UNAFERD			TOTAL eggs												
			A	+ B	=													
<u>AMP NESTS</u>	50					50												
<u>ADULTS</u>	350	-	440	200	600	350												
<u>YOUNG</u>	10					10												
<u>DCC NESTS</u>	488					488												
<u>ADULTS</u>	568		600+380	980		570	575											
<u>YOUNG</u>	?																	
<u>GBH NESTS</u>	21					21	25											
<u>ADULTS</u>	35					35	35											
<u>YOUNG</u>	?																	
<u>C. GULL NESTS</u>																		
<u>ADULTS</u>	1800	1250				100	3050											
<u>YOUNG</u>																		
<u>B.C. NORTHERNS NESTS</u>																		
<u>ADULTS</u>	25																	
<u>YOUNG</u>																		

SEC S.R. THOMPSON FIELD NOTES JUNE 14-15, 1988, 1942-46



AVIATO ISLAND

DEC A

NESTS: 380

BIRDS:

ADULT OF YOUNG

WAGE SITE

GBH

NESTS: 7

BIRDS: 3

BIRDS 7 2/3 AD

C. GULL.

ADULT OF ADULT

MOST HAVE

FEEDING

ADP

BIRDS: 8

SHORELINE: 20

ALMOST ALL

GONE

7-19-88

STEVE

THOMPSON



## PYRAMID LAKE

### First Spring Aerial Survey

---

Date: 12 April 1989

Observers: S. Thompson, T. Bowman, & L. Dubuc

Weather: Clear, 65°F

Time: 1015-1115

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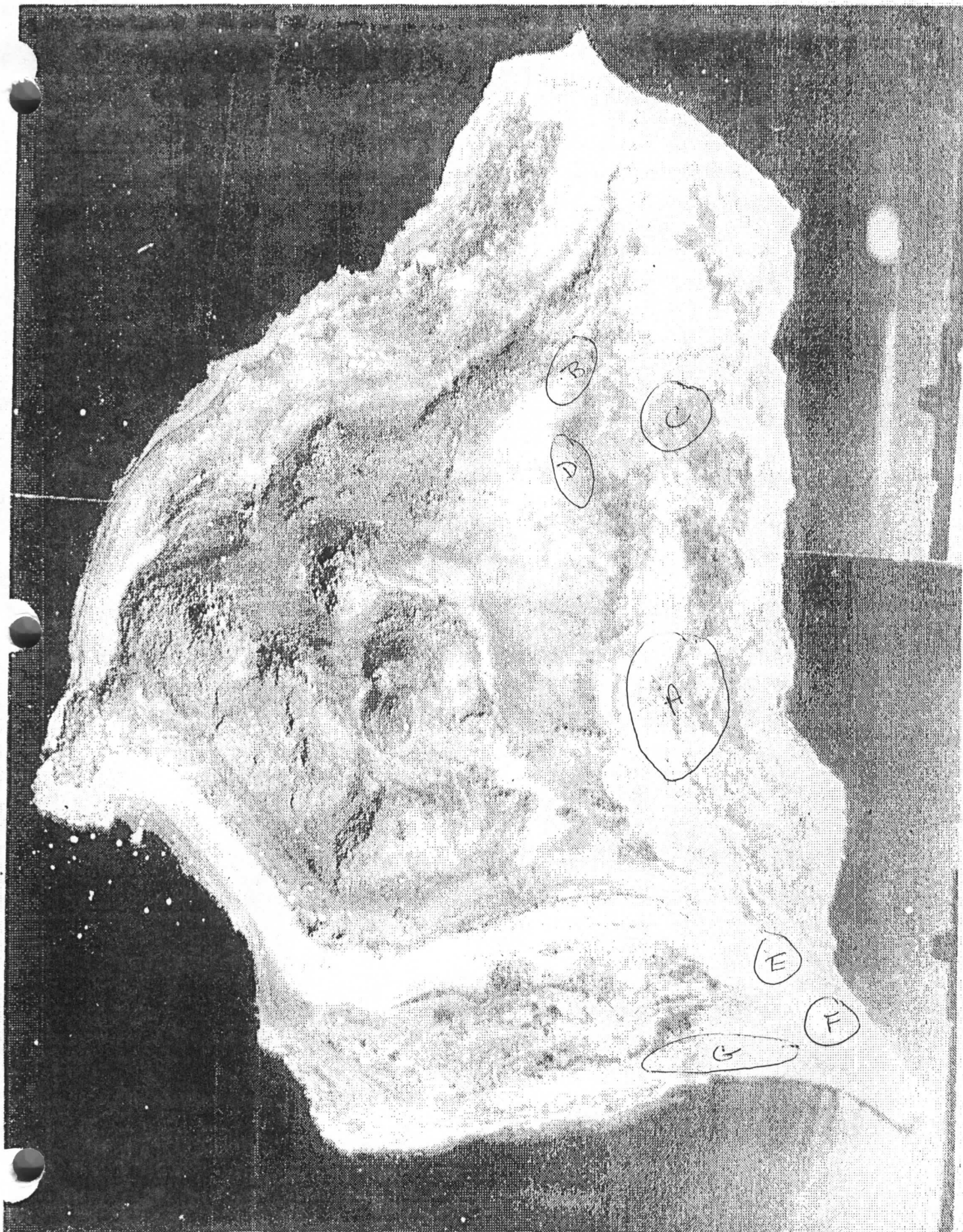
Species	Total Observed
Eared Grebe	10
Western Grebe	300
American White Pelican	2000**
Double-crested Cormorant	250
Great Blue Heron	5
Gulls	200
Caspian Tern	2
Unidentified Loons	13
Canada Goose	65*
Green-winged Teal	10
Unidentified Dabbler	10
Common Merganser	15
Redhead	50
Scaup	20
Bufflehead	10
American Coot	1100

---

\*Some were nesting on the Pinnacles.

\*\*Estimate 900 pelicans using 3 colonies on the East side of the island; could not determine the extent of nesting activity.

Figure . . Location of nesting colonies on Anaho Island in 1989.



# WATERFOWL ROUGH DATA SHEET

Date: 4-12-89 Area: Pyramid Lake Unit: \_\_\_\_\_  
 Air/ground survey Observers: TB, LD, SPT  
 Weather: clear, 65° Time: 1015 - 1115  
 Water Conditions: \_\_\_\_\_

Tundra Swan

Canada Goose 2, 40, 4 / 13, 2, 4

(65)

Mallard

Gadwall

A. Wigeon

G-w. Teal 10

B-w./Cinn. Teal

N. Shoveler

N. Pintail

Unid. Dabbler 10

Common Merganser 2, 2, 2, 3, 2, 2 / 13

(15)

Redhead 15, 20 / 10, 2, 1 48

(50)

Canvasback

Scaup 20

Ringnecked

Bufflehead 2, 1, 2, 2 7

(10)

Ruddy Duck

Jellyfin 2, 2.

Bag 1, 1

A. Coots 600, 100, 100, 20, 70, 40, 15, 20, 20 / 20, 10, 10, 10

1035

(1100)

COMMENTS:

Trout 1

POPULATION ESTIMATES--LAHONTAN VALLEY SURVEY

DATE: 4-12-89  
 AIR GROUND SURVEY  
 WEATHER: clear, 65°

AREA: Pyramid Lake  
 OBSERVERS: TB, LD, SPT

UNIT#:

TIME: 1015-1115

WATER CONDITONS:

WEGR  
 SOME of the  
 count data  
 were totaled  
 before recording  
 them here.  
 larger #'s do  
 not necessarily  
 represent lg.  
 groups of  
 grebes

+++++TOTALS														
E. GREBE	10													
WESTERN GREBE	2	2	3	2	2	2	1	2	3	1	4	6	2	2
PINK-BILLED	2	1	3	5	11	30	11	10	65	26	292			
AM. WHITE PELICAN	20	1800	1	1	2	2	3	1	1	1	1	1	1	50
D.-c. CORMORANT	60	40	5	5	10	1	1	1	2	1	1	1	1	1
GREAT BLUE HERON	1	1	2	4										
GREAT EGRET														
CATTLE EGRET														
SNOWY EGRET														
B.-c. NIGHT HERON														
VIRGINIA RAIL														
CALIFORNIA GULL	2	1	1	1	1	1	4	3	1	1	1	2	10	20
RING-BILLED GULL														
FRANKLIN'S GULL														
FORSTER'S TERN														
CASPIAN TERN	1	1												
BLACK TERN														
SEMIPALMATED PLOVERS														
SNOWY PLOVER														
KILLDEER														
BLACK-BELLIED PLOVER														
LONG-BILLED CURLEW														
SPOTTED SANDPIPER														
WILLET														
GREATER YELLOWLEGS														
LESSER YELLOWLEGS														
PECTORAL SANDPIPER														
BAIRD'S SANDPIPER														
LEAST SANDPIPER														
DUNLIN														
DOWITCHER														
WESTERN SANDPIPER														
MARBLED GODWIT														
AMERICAN AVOCET														
BLACK-NECKED STILT														
WILSON'S PHALAROPE														
RED-NECKED PHALAROPE														

Loon 1, 1, 1, 1, 1, 1, 1, 1, 1, 2

Styrofoam cup 1

13



ANAHO ISLAND NEST SURVEY

29 April 1989

Observers: Steve Thompson & Tim Bowman

Species	Colony	Nests	Adults	Loafers
American White Pelican	A	1000	1200	140
	B	100	460	
	C	50	140	
	D	0	140	
	E	50	75	
	F	180	200	
Total Pelicans		1380	2215	140
Double-crested Cormorant	A	265	365	28
	B	60	73	
Total Cormorants		325	438	28
Great Blue Heron	A	45	65	
	E	6		
Total Herons		51	65	0
California Gull	A	700	1200	250
	G	500	1000	
Total Gulls		1200	2200	250
Black-crowned Night Heron	A	1		
Snowy Egret	A	1		
TOTALS FOR ALL SPECIES		2958	4918	418

Other observers on the island: Leslie Dubuc, Beatrix Treiterer,  
and Leslaw Kuzia (Dub Masters, Reno).

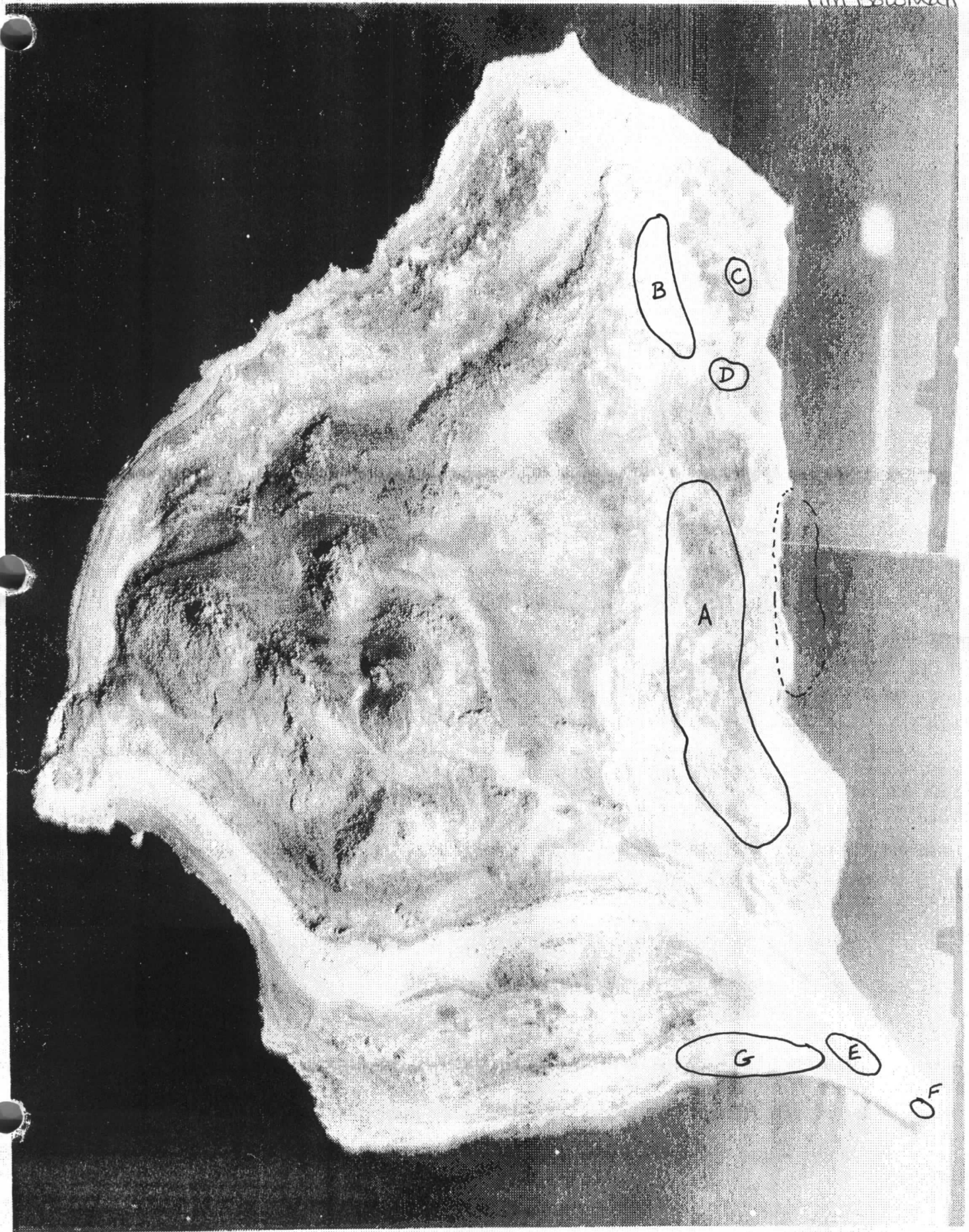
Ahau I. 4-24-89

Colony	Pelicans			Cormorants			GBH		Ca Gull			BCNH	Snowy Egret	No Blk. Nags on Pelicans.
	Nests	Adults	Loafers	Nests	Adults	Loafers	Nests	Adults	Nests	Adults	Loafers	Nest	Nest	
A	1000	1200	140	265	365	28	45	65	700 <sup>(est)</sup>	1200	250	1	1	
B														
C	50	140												
D	0	140												
E	50 <sup>est</sup>	75					6							
F	180	200												
G														
Totals	1380	2215	140	325	438	28	51	65	1200	2200	250	1	1	

500  
1000

NEST SURVEY  
29 April 1989

Observers: Steve Thompson  
Tim Bowman



# ANAHO ISLAND NEST SURVEY

19 May 1989

Observers: T. Bowman & G. Deutcher

Species	Colony	Nests	Adults	Loafers	Notes
American White Pelican	A	900	1050	620	on eggs, no young
	B	270	300	0	on eggs
	C	140	150	0	on eggs
	D	720	750	0	
	E	70	80	0	
	F	200	250	0	
	H	100	120		
Total Pelicans		2400	2700	620	
Double-crested Cormorant	A	380	500	90	
	B	140	200	0	
	C	70	90	0	
	D	250	300	0	
	E	0	0	0	
	F	30	35	0	
	H	40	50	0	
Total Cormorants		910	1175	90	
Great Blue Heron	A	0	50	0	
	E	0	12	0	
Total Herons		0	62	0	
California Gull	A	?	700	0	
	G		*		not counted
Total Gulls		0	700	0	
Black-crowned Night Heron	A	0	35	0	
Snowy Egret	A	0	1	0	
TOTALS FOR ALL SPECIES		3310	4673	710	

NOTES: Mate exchange observed between 1000 & 1100.

Census was done from ridge southwest of colony B.

Weather conditions: breezy 10-15mph; 55-60 F.

Colony H did not exist on 29 April 1989.

SEE MAP DATED 19 May 1989



Census from  
ridge SW of colony B.

	B	D	C	A	H (new colony)	E	F	G	Totals
<u>AWP</u>									
Individuals	300	750	150	1050	120	80	250		2700
Nests	270	720	140	900	100	70	200		2400
Loafers	-	-	-	620	-	-	-		620
<u>DCC</u>									
Individuals	200	300	90	500	50	0	35		1175
Nests	140	250	70	380	40		30		910
Loafers	-	-	-	90	-				90
<u>GBH</u>									
Individuals				50		12			62
Nests									62
Loafers									
<u>CG</u>									
Individuals				700					
Nests				?					
Loafers									
<u>BCNH</u>									
#				35					35
<u>S. Egret</u>									
#				1					1
Notes:	on eggs no young ?	on eggs	on eggs	? 1000 AM about 300 in air some going up some down	new colony - didn't exist 29 April	young?	young?	Gulls	
								Great Basin Gophersnake	

19 May 1989

T. Bowman & G. Deutcher



# ANAHO ISLAND NEST SURVEY

June 2 1989

Observers: T. Bowman

Species	Colony	Nests	Adults	Loafers	Young
American White Pelican	A	250	550	850	?
	B	60	200	0	?
	C	65	100	0	?
	D	75	150	0	?
	E	30	40	0	30
	F	0	160	350	100
	Gull Colo	0	0	200	0
Total Pelicans		480	1200	1400	130
Double-crested Cormorant	A	530	630	100	?
	B	155	170	0	?
	C	65	75	0	?
	D	170	200	0	?
	E	0	0	0	0
	F	?	30	30	15
	Gull Colo	0	0	200	0
Total Cormorants		920	1105	330	15
Great Blue Heron	A	45	60	0	4
	E	14	14	0	?
Total Herons		59	74	0	4
California Gull	A	0	800	0	?
	Gull Colo	0	1100	0	?
Total Gulls		0	1900	0	0
Black-crowned Night Heron	A	?	?	?	?
Snowy Egret	A	?	?	?	?
TOTALS FOR ALL SPECIES		1459	4279	1730	149

## NOTES:

Pelicans: Colonies B,C, & D - Looks like most have very small young, a few still have eggs.

