

Data Management Plan

DATA MANAGEMENT PLAN

Project Title: NWRS Legacy Seabird Monitoring Data Inventory, Compilation and Standardization

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Refuges included in database:

Alaska Peninsula National Wildlife Refuge (page 3)

Becharof National Wildlife Refuge (page 17)

Kodiak National Wildlife Refuge (page 27)

Togiak National Wildlife Refuge (page 32)

Yukon Delta National Wildlife Refuge (page 64)

Data Standards summary:

Each dataset was quality controlled using a combination of the data standards outlined by NatureServe and the USGS North Pacific Pelagic Seabird Database (NPSDD).

Assessment of usability:

Each dataset was visually assessed by a research technician to determine the quality and usability of the data. Minimum requirements for each dataset included the following: fundamental location, temporal, and species information. Specifically, we verified that each data set contained fields that were equivalent to, or easily translated to the following: plot/site, survey date, bird (or marine mammal) ID, count, and replicate number.

Latitude and longitude data were *not required* for inclusion of a record into *tblObservations*, due to the large number of regularly monitored plots (e.g., many of those in Togiak NWR) for which coordinates are currently unavailable. The *tblObservation* fields “observation time,” “observer,” and “entity” were also not required, and the latter two fields were populated with a value of “unrecorded” if missing or left blank; where time data were unavailable, “Time of observation not recorded” was written in the notes field. When not explicitly stated, start and end times for surveys (*tblSurveys*) were inferred as the minimum and maximum time values from that day’s survey, and if no time data were recorded, “start_time” was set to 0:01 hours and “stop_time” to 23:59, and “No start/stop time data” or “Time of survey not recorded” was written in the survey notes. Survey platform/protocol designations were inferred from the associated reports/email correspondences delivered with the datasets. Any “notes/comments” fields within the datasets were read carefully for information applicable to new fields such as wind speed or wind direction and were transcribed accordingly. When applicable, these details are described in the “Data Processing” section for each dataset.

The following were considered grounds for exclusion of a record from the dataset:

- Missing or insufficient ID (e.g., “bird”)
- Species not listed in the NPSDD taxonomic standard (e.g., “deer”)
- Missing count value (distinguished from zero/absent counts)

We recognize that these are fairly liberal standards for inclusion in the final database, however, because this database was built to incorporate a variety of methodologies, including both transect-count surveys and fixed-location monitoring surveys, we intentionally softened minimum data requirements and built sorting functions into the reporting forms in an attempt to maximize overall usability of the final dataset. A *Meta* table was created that briefly describes survey protocols and provides notes on overall data quality, data collection methods, and other nuances of the data for each refuge.

Verification/ validation:

Survey details—including dates, approximate location, survey type, survey platform, and survey protocol— were checked against the supplemental material delivered with each dataset (e.g., reports and email correspondence). In cases where the assessment of usability led to questions regarding the accuracy of the data (as in the case of the 2001 Alaska Peninsula NWR data), we requested original data sheets or field notebook scans to compare with the digitized data. When species identifications or entity designations were ambiguous, we consulted the specific refuge contact for clarification. All actions and communications pertaining to additional verification/validation steps are detailed in the “Quality Checks” section for each refuge dataset description.

General comments

Fields “refuge,” “refuge_lit,” and “refuge_unit” (*tblSurveys*, *tblPlots*) were populated using the values provided at http://www.fws.gov/stand/standards/de_literals_WWW.html. Values of the “refuge_unit” field, however, are duplicates of those in the “refuge” field, as the management units were unknown.

DATA INPUTS – ALASKA PENINSULA NATIONAL WILDLIFE REFUGE

Datasets provided by the Alaska Peninsula National Wildlife Refuge include:

1. 8863 total observation records imported
 - a. 2001 Puale Bay seabird counts -- **2476 records**
 - b. 2002 Puale Bay seabird counts -- **2220 records**
 - c. 2003 Puale Bay Murre counts – **976 records**
 - d. 2004 Puale Bay seabird counts – **326 records**
 - e. 2010 Puale Bay seabird counts – **2865 records**

1	murrepopdata.xls
Description:	2001 Puale Bay seabird counts
Source:	Susan Savage – Alaska Peninsula National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA

Quality Checks:

Assessment of usability:

Each dataset was visually assessed by a research technician to determine the quality and usability of the data. Minimum requirements for each dataset included the following: fundamental location, temporal, and species information. Specifically, we verified that each data set contained fields that were equivalent to, or easily translated to the following: plot/site, survey date, bird (or marine mammal) ID, count, and replicate number.

Latitude and longitude data were *not required* for inclusion of a record, due to the large number of regularly monitored plots for which coordinates are currently unavailable. The fields “observation time,” “observer,” and “entity” were also not required, and the latter two fields were populated with a value of “unrecorded” if missing or left blank. All “notes/comments” fields within the datasets were read carefully for information applicable to new fields such as wind speed or wind direction and were transcribed accordingly.

The following were considered grounds for exclusion of a record from the dataset:

- Missing or insufficient ID (e.g., “bird”)
- Species not listed in the NPSDD taxonomic standard (e.g., “deer”)
- Missing count value (distinguished from zero/absent counts)

Verification/ validation:

Survey details such as dates, approximate location, survey type, survey platform, and survey protocol, were checked against the supplemental material originally delivered with each dataset (e.g., reports and email correspondence). In cases where the assessment of usability led to questions regarding the accuracy of the data (as in the case of the 2001 AKP data), we requested original data sheets or field notebook scans to compare with the digitized data. If species identifications or entity designations were ambiguous, we consulted the specific refuge contact for clarification. All actions and communications pertaining to additional verification/validation steps are listed below.

Additional comments on data quality and communications with refuge:

Noticed quality issues on 11/6/15-- some of the counts have two numbers separated by a slash, and sometimes the corresponding species designation also includes two species separated by a slash (e.g., row 124 "TBMU/COMU...76/62"). This suggested that a count for each species was recorded in the same record. However, for other instances of double-counts, only one species is listed (e.g., row 75), or vice versa-- two species are listed but only one count is given (e.g., row 62). This was suspected to be a sort error, and Melissa Cady was contacted. She was out of the office, but Kevin Payne assisted us in her place.

Kevin suggested (and later review of the data sheet scans seemed to confirm) that multiple counts listed for a single species simply indicated additional replicates for that count. Where TBMU/COMU was listed, we replaced this designation with the broadest taxonomic concept relevant to both—i.e., UNMU.

Emailed Kevin for quality check of original data sets (11/9/15), and he responded (11/25/15) that he would scan the originals and send them to me next week. Datasheet scans were received (1/8/16), and the error was identified at line 163; emailed Kevin and Robin with updated file.

After data were imported into database back end, they were re-exported using the front-end export function to ensure maintenance of data quality throughout import/export process. Specifically, we checked final data exports against original delivered data in MS Excel, using pivot tables to sort by year/species/date and verify appropriate number of records.

	<p>2001 Puale Bay seabird counts -- 2476 records</p> <p>836 count events, 1 -12 replicate counts per event: 2476 records, all retained</p>
Data Processing & Scientific Workflows:	<p>Table reformatting to normalize and standardize the data records</p> <p>General:</p> <ul style="list-style-type: none"> • Replaced Corm sp = UNCO, Murre sp = UNMU, puffin sp = UNPU, etc • Assumed all entities not specifically named were adult birds • 6/20/2001 : “plot above F and G (to be included with E’)” – included with E’ • Consistency: Ef → Efar / En → Enear and Ff → Ffar / Fn • Changed “all plots”/”all colony” to “Colony” • Merged “hang cliff”/”hanging corm cliff”/”HC” into “HC” • Assigned platform = land (“Refuge biologists repeated the land-based monitoring work in 2001 through 2003, and in 2010 and the sea-based monitoring in 1999, 2001, 2002, and 2012 using the same established methods.”)
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	219 KB
Citation:	Provide citation for data product. If the data product can be found online, provide a URL.