Colony A - Some with large (~15") young.

Heron: Colony A - Some young 2/3 adult size.

Cormorants: Colony F - Some with big young, others still on eggs.

First mate exchange 0930-1045.



Colonies much reduced, many loafers

6-2-89 Tim Bowman  
Anchis Island  
Complete Census

0915 to 1025

75°, calm  
No flight activity at 0915





# ANAHO ISLAND NEST SURVEY

13 June 1989

Observers: T. Bowman

Species	Colony	Nests	Adults	Loafers	Young
American White Pelican	A	Off Nests	80	130	170
	B	45	52	0	0
	C	35	40	0	0
	D	65	80	0	0
	E	Off Nests	25	0	50
	F	Off Nests	6	0	100
Total Pelicans		145	283	130	320
Double-crested Cormorant	A	600	710	30	?
	B	140	150	0	?
	C	75	80	0	?
	D	200	235	0	?
	E	?	30	0	?
Total Cormorants		1015	1205	30	0
Great Blue Heron	A	30	?	0	?
Total Herons		30	?	0	?
California Gull	A	?	800	0	?
	G	?	1000	0	?
Total Gulls		0	1800	0	0
Black-crowned Night Heron	A	?	?	0	?
Snowy Egret	A	?	40	0	?
TOTALS FOR ALL SPECIES		1190	3328	160	320

## NOTES:

Snowys, Colony A - Determined from nightlighting; some on eggs some with small chicks. None seen from observation ridge.

Pelicans, Colony A - Many adults not in attendance, pods of 5-15 are often with 1 adult. At 1015 an exodus occurred without a mate switch

Colony E - # of young determined from banding while nightlighting.

Colony A - # of young estimated from counts of young chicks while nightlighting.

Great Blues, Colony A - probably an underestimate of the number of

nests, based on what we saw while nightlighting.

(about 300 pelicans)



13 June 1989 T. Bowman

count 1000-1045

\*census fr. ridge above  
colonies  
+ from boat for colonies E, F, G

75°F; ~~light~~ breeze  
↑  
light

# ANAHO ISLAND NEST SURVEY

26 June 1989

Observers: T. Bowman & Pat Brown

Species	Colony	Nests	Adults	Loafers	Young
American White Pelican	A	Off Nests	6	530	195
	B	Off Nests	4	0	23
	C	Off Nests	11	85	28
	D	Off Nests	9	0	7
	E	Off Nests	2	50	30
	F	Off Nests	4	NA	110
	G	Off Nests	0	650	0
Total Pelicans		0	36	1315	393
Double-crested Cormorant	A	730	NA	220	NA
	B	130	NA	NA	NA
	D	230	NA	NA	NA
	E	NA	NA	40	NA
	F	3	NA	170	NA
		1093	0	430	0
Great Blue Heron	A	29	NA	NA	NA
	E	12	NA	NA	NA
	F	2	NA	NA	NA
Total Herons		42	0	0	0
California Gull	A	NA	750	NA	NA
	G	NA	500	NA	400
Total Gulls		0	1250	0	400
Black-crowned Night Heron	A	0	0	NA	NA
Snowy Egret	A	0	5	NA	NA
TOTALS FOR ALL SPECIES		1134	1291	1745	428

NOTES: Actual counts of young pelican taken while nightlighting:  
 Colony A = 290  
 Colony B = 27  
 Colony C = 40  
 Colony D = 18

Influx of adults from 1030-1100, from south.

NA = Not applicable; can mean that we were unable to count or that adults were not around

Snowy Egrets - saw about 50-60 adults in colony A while nightlighting.



Figure . Location of nesting colonies on Anaho Island in 1989.





# ANAHO ISLAND NEST SURVEY

Date: July 20 1989

Observers: T. Bowman, W. Henry, & M. Gurdon

Species	Colony	Nests	Adults	Loafers	Young
American White Pelican	A	0	0	0	15
	B	0	0	0	15
	C	0	0	0	30
	D	0	1	0	116
	E	0	0	0	37
	F	0	0	0	99
Total Pelicans		0	1	0	312
Double-crested Cormorant	A	0	0	0	
	B	0	0	0	
Total Cormorants		0	0	0	
Great Blue Heron	A	0	0	0	
	E	0	0	0	
Total Herons		0	0	0	
California Gull	A	0	0	0	
	G	0	0	0	Fledged
Total Gulls		0	0	0	
Black-crowned Night Heron	A	0			
Snowy Egret	A	0			
TOTALS FOR ALL SPECIES		0	1	0	312

NOTE: Counts were only done for pelicans.



ve 1. ANAHO IS., PYRAMID LAKE AUGUST 15, 1989 VISIT



⊗ LANDING SPOT

--- PATH WALKED

AUG. 15, 1989

W. HENRY, L. CARLSEN, H. Klieforth

UNITED STATES GOVERNMENT

FISH AND WILDLIFE SERVICE

# Memorandum

TO : Files, Anaho Island National Wildlife Refuge  
Fallon, NV

DATE: September 14, 1989

FROM : Wildlife Biologist  
Fallon, NV

SUBJECT: Results of August 15, 1989 visit to Anaho Island National Wildlife Refuge

0900 I met Paul Wagner and Lee Carlsen at Pyramid Lake Fisheries (PLF) at headquarters at Sutcliffe. We then met Larry Benson of U.S. Geological Survey of Denver and Hal Klieforth of Desert Research Institute and all proceeded to the boat ramp north of Sutcliffe.

Access to Anaho Island was by the PLF 21 foot Boston Whaler. We landed at the northwest side of the island and three of us proceeded into the colonies to check for dead and deformed pelican and cormorant chicks (See Figure 1.).

Summary of visit include:

White Pelicans	- 10 adult, 25 young
D.C. Cormorants	- 250+
California Gulls	- 15
Snowy Egret	- 5 broods (3-5 young), 3/4 fledged
Great Blue Heron	- 8

Picked up 20 USFWS leg bands from pelican chicks. Estimated 6 banded to 1 unbanded dead pelican chicks.

Noted heavy pelican chick mortality in Colony D.  
No pelican chick deformities.

Departed Island at 1300, picked up Refuge buoy on east shore. Returned to boat ramp and departed for Fallon at 1430.

William G. Henry



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Stillwater Wildlife Management Area

P.O. Box 1236

Fallon, Nevada 89406-1236

June 26, 1990

### Memorandum

To: Files, Anaho Island NWR, Stillwater W.M.A.

From: Wildlife Biologist, William Henry  
Stillwater W.M.A.  
Fallon, Nevada

Subject: Results of Population Estimates for Anaho Island NWR, 1990

### Introduction

Anaho Island is a 248 acre National Wildlife Refuge established by Executive Order 1819 on September 4, 1913, by Woodrow Wilson. The island is surrounded by land owned by the Pyramid Lake Paiute Tribe. The primary purpose of Anaho Island NWR is to provide safe nesting habitat for colonial nesting species. It is one of nine major breeding areas used by the western population of American white pelicans.

### Methods

Anaho Island NWR was censused according to procedures outlined in the Stillwater WMA station Wildlife Inventory Plan. The plan calls for four trips to Anaho in April, May, June and July. An effort is made to count total nesting birds and estimate the number of nests for the following species: American white pelican, double-crested cormorant, great blue heron, California gull, and black-crowned night-heron. The location of each nesting colony is then mapped on photo-copies of aerial photographs.

The census of nesting birds has been conducted at the same location for several years. A good vantage point approximately 3/4 of the way up the island on the east side has been used. In 1990 censuses were conducted from the elevated vantage point using 20-60X spotting scopes and binoculars. Birds were counted and recorded as adults or young. Nests were counted if adults were incubating eggs or brooding small young. The location of each colony and its estimated number of nesting birds was then recorded on field data sheets, aerial photographs, and in biological field journals. The 1990 field surveys were conducted on April 18, May 9, June 20. Censuses and colony mapping were generally completed between 0800-1100 before major nest exchanges occurred.

### Results (See Table 1.)

Pelicans nesting was initiated in late April as occurred in 1989. During our June visit over 32 hours of observation revealed no pelican adult feeding young. The smaller (2-4 week old) young appeared very weak - possibly due to starvation.



Cormorant chicks appeared healthy with each nest averaging 2.65 young, in all stages of development.

Gull chick production appeared to be slightly below normal averaging 0.27 young per nest. A second "wave" or displaced group of gulls were just initiating egg-laying around colony A. These could be birds displaced from the abandoned colony at Honey Lake, California.

Six Caspian Tern nests were observed along the south edge of gull colony G one nest containing a 3-6 day old chick. This is the first nesting since 1983.

*William G. Henry*

William G. Henry  
Wildlife Biologist

Table 1. Results of nesting population estimates for Anaho Island 1990.

<u>Species</u>	<u>April 18</u>	<u>May 9</u>	<u>June 20</u>
AWPE			
Adults	3200	-	-
Nests	1600	4005	0
Young	0	0	375
DCCO			
Adults	1300	-	-
Nests	730	865	845
Young*	0	0	2240
CAGU			
Adults	1950	-	-
Nests	880	1680	450 late or re-nesters
Young	0	0	460
CATE			
Adults	0	0	14
Nests	-	-	6
Young	-	-	1

\* Cormorants nests averaged 2.65 yg/nest.

AWPE IN WA.

**WHITE PELICANS MAKE DRAMATIC APPEARANCE IN EASTERN WASHINGTON** —(WDW 8-24-90) YAKIMA— More than 1,000 endangered American White Pelicans have invaded the Columbia River from the Umatilla National Wildlife Refuge to the Vernita Bridge, according to a Washington Department of Wildlife biologist Lisa Fitzner who conducted an aerial survey of the area.

This is the second year in a row substantial numbers of the pelicans have shown up in the region. Last year, a drought in their usual Nevada nesting area drove as many as 1,500 pelicans to the Columbia Basin looking for food. The drought conditions have persisted in Nevada and in Oregon, where large concentrations of the pelicans are normally found. Some of the birds are suspected to have perished in those areas.

Normally, 150 to 300 birds can be found in the Potholes Reservoir from mid-August to mid-October and flocks of 30-40 birds can be seen in the Columbia Basin during the summer.

The last documented record of pelicans nesting in Washington occurred in 1926. The major reason for the decline of the birds in Washington was the loss of nesting habitat, according to WDW biologists.

Recovery potential for the pelicans in Washington is good. Department biologists, like Fitzner, are flying bi-monthly surveys of the birds and working on elements of a recovery plan that would involve re-establishment of nesting habitat for the birds.

Fitzner is trying to find where the flocks came from. She is also concerned with the potential for conflict between the birds and water recreation along the Columbia River. Plans are underway to start banding efforts this year to learn where the pelicans are coming from.

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Table . Anaho Island nest survey on April 18, 1990

Species	Colony	Nest	Adults	Loafers
American white pelican	A	882	1060	21 (along shoreline)
	B	87	1057	
	C	311	559	1042 (non-nesters)
	D	265	438	
	E	0		
	F	0		
Total Pelicans		1545 <sup>a.</sup>	3114	<del>1313</del> 1063
Double-crested cormorant	A	454	775	96 (along shoreline)
	B	72	164	
	C	130	186	
	D	72	122	
	E			
	F			
Total Cormorants		728	1247	96
Great-blue heron	A	42	44	
Black-crowned night heron	A	7	7	
California gull	A	876 <sup>b.</sup>	1380	390 (along shoreline)
	B		6	
	D		3	
	G		550	
Total Gulls		876	1939	390

<sup>a.</sup> Very preliminary nest estimate prior to peak nesting activity.

<sup>b.</sup> Gulls at initial nest stages (sitting on nest scrapes).

**Note:** Pacific Fisheries staff ferried observers to Anaho - DRI Researchers were also on the island checking vegetation and weather station.



APRIL 18, 1990 W. Henry, A. Janik





Stillwater Wildlife Management Area  
P.O. Box 1236  
Fallon, Nevada 98406-1236

April 23, 1990

Memorandum

To: Files, Anaho Island National Wildlife Refuge  
Fallon, Nevada

From: Wildlife Biologist, Stillwater W.M.A.  
Fallon, Nevada

Subject: Summary of April 18, 1990 trip to Anaho Island NWR

Weather: Overcast, 0-5 mph winds, temps. 55-60 F, precipitation (4/17)  
.11' inch.

0800 William Henry and Anne Janik met Lee Carlsen at Pyramid Lake Fisheries (PLF) headquarters at Sutcliffe. Four researchers from the Desert Research Institute also joined us to the island to check vegetation and the weather station. We departed for the island at approximately 0930 by the PLF 21 foot Boston Whaler. The landing spot was on the north west corner of the island.

Bill Henry walked over the bluffs to the south and east end of the island to check on the California gull colony G, while I counted the birds on the east side of the island.

A large group of American White Pelicans (AWP) were very concentrated on top of a rocky out cropping marked as colony B (Figure 1.). Due to other groupings in close proximity to each other and their standing positions, these birds are termed loafers as they did not appear to be on nests. Courtship activities (neck biting etc.) and actual copulations were observed in this colony. Approximately 87 pelicans were spread out and appeared to be on nest scrapes. Colony C appeared to be split into two sub colonies. A group of pelicans at the north end were spaced apart from each other and appeared to be nesting or sitting on nest scrapes. The group to the south were again very concentrated and active and most likely loafers. Colony D appeared to have the most pelicans on nests at this time. One clutch of 2 eggs and another clutch (unknown egg#) were observed. This is a very small colony of pelicans compared to the others. The pelicans were spread out and very easy to count. Colony A was spread out in three sub groups. The pelicans to the north and middle were spread apart and appeared to be on nests while those to the south were very concentrated and active (loafers). There were also quite a few pelicans resting/feeding along the shoreline which were grouped under the loafers. This colony also contained a large number of California gulls which in most instances were spread apart and appeared roosting or nesting on scraps (no eggs were observed). Colony A also contained many Double-crested cormorants (DCE). Females were obviously on nests and males were perched on or nearby nests in most cases. There were very few cormorants that appeared to be non-nesters or loafers. (Cormorants were also observed in colony C,D and a few in B).

Other birds observed:

Anaho Island: Rock Wren  
House Finch  
White-crowned sparrow  
Canada Goose  
(5 nests w/5 eggs each)

Pyramid Lake: Western grebe  
Clarkes grebe  
Common loon  
Eared grebes

Water sample was taken, conductivity = 8,870  $\mu$ S/cm or 5,987 mg/l

We departed the island in the PFL boat at 1300 hrs.

Stillwater Wildlife Management Area  
P.O. Box 1236  
Fallon, Nevada 89406-1236

May 14, 1990

Memorandum

To: Files

From: Refuge Biologist, Stillwater W.M.A.  
Fallon, Nevada

Subject: Summary of May 9, 1990 trip to Anaho NWR

Weather: Clear, sunny, 5-10mph winds, Temps 55-60 F

0900 Ron Anglin, Bob Fields, William Henry, and Anne Janik departed boat launch on Pyramid Lake Fisheries (PLF) Boston Whaler operated by Paul Wagner. We arrived at the North west corner of the island at approximately 0930 hours.

Bill Henry walked over the bluffs to the south end of the island to count the California Gulls in colony G and count the nesting birds in colony A. Anne Janik counted colony B,C, and D.

Table 1. Summarizes the bird counts by colony.

Approximately 90-95% of the pelicans in all the colonies were on nests. There appeared to be several groups of pelicans standing at the mid and south end of colony A either initiating nest or loafing. The pelicans in colony D shifted locations since the previous visit, they were more spread out and obviously nesting. During the April nest count, there appeared to be an over-estimate of the pelicans actually on nest at that time in colony D.

We departed the island at approximately 1200.

Other birds observed:

- 2 Golden Eagles
- 2 Harriers ( )
- 2 Killdeer
- 1 Osprey
- 2 Raven
- Western Grebes

William Henry

Anne Janik

Table 1. Anaho Island nest survey on May 9, 1990.

Species	Colony	Nest	Adults	Loafers
American White Pelican	A	2400		150
	B	680		50
	C	660		0
	D*	265		20
	E	0		
	F	0		
	G	0		15
<b>TOTAL</b>		<b>4005</b> <sup>a-</sup>		<b>235</b>
Double Crested Cormorants	A	550		
	B	125		50
	C	125		40
	D	65		30
<b>TOTAL</b>		<b>865</b>		<b>120</b>
Snowy Egret	At least 2			
Great Blue Heron	A	45		
Black-crowned Night Heron	Not Counted			
California Gull	A	800		
	G	880		
<b>TOTAL</b>		<b>1680</b>		

<sup>a-</sup> Estimate of total nests during peak nesting activity.





May 9, 1990 Visit  
W. Henry & A. Janik

# @ ANATO ISLAND

Wt ✓

4/21/90

## Colony A.

	<u>NESTS</u>	<u>ADULTS</u>	<u>Young</u>	<u>Confers</u>
AW Pelicans	0	6	230*	(10% 2 1/2 weeks 4-6 weeks)
DCC	500 x (2.65 yrs)	1000	> 1500 - 2000 (1325)	
GB Herons	30			
BC N Herons	10			
Snowy egrets	10	22 + (13 WH)		

## Colony D.

AWPE			80
DCC	90	180	250

## Colony B

AWPE			25 (2-4 weeks)
DCC	125 x (2.65)	250	~650? (335)

## Colony C

AWPE			40
DCC	130	260	(280) (345)

## Gull colony (G)

- *Caspian terns* ✓

(A) 800 x (.27)

(240) WH

(1 YG + 5 NESTS) WH

(220) WH

TOTAL: AWPE = 375 (230 [4-6 wk] old)

DCCO 2240

CAGU 460

CATE (1 YG + 5 NESTS)

(5) RAVENS Kill deer

G. Eagle (juvenile)  
No itamer f

Rock wren  
Heermann Gull 2

Say phoebe  
WTC Grebes

C. merg

Stillwater Wildlife Management Area  
P.O. Box 1236  
Fallon, Nevada 89406-1236

June 26, 1990

Memorandum

To: Files, Anaho Island NWR, Stillwater W.M.A.

From: Wildlife Biologist, Stillwater W.M.A.  
Fallon, Nevada

Subject: Summary of June 20-21 trip to Anaho Island

Weather: Clear, sunny, calm winds, temps 85 -90 F

Arrived at Pyramid Lake camp site approximately 1430 hours. John P. Mitchell - Audubon Magazine Journalist, Frank Todd - Consultant, Serry Theresa - California Fish and Game, William Henry and Anne Janik arrived on Anaho Island by inflatable boats.

We skirted on foot the perimeter of each colony and observed only a few adult (1-3) pelicans in each colony shading their young. Small groups of young pelicans were observed in each colony. All active Double-crested cormorants nests had between 2-4 young in various stages of development. At least one adult was present at each nest shading the young. Most young cormorants appeared to be 2+ weeks old.

John Mitchell, Bill and Anne departed the island approximately 1600 hours while Frank and Sherri remained to photograph the birds. We returned to the island at 2100 hours to band and color mark young pelicans. Due to the age and poor condition of many of the young pelicans, we expect additional mortalities prior to the young reaching full feather development. Banding was postponed for 2 weeks in order to band only those young pelicans most likely to survive. We departed the island approximately 2130.

We again arrived on the island at 0730 on June 21 and determined the production status of each colony. This information is summarized in the following table. (See Table 1.)

Colony A is the largest colony and also has the largest groups of young pelicans. We estimated the age of these young between 4-9 weeks old - (the most advanced of all 4 colonies). We estimated a majority of the young pelicans in colony B,C,D were between 2-4 weeks old.

Many of the young pelicans especially the youngest ones appeared weak and in poor condition. Many dead young pelicans were observed in all colonies but particularly in colony A. During our visit to the island, not one food exchange between an adult and young pelican were observed.

Double-crested cormorants in all colonies appeared to be successful and quite productive. The birds in colony B, C, D were again much less advanced than young in colony A.

During our return to the mainland, we captured an adult pelican which appeared weak and unable to fly. The bird had regurgitated several 10-13" fish which were not positively identified at the time but appeared to be Tahoe suckers. The birds breathing seemed to be labored possibly affected by aspergillosis. However, it did not appear to be emaciated. The bird was released due to our inability to have it sent to a laboratory for positive diagnosis of its weakened condition.

Other Species Observed:

Ravens (5)  
Killdeer  
Golden Eagle (juvenile)  
Northern Harrier  
Rock Wren  
Canada Goose

Heermans Gull (2)  
Say's Phoebe  
Common Merganser  
Western Grebe  
Clarke's Grebe



Table 1. Anaho Island nest survey on June 20 1990.

Species	Colony	Nest	Adults	Young
American white pelican	A	-	-	230 <sup>a.</sup>
	B	-	-	25
	C	-	-	40
	D	-	-	80
	<b>TOTAL</b>	<b>4005 <sup>b.</sup></b>		<b>375</b>
Double-crested cormorant	A	500	1000	1325
	B	125	250	331
	C	130	260	345
	D	90	180	239
	<b>TOTAL</b>	<b>845</b>		<b>2240 <sup>c.</sup></b>
California gull	G	880	-	240
	A	800	-	220
	<b>TOTAL</b>	<b>1680 <sup>b.</sup></b>		<b>460 <sup>d.</sup></b>
Caspian tern	G	6	14	1
Great-blue heron	A	30	-	-
Black-crowned night heron	A	10	-	-
Snowy egrets		10+	35	

<sup>a.</sup> These pelicans were between 4-6 weeks old, approximately 2 weeks older than other colonies.

<sup>b.</sup> Estimate from peak nesting visit on May 9, 1990.

<sup>c.</sup> Estimate based on average young/nest of 2.65 (Double-crested cormorant).

<sup>d.</sup> Estimate based on average young/nest of .27 (California gull).

Stillwater Wildlife Management Area  
P.O. Box 1236  
Fallon, Nevada 89406-1236

July 23, 1990

Memorandum

To: Files

From: Assistant Wildlife Biologist, Stillwater WMA  
Fallon, Nevada

Subject: Summary of July 11-12 trip to Anaho Island

Weather: Temps 90-95 , partly cloudy, winds calm toward evening.

Arrived at Pyramid Lake camp site approximately 1730 hours. The participants of the Anaho Island trip are as follows: Hugh Judd - local Audubon Society member and bird bander, Dr. Douglas Siegel-Causey - research interests in pelicaniformes specifically the cormorant and pelican colonies on Anaho Island, William Henry and Anne Janik.

We arrived on Anaho Island by inflatable boat approaching from the gull colony (G) on the south side. Majority of the California gull juveniles are flight capable. There was no evidence of successful caspian tern nests.

We walked along the perimeter of colony (A). Double-crested cormorant young were still on nests and estimated to be approximately 6-7 weeks old. There were many instances of one dead young cormorant in an empty nest. These young may have been abandoned or did not survive sibling rivalry for parental food sources. Dr. Siegel-Causey who has conducted much research on cormorant colonies all over the world was most impressed with the unusual ground nest platforms (many nest built up through years of use) and the variation of spacing between groups of nests within the colony (perhaps family groups returning to nest areas in a small sub-colony). He was also surprised with the asynchrony of juvenile development within a colony and also between colonies which is an unusual circumstance considering the theories of behavioral and developmental adaptations of colony nesters in general.

Colony A had the largest number of juvenile American white pelicans. These were very large, well developed and appeared in good condition. We estimated their ages between 7-12 weeks old - some just short of being flight capable.

The juvenile pelicans in colony D, B and C appeared to be approximately 1-2 weeks slower in development than colony A birds. We estimated approximately 6% mortality rate of juvenile pelicans in colony D and C since our last visit on June 20. Pelican numbers remained the same at colony B. Production estimates for each colony are summarized below.

Snowy egrets - Approximately 30 adults were observed resting/preening on the greasewood traces on the perimeter of colony A. We were unable to determine the number of actual nest.

Great blue herons - Several nests in colony A had 1-3 young that were almost ready to fledge. Previously we estimated 30 nest. We were unable to verify that.

Black-crowned night herons - "No report".

California gull - Production was not estimated at this time because most of the juveniles were flight capable and had dispersed from the colonies.

Double-crested cormorants - Production was not estimated but a minimum number of 2,200 from all colonies will be used as an index.

Heerman's gull - A single adult bird was observed in colony A perched in a abandoned cormorant nest platform.

We returned to the camp site at 2000 hours and later returned to the island at 2130 to band young pelicans and California gulls by night lighting. Hugh Judd, Bill Henry and Anne Janik were the banding team - and quite overwhelmed with the task at hand. We banded birds from colony A only. During approximately 3.5 hours we herded several pods of pelicans and banded approximately 43 young. The first 13 were also color marked pink with Rhodamine-B around the neck and breast. We also banded 40 juvenile California gulls that were not flight capable. We stopped banding at midnight and returned to camp.

The next morning Bill and Anne returned to the island at 0830 to band 7 more juvenile pelicans completing a total of 50 banded birds. The 7 we banded were captured from the boat. We observed 3 adult pelicans along the shoreline intermingled with the juvenile birds - perhaps just completing food exchange. No other adults were observed in the colonies or within the groups of young pelicans. The timing and frequency of adult - juvenile food exchange in these colonies is still unknown.

Table 1. Anaho Island nest survey on July 11-12, 1990

Species	Colony	Young @ 6/20/90 visit	Young @ 7/11/90 visit
American white pelican	A	230 <sup>a.</sup>	230 <sup>a.</sup>
	D	75	80
	B	25	25
	C	35	40
		365	375

<sup>a.</sup> The production and survival of young pelicans in this colony may be slightly under estimated.

Other species observed:

Heerman's gull  
Northern Harrier  
Rock wren  
Ravens

Killdeer  
Common merganser  
Western grebes  
Clarkes grebes

Suggestions for future banding operations:

- A minimum of 5 people for banding operations
- Quick set-ups of netting for holding pens to herd pods of pelicans
- Better spraying device for marking birds with Rhodamine-B
- Banding pliers for size 9 bands
- Banding rods for gull, cormorant and pelican bands.

Cynthia A. Janik





# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Stillwater Wildlife Management Area  
P.O. Box 1236  
Fallon, Nevada 89406-1236

August 30, 1990

### Memorandum

To: Files

From: Wildlife Biologist, Stillwater W.M.A.  
Fallon, Nevada

Subject: Summary of August 30 Trip to Anaho Island.

Weather: Temps 70-85°F, clear, NW winds 5-15 mph

Arrived Sutcliffe at 9:15 a.m. met with participants for boat trip to Anaho at PLF office.

We departed Pelican Bay boat ramp at 10 A.M. on PLF Boston Whaler with 2 EPA representatives, Robin Tausch (USFS), Robert Nowak (UNR), and skipper Paul Wagner (PLF). Enroute to island we skirted Pyramid Island and landed at the S.E. corner of Anaho.

I proceeded overland to the northern shoreline where I conducted pelican mortality checks (Fig. 1) spotted 2 rattlesnakes within 15 yds. of each other along shoreline. Located one new refuge buoy. I then proceeded inland through all pelican colonies eventually finding and photographing Mushroom Rock. After covering all colonies I met up with other members of the party and proceeded overland to the boat.

All total, 45 dead pelican chicks were observed - 4 were banded of which 2 were pink dyed.

The island was extremely quiet and deserted compared to only 1 month ago.

Numerous Zebra-tailed lizards (both adult and young) were encountered along the south beach, departed island at 12:45 P.M.

Bird species observed: AWPE 8, DCCO 130, CAGU 25, GBHE 6, BCNH 3, SNEG 5, WEGR 40, ROWR 18, SPSA 5, KILL 12,

*William G. Henry*  
William G. Henry  
Wildlife Biologist



AUGUST 30, 1980

ANATO ISLAND

FIG. 1

MORTALITY CHECK  
SURVEY ROUTE  
W. HENRY

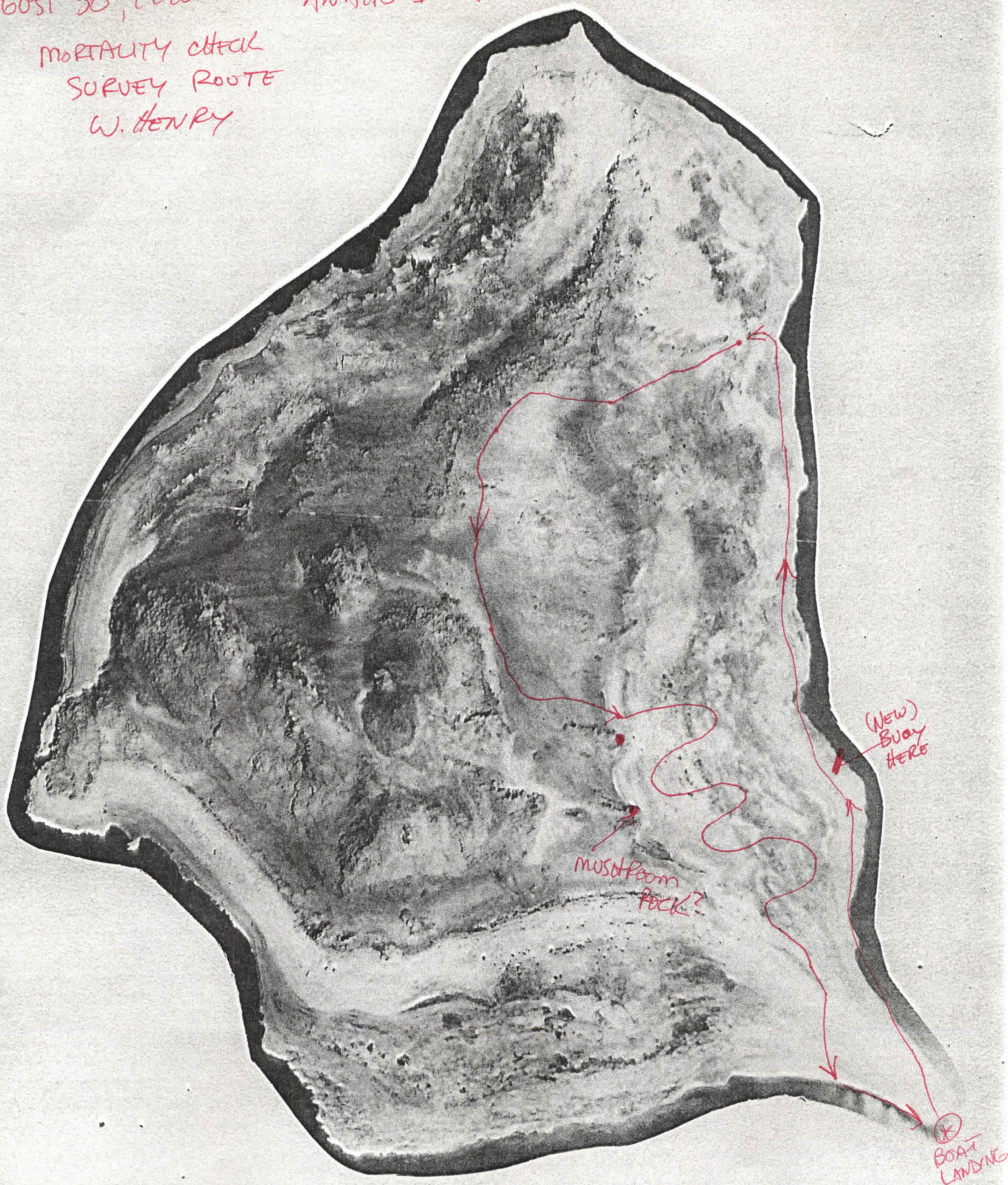




Table 1. Surface acres of water in Lahontan Valley wetlands. 1986-1991

Lahontan Valley Wetland Unit	Wetland Area	USGS Map	1986	1987	1988	1989	1990	1991
1	Fernley	Two Tips	367	610	253	120	~482	657
2	Mahala Slough	Soda Lake	20	803	142	233	187	5
2	Desert Gun Club	Soda Lake	395	1215	57	583	469	140
		<b>TOTAL</b>	<b>415</b>	<b>2018</b>	<b>199</b>	<b>816</b>	<b>656</b>	<b>141</b>
3	Workman Ponds	Soda Lake	77	75	50	121	89	74
3	Soda Lake	Soda Lake	425	395	367	418	400	496
3	Little Soda Lake	Soda Lake	20	19	16	39	25	48
3	Lucas Pond	Soda Lake	49	64	42	56	DRY	DRY
3	Upper Workman Ponds	Soda Lake	414	66	82	96	84	19
3	Soule Ponds	Soda Lake	347	119	70	164	30	26
		<b>TOTAL</b>	<b>1332</b>	<b>738</b>	<b>627</b>	<b>894</b>	<b>628</b>	<b>663</b>
4	Old River Reservoir		200	200	200	~200	~150	0
5	Sheckler Reservoir Division Dam	Fallon NW	1650	1650	1106	1147	990	0
								69
6	Sagouspe Dam	Stillwater SW	No est.			101	No est.	86
6	6-Man Club, misc. area.	Carson Lake SW	No est.				16	94
6	Fallon Pasture	Carson Lake SW	No est.				36	DRY
6	Pasture	Fallon NE					120	DRY
							<b>172</b>	<b>180</b>
7	Sprig Pond	Carson Lake SW	2592	2185	1746	1780	1887	918
7	Big Water	Carson Lake SW	947	563	182	134	8	DRY
7	York Unit	Carson Lake SW	674	164	0	286	DRY	DRY
7	Island Unit	Carson Lake SW	1318	664	0	375	25	DRY
7	Sump	Carson Lake SW	282	0	0	DRY	DRY	DRY
7	Pasture NE	Carson Lake SW	863	332	634	83	22	-
7	South Pasture	Carson Lake SW	1689	699	586	45	25	-