2	PopCountRaw2002.xls
Description:	2002 Puale Bay seabird counts
Source:	Susan Savage – Alaska Peninsula National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA

<p>Quality Checks:</p>	<p>Assessment of usability:</p> <p>Each dataset was visually assessed by a research technician to determine the quality and usability of the data. Minimum requirements for each dataset included: fundamental location, temporal, and species information. Specifically, we verified that each data set contained fields that were equivalent to, or easily translated to the following: plot/site, survey date, bird (or marine mammal) ID, count, and replicate number.</p> <p>Latitude and longitude data were <i>not required</i> for inclusion of a record, due to the large number of regularly monitored plots for which coordinates are currently unavailable. The fields “observation time,” “observer,” and “entity” were also not required, and the latter two fields were populated with a value of “unrecorded” if missing or left blank. All “notes/comments” fields within the datasets were read carefully for information applicable to new fields such as wind speed or wind direction and were transcribed accordingly.</p> <p>The following were considered grounds for exclusion of a record from the dataset:</p> <ul style="list-style-type: none"> - Missing or insufficient ID (e.g., “bird”) - Species not listed in the NPSDD taxonomic standard (e.g., “deer”) - Missing count value (distinguished from zero/absent counts) <p>Verification/ validation:</p> <p>Survey details such as dates, approximate location, survey type, survey platform, and survey protocol, were checked against the supplemental material originally delivered with each dataset (e.g., reports and email correspondence). In cases where the assessment of usability led to questions regarding the accuracy of the data (as in the case of the 2001 AKP data), we requested original data sheets or field notebook scans to compare with the digitized data. If species identifications or entity designations were ambiguous, we consulted the specific refuge contact for clarification. All actions and communications pertaining to additional verification/validation steps are listed below.</p> <p>After data were imported into database back end, they were re-exported using the front-end export function to ensure maintenance of data quality throughout import/export process. Specifically, we checked final data exports against original delivered data in MS Excel, using pivot tables to sort by year/species/date and verify appropriate number of records:</p> <p>2002 Puale Bay seabird counts -- 2220 records</p> <ul style="list-style-type: none"> • 1124 counting events, 1-4 replicate counts per event : <ul style="list-style-type: none"> ○ 55 single counts + 1043 double counts + 25 triple counts + one quadrp. count = 55 + (1043*2) + (25*3) + (1*4) = 2220 total count records • 2220 / 2220 records retained • Summary of count events per species in original data matched exported data.
<p>Data Processing & Scientific Workflows:</p>	<ul style="list-style-type: none"> • Table reformatting to normalize and standardize the data records • Assigned platform = land (“Refuge biologists repeated the land-based monitoring work in 2001 through 2003, and in 2010 and the sea-based monitoring in 1999, 2001, 2002, and 2012 using the same established methods.”)
<p>Backup & Storage:</p>	<p>Handled by USFWS Information Resource Technology Management</p>

Volume Estimate:	139 KB
Citation:	Provide citation for data product. If the data product can be found online, provide a URL.

3	MURREPopCount2003.xls
Description:	2003 Puale Bay murre counts
Source:	Susan Savage – Alaska Peninsula National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	<p>Assessment of usability: Each dataset was visually assessed by a research technician to determine the quality and usability of the data. Minimum requirements for each dataset included: fundamental location, temporal, and species information. Specifically, we verified that each data set contained fields that were equivalent to, or easily translated to the following: plot/site, survey date, bird (or marine mammal) ID, count, and replicate number.</p> <p>Latitude and longitude data were <i>not required</i> for inclusion of a record, due to the large number of regularly monitored plots for which coordinates are currently unavailable. The fields “observation time,” “observer,” and “entity” were also not required, and the latter two fields were populated with a value of “unrecorded” if missing or left blank. All “notes/comments” fields within the datasets were read carefully for information applicable to new fields such as wind speed or wind direction and were transcribed accordingly.</p> <p>The following were considered grounds for exclusion of a record from the dataset:</p> <ul style="list-style-type: none"> - Missing or insufficient ID (e.g., “bird”) - Species not listed in the NPSDD taxonomic standard (e.g., “deer”) - Missing count value (distinguished from zero/absent counts) <p>Verification/ validation: Survey details such as dates, approximate location, survey type, survey platform, and survey protocol, were checked against the supplemental material originally delivered with each dataset (e.g., reports and email correspondence). In cases where the assessment of usability led to questions regarding the accuracy of the data (as in the case of the 2001 AKP data), we requested original data sheets or field notebook scans to compare with the digitized data. If species identifications or entity designations were ambiguous, we consulted the specific refuge contact for clarification. All actions and communications pertaining to additional verification/validation steps are listed below.</p> <p>After data were imported into database back end, they were re-exported using the front-end export function to ensure maintenance of data quality throughout import/export process. Specifically, we checked final data exports against original delivered data in MS Excel, using pivot tables to sort by year/species/date and verify appropriate number of records:</p> <ul style="list-style-type: none"> • 2003 Puale Bay Murre counts – 976 records <ul style="list-style-type: none"> ○ 488 counting events, two replicate counts per event (=976 total counts) ○ 976 / 976 records retained

Data Processing & Scientific Workflows:	<p>Table reformatting to normalize and standardize the data records</p> <p>General:</p> <ul style="list-style-type: none"> • Moved wind/weather data into appropriate fields • Deleted "avg" field • Consistency: Ef → Efar / En → Enear and Ff → Ffar / Fn • Changed "all plots"/"all colony" to "Colony" • Merged "hang cliff"/"hanging corm cliff"/"HC" into "HC" • Assigned platform = land ("Refuge biologists repeated the land-based (Puale Bay) monitoring work in 2001 through 2003, and in 2010 and the sea-based (Oil Creek/Jute Peak) monitoring in 1999, 2001, 2002, and 2012 using the same established methods.")
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	114 KB
Citation:	Provide citation for data product. If the data product can be found online, provide a URL.

4	MurrePopCount2004.xls
Description:	2004 Puale Bay seabird counts
Source:	Susan Savage – Alaska Peninsula National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	<p>Assessment of usability: Each dataset was visually assessed by a research technician to determine the quality and usability of the data. Minimum requirements for each dataset included: fundamental location, temporal, and species information. Specifically, we verified that each data set contained fields that were equivalent to, or easily translated to the following: plot/site, survey date, bird (or marine mammal) ID, count, and replicate number.</p> <p>Latitude and longitude data were <i>not required</i> for inclusion of a record, due to the large number of regularly monitored plots for which coordinates are currently unavailable. The fields “observation time,” “observer,” and “entity” were also not required, and the latter two fields were populated with a value of “unrecorded” if missing or left blank. All “notes/comments” fields within the datasets were read carefully for information applicable to new fields such as wind speed or wind direction and were transcribed accordingly.</p> <p>The following were considered grounds for exclusion of a record from the dataset:</p> <ul style="list-style-type: none"> - Missing or insufficient ID (e.g., “bird”) - Species not listed in the NPSDD taxonomic standard (e.g., “deer”) - Missing count value (distinguished from zero/absent counts) <p>Verification/ validation: Survey details such as dates, approximate location, survey type, survey platform, and survey protocol, were checked against the supplemental material originally delivered with each dataset (e.g., reports and email correspondence). In cases where the assessment of usability led to questions regarding the accuracy of the data (as in the case of the 2001 AKP data), we requested original data sheets or field notebook scans to compare with the digitized data. If species identifications or entity designations were ambiguous, we consulted the specific refuge contact for clarification. All actions and communications pertaining to additional verification/validation steps are listed below.</p> <p>After data were imported into database back end, they were re-exported using the front-end export function to ensure maintenance of data quality throughout import/export process. Specifically, we checked final data exports against original delivered data in MS Excel, using pivot tables to sort by year/species/date and verify appropriate number of records:</p> <ul style="list-style-type: none"> • 2004 Puale Bay seabird counts – 326 records <ul style="list-style-type: none"> ○ 114 Murre, 48 Gull counting events, 1-4 replicate counts per event ○ 326/330 records retained – see ‘Data Processing & Scientific Workflows’ subsection below for list of deleted records