Lahontan Valley Wetland Unit	Wetland Area	USGS Map	1986	1987	1988	1989	1990	1991
7	Misc. Pasture	Carson Lake SW	No est.					237
7	All Pasture	Fallon SE	4300	1017	942	DRY	117 DRY	-
7	C. Lake - W. Pasture+ Sprig.	Fallon SE					93	
		<b>TOTAL</b>	<b>12665</b>	<b>5624</b>	<b>4090</b>	<b>2703</b>	<b>2177</b>	<b>1155</b>
8	Harmon Reservoir	Carson Lake NW	1332	1060	668	628	670	729
9	Ole's Pond	Stillwater SW	140	432	18	68	6	62
9	Ole's Pond/Swan Pond	Stillwater SW	203	34	0	69	56	DRY
9	Indian Reservation	Stillwater SE	361	252	153	DRY	7	82
	Wetlands							
9	West Indian Wetlands	Stillwater SE	88	90	DRY	DRY	DRY	DRY
9	S-Line Reservoir	Carson Lake NW	473	460	362	514	539	624
		<b>TOTAL</b>	<b>1265</b>	<b>1268</b>	<b>533</b>	<b>651</b>	<b>608</b>	<b>768</b>
10	Canvasback Club	Foxtail Lake			650	300	216	
10	Canvasback Club	Stillwater SE	3000	2384	3294	1161	1872	
		<b>TOTAL</b>			<b>3944</b>	<b>1461</b>	<b>2088</b>	<b>1491</b>
11	Leter Reservoir	Stillwater SW	289	200	107	240	261	102
11	Twin Lakes	Stillwater SW	50	68	43	48	39	
11	Upper Lake	Stillwater SW	92	155	97	171	50	
11	Likes Lake	Stillwater SW	76	91	55	90	65	539
11	Papoose	Stillwater SW	147	155	120	DRY	149	
11	Big Indian	Stillwater SW	190	217	123	150	123	
11	Serpa	Stillwater SW	43	71	21	DRY	DRY	DRY
11	Vaughn Slough	Stillwater SW	0	32	0	DRY	37	DRY
11	River Wetlands North of Wolf Dam A.	Stillwater SW	DRY	No est.	75	228	34	142
11	Estimated flooded, not mapped.	Stillwater SW	3100	0	0	0	0	0
		<b>SUBTOTAL</b>	<b>3698</b>	<b>789</b>	<b>534</b>	<b>687</b>	<b>758</b>	<b>783</b>
11	East Lake	Stillwater SE	89	85	0	52	DRY	DRY
11	Cottonwood Lake	Stillwater SE	103	108	36	47	6	DRY
		<b>SUBTOTAL</b>	<b>192</b>	<b>193</b>	<b>36</b>	<b>99</b>	<b>6</b>	<b>0</b>



Lahontan Valley Wetland Unit	Wetland Area	USGS Map	1986	1987	1988	1989	1990	1991
11	Lower Fox	Foxtail Lake			923	DRY	DRY	DRY
11	Upper Fox	Foxtail Lake			DRY	FILLING	DRY	DRY
11	Dry Lake	Foxtail Lake			DRY	431	464	203
11	Cattail	Foxtail Lake			DRY	236	253	DRY
11	Doghead	Foxtail Lake			102	DRY	111	DRY
11	East Alkali	Foxtail Lake			463	DRY	329	DRY
11	Goose Lake	Foxtail Lake			28	FILLING 39+	DRY	DRY
11	Division Pond	Foxtail Lake			10	DRY	5	DRY
11	Lead Lake	Foxtail Lake			913	1039	63	DRY
11	Still. Pt. Reservoir	Foxtail Lake			1101	1193	617	391
		<b>SUBTOTAL</b>	<b>19000</b>	<b>7660</b>	<b>3540</b>	<b>2938</b>	<b>1842</b>	<b>676</b>
A. Includes Timber Lake, Battleground artisan wells								
11	Nutgrass	Pintail Bay			DRY	699	549	DRY
11	Swan Check	Pintail Bay			DRY	242	580	DRY
11	Tule Lake	Pintail Bay			DRY	DRY	DRY	DRY
11	Swan Lake	Pintail Bay			DRY	DRY	DRY	DRY
11	Pintail Lake	Pintail Bay			DRY	DRY	DRY	DRY
11	Big Water	Pintail Bay			DRY	DRY	DRY	DRY
		<b>SUBTOTAL</b>			<b>0</b>	<b>941</b>	<b>1129</b>	<b>0</b>
		<b>TOTAL FOR UNIT #11</b>	<b>23179</b>	<b>8842</b>	<b>4217</b>	<b>4905</b>	<b>3735</b>	<b>1459</b>
		<b>TOTAL FOR LAHONTAN VALLEY</b>	<b>45405<sup>+</sup></b>	<b>24393</b>	<b>15837</b>	<b>13626</b>	<b>12356</b>	<b>7312</b>

+ Survey's flown: Sept. 5 1986  
 Aug. 24 & 31 1987  
 Sept. 7 & 8 1988  
 Aug. 9 & 10 1989  
 Aug. 29 1990  
 Aug. 21 1991

Sept. 6, 7 & 11 1989

Table . Wetland acres by unit on Stillwater NWR/Management Area 1991.

UNIT	JANUARY 1	APRIL 1	JULY 1	OCTOBER 1
Stillwater Pt. Res	350	50	320	400
Upper Foxtail	300	110	80	70
Lower Foxtail	DRY	DRY	DRY	DRY
Doghead	100	DRY	DRY	DRY
Dry Lake	500	DRY	200	290
Cattail	240	100	DRY	DRY
East Alkali	540	460	DRY	DRY
Division Pond	5	30	DRY	DRY
Lead Lake	75	50	DRY	DRY
Goose Lake	800	550	DRY	600
South Nutgrass	600	150	DRY	DRY
West Nutgrass	30	DRY	DRY	DRY
North Nutgrass	DRY	DRY	DRY	DRY
Swan Check	300	250	DRY	DRY
Swan Lake	DRY	DRY	DRY	DRY
Pintail Bay	DRY	DRY	DRY	DRY
North Tule	DRY	DRY	DRY	DRY
South Tule	200	100	DRY	DRY
Miller Lake	DRY	DRY	DRY	DRY
Willow Lake	DRY	DRY	DRY	DRY

## TOTALS

3,740

1,850

600

1,360

## Indian Lakes

Upper	60	50	35	45
Likes	60	50	50	60
Twin	45	40	35	45
Vaughn	50	DRY	DRY	DRY
Papoose	60	60	60	60
Big Indian	60	60	60	60
Little Cottonwood	5	10	DRY	DRY
Big Cottonwood	DRY	DRY	DRY	DRY
East Lake	DRY	DRY	DRY	DRY

## TOTALS

295

260

205

270

## GRAND TOTALS

4,035

2,110

805

1,630



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Stillwater National Wildlife Refuge  
P.O. Box 1236  
Fallon, Nevada 89406-1236

May 18, 1991

### Memorandum

To: Files

From: Wildlife Biologist, Stillwater NWR  
Fallon, Nevada

Subject: Anaho Island Field Trip, May 18, 1991

Weather: Clear, sunny, calm winds, 60° temperatures - Outrageous Day!

Anne Janik, Robin Tausch (USFS) and Pyramid Lake Fishery (PFL) crew departed boat lunch at 9:00 a.m. in PFL Whaler and arrived at Anaho Island at 9:15 a.m.

I arrived at the bluff overlooking the colonies at approximately 9:30 a.m. and began counting the colonies. As I was doing so several groups of pelicans (a total of approximately 270) were soaring over the island. Several smaller flocks 8-15 appeared to be arriving or departing the island. Approximately 210 pelicans were resting along the shoreline, a few were loafing or floating just off shore.

The three smaller colonies on the north side of the island - colony C, B and D were greatly reduced in size from 1990. During the April 18 visit, several large groups of birds were congregating in the center of colony initiating courtship activities. There appeared to be between 280-350 adults in each of these three colonies at that time. A reduced number of pelicans were observed at the colonies in May - almost all were incubating eggs. Nesting pelicans in these three colonies were fairly well scattered (singly or in small clumps of between 5-10) within the boundary of the colonies as designated by the lack of vegetation.

Colony A was at least one week ahead of the other colonies on the April 18 visit. At that time several groups of pelicans were either egg laying or incubating - however, several subgroups of adults were still initiating nests within the colony.

This colony is again very spread out into several subgroups in various sizes within the boundaries of the colony (denuded areas). Dense clumps of greasewood is scattered within the colony which obstructs the visibility of some groups of pelicans. In these situations it is difficult to determine by posture if the pelicans are actually incubating eggs or loafing in the group.

Nesting cormorants are most numerous in this colony and are also scattered in small subgroups. There appears to be a lot of vacant nest clusters used by cormorants in previous years.

At least 16 great blue herons and 5 black-crowned night herons were observed perched in greasewood shrubs presumed to be on nests. No snowy egrets were observed at this time.

Approximately 1100 California gulls were on nests in colony G at the south end of the island. No Caspian terns were observed.

Other species observed:

Say's phoebe  
rock wren  
mourning dove (nest w/2 eggs)  
raven (2)  
Canada geese (15+)  
turkey vulture

great basin rattlesnake

Table 1. Anaho Island nest survey, May 15, 1991

Species	<u>Colonies (nests)</u>					TOTAL
	A	B	C	D	G	
American white pelican	1050	125	90	70		1335
Double-crested cormorant	370	50	40	55		515
California gull	1700				1100	2800
Great blue heron	16 <sup>a</sup>					
Black-crowned night heron	5 <sup>a</sup>					
Snowy egret	? <sup>a</sup>					

<sup>a</sup> This is a minimal number as accurate estimate of these species was not possible to get at this time.

4/18/91

	<u>nests</u>	<u>loafers</u>
Colony A	350 nests	(850-900 adults)
B	80 nests	(370 adults)
C	60 nests	(300 adults)
D	?	(300-400)



Stillwater National Wildlife Refuge  
P.O. Box 1236  
Fallon, Nevada 89406-1236

June 4, 1991

Memorandum

To: Files

From: Wildlife Biologist, Stillwater NWR  
Fallon, Nevada

Subject: Anaho Island Field Trip, June 1-2, 1991

Weather: Clear, sunny, calm winds, 75-85 temperatures.

Anne Janik, Gary Shellhorn (volunteer) and Bruce Farnsworth (photographer) arrived at Pyramid Lake Friday night. We spent Saturday 10:30 - 3:30, 6:30 - 8:30 and Sunday 6:00 - 11:30 on Anaho Island observing and counting the pelican colonies.

Since our last visit and count of the colonies on May 18, approximately 2 weeks ago, mass abandonment occurred in the four sub-colonies on the island. This tremendous nest abandonment within one month of nest initiation has occurred during the past three seasons 1988-1990 and is most likely linked to decreasing foraging areas as a result of the continued drought in western Nevada.

The following table summarizes the results of the May/June nest surveys.

Table 1. Summary of Anaho Island nesting surveys, May 15 and June 1-2, 1991.

Species	<u>Colonies</u>								G May/June	TOTAL <i>nest</i> May/June
	A May	A June	B May	B June	C May	C June	D May	D June		
American white pelican	1050	300	125	6	90	4	70	6		1335/316
Double-crested cormorant	370	400	50	40	40	35	55	40		515/515
California gull	1700	1700							1100/1100	2800/2800
Great blue heron	16*	30								16/30
Black-crowned night heron	5*	20								5/20
Snowy egret	?*	5								?/5
Caspian tern									0/2	0/2

\* This is a minimal number as accurate estimate of these species was not possible to get at this time.

**Colony A** - The nesting white pelicans appeared to be increasingly spread out into three sub-groups. A concentrated group of approximately 190 nesting pelicans are located in the north end of the colony boundary gradually straggling out into a very scattered group of about 30 nesting pelicans. Another distinct concentration of approximately 80 nesting pelicans were located in the south end of the colony (Figure 1). This group appears to be extended farther out of the colony boundary and half way up towards the ridge then nesting locations in the previous year. I observed a group of 30-50 pelicans congregating in the center of the large group of 190. These birds were probably males loafing (not on nests) in proximity to their nests. I observed several small groups of pelicans (3-5) fly into the colony from the south and land in the middle of these loafing birds. The new arrivals remained in the group and did not move toward a nesting bird. As they landed in the group, much beak jabbing occurred with adjacent birds as if each was defending a space. I did not observe a feeding or nest exchange between pairs or a large group foraging flight exodus or arrival.

While several females in colony A were repositioning themselves, I was able to determine their nesting stage which ranged from females incubating eggs; females brooding 1-2 day old (naked) chicks; and females shading larger down covered young estimated to be 2-3 weeks old. From the behavior and posture, it appeared that approximately 80% of the females were still incubating eggs or possibly brooding day old chicks. So I estimated that peak hatch is probably occurring between June 1-10.

An interesting behavioral observation- while observing two incubating/brooding females, I observed the males on the females back attempting to copulate for several seconds. I assume this to be a behavioral response somehow related to the reinforcing the pair bond.

Approximately 15-20% of the California gulls were brooding/shading 1-3 small downy chicks. The remaining appeared to be still incubating eggs.

I did not observe Double-crested cormorant chicks in any of the four colonies, however it is possible there are some newly hatched chicks in the nests that I was unable to detect. The hatching status of this species is undetermined at this time.

Several more great blue herons, black-crowned night herons and snowy egrets were observed in colony A during this visit; however, I was unable to determine the nesting stage of these species.

**Colony B** - only six nesting pelicans remain in this colony, three of which were brooding newly hatched chicks (naked and extremely small). The other 3 pelicans appeared to be incubating eggs but may also have been brooding 1 -2 day old chicks. I was not able to catch them re-position themselves to observe an egg or chick. One single pelican was standing 15-20 feet from 3 nesting pelicans, most likely the mate to one. The six nests were located between 30-100 feet of each other. I observed several pelican and cormorant eggs scattered in this colony and 2 pelican eggs in a nest depression with visible hole punctures - signs of avian predation (gulls). Did not observe feeding or nest exchanges.

Colony D - six pelicans remain on nests, four brooding newly hatch chicks, and two incubating one egg each. No single pelicans (mates) were observed in this colony. Three pelican nests were within 5-10 feet of each other (2 with chicks, one with egg), the others were scattered singly within the are

Colony C - Four pelicans remain on nest. One has a newly hatched chick, the other three pelicans are most likely still incubating eggs as they were fairly immobile during observations. I observed the pelican with a chick pull grass/twigs and sand with her beak under her in a nest maintenance activity. The female would occasionally reach over towards the male loafing 3-5 feet away and attempt to nip at him with her beak. Two other single birds were loafing in this colony probably the males, but did not appear to be in close proximity to a nesting pelican.

Colony G - The California gull colony. Did not re-count this colony from May. Approximately 10-15% were brooding 1-3 downy young.

One pair of Caspian terns were observed nesting in the general location of the birds nesting in 1990. I was unable to determine the nesting stage of this pair.

Other pelican observations:

One dead pelican was observed in Colony B.

At least two incubating pelicans in colony A had rusty colored breast - possibly from feeding in waters with ferris oxide (?)

A large line of approximately 360 pelicans were loafing on the east shoreline, adjacent to Colony A. Several groups between 5-8 were floating just off the shoreline on the shelf of the island. A concentration of 60-75 pelicans were loafing about 50 feet inland from shore adjacent to colony A. I am not sure if these are non-breeders, birds that abandoned nesting efforts, or mates to nesting pelicans.

Saturday evening just about dusk, most of these pelicans flew to east shore of pyramid lake just south of the rock and appeared to be loafing there. Just at dusk, several groups formed into lines and "v"'s as they flew north along the shore.

Feeding areas: groups of pelicans and cormorants were observed floating/feeding 50-100 feet off the north east corner of the island (north side of island). I actually observed sort of a "feeding frenzy" occur by both the cormorants and pelicans in this vicinity Saturday approximately 1030-1100 and 1300- 1400 hrs.- apparently successful foraging. They were also resting/loafing on the rocks in this area. Sunday morning, several groups of pelicans ranging from 12 to approximately 30-40 were floating in lines north and east about .25-.5 miles off the island. I did not observe them catching fish.



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Stillwater National Wildlife Refuge  
P.O. Box 1236  
Fallon, Nevada 89406-1236

June 19, 1991

### Memorandum

To: Files

From: Wildlife Biologist, Stillwater NWR  
Fallon, Nevada

Subject: Anaho Island Field Trip, June 19, 1991

Weather: Clear, sunny, A.M. winds 5-10 mph increasing by mid-day, 70-75° temperatures.

Bill Henry and Anne Janik arrived at Pyramid Lake Wednesday at 10:00 A.M. and headed to the island. Due to the northwesterly winds, we landed the zodiac on the southeast corner and approached the colonies from that direction.

Pelican production is extremely poor. There has been much nest abandonment since the last visit (June 1). A total of 9 pelican chicks between 5-7 weeks old were observed in the colonies. Approximately 16 pelicans appeared to be on nests (all in colony A) probably brooding newly hatched chicks. It is doubtful these late hatched chicks will survive to fledging.