<p>Data Processing & Scientific Workflows:</p>	<p>Table reformatting to normalize and standardize the data records</p> <p>General:</p> <ul style="list-style-type: none"> Deleted “avg” field Combined gulls and murres spreadsheets Consistency: Ef → Efar / En → Enear and Ff → Ffar / Fn Changed “all plots”/”all colony” to “Colony” Merged “hang cliff”/”hanging corm cliff”/”HC” into “HC” Assumed platform = land because “Refuge biologists repeated the land-based (Puale Bay) monitoring work in 2001 through 2003, and in 2010 and the sea-based (Oil Creek/Jute Peak) monitoring in 1999, 2001, 2002, and 2012 using the same established methods.” Deleted the following “uncounted” records <ul style="list-style-type: none"> 8/3/2004 SMS, KAS Hang Cliff GWGU 8/6/2004 JAE, RSAK Hang Cliff GWGU 8/8/2004 EMA, SMS E' MURRES 8/5/2004 EMA,SMS,RSAK, JAE Q GWGU <p>Individual counts were parsed out as follows:</p> <ul style="list-style-type: none"> Sorted records by number of counts, made duplicates of records such that # dup = # counts, and deleted other counts column-by-column until only a single count per record remained. Created an “obs_count” calculated field to take the sum of Counts 1-10 (since only one count per record, give the value of that count without having to shift columns around). Double checked data for redundancy/error by also creating a column that counts the number of entries used in the average (=COUNT(range)), and verified that only one value existed for each record. Assigned a “count_num” by sorting columns and assigning “count_num”=column#, where column1 = 1A, column 2 = 1B, column3 = 2A, column4 = 2B, ... column10 = 5B. handful of GWGU records have no observer recorded; filled in with “unknown” All counts assigned to “unrecorded” entity Replaced MURRES = UNMU
<p>Backup & Storage:</p>	<p>Handled by USFWS Information Resource Technology Management</p>
<p>Volume Estimate:</p>	<p>59 KB</p>
<p>Citation:</p>	<p>Provide citation for data product. If the data product can be found online, provide a URL.</p>

5	PUBA_popcount_2010.xls
Description:	2010 Puale Bay seabird counts
Source:	Susan Savage – Alaska Peninsula National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA

Quality Checks:

Assessment of usability:

Each dataset was visually assessed by a research technician to determine the quality and usability of the data. Minimum requirements for each dataset included: fundamental location, temporal, and species information. Specifically, we verified that each data set contained fields that were equivalent to, or easily translated to the following: plot/site, survey date, bird (or marine mammal) ID, count, and replicate number.

Latitude and longitude data were *not required* for inclusion of a record, due to the large number of regularly monitored plots for which coordinates are currently unavailable. The fields “observation time,” “observer,” and “entity” were also not required, and the latter two fields were populated with a value of “unrecorded” if missing or left blank. All “notes/comments” fields within the datasets were read carefully for information applicable to new fields such as wind speed or wind direction and were transcribed accordingly.

The following were considered grounds for exclusion of a record from the dataset:

- Missing or insufficient ID (e.g., “bird”)
- Species not listed in the NPSDD taxonomic standard (e.g., “deer”)
- Missing count value (distinguished from zero/absent counts)

Verification/ validation:

Survey details such as dates, approximate location, survey type, survey platform, and survey protocol, were checked against the supplemental material originally delivered with each dataset (e.g., reports and email correspondence). In cases where the assessment of usability led to questions regarding the accuracy of the data (as in the case of the 2001 AKP data), we requested original data sheets or field notebook scans to compare with the digitized data. If species identifications or entity designations were ambiguous, we consulted the specific refuge contact for clarification. All actions and communications pertaining to additional verification/validation steps are listed below.

After data were imported into database back end, they were re-exported using the front-end export function to ensure maintenance of data quality throughout import/export process. Specifically, we checked final data exports against original delivered data in MS Excel, using pivot tables to sort by year/species/date and verify appropriate number of records:

- 2010 Puale Bay seabird counts – **2865**
 - UNMU: 3040 potential, including nulls 1492 of 1492 non-null records retained
 - UNCO: 564 potential, including null; 310 of 310 non-null records retained
 - GWGU: 1596 potential, including null; 915 of 915 non-null records retained
 - Corm1-4 plots: 296 potential, including null; all 148 non-null records retained

During this process, we identified one murre count on Plot A’ that occurred on 7/8/2010 but was incorrectly included in the AKP07062010 survey. This error was corrected manually and no others were identified.

<p>Data Processing & Scientific Workflows:</p>	<p>Table reformatting to normalize and standardize the data records</p> <p>Assumed platform = land because “Refuge biologists repeated the land-based (Puale Bay) monitoring work in 2001 through 2003, and in 2010 and the sea-based (Oil Creek/Jute Peak) monitoring in 1999, 2001, 2002, and 2012 using the same established methods.”</p> <p>Individual counts parsed out, as per Michael’s instruction:</p> <ul style="list-style-type: none"> • Used Michael’s VB code (see “Custom Software/Code...” section) to reformat tables, then consolidated results into a single sheet • Sorted records by number of counts, made duplicates of records such that # dup = # counts, and deleted other counts column-by-column until only a single count per record remained. • Created an “obs_count” calculated field to take the sum of Counts 1-10 (since only one count per record, give the value of that count without having to shift columns around). • Double checked data for redundancy/error by also creating a column that counts the number of entries used in the average (=COUNT(range)), and verified that only one value existed for each record. • Assigned a “count_num” by sorting columns and assigning “count_num”=column#, where column1 = 1A, column 2 = 1B, column3 = 2A, column4 = 2B, ... column10 = 5B. Also added an observer name field specifying A/B. • All counts assigned to “unrecorded” entity • Assigned platform = land (“Refuge biologists repeated the land-based monitoring work in 2001 through 2003, and in 2010 and the sea-based monitoring in 1999, 2001, 2002, and 2012 using the same established methods.”)
<p>Backup & Storage:</p>	<p>Handled by USFWS Information Resource Technology Management</p>
<p>Volume Estimate:</p>	<p>126 KB</p>
<p>Citation:</p>	<p>Provide citation for data product. If the data product can be found online, provide a URL.</p>

DATA INPUTS – BECHAROF NATIONAL WILDLIFE REFUGE

Datasets provided by the Becharof National Wildlife Refuge include:

1. 1989-2012 seabird counts for on Jute Peak, Oil Creek, and Puale Bay

1	Pacific Seabird Trip_All Data_2012.xlsx
Description:	1989-2012 seabird counts for on Jute Peak, Oil Creek, and Puale Bay
Source:	Susan Savage – Alaska Peninsula National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA

Quality Checks:

Assessment of usability:

Each dataset was visually assessed by a research technician to determine the quality and usability of the data. Minimum requirements for each dataset included: fundamental location, temporal, and species information. Specifically, we verified that each data set contained fields that were equivalent to, or easily translated to the following: plot/site, survey date, bird (or marine mammal) ID, count, and replicate number.

Latitude and longitude data were *not required* for inclusion of a record, due to the large number of regularly monitored plots for which coordinates are currently unavailable. The fields “observation time,” “observer,” and “entity” were also not required, and the latter two fields were populated with a value of “unrecorded” if missing or left blank. All “notes/comments” fields within the datasets were read carefully for information applicable to new fields such as wind speed or wind direction and were transcribed accordingly.

The following were considered grounds for exclusion of a record from the dataset:

- Missing or insufficient ID (e.g., “bird”)
- Species not listed in the NPSDD taxonomic standard (e.g., “deer”)
- Missing count value (distinguished from zero/absent counts)

Verification/ validation:

Survey details such as dates, approximate location, survey type, survey platform, and survey protocol, were checked against the supplemental material originally delivered with each dataset (e.g., reports and email correspondence). In cases where the assessment of usability led to questions regarding the accuracy of the data (as in the case of the 2001 AKP data), we requested original data sheets or field notebook scans to compare with the digitized data. If species identifications or entity designations were ambiguous, we consulted the specific refuge contact for clarification. All actions and communications pertaining to additional verification/validation steps are listed below.

Final Checks

After data were imported into database back end, they were re-exported using the front-end export function to ensure maintenance of data quality throughout import/export process. Final data exports were compared to original delivered data in MS Excel, using sort functions and pivot tables to sort by species and compare number of delivered (total potential) records, number of uncounted/null records, and final number imported into database.

Additional Notes on Individual Worksheets:

Most data were organized by site (T1 Puale Bay, T2 Oil Creek, T3 Jute Peak, T4 Other Species [contains observations of uncommon species at former three sites], T5 Islands) and were present only in summary table form. These data were normalized via Michael Cunanan’s VB code (see “Custom Software/Code...” section) such that individual species’ counts are listed by date as individual observations. Surveys were inferred as unique combinations of dateXsite. Because these “observations” are colony estimates (see email note from Susan Savage: “*It is mostly ‘totals’ for the colonies and not plot by plot*”)— and thus not comprised of multiple, timestamped counts over a listed survey duration— their “Entity_Type” field will be set to “Colony” unless otherwise noted in the data.

The “T6 Seabird Transect” data do represent counts of individual birds along a transect, and will be imported as “Entity_Type”=“Adult” and “Plot_Type”=“Transect.” Transect details, including start and end coordinates, approximate length, and approximate area, are stored in their respective field in *tluPlots*. Data notes suggest that these are incidental transects that will not be repeated, and thus are included in new *tblIncidentals* (rather than *tblObservations*).

The “T7 Incidentals” and “IncRaw” data represent qualitative estimates of abundance outside the established sites/plots and not along transects. A separate table (*tblIncidental*) and data entry form (*frmIncidental*) was developed for these and similar future data.

All species codes were converted to the 4-letter NPPSD-compliant codes, as detailed below.

Data Processing & Scientific Workflows:

Table reformatting to normalize and standardize the data records

General:

- Assumed all surveys were boat/visual based on 2012 report
- Changed the following species designations to align with those of NPPSDB
 - Murre → UNMU
 - UNCorm → UNCO
 - Corm → UNCO
 - UNMurre → UNMU
 - UN Shearwater → UNSH
 - UnSandpiper → UNSA
 - UnAlcid → UNAL

By spreadsheet:

T1 PUALE BAY

Did not contain individual observation records, only colony estimates. Each column from each table (siteXdate) treated as an individual survey, with “start_time” and “stop_time” = NULL. Species’ counts at each site are treated as observations, with “obs_time”= NULL and “entity_type”=“Colony”.

BCH080290 refers to the Oil Creek survey conducted on that date; BCH080290b refers to the Puale Bay survey conducted on that date. This was the only instance in which surveys at different sites occurred during the same day.

Plot and site entered into *tluPlots*, but no geospatial data are available for individual plots. Site coordinates were inferred from report maps.

Note: The 2012 data were pulled from the leftmost table in this worksheet, rather than the summary table, as these data referred to the new plot designations. We verified that the totals for subplots equaled the average displayed in the summary table.

T1 PUALE BAY (Murre + Others in 2012) – 435 records

- Historical Data: 483 potential records, 185 uncounted = **298 total retained**
 - 1989 = 8 records (minus 84 null = 92)
 - 1990 = 71 records (minus 21 null = 92)
 - 1991 = 49 records (minus 20 null = 69)
 - 1992 = 50 records (minus 19 null = 69)
 - 2001 = 100 records (minus 15 null = 115)
 - 2002 = 20 records (minus 3 null = 23) 2012 Data: **137 records** – 27 records for GWGU, UNMU, HOPU, TUPU/ 26 for UNCO/ 3 records for RFCO

T2 OIL CREEK

Did not contain individual observation records, only colony estimates. Each column from each table (siteXdate) treated as an individual survey, with “start_time” and “stop_time” = NULL. Species’ counts at each site are treated as observations, with “obs_time”= NULL and “entity_type”=“Colony”.

BCH080290 refers to the Oil Creek survey conducted on that date; BCH080290b refers to the Puale Bay survey conducted on that date. This was the only instance in which surveys at different sites occurred during the same day.

Plot and site entered into *tluPlots*, but no geospatial data are available for individual plots. Site coordinates were inferred from report maps.

Note: The 2012 data were pulled from the leftmost table in this worksheet, rather than the summary table, as these data referred to the new plot designations. We verified that the totals for subplots equaled the average displayed in the summary table.

T2 OIL CREEK (Murre) – 252 records

- Historical Data: 300 potential records, 80 uncounted = **220 total retained**
 - 1989 = 55 records (minus 25 null = 80)
 - 1990 = 38 records (minus 2 null = 40)
 - 1991 = 18 records (minus 2 null = 20)
 - 1992 = 19 records (minus 1 null = 20)
 - 1999 not counted (20 null)
 - 2001 = 11 records (minus 9 null = 20)
 - 2002 = 79 records (minus 21 null = 100)
- 2012 Data: 32 records (other spp's counts are captured in the "Other Species" tab below)

T3 JUTE PEAK

Did not contain individual observation records, only colony estimates. Each column from each table (siteXdate) treated as an individual survey, with "start_time" and "stop_time" = NULL. Species' counts at each site are treated as observations, with "obs_time" = NULL and "entity_type" = "Colony".

Plot and site entered into *tluPlots*, but no geospatial data are available for individual plots. Site coordinates were inferred from report maps.

Note: The 2012 data were pulled from the leftmost table in this worksheet, rather than the summary table, as these data referred to the new plot designations. We verified that the totals for subplots equaled the average displayed in the summary table.

T3 JUTE PEAK (Murre) -- 219 records

- Historical Data: 294 potential records, 105 uncounted = **189 total retained**
 - 1989 = 29 records (minus 13 null = 42 potential)
 - 1990 = 34 records (minus 8 null = 42 potential)
 - 1991 = 18 records (minus 3 null = 21 potential)
 - 1992 = 18 records (minus 24 null = 42 potential)
 - 1999 not counted (21 null/ potential)
 - 2001 = 13 records (minus 8 null = 21 potential)
 - 2002 = 77 records (minus 28 null = 105 potential)
- 2012 Data = 30 records (other spp's counts are captured in the "Other Species" tab below)

Other Species (Raw Data)

Data were normalized and entity_type set to “unrecorded.” Summary tables (averaged counts on required plots) were stored in “T4 Other Species” but were not imported into the database, as they do not represent raw data and can be generated using the “Index Plot Totals by Year” function.

Note: The 2012 data were pulled from the leftmost table in the corresponding T1/T2/T3 worksheet, rather than the summary table, as these data referred to the new plot designations. We verified that the totals for subplots equaled the average displayed in the summary table.