Aerial surveys continue every three weeks to determine areas pelicans are foraging. The drought and evaporation has resulted in very few areas available for foraging sites. Pelicans appear to be concentrating at larger lakes/resevoirs such as Walker Lake, Topaz Lake, Rye Patch and Lahontan Reservoir. A majority of the pelicans remain at Pyramid Lake. Many failed nesters or non-breeders are loafing on the shoreline of Anaho Island and feeding just off the island on the north, east and south sides. There has consistently been several groups of pelican (total of approx. 350) loafing, and probably feeding at the south end of Pyramid (outlet of Truckee River). Other areas in Lahontan Valley pelicans have been observed are Canvasback Gun Club, Indian Lakes, Harmon and S-Line Reservoir.

The following table summarizes the results of the nest surveys on Anaho Island at this time.



Table 1. Summary of Anaho Island nesting surveys, 1991.

Species	May 18					June 1					June 19				
	A	B	C	D	G	A	B	C	D	G	A	B	C	D	G
AWPE															
Nests	1050	125	90	70		300	6 <sup>1</sup>	4 <sup>1</sup>	6 <sup>1</sup>		16	0	0	0	
Young	-	-	-	-		3+	4 <sup>1</sup>	3 <sup>1</sup>	3 <sup>1</sup>		7	0	0	2	
DCCO															
Nests	370	50	40	55		400	40	35	40		315				
Young	-	-	-	-		-	-	-	-		? <sup>2</sup>				
CAGU															
Nests	1700				1200	1700				1200	780				1200
Young	-				-	? <sup>3</sup>				? <sup>3</sup>	? <sup>4</sup>				? <sup>4</sup>
CATE															
Nests					0					1					2 <sup>5</sup>
Young					-					-					-
GBH															
Nests											40				
BCNH															
Nests											20				
SNEG															
Nests											6				

1. Peak hatch was occurring in pelican colonies about this time. In colonies B, C, D the young were 1-2 days old (newly hatched). At least three young were observed in Colony A between 1-3 weeks old.

2. Cormorants were hatching at this time. Nest status ranged from adults still incubating eggs to adults shading half grown nestlings. No counts were made of the young but productivity ranged from 1 to 3 nestlings per nest. Last years average of 2.65 young /nests appears applicable for this year.

3. 20% of gulls had hatched at this time, no chick count.

4. approximately 80% of gull nests hatched, adults were brooding/shading from 1-3 chicks ranging in size from 2-5 days old to half grown. No counts of chicks were made.

5. Approximately 26 Caspian terns were in colony G and appeared to be roosting not nesting.

June 19th, Trip to Anaho Island NWR

Senator Harry Reid

Wendell Newman - Aide

Congressman Barbara Vucanovich

Nancy Walther - Aide

Nevada Department of Wildlife

Terry Crawford - Asst. Director

Richard Heap - Regional Manager

Fish and Wildlife Service

Marvin Plenert - Regional Director

David Harlow - Field Station Supervisor, Reno

Ronald Anglin - Project Leader Stillwater NWR

Barry Whitehill - Asst. Manager

Bill Henry - Wildlife Biologist

Anne Janik - Wildlife Biologist

Bureau of Reclamation

Larry Hancock - Regional Director

Truckee-Carson Irrigation District

Lyman McConnell - Manager

Ted de Braga - President

Pyramid Lake Paiute Tribe

Elwood Lawery - Chairman

Fallon Paiute Shoshone Tribe

Merlin Dixon - Chairman

The Nature Conservancy

Suzanne Case - Western Regional Council

The Lahontan Valley Wetlands Coalition

Tina Nappe -

Sierra Pacific Power Company

Stillwater National Wildlife Refuge  
P.O. Box 1236  
Fallon, Nevada 89406-1236

July 31, 1991

Memorandum

To: Files

From: Wildlife Biologist, Stillwater NWR  
Fallon, Nevada

Subject: Anaho Island Field Trip, July 31, 1991

Weather: Calm, sunny, temps 90's, afternoon clouds and thunderstorms.

Anne Janik, Lee Bryant and photographers Jim and Cathy Stamates met Ernie Lantto and Bob Henderson on Pyramid Lake Fisheries boat at the Pyramid at 10:45 -arrived at island at 11:00 P.M.

Colony C - no pelican chicks survived beyond June 1, approximately 40 cormorant chicks perched on nests - all looked almost flight capable. We did not walk through this colony to determine bird mortalities.

Colony B - approximately 30 cormorant chicks remained on nests in colony; all were developed and feathered. A lot of broken egg shells remained in pelican nest depressions. We observed approximately 4 (1-2 day old) dead and dried up pelican chicks scattered in this colony obviously abandoned by adults just after hatch. Only 4 chicks were observed hatched on June 1 visit, 2 pelican adults still incubating eggs. This colony had no pelican chick survival. Two dead pelican adults were located in the colony and several more were located scattered between colony B and D. The carcasses were very dried out and it was difficult to determine if these birds died this year or last.

Colony D - the two pelican young observed during the June 19 visit were still present in the colony. These two were approximately 8-10 weeks old (almost flight capable) and appeared in good condition. One was caught and weighed 18 lbs. Twenty (fully feathered) cormorant chicks remained in a group on a nest complex within the colony.

Colony A - two well developed pelican chicks were roaming separately in this colony. One was caught and weighed 15 lbs. It was estimated to be approximately 9-10 weeks old. Additionally 5 pelican young were loafing on the adjacent shoreline and were most likely from this colony. All appeared to be fully feathered and almost flight capable.

There were many more cormorant chicks in the colony than previously estimated from the observation point. Many were well hidden in nests under the greasewoods. Most of the chicks were fairly well developed and appeared almost flight capable. However, there were approximately 75 that were still down covered and remained in the nest complex. As we walked through the colony an estimate of 500 cormorant chicks were observed.

Approximately 25 great blue herons chicks were still present on nests, however, many more were loafing on the shoreline. Nesting ranged from 1 to 3 per nest.

At least 10 black crowned night herons were observed (1 per nest) in this colony. These birds were very secretive and were not easily observed unless we were right near the nest.

Approximately 9 young snowy egrets were observed although more may have been present and undetected.

All the California gulls in this colony had fledged. Several dead gull chicks were scattered throughout the colony as well as many cormorant chicks and at least 2 pelican chicks.

Colony G - the gull colony was not checked , we have no information on the outcome of the 2 caspian tern nests.

Summary of Anaho Island nest survey's, July 31, 1991.

Species	# young in colonies					Total
	A	B	C	D	G	
American white pelican	7	0	0	2	-	9
double-crested cormorant	500	30	40	20	-	590
California gull	None in colony				Not checked	
great blue heron	18 <sup>a.</sup>					
black-crowned night heron	20 <sup>a.</sup>					
snowy egret	9 <sup>b.</sup>					
caspian tern	This colony (G) not checked.					

- a. Approximately 40 nests were observed on the island during June 19 using a conservative average of 1.5 chicks per nest, an estimation of 60 young great blue herons and 30 black-crowned night herons (20 nest) were produced.
- b. At least 9 snowy egret young (from 4 nests) were observed during this visit. Two nests contained 3 young each. More egrets may have been produced and not detected as a total of 6 nests were observed in June.





# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Stillwater National Wildlife Refuge  
P.O. Box 1236  
Fallon, Nevada 89407-1236

October 3, 1991

### Memorandum

To: Refuge Manager, Stillwater N.W.R.  
Fallon, Nevada

From: Wildlife Biologist, Anne Janik *Anne Janik*  
Stillwater N.W.R.  
Fallon, Nevada

Subject: Summary of Colonial Bird Populations on Anaho Island NWR, 1991

### Introduction

Anaho Island is a 248 acre National Wildlife Refuge established by Executive Order 1819 on September 4, 1913, by Woodrow Wilson. The island is surrounded by land owned by the Pyramid Lake Paiute Tribe. The primary purpose of Anaho Island NWR is to provide safe nesting habitat for colonial nesting species. It is one of nine major breeding areas used by the western population of American white pelicans.

### Methods

Anaho Island NWR was censused according to procedures outlined in the Stillwater WMA station Wildlife Inventory Plan. This plan calls for four trips to Anaho in April, May, June and July. An effort is made to count total nesting birds and estimate the number of nests for the following species: American white pelican, double-crested cormorant, great blue heron, California gull, and black-crowned night-heron. The location of each nesting colony is then mapped on photo-copies of aerial photographs.

The census of nesting birds has been conducted at the same location for several years. A good vantage point approximately 3/4 of the way up the island on the east side has been used. In 1991 censuses were conducted from the elevated vantage point using 20-60X spotting scopes and binoculars. Birds were counted and recorded as adults or young. Nests were counted if adults were incubating eggs or brooding small young. The location of each colony and its estimated number of nesting birds was then recorded on field data sheets, aerial photographs, and in biological field journals. The 1991 field surveys were conducted on April 18, May 18, June 2, June 19, and July 31. Censuses and colony mapping were generally completed between 0800-1100 before major nest exchanges occurred. One additional trip was scheduled this year (June 2) to better estimate peak hatching of the pelican colonies. This data complemented surveys being conducted to document pelican foraging areas in western Nevada.

### Results

#### American White Pelican

Pelican production was at an all time low this year. A total of 1335 nests were initiated in May and within 2 weeks all but 316 nests were abandoned (Table 1). There appeared to be no synchrony in nesting chronology within or between sub-colonies; Females were observed on June 2 incubating eggs, brooding 1-2 day old chicks and shading 10-14 day old chicks. During mid-June, 16 pelicans appeared to be on nests (nesting stage unknown) and 9 juveniles were observed in the colonies. By July 31, these same 9 juveniles were the only young observed, however several dead 1-2 day old chicks were observed in nest scrapes in the colonies apparently abandoned just at hatch. Due to the poor production no

efforts to band the young were made this year. The locations of the sub-colonies remained roughly in the same vicinity as in previous years, however a cohort of Colony A appeared to extend farther to the south than previously mapped (Figure 1).

Since 1987 pelican production has been on the decline (Table 2). Previous to this year, the lowest production on record occurred in 1988 with 35 pelicans fledgling from the island. Production increased to 395 and 365 during 1989 and 1990 respectively but remained far below the average production (1903-1990) of 3262 young.

Several factors may be responsible for this decreasing trend. The continuing drought has impacted most of the foraging areas historically used by pelicans. The inability of these birds to locate sufficient forage to sustain themselves let alone their young has no doubt been a primary cause of the tremendous nest abandonment occurring in the last four years. This summer pelicans were observed congregating at the larger lakes/reservoirs such as Walker Lake, Topaz Lake, Rye Patch and Lahontan Reservoir. Throughout the breeding season, a large concentration of pelicans were observed foraging and loafing at Pyramid Lake primarily at the outlet of the Truckee River. Pelicans were frequently observed foraging and loafing at the following areas in Lahontan Valley: Indian Lakes, Canvasback Gun Club, Harmon and S-Line Reservoir. Honey Lake, Humboldt Sink and Stillwater NWR, primary foraging areas used by pelicans in previous years were completely dry this year.

#### Double-crested Cormorant

During late June counts from the observation point, approximately 430 cormorant nests were estimated from all subcolonies. This is 49% fewer than the 1990 estimate of 845 nests. An average rate of production of 2.65 young/nest for cormorants was determined from sub-samples in each colony during mid July (prior to fledgling). This rate was used in projecting the 1990 production of 2,240 young. The 1991 production estimate was 1,340 young using this rate.

Approximately 590 total young were observed while walking the perimeter of the subcolonies during late July. Approximately 40% of the cormorant young were still in nests (averaging 2-3 young/nest); The remainder were fully feathered and moving within the colonies. Very little nesting synchrony appeared within or between subcolonies. It is possible that some of the cormorant young had already fledged at this time. Using these observations and the projected production, we estimate that the actual production ranged between 590 to 1,340 young.

#### California Gull

A total of 2900 California Gull nests were estimated for both Colony A and G. This estimate is 66% higher than 1990 (Table 3). The number of young produced was not estimated, however 1-2 young/ nest were observed.

#### Great Blue Heron

Approximately 40 nests were observed this year (Colony A). The number of nestlings ranged from 1-3/nest. Although no major fluctuations occurred in the nesting population during the last three years, there has been approximately a 73% decline from the nest numbers observed in 1986 and 1987 (Table 3). The populations of fish-eating colonial nesting birds were most likely inflated during these years as a result of excellent forage conditions created by receding flood waters in many of the wetland areas. Therefore caution must be taken in interpreting trends in the data for these years.

#### Black-crowned Night Heron

Approximately 20 Black-crowned night heron nests were observed in 1991. These birds are difficult to observe from the observation point and better counts have been obtained in past years by night-lighting during banding operations. Their nesting numbers have been fairly stable at 10-35 nests in the past 6 years (Table 3).

### Snowy Egrets

At least 6 nests were observed on June 19, 1991. These birds are difficult to count from the observation point because their nests are constructed low in the greasewood and usually obstructed from view. During July 31, nine young were observed from 4 nests while walking the perimeter of Colony A. Two nests contained 3 young. It is possible the production this year was greater than 9, however an accurate count was not obtained.

### Caspian Tern

Two nests with 4 adults present were observed in Colony G on June 2, 1991; Additionally 26 Caspian terns appeared to be roosting in the colony at that time. Observations were not made at a later date but it is doubtful these nests were successful because of the disturbance factor from the surrounding gull breeding population. Last year was the first time terns had been observed nesting in this colony since 1968. Five nests were observed producing at least one young.

Table 1. Results of nesting population estimates for Anaho Island, 1991.

Species	May 18	June 1-2	June 19	July 31
American white pelican Adults Nests Young	2670 1335 --	No Est. 316 No Est.	No Est. 16 9	No Est. 0 9
Double-crested cormorant Adults Nest Young	1030 515 --	1030 515 --	No Est. 430 <sup>a</sup> 1340	No Est. No Est. 590 <sup>e</sup> - 1340 <sup>a</sup>
California gull Adults Nests Young	No Est. 2900 --	No Est. 2900 --	No Est. 1980 No Est.	No Est. 1980 No Est.
Caspian tern Adults Nest Young	-- 0 --	4 2 --	30 <sup>c</sup> 2 <sup>d</sup> --	-- -- --
Great blue heron Adults Nest Young	No Est. 16 --	No Est. 30 --	No Est. 40 No Est.	No Est. No Est. 18 <sup>b</sup>
Black-crowned night heron Adults Nests Young	No Est. 5 --	No Est. 20 --	No Est. 20 No Est.	No Est. No Est. 20 <sup>b</sup>
Snowy egret Adults Nests Young	No Est. No Est. --	No Est. 5 --	No Est. 6 --	No Est. No Est. 9 <sup>b</sup>

<sup>a</sup> Cormorant nests usually average 2.65 yg/nest. (rate used in projected production)

<sup>b</sup> Potentially more young produced but already fledged or not observed.

<sup>c</sup> 26 terns were observed roosting in colony.

<sup>d</sup> Not rechecked; probable failure.

<sup>e</sup> Actual number of young observed.



Table 2. Estimates of nesting population size of American white pelicans on Anaho Island NWR, 1903-1991.

Year	# Of Young	# Of Nests	# Of Adults	YG/Nests	Source
1903	3000				Chapman (1908)
1917	5500				Evermann (1923)
1921	4181				Evermann (1923)
1924	4534	5000	10000	0.91	Hall (1925)
1931			7000	N/A	Thompson (1933)
1932	2994	3000	6000	1.00	Thompson (1933)
1940	3000				Bond (1940)
1942	3314				Alcorn (1943)
1944	5417				Alcorn (1946)
1950	4160	4900	9800	0.85	Marshall & Giles (1953)
1951	3742	5629	11258	0.66	Marshall & Giles (1953)
1952	4053	3973	7947	1.02	USFWS Anaho Island NWR
1953	3803	5598	11197	0.68	"
1954	5340				"
1958	6400				"
1959	3500	2750	5500	1.27	"
1960	4000	3750	7500	1.07	"
1961	3000	3650			"
1962	3000	3250	6500	0.92	"
1963	2500	3000	6000	0.83	"
1964	2314	2343	4686	0.99	"
1965	2700	2400	4800	1.13	"
1966	2550	2475	4950	1.03	"
1967	1655	3172	6345	0.52	"
1968	3090	2705	5410	1.14	"
1969	3400	2800	5600	1.21	"
1970	1822	3344	6688	0.54	"
1971	2980	2975			"
1972	2980				"
1973	3200				"
1974	1725				"
1975	1700				"
1976	2475				"
1977	1400	1500	3000	0.93	"
1978	1540	1710	3420	0.90	"
1979	1575	1750	3500	0.90	"
1980	1400	1500	3000	0.93	Anderson (1982)
1981	2880	3000	6000	0.96	Anderson (1982)
1982	3350	3400	6800	0.99	Anderson (1982)
1983	3300	5700	11500	0.58	USFWS Anaho Island NWR
1984	4800	2950	6000	1.63	"
1985	5000	4475	9000	1.12	"
1986	10000	10700	21500	0.70	"
1987	6000	6000	12000	1.00	"
1988	35	50	4000	0.7	"
1989	395	2400	4800	0.16	"
1990	365	4005	8000	0.09	"
1991	9	1335	2670	0.006	"
Average	3193	3455	7042	0.86	

Table 3. Nesting data for colonial nesting birds at Anaho Island, 1986-1991.