Other Species (Raw Data)

Jute Peak – 530 records

- **GWGU: 119 records retained**, 37 uncounted, 156 potential
 - 2001 = 12 records, 9 null, 21 potential
 - 2002 = 77 records, 28 null, 105 potential
 - 2012 = 30 records, 0 null, 30 potential
- **HOPU: 108 records retained**, 48 uncounted, 156 potential
 - 2001 = not counted (21 potential)
 - 2002 = 78 records, 27 null, 105 potential
 - 2012 = 30 records, 0 null, 30 potential
- **TUPU: 108 records retained**, 48 uncounted, 156 potential
 - 2001 = not counted (21 potential)
 - 2002 = 78 records, 27 null, 105 potential
 - 2012 = 30 records, 0 null, 30 potential
- **BLKI: 39 records retained**, 3 uncounted, 42 potential
 - 2001 = not counted (2 potential)
 - 2002 = 9 records, 1 null, 10 potential
 - 2012 = 30 records, 0 null, 30 potential
- **UNCO: 78 records retained**, 69 uncounted, 147 potential
 - 2001 = not counted (21 potential)
 - 2002 = 78 records, 27 null, 105 potential
 - 2012 = not counted (21 potential)
- **DCCO: 78 records retained**, 69 uncounted, 147 potential
 - 2001 = not counted (21 potential)
 - 2002 = 78 records, 27 null, 105 potential
 - 2012 = not counted (21 potential)

Oil Creek – 446 records

- **GWGU: 114 records retained**, 38 uncounted, 152 potential
 - 2001 = 6 records, 14 null, 20 potential
 - 2002 = 76 records, 24 null, 100 potential
 - 2012 = 32 records, 0 null, 32 potential
- **HOPU: 110 records retained**, 42 uncounted, 152 potential
 - 2001 = not counted (20 potential)
 - 2002 = 78 records, 22 null, 100 potential
 - 2012 = 32 records, 0 null, 32 potential
- **TUPU: 111 records retained**, 41 uncounted, 152 potential
 - 2001 = not counted (20 potential)

- 2002 = 79 records, 21 null, 100 potential
- 2012 = 32 records, 0 null, 32 potential
- UNCO: **111 records retained**, 41 uncounted, 152 potential
 - 2001 = not counted (20 potential)
 - 2002 = 79 records, 21 null, 100 potential
 - 2012 = 32 records, 0 null, 32 potential

T5 islands

In addition to the conditions listed for worksheets T1-T4, “T5 Islands” does not list individual plots. To make these data consistent with the database format, we assigned plot names as “[Island/Site Name] Colony” in *tluPlots* (see table below). This way, if future surveys establish individual plots at these island sites, they can be added to the appropriate site without conflicting with the colony-wide estimates provided in these data (see table).

<i>tluPlots</i>	
plot_name	site
Ashiiak Island Colony	Ashiiak Island
David Island Colony	David Island
Eagle Island	Eagle Island
Garden Island Colony	Garden Island
Hydra Island Colony	Hydra Island
Kumlik Island Colony	Kumlik Island
Lone Rock Colony	Lone Rock
Unavikshak Island Colony	Unavikshak Island

T6 Seabird Transects

Identified two surveys—"3_AUG" between 1000h and 1928h, and "9_AUG" between 1330h and 1500h. Transects were treated as plots and imported into *tluPlots* along with their start/end coordinates. The length of each transect was calculated in ArcMap 10.3.1 as the linear distance between these points. Area estimation is more difficult as no transect width is specified in the report: "We counted birds out to several hundred meters or the distance to which they could be identified." Thus, we have not estimated area at this point.

Report further suggests that these transects will not be repeated. As such, we currently include these transect data in the separate "*tblIncidentals*," but they can be imported back into the standard *tblObservations* at any point.

T5 islands – 102 records

106 records delivered, **102 records retained**

Observations dropped:

- 1 record -- common raven, 8/10/2012, Unavikshak Island
- 1 record -- song sparrow, 8/10/2012, Unavikshak Island
- 2 records -- pacific wren, 8/10/2012 @ Garden and Eagle Islands

T7 Incidentals and "IncRaw"

Added "Incidental Records" form (*frmIncidental*), which lacks the survey-observation structure, and whose data is stored in a separate *tblIncidental*. Incidental records contain only basic, non-relational info – Refuge, Site, Observer, Species, Entity, Relative Abundance (uncommon, common, abundant). Thus for data entry and data export, users can search by general locations (refuge, site), but plot info is not required, so that incidental observations between plots or transects can be recorded. This form/table also provides a place for non-quantitative observations, so that these data, while unfit for NPPSD or the quantitative database, may be useful to researchers.

- T6 Seabird Transects – 83 records delivered, **76 records retained and imported into *tblIncidentals*** (see below)
 - Northern Fulmar observations (15 records) were divided into "light," "intermediate," and "dark." Before importing, we merged these observations (into 8 records), summed the counts, and noted the number counted in each category in the "Inc_notes" field. This resulted in 7 fewer observation records than the original number delivered, but a net retention of the data.

T8 MAMfinal and "Mamraw"

Marine mammal observations were imported into the *tblNonSeabird* structure, once built. Counts will be inferred from comments, or left blank and comments imported.

- T7 Incidentals – **138/138 records retained and imported into *tblIncidentals***

T9 Historic

Data included with respective site's recent data (from t1/t2/t3) and formatted analogously.

- HistoricMaritime – 42 records delivered, two uncounted, **40 records imported**

Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	135 KB
Citation:	Provide citation for data product. If the data product can be found online, provide a URL.

DATA INPUTS – KODIAK NATIONAL WILDLIFE REFUGE**Datasets provided by Kodiak National Wildlife Refuge include:**

1. 2011-2013 marine bird survey data

1	Kodiak_NMBS_2011-13_AllTransect_ForSharing.xlsx
Description:	2011-2013 marine bird survey data
Source:	Robin Corcoran - Kodiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	<p>Assessment of usability: Each dataset was visually assessed by a research technician to determine the quality and usability of the data. Minimum requirements for each dataset included: fundamental location, temporal, and species information. Specifically, we verified that each data set contained fields that were equivalent to, or easily translated to the following: plot/site, survey date, bird (or marine mammal) ID, count, and replicate number.</p> <p>Latitude and longitude data were <i>not required</i> for inclusion of a record, due to the large number of regularly monitored plots for which coordinates are currently unavailable. The fields “observation time,” “observer,” and “entity” were also not required, and the latter two fields were populated with a value of “unrecorded” if missing or left blank. All “notes/comments” fields within the datasets were read carefully for information applicable to new fields such as wind speed or wind direction and were transcribed accordingly.</p> <p>The following were considered grounds for exclusion of a record from the dataset:</p> <ul style="list-style-type: none"> - Missing or insufficient ID (e.g., “bird”) - Species not listed in the NPSDD taxonomic standard (e.g., “deer”) - Missing count value (distinguished from zero/absent counts) <p>Verification/ validation: Survey details such as dates, approximate location, survey type, survey platform, and survey protocol, were checked against the supplemental material originally delivered with each dataset (e.g., reports and email correspondence). In cases where the assessment of usability led to questions regarding the accuracy of the data (as in the case of the 2001 AKP data), we requested original data sheets or field notebook scans to compare with the digitized data. If species identifications or entity designations were ambiguous, we consulted the specific refuge contact for clarification. All actions and communications pertaining to additional verification/validation steps are listed below.</p>

Data Processing & Scientific Workflows:

Table reformatting to normalize and standardize the data records

Reorganization/Reformatting, Cleaning:

Repeated transects were treated as plots, and for each named plot (“Transect_#”), we used the average of all latitudes and longitude as the plot lat/long, respectively. Original data are available in the original delivered dataset (“Kodiak_NMBS_2011-13_AllTransect_ForSharing.xlsx”). We used the “Block” designations illustrated in the “Nearshore Marine Bird Monitoring on Kodiak National Wildlife Refuge, Alaska 2011-13” instructions document (and in the “Map” tab of the original data) as Sites (grouping units) for each transect-plot.

“Survey” entries were generated manually by identifying unique combinations of **transect** and **date**. The minimum and maximum observation times for each unique transectXday were treated as the start and stop times, respectively.

Original observations recorded males and females as separate observations; **when timestamps were identical** we merged these separate observations into a single observation. **Thus, there still exist in the data ambiguous cases where males and females of the same species were observed 1-30+ seconds apart. To avoid the subjectivity of assigning a cutoff time under which observations were treated as the same observation, we merged only those with identical timestamps.**

The following fields in the original data were transferred to the “Comments” field in *tblObservations*: Male/Female designations, nearshore v. offshore survey status, behavior

The entity type for all observations assigned as ‘unrecorded’ unless otherwise specified (*tblObservations.entity_type* = “unrecorded”); the survey platform for all observations was assumed to be a boat (*tblObservations.platform* = “boat”); and the observation type for all was assumed to be visual (*tblObservations.type* = “Visual”). No observer names or initials were provided, so all observations have *tblObservations.obs_name* = “unknown”

Because we adhered to the NPPSD taxonomic standards, the following changes were made to species IDs/codes for one or more observations:

<ul style="list-style-type: none">▪ GWGUF = GWGU▪ BLKIF = BLKI▪ MEGUF = MEGU▪ BAEAS/BAEAA = BAEA (subadult, adult status recorded in notes)▪ UNALCID = UNAL▪ UNCORMORANT = UNCO▪ UNBRACHYRAMPHUS (Murrelet) = UNML▪ UNDUCK = UNDU▪ UNLOON = UNLO▪ UNMERC = UNME	<ul style="list-style-type: none">▪ UNJAEGER = UNSK (unidentified skua/jaeger)▪ UNPEEP = UNSA (unidentified sandpiper)▪ UNPHALAROPE = UNPH▪ UNSHOREBIRD = UNSB▪ UNTERN = UNTE▪ UNWATERFOWL = UNWF▪ UNGULL = UNGU▪ SCOTER = UNSC▪ NSHO = NOSH (Northern Shoveler)▪ HERG = HEGU (Herring Gull)▪ AGWT = GWTE (American Green-Winged Teal)▪ ORCA (5) = KIWH
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Furthermore, observations for non-seabirds were fairly common in the delivered data. After touching base with Robin Corcoran to discern which data were of value, we opted to discard all non-seabird observations that did not pertain to marine mammals. We created a separate table (*tblNonSeabird*), and separate form/subform (*frmNonSeabird*) for these data so that incidental marine mammal observations that occur during seabird surveys (whether for Kodiak or other refuges) can be entered simultaneously with the target data and stored permanently.

We also imported the area (km²) for each transect (not averaged—original data contained area estimates for individual iterations of each transect) into *tblObservations* to facilitate potential future incorporation of these data into NPPSD. Kodiak is the only refuge that recorded surveys along transects (rather than single-point/plot data) and will thus be the only refuge in this project whose data facilitate bird density estimates if imported into NPPSD.

Final Checks

After data were imported into database back end, they were re-exported using the front-end export function to ensure maintenance of data quality throughout import/export process. Final data exports were compared to original delivered data in MS Excel, using sort functions and pivot tables to sort by species and compare number of delivered (total potential) records, number of uncounted/null records, and final number imported into database:

37576 of 37969 records retained:

- 37969 initial observations, including seabirds and marine mammals
- One record was recorded only as “birds” and was not included --> 37395 records
- 305 were non-marine mammals, non-birds, or non-animals and were not imported, leaving 37663 records; removed included:
 - BANS (bank swallow) – 36 records
 - BBMA (Black-billed Magpie) – 2 records
 - BEAR – 25 records
 - BEAVER – 2 records
 - DEER – 85 records
 - DOWT (not listed in NPPSD, BirdPop nor found elsewhere) – 1 record
 - HUWH (likely Humpback Whale, but not in NPPSD taxonomy) – 41 records
 - MOGOAT – 3 records
 - NOCR (Northern Crow) – 2 records
 - REFO (not listed in NPPSD, BirdPop nor found elsewhere) – 63 record
 - RLHA (rough-legged hawk) – 2 records
 - SETNET – 40 records
 - UNWHALE (no NPPSD code for unknown whale) – 3 records

Row Labels	Count of No
BANS	36
BBMA	2
BEAR	25
BEAVER	2
BIRDS	1
DEER	85
DOWT	1
HUWH	41
MOGOAT	3
NOCR	2
REFO	63
RLHA	2
SETNET	40
UNWHALE	3
Grand Total	306

	<p>87 were duplicates in time/date/species but were originally parsed out into males/females (see detail in section below); these were merged and summed, leaving 37,576 records, of which:</p> <ul style="list-style-type: none"> • 34571 were imported into <i>tblObservations</i> • 3005 were imported into <i>tblNonSeabird</i>
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	4.3 MB
Citation:	Provide citation for data product. If the data product can be found online, provide a URL.

DATA INPUTS – TOGIAC NATIONAL WILDLIFE REFUGE

Datasets provided by Togiak National Wildlife Refuge include:

**** 46951 records delivered, 1222 uncounted, 45729 records imported**

Full breakdown by dataset provided upon request.

1. 1990 Cape Peirce seabird counts
2. 1991 Cape Peirce seabird counts
3. 1992 Cape Peirce seabird counts
4. 1993 Cape Peirce seabird counts
5. 1994 Cape Peirce seabird counts
6. 1995 Cape Peirce seabird counts
7. 1996 Cape Peirce seabird counts
8. 1997 Cape Peirce seabird counts
9. 1998 Cape Peirce seabird counts
10. 1999 Cape Peirce seabird counts
11. 2000 Cape Peirce seabird counts
12. 2001 Cape Peirce seabird counts
13. 2002 Cape Peirce seabird counts
14. 2003 Cape Peirce seabird counts
15. 2004 Cape Peirce seabird counts
16. 2005 Cape Peirce seabird counts
17. 2006 Cape Peirce seabird counts
18. 2007 Cape Peirce seabird counts
19. 2008 Cape Peirce seabird counts
20. 2009 Cape Peirce seabird counts
21. 2010 Cape Peirce seabird counts
22. 2011 Cape Peirce seabird counts
23. 2012 Cape Peirce seabird counts
24. 2013 Cape Peirce seabird counts
25. 2014 Cape Peirce seabird counts
26. 1991 Cape Newenham seabird counts
27. 1992 Cape Newenham seabird counts
28. 1993 Cape Newenham seabird counts
29. 1996 Cape Newenham seabird counts
30. 1997 Cape Newenham seabird counts
31. 2009 Cape Newenham seabird counts

1	Cape Peirce population counts 1990.xls
Description:	1990 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	<p>Assessment of usability: Each dataset was visually assessed by a research technician to determine the quality and usability of the data. Minimum requirements for each dataset included: fundamental location, temporal, and species information. Specifically, we verified that each data set contained fields that were equivalent to, or easily translated to the following: plot/site, survey date, bird (or marine mammal) ID, count, and replicate number.</p> <p>Latitude and longitude data were <i>not required</i> for inclusion of a record, due to the large number of regularly monitored plots for which coordinates are currently unavailable. The fields “observation time,” “observer,” and “entity” were also not required, and the latter two fields were populated with a value of “unrecorded” if missing or left blank. All “notes/comments” fields within the datasets were read carefully for information applicable to new fields such as wind speed or wind direction and were transcribed accordingly.</p> <p>The following were considered grounds for exclusion of a record from the dataset:</p> <ul style="list-style-type: none"> - Missing or insufficient ID (e.g., “bird”) - Species not listed in the NPSDD taxonomic standard (e.g., “deer”) - Missing count value (distinguished from zero/absent counts) <p>Verification/ validation: Survey details such as dates, approximate location, survey type, survey platform, and survey protocol, were checked against the supplemental material originally delivered with each dataset (e.g., reports and email correspondence). In cases where the assessment of usability led to questions regarding the accuracy of the data (as in the case of the 2001 AKP data), we requested original data sheets or field notebook scans to compare with the digitized data. If species identifications or entity designations were ambiguous, we consulted the specific refuge contact for clarification. All actions and communications pertaining to additional verification/validation steps are listed below.</p> <p>Additional comments on data quality and communications with refuge: Plot data were imported into <i>tluPlots</i>, but many plots do not have coordinates. We contacted Michael Swaim and he confirmed that the geospatial data we have is current in its completeness; future surveys at these plots should record GPS data.</p> <p>After data were imported into database back end, they were re-exported using the front-end export function to ensure maintenance of data quality throughout import/export process. Final data exports were compared to original delivered data in STATA to sort by species, year, and entity, and to verify that the number of delivered (total potential) records, the number of uncounted/null records, and the final number imported into database matched.</p>