Species	1986	1987	1988	1989	1990	1991
American white pelican Nests Young	10700 10000 <sup>a</sup>	6000 5-6000	50 35	2400 395	4005 365	1335 9
Double-crested cormorant Nests Young	2500 No Est.	1500-2000 5400	500 No Est.	1093 No Est.	845 2240 <sup>c</sup>	515 1340 <sup>c</sup> /590 <sup>d</sup>
Great blue heron Nests Young	135 No Est.	140 175	25 No Est.	42 No Est.	30 No Est.	40 No Est.
Black-crowned night heron Nests Young	25 No Est.	20 No Est.	25 <sup>b</sup> No Est.	35 No Est.	10 <sup>+</sup> No Est.	20 No Est.
Snowy egret Nest Young	0 0	2 4	0 0	20 No Est.	10 <sup>+</sup> No Est.	6 9 <sup>+</sup>
California gull Nests Young	2660 No Est.	2800 No Est.	3300 No Est.	1000 400	1680 460 <sup>+</sup>	2900 No Est.
Caspian tern Nests Young	0 0	0 0	0 0	0 0	5 1 <sup>+</sup>	2 0

<sup>a</sup> Probable underestimate.

<sup>b</sup> 30 adults were present; actual nest number unknown.

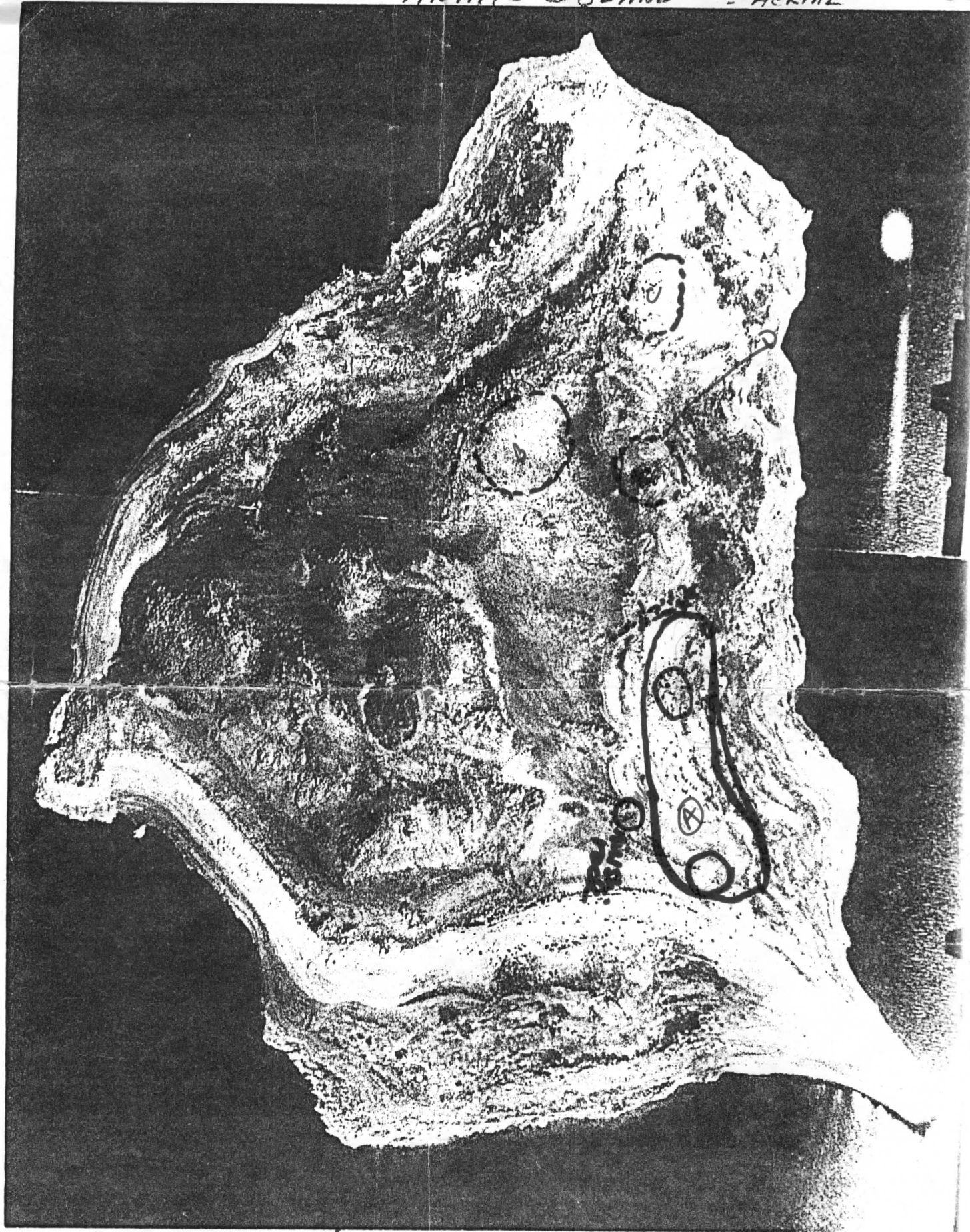
<sup>c</sup> Cormorant nests averaged 2.65 young/nest. (projected production)

<sup>d</sup> Total number of cormorant young observed in colonies.

Figure 1. Location of colonies on Anaho Island, 1991.







Colony. locations 6/12/1991



# AERIAL WHITE PELICAN SURVEY

5/13-14/91

AREA	ON SHORE	OPEN WATER	FEEDING	FLYING	TOTAL
1. Alkali Lake W.M.A.	0	0	0	0	0
2. Alkali Lake (N. Washoe Co.)	0	0	0	0	0
3. Bog Hot	0	0	0	0	0
4. Carson Lake	12	5	0	0	17
5. Carson River (Dayton - Toll)	No survey				
6. Carson Valley	1	2	0	0	3
7. Canvasback Gun Club	28	22	0	3	53
8. Continental Lake	0	0	0	0	0
9. Duck Flat	0	0	0	0	0
10. Fernley W.M.A.	0	0	0	0	0
11. Gerlach Hot Springs	0	0	0	0	0
12. Harmon Reservoir	29	12	0	0	41
13. Humboldt River	0	0	0	0	0
14. Humboldt W.M.A.	0	0	0	0	0
15. Lahontan Reservoir	74	34	0	6	114
16. Massacre Lakes	0	0	0	0	0
17. Massie/Mahala Slough	0	0	0	0	0
18. Mason Valley W.M.A.	0	0	0	0	0
19. New Year Lake	0	0	0	0	0
20. Old River Reservoir	0	0	0	0	0
21. Pyramid Lake	1,320	38	0	250	1608
22. Quinn River	0	0	0	0	0
23. Rye Patch to Lovelock	7	2	0	0	9
24. Rye Patch Reservoir	68	19	3	8	98
25. S-Line Reservoir	9	0	0	0	9
26. Sheckler Reservoir	0	0	0	0	0
27. Sheldon N.W.R.	0	0	0	0	0
28. Smith Valley	0	0	0	0	0
29. Soda Lakes	0	0	0	0	0
30. Spanish Springs	5	5	0	0	10
31. Stillwater W.M.A.	18	4	0	0	22
32. Topaz Reservoir	17	22	0	3	42
33. Washoe Lake(Scripps W.M.A.)	0	0	0	0	0
34. Walker Lake	164	69	0	28	261
35. Weber Reservoir	10	8	2	2	22
36. Wabuska Slough	0	0	0	0	0
37. Sleeper Mine	0	0	0	0	0
38. Summit Lake	0	0	0	0	0
39. Gridley Lake	0	0	0	0	0
TOTAL	1762	242	5	300	2309

Survey done by Norm Saake

1140 pelicans on Anaho Island

\* Dry MEERS  
No water/surface acres

*Incubation*  
*hatched*  
*A*  
*Hatching*  
*B-C-D*  
*9 Fledglings*

1 Pelican observations by area during aerial surveys April - November 1991.

Area	4/3	4/23	5/13	5/30	6/25	7/30	8/12 <sup>1</sup>	8/26	9/12 <sup>2</sup>	9/26 <sup>4</sup>
Anaho colony Shore	465 265 200	1980 1700 280	NS	165	270	9 juv 15		0	0	3
Pyr De	70	455	?	305	185	0	NS	44	0	0
Pyr L	85	166	1680	319	369	137	NS	4	7	1
SNWR	0	3	0	1	0	0	0	0	0	0
Indian Lakes	11	25	22	172	7	33	19	19	45	0
Can Club	447	120	53	89	90	160	53	63	15	35
Carson Lake	29	16	17	0	10	0	0	8	0	0
S Line	39	33	9	0	0	79	0	0	0	58
Harmon	35	55	41	20	14	4	3	16	0	16
Lahont Res.	166	115	114	444	300	333	NS	472	NS	138
Humb.R	3	2	9	3	0	0	0	0	NS	0
Rye Patch	194	160	98	228	250	910	NS	157	NS	41
Walker Res	219	200	261	579	1650	378	346	283	NS	81
Weber Res.	7	25	22	12	0	35	8	10	NS	0
Topaz	3	23	42	61	60	13	NS	NS	NS	NS
Wabusk	0	0	0	0	0	0	83 <sup>2</sup>	83 <sup>2</sup>	NS	6
Mason V.WMA	3	7	0	4	3	35	40	16	NS	12
Davis Lake	NS	NS	NS	NS	NS	191	NS	88	NS	NS
Carson River	7	22	NS	NS	0	0	NS	NS	NS	NS
E.Walk River	2	24	NS	2	0	0	NS	NS	NS	NS
W.Walk River	0	7	NS	10	NS	0	NS	NS	NS	NS

Reno Trucke River	7	14	NS	13	NS	NS	NS	10	NS	NS
		8		8						
Span. Spring	0	NS	10	NS	NS	NS	NS	0	NS	NS
L. Wash	0	0	0	40	0	0	NS	0	NS	NS
B. Wash	0	0	0	dry	dry	dry	dry	dry	dry	dry
Carson Valley	0	0	0	5	0	0	NS	NS	NS	NS
Total	1327	1480	2378	2315	2939	2128	—3	1263	—3	391

Not including  
ANAD FSL.

N

The following areas were included in the aerial surveys but pelicans were not observed:

Sagoupe Reservoir  
Fernley WMA  
Carson River wetlands  
Smith Valley

The following areas were surveyed in April and were found to be dry (remained dry throughout the summer):

Honey Lake  
Humboldt Sink  
Old River Reservoir  
Sheckler Reservoir

1. NDAD surveys (not all areas covered)
2. Draw down slumped fish
3. Not complete survey

Stillwater National Wildlife Refuge  
P.O. Box 1236  
Fallon, Nevada 89406-1236

**DRAFT**

April 2, 1991

Memorandum

To: Files

From: Wildlife Biologist, Stillwater NWR  
Fallon, Nevada

Subject: Flight Plan for Pelican Foraging Area Surveys

Dates: April 3 (bi-monthly through October).

Flight Level: 300-500 feet.

Depart: Fallon Airport approximately 0800 hours.

Flight Schedule:

S-Line Reservoir, Harmon Reservoir  
Stillwater NWR and WMA  
Sagouspe, Old River Reservoir, Carson River  
Massie-Mahala Slough, Desert Gun Club, Fernley WMA and Sink  
Humboldt Sink, Humboldt River, Rye Patch Reservoir  
Pyramid Lake,  
Truckee River, Spanish Springs wetlands  
Washoe Lake, Carson Valley wetlands  
Topaz Lake, Smith and Mason Valleys  
Webber Reservoir, Walker Lake  
Carson River, Lahontan Reservoir, Carson Lake Pasture

Return to Fallon approximately 1200 hours.



4/3/91 Pelican Flight: B. Henry, A. Janek, N. Saake  
8:30 → 2:00 (5.2 hr. Cost \$58.00 (165/hr.))

total  
1827

Unit	total* acreage	% Full	# acres	Pelicans	Comments
✓ S-Line	502*	90%	451	39	all were loafing
/Harmon	200*	70%	140	35	loofing / resting
Still pt.	1840	720%	100	0	
Dry Lake	563	50%	282		
Cattail	267	65%	175		
Doghead	100	50%	50		
Division	100	40%	40		
E. Alkali	585	65%	380		
S Tule	215	50%	100		
Goose	1006	65%	650		
Swanck	325	85%	280		
W Nut	325		30		
So Nut.	700	60%	420		
Good Lake	1025		200		
Can Club	3000	50%		444	greatest number on WARD & FREEMAN PONDS (30-40% in water 6% loafing / resting)
Cottonwood	30	934	20	0	
Vaughn Sto.	120		30	0	
Big Indian	175	50%	90	0	
W. Lake	115	75%	85	0	
Twin Lake	44		25	0	
Papoose	125	70%	87	5	april 2
Likes Lake	60	85%	50	6	4/3 1 Pel dead - gunshot (collected)
later	265	65%	173	0	
Carson River	?			7	(on lac pond NO Wolf's ranch)
Sagousby	2150		101	—	
✓ Old River	270*	0	0	—	
✓ Sheckler	2500*	0	0	—	

\* acreage A/ 1973 water planning resources (1952-55)

AF

unit      total  
acreage      % Full      # acres      Pelicans

Pyramid Lake	108,000*		12,300	605	(at elevation 3,802.7) see attached
Rye Patch Res.	11,400 ac.	25%	~2000	194	1955 - 11,400 acres
Sakuntal Res.	14,800*	30%	4,153	164	
Walker Res.	38,800*	ask mike	30,000	219	
Topog	1205*		1100	3	
Weber Res.	950*	60%	570	7	
Mason Valley Wild area.	400	80%	400	3	(1700 ac when Full)
E. Walker River	?			2	
Humboldt River (lock)	?			3	
Truckee River					
(T. meadows - Albers Lk)				7	
Carson Lake Pasture	10,000	50%	3500	29	

FERULEY U. Pond 300  
POND 2 95  
Slough 80  
Smk 1000 + Norm  
with 1st  
better rest } 800

Humboldt Smk 11,796<sup>N</sup> ~2,000  
L lake = 10,280, W. lake = 4,116, Toulon = 2400

H. River ?

SPANISH SPRINGS 300\* 80-90% 270

Truckee River meadows (Albers) 75-100

Carson River Valley  
Include Wetlands ~ (600) 90%  
Ambroselle Pond 50

Settlemeyer FIELDS 100

Brington Duck Pond 40

Wallers & gun Club 30

Mud Lake 100

total pel  
1827

very low - will pool soon

<u>Smith Valley</u>	total	%	present ac.	# pelicans
Beaman Res.	80*		70 ac.	
Artesia Lake	2500	5%	50 ac.	
Mrs. ponds	150		30	

<u>Walker River</u>				# pelicans
<u>Mason Valley</u>	WMA (Full = 1700 Average = 400)	80%	400-300	3
<del>St. Marys</del> cooling pond Ft. Churchill cooling pond	250			

<u>Wiber Res</u>	OK	950	60%	570	# pelicans
					7

Wobuska (Hwy) (Scottsbluff)	500	100%	500

misc. sightings:

4/9 Lohman Res - 132 M Seom 60 Loafing gull isle  
17 in narrows

4/9 Dely Dam ~10 Loafing in island

~4/8-10 Con Club - pond 50. Con Club House (wait)

?? 10x as many as were survey of 4/13

4/3/91 notes

Pyramid Lake - pelicans

250 congregating in area of colony A, 10-15 in area of colony D

200 loafing on shoreline edge or flying

70 loafing at trucker mouth

85 misc - mostly all in deeper water (off shelf) probably  
fishing - most were singles or small groups, several  
flocks of 15-30 in flight at north end of lake

Rye Patch Reservoir - scattered singles out in deeper water - foraging?  
several groups were loafing along West shore,  
several more 2 flocks ~30 each were flying at north  
end of reservoir - most scattered areas where  
river mouth is - on return the flying pelicans settled  
in the north end

Jabuntan Reservoir - group pelicans loafing at gull island -  
single pelicans in water in narrows and north  
end of reservoir - mostly not in groups South side  
as Carson enters is very shallow - only 1 flock - 40-50  
flying in that area -

Walker Reservoir - pelicans scattered throughout - most all  
were off shelf in deeper water - many singles  
scattered about throughout the lake - some loafing  
at south end

Topoz - only 3 loafing at water.

Comment: tape broke 1/2 thru flight so notes are not as detailed





# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Stillwater National Wildlife Refuge  
P.O. Box 1236  
Fallon, Nevada 89406-1236

April 23, 1991

Memorandum

To: Files

From: Wildlife Biologist, Stillwater NWR  
Fallon, Nevada

Subject: Flight Plan for Pelican Foraging Area Surveys

Dates: April 23 (bi-monthly through October).

Flight Level: 300-500 feet.

Depart: Fallon Airport approximately 0800 hours.

Flight Schedule:

S-Line Reservoir, Harmon Reservoir  
Stillwater NWR and WMA  
Sagoupe, Old River Reservoir, Carson River  
Massie-Mahala Slough, Desert Gun Club, Fernley WMA and Sink  
Humboldt Sink, Humboldt River, Rye Patch Reservoir  
Pyramid Lake,  
Truckee River, Spanish Springs wetlands  
Washoe Lake, Carson Valley wetlands  
Topaz Lake, Smith and Mason Valleys  
Weber Reservoir, Walker Lake  
Carson River, Lahontan Reservoir, Carson Lake Pasture

Return to Fallon approximately 1200 hours.