<p>Data Processing & Scientific Workflows:</p>	<p>Table reformatting to normalize and standardize the data records</p> <p>Reorganization, Reformatting Cleaning:</p> <p>Data were delivered in individual-year spreadsheets, each containing separate worksheets for 1-3 different species. Each worksheet’s data was nonnormalized (formatted such that rows corresponded to plots and columns to dates); by contrast the standard <i>tblObservation</i> from the model database was normalized (formatted such that each count is an individual record). Thus, the “crosstabular” format of the delivered data needed to be normalized (i.e., transposed such that each count occupied a separate row with its associated date and plot name in adjacent fields (columns)). Project lead Michael Cunanan wrote a brief Visual Basic code (see “Custom Software/Code...” section), which, with minimal preparation, allowed rapid normalization of the data.</p> <p>Before running code the following preparatory reformatting steps were taken:</p> <ol style="list-style-type: none"> 1. Separate “bird” and “nest” counts into separate spreadsheets 2. Delete “bird” and “nest” headers from columns 3. Remove any “dead space” (empty cells that disrupted vb code) 4. Change all null count fields to 999 5. Create “SortID” column = AutoNumber <p>After running the code, a duplicate worksheet was created, and the raw data was deleted from this duplicate sheet, leaving only the re-formatted data. Column headers (SortID, Plot, Date, Count, Species, Entity, Site) were added, and the “species,” “entity,” and “site” fields were populated according to the original data. This new, reformatted worksheet was renamed “YYYY_SPCS_entity.” All spreadsheet were then merged using Ablebits Data’s Consolidate Worksheet package, then saved in two excel files: TGK_WithNull includes all records, regardless of whether counts were recorded (hidden); TGK is all data sans the null (999 = count) records.</p> <p>Surveys were inferred as unique combinations of site and date, and a P or N was added to the survey ID at the end of the “TGK” refuge code to distinguish between Cape Peirce and Cape Newenham, respectively (e.g., TGKP06232001 versus TGKN06232001).</p>
<p>Backup & Storage:</p>	<p>Handled by USFWS Information Resource Technology Management</p>
<p>Volume Estimate:</p>	<p>49 KB</p>
<p>Citation:</p>	<p>Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.</p>

2	Cape Peirce population counts 1991.xls
Description:	1991 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	48 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

3	Cape Peirce population counts 1992.xls
Description:	1992 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	49 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

4	Cape Peirce population counts 1993.xls
Description:	1993 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	<p>Table reformatting to normalize and standardize the data records</p> <p>Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).</p>
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	47 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

5	Cape Peirce population counts 1994.xls
Description:	1994 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	49 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

6	Cape Peirce population counts 1995.xls
Description:	1995 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	<p>Table reformatting to normalize and standardize the data records:</p> <p>Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).</p>
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	48 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

7	Cape Peirce population counts 1996.xls
Description:	1996 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	49 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

8	Cape Peirce population counts 1997.xls
Description:	1997 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	50 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

9	Cape Peirce population counts 1998.xls
Description:	1998 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as for source 1.
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: same as for source 1.
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	50 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

10	Cape Peirce population counts 1999.xls
Description:	1999 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	52 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

11	Cape Peirce population counts 2000.xls
Description:	2000 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	53 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

12	Cape Peirce population counts 2001.xls
Description:	2001 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	52 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

13	Cape Peirce population counts 2002.xls
Description:	2002 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	50 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

14	Cape Peirce population counts 2003.xls
Description:	2003 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	53 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

15	Cape Peirce population counts 2004.xls
Description:	2004 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	46 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

16	Cape Peirce population counts 2005.xls
Description:	2005 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	66 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

17	Cape Peirce population counts 2006.xls
Description:	2006 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	86 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

18	Cape Peirce population counts 2007.xls
Description:	2007 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	51 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

19	Cape Peirce population counts 2008.xls
Description:	2008 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	49 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

20	Cape Peirce population counts 2009.xls
Description:	2009 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	43 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

21	Cape Peirce population counts 2010.xls
Description:	2010 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	52 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

22	Cape Peirce population counts 2011.xls
Description:	2011 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	51 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

23	Cape Peirce population counts 2012.xls
Description:	2012 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	61 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

24	Cape Peirce population counts 2013.xls
Description:	2013 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	69 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

25	Cape Peirce population counts 2014.xls
Description:	2014 Cape Peirce seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	70 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

26	Cape_Newenham_Population_1991.xls
Description:	1991 Cape Newenham seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	40 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

27	Cape_Newenham_Population_1992.xls
Description:	1992 Cape Newenham seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	31 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

28	Cape_Newenham_Population_1993.xls
Description:	1993 Cape Newenham seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	33 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

29	Cape_Newenham_Population_1996_west.xls
Description:	1996 Cape Newenham (west) seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	31 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

30	Cape_Newenham_Population_1997_west.xls
Description:	1997 Cape Newenham (west) seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	28 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

31	Cape_Newenham_Population_2009.xls
Description:	2009 Cape Newenham seabird counts
Source:	Pat Walsh - Togiak National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records Reorganization, Reformatting Cleaning: Same as Source 1 – ‘Cape Peirce population counts 1990’ (page 33 and 34).
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	70 KB
Citation:	Swaim, M. 2015. Seabird Population and Productivity Monitoring at Cape Peirce and Cape Newenham, Alaska, 1990-2014. U.S. Fish and Wildlife Service. Togiak National Wildlife Refuge. Dillingham, Alaska.

DATA INPUTS – YUKON DELTA NATIONAL WILDLIFE REFUGE

Datasets provided by Yukon Delta National Wildlife Refuge include:

1. 1998 Nunivak Island Black-legged Kittiwake counts
2. 1998 Nunivak Island Common Murre counts

1	BLKI cnss.xls
Description:	1998 Nunivak Island black-legged kittiwake counts
Source:	Kristine Sowl - Yukon Delta National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	<p>Assessment of usability: Each dataset was visually assessed by a research technician to determine the quality and usability of the data. Minimum requirements for each dataset included: fundamental location, temporal, and species information. Specifically, we verified that each data set contained fields that were equivalent to, or easily translated to the following: plot/site, survey date, bird (or marine mammal) ID, count, and replicate number.</p> <p>Latitude and longitude data were <i>not required</i> for inclusion of a record, due to the large number of regularly monitored plots for which coordinates are currently unavailable. The fields “observation time,” “observer,” and “entity” were also not required, and the latter two fields were populated with a value of “unrecorded” if missing or left blank. All “notes/comments” fields within the datasets were read carefully for information applicable to new fields such as wind speed or wind direction and were transcribed accordingly.</p> <p>The following were considered grounds for exclusion of a record from the dataset:</p> <ul style="list-style-type: none"> - Missing or insufficient ID (e.g., “bird”) - Species not listed in the NPSDD taxonomic standard (e.g., “deer”) - Missing count value (distinguished from zero/absent counts) <p>Verification/ validation: Survey details such as dates, approximate location, survey type, survey platform, and survey protocol, were checked against the supplemental material originally delivered with each dataset (e.g., reports and email correspondence). In cases where the assessment of usability led to questions regarding the accuracy of the data (as in the case of the 2001 AKP data), we requested original data sheets or field notebook scans to compare with the digitized data. If species identifications or entity designations were ambiguous, we consulted the specific refuge contact for clarification. All actions and communications pertaining to additional verification/validation steps are listed below.</p> <p>After data were imported into database back end, they were re-exported using the front-end export function to ensure maintenance of data quality throughout import/export process. Final data exports were compared to original delivered data in MS Excel, using pivot tables to sort by species and compare number of delivered (total potential) records, number of uncounted/null records, and final number imported into database:</p> <p>1998 Nunivak Island Black-legged Kittiwake counts</p> <ul style="list-style-type: none"> • 198 count events, no count replicates • 198/198 records retained

Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records, using Michael Cunanan’s VB code (see “Custom Software/Code...” section). Surveys were inferred as unique dates, given that the site (Nunivak Island) was constant. Plots were imported into <i>tluPlots</i> and observations into <i>tluObservations</i> . Data was imported without issue.
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	47 KB
Citation:	Provide citation for data product. If the data product can be found online, provide a URL.