*4 1/2 Flight time*

April 23 aerial survey

Anne Jarik / Tim Bowen

pilot - Walt.

Dep. 8:15 Am - Return 12:15 (4.5 hrs).

Clear, fairly calm day

Total

1500

+ Annotated 2000

3500

(33)

S-line 90% full ~ 50 acres - group 10 feeding,  
Singles 13 floating  
group 10 feeding.

Harmon 90% (180 ac.) ring charge group 30 floating.  
group 5 loafing  
2 loafing  
4 singles floating.  
group 8 foraging.

(55)

Still pt. Res. 50 acres at best - drying up

U. Fox 100-110 ac.

Cattail 30% - 50 ac. best drying up

E. Aik. 65-70%

1 standing shallow water

(1)

Moose Lake 90-95%

1 standing shallow water

(1)

So Nut. 40%

W. Nut. Dry

Swan ck. 65-70%

So. Tule 60-80 ac.

Dump ponds (E. Suez) 40 ac. best.

Can Club

foraging 2, 2, 5

loafing 15, 10, 4, 50

standing shallow water 4, 1, 2, 18

flying 3

120

Lead Lake - dry (W pond ~ 15 ac best) 1 flying

(1)

Cottonwood 15 ac.

Big Indian 40 ac.

pupoose 50%

Likes Lake 65%

3 loafing.

(3)

{ loafing 5, 5, 3 }

{ feeding ? 5 }

(18)

Twinn Lakes 90%  
Indian Seed ponds 30 ac.

4/23/91

Carson River n. wolf's (lac) Flying 22 (were feeding) (22)  
later Res 70-75% 4 loafing (4)  
Humboldt River - low 2 loafing (2)

Humboldt Strik 500-500 SHEETWATER

Rye Patch Res loafing/floating 21, 21, 16, 40, 25, 12, 7 (160)  
floating / feeding by Dam 15

Pyramid Lake outlet of truckee several groups loafing

110, 35, 230, 15, 65 = 455

A. flying (feeding) 7, 35, 10, 8, 1, 1, 1, 1 = 65

B. floating deep water 3, 9, 10, 1, 5, 1, 12, 2, 1, 1, 3, 6, 1, 5 = 60

C. loafing shoreline 10, 5, 5, 5, 10, 6 = 41

NE corner 500' offshore. very shallow & sweetwater.

(621)

Anahe Island

Colony A - 800

Colony D - 300

Colony C = 350

Colony B = 300

} very rough

} estimates

Loafing 280 Shoreline

(2030) very rough est.

pelicans in all colonies seem to be better spaced not as  
Congregated in center as in 4/18 Trip - probably beginning  
nest phase of nesting - egg laying

A. These pelicans were probably floating but disturbed by us + flew

B. floating pelicans - most singles or spread out groups almost all  
in deep water - less than 10 on the shelf.

C. these were resting on rock outcrops along shore, or piers  
at Silt cliffs -

Carson Lake Spring 80% Full 16 Floating  
Islands 60% Full

(16)

Truckee River 2 loafing, 1 feeding (Weir)

(3)

Derby Cooling Pond 5 loafing,

(5)

Fernley Pond 1 75% Full }  
Pond 2 ? } 300 acres

Slough Pond - 10 acres - a lot of aquatic veg  
Sink = 1000 STREET WATER

Reno Ponds 11 loafing, (2 in <sup>standing</sup> shallow H<sub>2</sub>O)

80 ac. 3 swimming

(14)

2 loafing shoreline.

WASHOE - little 100 ac.

Big very low 50% murky water

Saverton Res. Carson inlet ? 10 loafing mudflat  
Floating 3, 1, 3, 4, 2, 3, 4, 5, 1, 1, 5, 1, 4, 1, 12  
Loafing 7, 2, 12, 3, 10, 10, 12,  
Flying

(115)

S. Walker 8, 3, 2 loafing  
12 Flying

(24)

Webber Res. 20 ac 21 loafing / flying  
4, 1 Floating

(25)

Walker - Floating 35, 1, 3, 2, 2, 2, 15, 1, 10, 6, 4, 15, 1  
1, 2, 3, 16, 3, 1, 6, 1, 4, 22, 20  
Loafing 11, 13

(200)

W. Walker @ TOPAZ 7 loafing / resting on river

(7)

TOPAZ (80%) Floating 17, 1, 5

(23)

Mason Valley WMA low same as last

Cooling ponds -

Hatchery (Mason Valley) 50 ac. 1 Floating, 6 loafing. 7



## Notes on flight

- active foraging (feeding frenzy) was observed by small groups of pelicans grouped tightly in a circular arrangement - at S-line and Harmon Reservoir early in AM (8:15-8:30 AM) good spots a good feeding time. - also groups of pelicans loafing on islands or peninsulas on these reservoirs, some standing in shallow water near shoreline as if to cool feet.
- Can Club - few single pelicans floating in Pappis Pond more larger groups loafing or swimming / floating near shore at SE Dutchbill + Ward Pond - Also a few in Mallard and Freeman Pond.
- Consistently see a small group in a bend of Carson River just north of Wolf's property. (10-18 loafing mainly must also be feeding) and also small groups or singles in Pappoose and Liles Lake and Leter.
- Rye Patch - several groups most likely feeding just below dam on the river rest are scattered singly thru-out deeper water off shore. A few groups loafing / resting on shoreline W. side and also several groups at north end at river outlet, very shallow water there.
- Pyramid Lake - 450+ loafing in large groups at Truckee inlet - most appear to be on land or in shallow water - did not appear to be feeding at the time. A lot of single pelicans or <sup>singles</sup> spread out loosely - <sup>almost in formation</sup> following a line just south of avoca - a few singles scattered thru-out Lake - mostly on W. side - A lot of loafers on rocky peninsulas on W. side up + down from boat launches and also at Sutchup.

pelicans at arado seem to be in nest initiation / egg laying stage in the 3 smaller colonies - Colony A is probably more advanced by 5-7 Days - on last flight this colony was the only one foraging at the time

Rena Ponds (Colberts + Pond by Helms project) host a scattered few as well as Daily cooling ponds

Tahatan Res - a group loafing / flying at mouth of Carson River - few scattered thru-out in water floating - particularly in narrows + NE corner + by Dam - rest are loafing / resting on islands + shoreline (guil island + one on west side of Reservoir.

E. Walker - most are near to Weber Res + Walker Res

W. Walker - a group as it enters to PAR - a few singles scattered thru the Lake - mostly at mouth

Walker Lake - most pelicans are in loose formed groups in middle of Lake floating - few on east side, few are loafing - most floating obviously deep water.

Utah Valley - Most of wetlands around Hatchery Area - each flight have observed a few in these areas.

Carson Lake - only 14 today but the following week observed ~ 50 in Cabin Drain fishing

DID NOT FLY SPANISH SPRINGS / CARSON VALLEY

Stillwater National Wildlife Refuge  
P.O. Box 1236  
Fallon, Nevada 89406

June 25, 1991

Memorandum

To: Files

From: Wildlife Biologist, Stillwater NWR  
Fallon, Nevada

Subject: Flight Plan For Pelican Foraging Area Surveys

Dates: June 25, 1991 (bi-monthly through October)

Flight Level: 300-500 feet.

Depart: Fallon Airport approximately 0800 hours.

Flight Schedule:

S-Line Reservoir, Harmon Reservoir  
Stillwater NWR and WMA  
Sagouspe, Old River Reservoir, Carson River  
Massie-Mahala Slough, Desert Gun Club, Fernley WMA and Sink  
Humboldt Sink, Humboldt River, Rye Patch Reservoir  
Pyramid Lake  
Truckee River, Spanish Springs Wetlands  
Washoe Lake, Carson Valley Wetlands  
Topaz Lake, Smith and Mason Valleys  
Webber Reservoir, Walker Lake  
Carson River, Lahontan Reservoir, Carson Lake Pasture

Return: Fallon Airport approximately 1200 hours.

Pelican Foraging area Flight June 25 , 1991

Observers: A. Janik, Bill Henry (1st part)

Weather: Calm winds, most water bodies are relatively calm as well

Time: 0600-1100 (\$800)

<u>AREA (acres)</u>	<u>ACTIVITY #AWP</u>	<u>TOTALS</u>
S-Line (90%)	-	
Sprig (100 ac.)	- alot of stranded and dead carp in Cabin Drain	
York/Rice (dry)	- ( 6-10 AWP standing in shallows sprig June 26)	
Harmon (80%)	floating 4,10 possibly feeding bunched(all shallow)	<u>14</u>
U. Fox (80 ac)	-	
Goose (dry)		
Swan Ck (65%,200ac)	-	
E. Alkali (70%,400 ac)	-	
Division (5 ac)-	-	
Doghead (70%,80 ac)	-	
Still Pt. Res. (65 ac)	-	
Can club (80%)	floating 1,1,	<u>90</u>
North clubhouse	flying	
	floating/loafing ? (shallow water)	15,5,25,25,10,2,7
	resting/loafing on waterline	
south clubhouse	feeding in shallows	
	loafing/feeding	
	loafing/resting	
cottonwood (15 ac)	floating 5 (3-5 AWP observed 7/1)	<u>5</u>
Big Indian (70%)	- (one floating 7/3)	
Likes Lake (80%)	standing in water 2	<u>2</u>
Upper Lake (80%)	-	
twin (80%)	-	
seep ponds 15ac	-	
Papoose (90%)	- (at other times have consistently observed 8-12 AWP in this unit loafing on shore or floating singly)	
Carson R.(N. Wolf's-dry)		
Leter (75%, <sup>185</sup> <del>200</del> ac)	-	
Humboldt Sink (dry)		
Humboldt river intermittently dry or very low		
Rye Patch (+)	resting/loafing? shoreline/ shallow water 23,1,	<u>145</u>
	standing in middle 40,10,15,10,15,1,15,5 (feeding?loaf?)	
	floating 1,1, 1,1,1,1,1	
	(note: L.N. observed 250 AWP loafing Pitt-Taylor Arm up river on 7/2)	
PYRAMID L.(south)	loaf/rest shore/shallow tight clusters @mouth 35,150,	
	floating deep	
	flying 1,	
(Anaho Isl)	loaf shore 270	<u>824-185</u>



(east shore)	floating deep 14x1,	
(sweetwater)	floating (Shallow) 1,8,10,1,1,1,1,2,1,1,1, loaf shore/shallow 12,6,1,1,1,65,1,15,1,5,5,10, flying 1,	
(needles)		
(west side)	loafing shore/shallow 20,40,25,6,85, floating shallow 1,4,10, 3(hatch), floating deep(350'off) 1,1,1,5(hatch) (note: AWP appear to be scattered around the lake,loafing/resting on shoreline or standing in very shallow water on shelf,very few are actually in deeper water floating-if so they are single. this may be due to time of day or that it is not a calm day on lake-some whitecaps but I have seen worse winds)	
Truckee River (min. flows) -		
Fernley	not surveyed	
-		
-		
F. Sink (? ac)	not surveyed	
Lahontan R(1002 ac.)	loaf shore/shallow 5,10,3,2,3,10,15,30 floating in narrows(deep)1,1,1,1,2,4,2,3,1,1,2,7, floating(shallow) 2,2,1,30 flying 1, 1,1,1	<u>300</u>
(mouth Carson R.)	float/feed (shallow)4,1, 15 flying 2,75(disturbed),55 (one dead)	
Truckee River	not surveyed	
" Reno	not surveyed	
Alberts ? Reno	not surveyed	
Washoe Little	-	
between Big	-	
Washoe Big-dry	dry	
NDOT wetlands 5 ac	-	
Incline wet (90%)	-	
Ambrosini (90%)	-	
Settlemyer (90%)	-	
Topaz Lake		
" mouth	loafing 60(?)	<u>60</u>
W. Walker	-	
Mason WMA (90%)	loafing shallow 3	<u>3</u>
E. Walker	-	
Weber Res. (65%)	-	

Walker Lake

loafing shore/shallow 90,15,4x1,80,15,10,35  
20,15,10,30,15,5,10,5,10,20,40,20,15,5,30,10,  
15,10,5,5,5,2,25,90,30  
floating(shallow)2,2,1,2,3,10,2,5,8,2,  
23,3,7,4,2,7,1,1,2,1,5,20,1,3,6,3x3,4,7,2,1,  
50,6,120,8,2,2,5,1,1,2,2,  
floating (deep 20'off) 2,2,15,8,2,5,1,1,2,2,2,  
(note:add another 230 perched/loaf,240loafing=470)

1650

GRAND TOTAL= 3,000

Notes: On 7/2/91 Bill Henry observed approx. 300-350 AWP at Davis Lake, California about 60-70 air miles from Pyramid Lake. The birds leaving Davis were headed in an easterly direction possibly headed to Anaho.

Additionally, Larry Neel (6/29) observed approx. 250 AWP at the Pitt-Taylor arm of Rye Patch farther up river then we flew. But it probably received more water and is very shallow. Not sure of fish potential in that area. Previous to this flight the pelicans were congregated/loafing at the north end of Rye just as the river entered. A likely fishing area due to its shallowness. We will probably try to cover these areas during the next flight.

Pelican Foraging area Flight July 30 , 1991

Observers: A. Janik

Weather: Calm winds, most water bodies are relatively calm as well

Time: 0600-1100 (\$800)

<u>AREA (acres)</u>	<u>ACTIVITY #AWP</u>	<u>TOTALS</u>
S-Line (90%)	- Floating 1,2,70 loafing(shallow) 4 loafing shore 2	79
Sprig (200 ac.)	- 0 (shallow,murky)	
Harmon (85%)	floating 2,1,1	4
U. Fox (60 ac)	-	
Goose (dry)	-	
Swan Ck (dry)	-	
E. Alkali (dry)	-	
Division (dry) -	-	
Doghead (dry)	-	
Still Pt. Res. (20 ac)	-	
cottonwood (2 ac)	0	
Big Indian (35%)	0	
twin (50%)	0	
upper (80%)	floating 6	
likes (95%)	loafing shore 1	
Papoose (85%)	floating 1, shore 1	
Leter Res.(65%)	loafing shallow 22,2	33
Can club (70%)		
North clubhouse	flying 5 floating/loafing (shallow water)50,10,10,15,45,3,3,4,2,1	
south clubhouse	loafing/shallow 5,2,3,2,1	160
Humboldt Sink (dry)		
Humboldt river intermittently dry or very low		
Rye Patch (+) Pitt-Taylor Arm and upper reaches of River (shallow + braided)	flying (probably disturbed) 2,65,6,9 loafing shallow-15,4,90,90,45,50,20,75,25,30,10,5,5,8,10 2,10,5,10,75,10,23,15,130,10,10,17 (loafing/standing in river at mouth res.)	
Reservoir	floating deep 1,1,4 loafing shoreline 40,65	910

PYRAMID L.	flying 1 floating (shallow) 2,3 loafing shore/shallow 5,10,25
Sweetwater Bay	loafing shore 8,5,25,2 floating shallow 7,1 floating deep 2,31 (feeding) 10
Anaho Island	loafing shore 10,5

157

This was the fewest pelicans observed on the Lake, none were at the Truckee Mouth with approx 500 acres of shallow water as river enters. The island was visited day after the flight and a total of 9 young remained with no adults loafing on shoreline. Pretty dismal outcome for this breeding season.

Truckee River (min. flows) -not surveyed

Fernley not surveyed

-

-

F. Sink (? ac) not surveyed

Lahontan R(	ac.)	loaf shore/shallow 2,25,20,10 floating in narrows(deep) floating(shallow) 10,10,4,4,8,17,4,1,2,2,10,60,6,20,5 flying 1
(mouth Carson R.)		float/feed (shallow) 3,3,9,3,1,8,24,10,15,2,19 loafing shoreline 5,10

333

Mouth of Carson River is dry just beyond last camping area on south beach.

"	Reno	not surveyed
Alberts ?	Reno	not surveyed

Washoe Little	dry
between Big	dry
Washoe Big-dry	dry
NDOT wetlands 5 ac	dry
Incline wet (90%)	0
Ambrosini (90%)	0
Settlemyer (90%)	0

Topaz Lake	floating deep 5,3
------------	-------------------

"	mouth	loafing 5
---	-------	-----------

Alot of boating activity possibly disturbing pelicans in Lake

13

W. Walker	0
E. Walker	0

Mason WMA (200ac) loafing on shallow 15,20(2 tight groups) East Pond  
3 ponds east 80 ac, west 60 ac and 25 ac, hatchery 200 ac. -good emergents



378

Davis Lake (60%) ? acreage

floating shallow 1,10,1,3,4,6,2  
loafing shore/shallow 30,6,110, 18 (north end of lake)  
very shallow lake, alot of algae growth, murky water, some fishermen

Notes: obviously reduction in number of pelicans in the Lahontan Valley, approx 700 less then last survey. Few pelicans are remaining at Pyramid Lake but seem to have shifted to Rye Patch Res, the upper reaches of Res into Pitt-Taylor Arm - river braids and is very shallow. Also the Carson River has dried up as it enters Lahontan Reservoir, there are fewer pelicans in this reservoir and most are concentrating on the north half by dam (above Narrows) which is a shift from the last flight (pelicans at mouth). There are few Pel at Topaz and the intensive use by ski/fishing boats and recreationalists may be a reason for that. There appeared to be less pel at Walker Lake particularly since the last flight, however there is still a substantial use. Most pelicans appeared to be along the shoreline either loafing on land /shore or on the shallow shelf. There are few pelicans in the deeper water off shore. Also few tight groups of pelicans (feeding) - most seem to be singly floating or bunched in a group loafing.

New areas surveyed were Davis and Frenchmens Lake which had about 150 (no substantial numbers as previously thought by Bill on his trip there). I talked with Mike Wolger (?) of Cal. F & G in the Bishop area and he has not observed a substantial increase in the number of Pel at Crowley or the other lakes in the area. But as of 8/22 he will keep a better look out for the birds which should be starting to pass through. Wetland inventory conducted for L.V. 8/22-23. so will have a good idea of wetland acres in the valley.

Pelican Foraging area Flight May 30, 1991

Observers: A. Janik, D. Lee

Weather: Cool, winds gusting, rain-hail-snow squawls dispersed,  
most lakes had white caps

Time: 0600-1023

AREA (acres)	ACTIVITY	#AWP	TOTALS
S-Line (90%)	-		0
Sprig (45%)	-		0
York/Rice (25%)	-		
Harmon (90%)	flying 1,4,1,2, floating 10, 1,1 shallow (south end)		20
U. Fox (90 ac)	-		
Goose (40%) 402 ac.	-		
Swan Ck (80%) 240	flying 1		①
E. Alkali (70%) 409	-		
Division (10 ac)	-		
Doghead (90%) 90 ac	-		
Can club (90%)	floating 11,2,5,10,5,7, flying 5,		
North clubhouse	floating/loafing ? tight cluster 23, resting/loafing on waterline 15,2,10		89
south clubhouse	feeding in shallows 3? loafing/feeding 2,1, loafing/resting 2, 7 group, 1 drain		
cottonwood (70%) 12	-		
Big Indian (50%) 88	feeding 9		
Likes Lake (80%) 48	floating 6		
Upper Lake (80%) 42	floating 2		
twin 80% 35	-		
seep ponds 15 ac	-		
Papoose (80%) 100	flying/were floating ? large group 110, 20 floating 10,15		172
Leter (75%) 185	-		
did not survey area in river north of wolfs ranch			
Humboldt Sink (dry)			
Humboldt river	floating/resting 1 shallow		
N.Lovelock	floating 2, shallow		
Rye Patch (+)	resting/loafing? shoreline 10,12,15,30,120 cluster(isl.) floating 2,2,2, flying 5,1,2,9,30		220
PYRAMID L.(south)	loaf/rest shore 70,150, 85 all tight clusters @mouth floating deep 2,1,1,1,1,10		305
(Anaho Isl)	loaf shore 55,60,50		
(east shore)	floating deep 2,2,2,1,25,5,1,1,		

319

(sweetwater)	floating 16, 15, 1, 1, 2, 1 (Shallow)	
	loaf shore 25, 10,	
	flying 8,	
(needles)	floating 2, 3 (shallow)	
(west side)	loafing shore 5, 35, 12 cluster, 75 cluster,	
	floating 1, 1, 1, 1, 1, 1, 5 cluster, 1, 4, 26 hatch, 2, 1, deep	
	flying 1, 1,	
	feeding ? deep 5,	
Truckee River	flying 2,	
Fernley #2 (60%)	-	
Slo (25%)	-	
#1 (70%)	-	
F. Sink (500 ac)	not surveyed	
Lahontan R (1002 ac.)	loaf shore 15, 5, 10, 1	
	floating 2, (1, 1, 1, 2, 3, 5, 12 narrows) (deep)	
	2, 2, 15 cluster, 10, 8, 2, 1, 110 cluster (deep)	240
	flying 4, 3, 10, 9, 2, 1, 2, 1, 1,	
(mouth Carson R.)	float/feed 6, 10, 1, 5, 1, 80 group, 100 group (disturbed)	
	(shallow)	204
Truckee River	loafing shore 5 by plant, shallow 1	
" Reno	loafing shallow 1, 3,	
Alberts ? Reno	loafing shore 10,	
Washoe Little	forage shallow 3,	
between Big	forage shallow 25, 12	
Washoe Big-dry	-	
NDOT wetlands 40%	-	
Incline wet (90%)	-	
Ambrosini (90%)	loafing/shallow 5 (1 dead)	
Settlemyer (90%)	-	
Topaz Lake	floating deep 15	
" mouth	loafing shallow 40 cluster, 5, 1	
W. Walker	floating/fishing 10 group	
Mason WMA (90%)	loafing shallow 1, island 3,	
E. Walker	flying 1,	
	loafing 1,	
Weber Res. (65%)	loafing shallow 7, 5, (1 dead)	
Walker Lake	loafing shore 25, 55, 35, 30, 100, 160, 40, 11, 55, 47, clusters	
	floating, 1, 1, 2 deep	
	flying 1, 1, 15,	519

Notes: Pelicans appear to be more dispersed at this time. Few or none at S-line and Harmon unlike the other flights where at least 50 were feeding/loafing. A lot more pelicans using Lahontan Reservoir particularly at the mouth of the Carson River—there must be some fish spawning. Several were observed at Washoe Lake which have not been observed before. The area between

Little Washoe and Big Washoe is sort of braided channels and very shallow water. Most of the pelicans there appear to be loafing. Fewer at Rye Patch but again most were loafing or possibly feeding at the north end-@ inlet - braided river bed and obviously shallow water. Will check on the fish species occurring there. The usual 300-350 pelicans were in 3 tight clusters at the mouth of the Truckee River at Pyramid Lake. More pelicans were scattered on the east and northeast (Sweetwater Bay) of the Lake. On previous flights they were mostly on the west side. Possibly due to the wind direction. Because of the rain storms and high winds the lake was very choppy with white caps and most pelicans were on the shoreline balled up in tight groups I assume for thermo-regulation. a few groups of pelicans were scattered along the west shore as usual either loafing on shore or rock outcrops (particularly at Sutcliffe fisheries) or floating singly just off shore. The locations of shallow water at Pyramid are at the river inlet and Sweetwater Bay - all remaining pelican observations were in deep water along the shoreline. Did not really observe any pel in the middle of lake but there were so many whitecaps it would be hard to observe a pelican. It is difficult to determine if single or small dispersed groups of pelicans floating in water are actually foraging (they would have to be observed for longer periods to determine that), groups of pelicans standing or loafing in shallow water may also be foraging but not observed long enough to determine that either. Most pelicans that are flying were most likely disturbed by the aircraft from their previous activity which was either floating or loafing. I have only observed 2-3 instances of active feeding frenzy during the flights (April @ Harmon and S-line).



# Pelicans observed on aerial Survey Aug. 26, '91

Huuma	0
Rye Patch	157
Sleeper Mine	0
Walker lk.	283
Carson lk	8
Harmon R.	16
Stillwater	—
Indian lks	3
Ketch	16
Can Club	63
Lahontan	472
Wabuska Sh.	84 - <sup>Mason valley</sup> Geothermal plant.
Mason V. WMA	16
Weber R.	10
Washoe lk	0

Sept. 26 → NORM'S NEXT FLIGHT.

Harmon 16.

Pelican Foraging Flight- incomplete flight - Norm Saake flew most of tyhe areas on August 26 and will give us the results. The following areas were not surveyed on that date.

Date: August 30, 1991

Time: 6:00 - 8:00 (2 hrs)

Pyramid Lake - Lake at mouth of river is very shallow est. 500 acres

Mouth      loafing/perched 40 in tight group(possibly feeding)  
             floating deep- 1,1,1,  
             flying, 1

North (Sweetwater)-floating 1,1

West (Needles) floating shallow 1

West side      flying 1

TOTAL 48

Davis Lake (CA)- appears to be fairly shallow on edges and probably deeper in middle; the water is very murky so difficult to determine. several fishing boats on lake during flight. Largest groups are on shallow north end and on the far shoreline from our approach. Pel groups in same area as last flight. A few larger groups 25-30 in lake appear to be loafing (standing) close together in shallow water not observed to be actively feeding at this time.

floating 1, 1, 2, 10,30 (possibly feeding),2,2,1,3,2

loafing shallow 2, 25, 5 (island),1,

flying (disturbed?) 2,1,

TOTAL 88

RENO-Washoe gravel pit (Helms)

10 pelicans perched or standing in shallow water on south end

Truckee River- coke generation plant (Patrick ponds?)

no pelicans observed

Total for flight 146

Aerial Monitoring Surveys of Foraging Areas  
of The American White Pelicans Nesting on  
Anaho Island National Wildlife Refuge

One of the largest nesting colonies of the American White Pelican in North America is located on Anaho Island, in Pyramid Lake, Nevada. Census data indicate that as many as 10,000 pairs have nested there as recently as 1986 (SNWR unpublished data).

It has been shown that pelicans are opportunistic and often fly great distances from nesting areas to feed (Low et. al. 1950, Behle 1958, Lingle and Sloane 1980, Dunbar 1984). White Pelicans have frequently been observed foraging in the following areas surrounding Pyramid Lake: Washoe lake, Walker Lake and the Humboldt River (Hall 1925), ponds and ditches in (Fallon) Churchill Country (Alcorn 1943), and the Stillwater Marshes (Marshall and Giles 1953). Knopf and Kennedy (1980) surveyed water areas within 100 km of Pyramid Lake and observed pelicans foraging primarily in the Humboldt Sink, the Stillwater Marshes, Honey Lake, California and Pyramid Lake. The occurrence of pelican use of these areas shifted in response to the spawning periods of fish species with the exception of Honey Lake. Declining water levels at Honey Lake in 1976 resulted in a temporary concentration of fish and attracted a large number of pelicans (Tait et. al. 1978). Diminished fish availability and/or a reduction in foraging areas surrounding pelican colonies can be a significant factor influencing the nesting success of a colony (USFWS 1982 and 1984). Behle (1944, 1949) indicated that periods of drought accompanied by lower lake levels in the Great Salt Lake affected the pelican breeding colony in 1935. Reduced colony size at Anaho Island in 1963 was considered a result of the previous years low water and decreased fish populations on the Carson and Truckee River drainages (Lies and Behle, 1966). Pelicans are capable of commuting long distances between nesting sites and foraging areas. The maintenance of wetlands within 100 km of a breeding colonies are essential for successful pelican production (Knopf and Kennedy 1980, USFWS 1984).

Since 1987, western Nevada has been affected by severe drought conditions. By August of 1991, the fifth year of the present drought period, fewer than 12,000 acres of wetlands remained in Lahontan Valley. Honey Lake and Humboldt Sink, prime foraging areas for pelicans in the past were now completely dry and approximately 3000 acres of wetlands remained in the Stillwater Marshes (including the adjacent private lands). The continued reduction of the primary foraging areas of pelicans nesting on Anaho Island and impacts on the colony production will be discussed.

The objectives of this study are to determine 1) the areas within 100 km of Anaho Island available as foraging sites for the pelicans, 2) occurrence of fish species and spawning periods for each water area, 3) document pelican use of potential foraging areas through the breeding season and 4) document shifts in frequency of pelican use in relation to specific nesting chronology.

#### METHODS

Carson Lake, Honey Lake, Humboldt River Sink, Lahontan Reservoir, Stillwater National Wildlife Refuge, Washoe Lake and Pyramid Lake were previously identified as foraging areas for pelicans from Anaho Island (Hall 1925, Bond 1940, Alcorn 1943, Marshall and Giles 1953, Knopf and Kennedy 1980). These areas as well as other wetlands, rivers, reservoirs and lakes within a 150 km radius of Anaho

Island were surveyed to determine total surface acreages and pelican use (Appendix for list of areas surveyed??). From April 3 through September 26, a total of 6 aerial surveys were conducted by the USFWS and 4 by Nevada Department of Wildlife. The Surveys began between 6:00 adn 8:00 A.M. and were completed within 4-5 hours. Areas that became dry were were eliminated on subsequent surveys resulting in shorter flights by late summer.

Davis Lake, California (approximately ? km west of Anaho Island) was surveyed on July 30 and August 26 after observations of pelicans in the area were reported.

An estimate of the surface water coverage was made for each water area and whenever visible an estimate of the extent of shallow areas (shelf, deltas). The Bureau of Reclamation, Dept of Wildlife, and Specific Indian Tribes were contacted to obtain estimates of full capacity and present capacity or surface acres for reservoirs, lakes and wetlands managed by the respective agency.

As pelicans were observed group size and specific locations in an area were recorded and the following activities: flying, floating - deep water -shallow water, loafing -on shore -in shallows, actively feeding. Flight altitudes remained approximately 500 feet, therefore it was not possible to detect surface feeding or spawning fish as anticipated.

American white pelicans have rarely been observed diving for fish (Bent 1924, Hall 1924, Gunter 1958). The structure and length of their beak as well as observations of their foraging behavior indicate the birds are restricted to the upper 1.25 meter of the water column (Palmer 1976, Knopf and Kennedy 1980). Anderson (1991) observed that the preferred foraging habitat during day light hours away from Pyramid Lake consisted of open water 0.3 to 2.5 meters deep. The occurrence of fish in the littoral zone of water areas surveyed for this study was not determined. Species, spawning periods and other information for each area was obtained from the Nevada Department of Wildlife and summarized for this report.

The colonies were visited for ground counts and observations to determine the location of sub-colonies, nesting chronology, number of nests and number of pelicans fledged. Ground observations were conducted on April 18, May 15, June 1, June 19 and July 31. On June 1 and 2 approximately 7 hours and 5 hours of observations respectively were conducted from a ridge overlooking the colonies to determine hatching dates and observe food exchanges.

## Results

### CHRONOLOGY:

In 1991, Pelicans first arrived in Lahontan Valley by March 11, at Pyramid Lake by March 16-17, and on Anaho Island by March 30. On the first (April 3) aerial survey, pelicans were observed congregating in groups in the colony areas and along the shoreline on Anaho Island. During ground observations on April 18 incubation in all sub-colonies was underway. By May 15, adults in sub-colony B, C, and D were incubating eggs. Adults in Colony A appeared to be incubating as well, however on the subsequent visit (June 1) several young approximately 2-3 weeks old were observed. These young were probably just hatching on the May 15 visit. Through back-dating, it is estimated that onset of incubation for the earliest breeders (located in Colony A) was approximately April 10-15 and hatching occurred between May 7-21. Nests from Colony B,C and D were just hatching on June 1-2. Most nest observed had one naked (1-3 day old) chick , all closely brooded by an adult. At least 1 or 2 adults in these colonies were still incubating eggs at this time. During the June 19 ground count only nine chicks



approximately 6-7 weeks old were observed in the colonies. These nine young were again observed on July 31 and appeared in good condition. Approximately 6 were loafing on the shoreline and appeared almost flight capable. The remaining 3 remained in the deserted colonies (A and B) and appeared to be slightly less developed than the others (probably 2-3 weeks younger).

#### NEST SUCCESS:

The nest status for each colony through the 1991 breeding season is shown below:

Summary of nest surveys for White Pelicans on Anaho Island, May 15-July 31, 1991.

Anaho Island	May 15	June 1	June 19	July 31
A	1050	300 7	16 7	7
B	125	3 3*	0 0	0
C	90	4 1*	0 0	0
D	70	6 4*	0 2	2
TOTAL	1335	313 15	16 9	9

Within two weeks of nest initiation, approximately 1000 pairs abandoned their nest. From a total of 1335 nest initiated on Anaho Island in 1991 only nine pelicans survived to fledging. This was the poorest production on record since nesting surveys were recorded in 1903 (Table 2). The locations of the sub-colonies remained roughly in the same vicinity as in previous years (Figure 1).

Since 1987 pelican production has been on the decline (Table ?). Previous to this year, the lowest production on record occurred in 1988 with 35 pelicans fledging from the island. Production increased to 395 and 365 during 1989 and 1990 respectively but remained far below the average production (1903-1990) of 3262 young.

#### FORAGING AREAS:

From April through July, large concentrations (Gr 100) of pelicans were consistently observed on Walker Lake, Lahontan Reservoir, Rye Patch Reservoir and Pyramid Lake. The Canvasback Gun Club, wetlands adjacent to Stullwater NWR attracted a large number of pelicans in early April. This was one of the few remaining wetlands in Lahontan Valley and was consistently used by groups of pelicans through-out the summer.

The following areas received less frequent and sporadic use by pelicans: Harmon Reservoir, S-Line Reservoir, Indian Lakes (SNWR), Weber Reservoir, Carson Lake, Topaz, Wabuska and Mason Valley wetlands. Davis Lake was only surveyed in late July and August at which times approximately 200 and 88 pelicans were observed respectively. It is unknown if these birds just arrived from other areas or had been using the area throughout the summer.

Discussion:

Hall (1925) determined that the Anaho Pelicans feed almost exclusively on non-commercial fish particularly carp (*Cyprinus carpio*) and Tui-chub (*Gilia bi-color*) rather than trout or Cui-ui suckers as had been previously suggested. This conclusion is supported by other studies (Bond 1940, Alcorn 1943, Marshall and Giles 1953, Woodbury 1966. and Knopr and Kennedy 1980).