2	COMU cnss.xls
Description:	1998 Nunivak Island Common Murre counts
Source:	Kristine Sowl - Yukon Delta National Wildlife Refuge
Restrictions:	None
Format:	Microsoft Excel
Fees:	NA
Quality Checks:	<p>Assessment of usability: Each dataset was visually assessed by a research technician to determine the quality and usability of the data. Minimum requirements for each dataset included: fundamental location, temporal, and species information. Specifically, we verified that each data set contained fields that were equivalent to, or easily translated to the following: plot/site, survey date, bird (or marine mammal) ID, count, and replicate number.</p> <p>Latitude and longitude data were <i>not required</i> for inclusion of a record, due to the large number of regularly monitored plots for which coordinates are currently unavailable. The fields “observation time,” “observer,” and “entity” were also not required, and the latter two fields were populated with a value of “unrecorded” if missing or left blank. All “notes/comments” fields within the datasets were read carefully for information applicable to new fields such as wind speed or wind direction and were transcribed accordingly.</p> <p>The following were considered grounds for exclusion of a record from the dataset:</p> <ul style="list-style-type: none"> - Missing or insufficient ID (e.g., “bird”) - Species not listed in the NPSDD taxonomic standard (e.g., “deer”) - Missing count value (distinguished from zero/absent counts) <p>Verification/ validation: Survey details such as dates, approximate location, survey type, survey platform, and survey protocol, were checked against the supplemental material originally delivered with each dataset (e.g., reports and email correspondence). In cases where the assessment of usability led to questions regarding the accuracy of the data (as in the case of the 2001 AKP data), we requested original data sheets or field notebook scans to compare with the digitized data. If species identifications or entity designations were ambiguous, we consulted the specific refuge contact for clarification. All actions and communications pertaining to additional verification/validation steps are listed below.</p> <p>After data were imported into database back end, they were re-exported using the front-end export function to ensure maintenance of data quality throughout import/export process. Final data exports were compared to original delivered data in MS Excel, using pivot tables to sort by species and compare number of delivered (total potential) records, number of uncounted/null records, and final number imported into database:</p> <p>1998 Nunivak Island Common Murre counts</p> <ul style="list-style-type: none"> • 198 count events, no count replicates • 198/198 records retained

Data Processing & Scientific Workflows:	Table reformatting to normalize and standardize the data records, using Michael Cunanan’s VB code. Surveys were inferred as unique dates, given that the site (Nunivak Island) was constant. Plots were imported into <i>tluPlots</i> and observations into <i>tluObservations</i> . Data was imported without issue.
Backup & Storage:	Handled by USFWS Information Resource Technology Management
Volume Estimate:	39 KB
Citation:	Provide citation for data product. If the data product can be found online, provide a URL.

CUSTOM SOFTWARE/CODE AND WEB TOOLS

Describe any custom software or code used as part of this project. If a web tool (e.g., visualization, decision support, etc.), is a project deliverable that should be included in this section.

1	National Wildlife Refuge – Alaska Region: Seabird Observation & Monitoring Database
Description:	<p>The database was developed using the current Alaska Maritime National Wildlife Refuge seabird monitoring database as a starting point (provided by Michael Cunanan). We determined that the data storage structure was not perfectly suited to support the data provided by each refuge nor to a database that needed to store data for both regularly monitored plots and transects. Specifically, the original “Survey” structure mandated a focal species and entity for each day and site, such that a given survey might focus on, <i>e.g.</i>, adult glaucous-winged gulls. Most of the data provided by each refuge, by contrast, had a temporal and geographic focus (<i>i.e.</i>, multiple observations at a given site on a given day), but recorded all birds seen, regardless of species or development stage. Thus, we moved the “species” and “entity” fields into <i>tblObservations</i> as <i>obs_species</i> and <i>obs_entity</i>, respectively.</p> <p>tblIncidentals/frmIncidental We also encountered a significant collection of incidental observations—<i>i.e.</i>, birds counted at camp or abundances noted at non-plots that might show promise as future monitoring sites, etc. Thus, we built a table and import form for these data. The “Incidentals” table contains information almost identical to that stored in the <i>tblSurveys/tblObservations</i> tables, but not in nested format because these observations did not occur as a part of a survey proper.</p> <p>tblNonSeabird/frmNonSeabird We created a separate table (<i>tblNonSeabird</i>), and separate form/subform (<i>frmNonSeabird</i>) for these data so that incidental marine mammal observations that occur during seabird surveys (whether for Kodiak or other refuges) can be entered simultaneously with the target data and stored permanently.</p> <p>FrmExistingRecords In addition to modifying the index plot summary functions to fit the new data structure, we also created a form that allows users to export all observation records, whether from monitoring plots or transects, for their refuges with additional options to filter by year, site, plot, and/or species. The resulting data can be viewed as a read-only table in MS Access or exported as an XLS.</p>
Source/Link:	
Restrictions:	None.
Maintenance and Support for the Web Tool	Not applicable.
Languages:	Some basic coding (VBA) added to “model” database to make new features functional and user-friendly. Much of the original code remains intact.
Environment:	Windows; MS Access 2013

2

Visual Basic Code for Normalization of Non-Normalized Data

Description:

We used a Visual Basics code (provided by Michael Cunanan) to normalize non-normalized data provided to us from the refuges:

```
Sub formatsheet()
Dim x, y, rcnt
Dim numrows, numcols

' find the number of rows
numrows = Cells(Rows.Count, 1).End(xlUp).Row
Debug.Print "Rows:" & numrows

' find the number of columns
numcols = Cells(1, Columns.Count).End(xlToLeft).Column
Debug.Print "Columns:" & numcols

' set the data row counter
rcnt = 2

' loop through the columns
For y = 3 To numcols

' within each column loop through each row
For x = 2 To numrows

' insert the row id
Cells(rcnt, numcols + 2).Value = Cells(x, 1)

' insert the plot
Cells(rcnt, numcols + 3).Value = Cells(x, 2)

' insert the header value
Cells(rcnt, numcols + 4).Value = Cells(1, y)

' insert the cell value
Cells(rcnt, numcols + 5).Value = Cells(x, y)

' increment the row counter
rcnt = rcnt + 1
Next x
Next y
End Sub
```

Source/Link:

Michael Cunanan, unpublished code, 2015.

Restrictions:

Maintenance and Support
for the Web Tool

Not Applicable

Languages:

Visual Basic

Environment:

Windows: Microsoft Excel 2013

DATA PRODUCTS (E.G., DELIVERABLES)

Identify project deliverables and data products that were developed as a result of the project's funding.

1	FWS_SeabirdLegacyData
Description:	<p>1) FWS_SeabirdLegacy_AllStandardizedData.xls – A Microsoft Excel flat file containing a standardized data set of historical seabird surveys from 5 refuges - Alaska Peninsula National Wildlife Refuge, Becharof National Wildlife Refuge, Kodiak National Wildlife Refuge, Togiak National Wildlife Refuge, Yukon Delta National Wildlife Refuge.</p> <p>2) FWS_SeabirdLegacy_Database (Front and Back ends) – A Microsoft Access database containing a standardized data set of historical seabird surveys from 5 refuges - Alaska Peninsula National Wildlife Refuge, Becharof National Wildlife Refuge, Kodiak National Wildlife Refuge, Togiak National Wildlife Refuge, Yukon Delta National Wildlife Refuge. Includes interface to enter new data points and/or export excel files of existing data.</p> <p>3) FWS_SeabirdLegacyDatabase_UserGuide.pdf – A pdf document for users, describing how to use the database to input new data and/or view/export existing data.</p> <p>4) FWS_SeabirdLegacy_Database_FieldKey.pdf – a pdf document containing a key to all of the fields used in the database, including field name, source table, data type and a field description.</p> <p>5) HowToLinkData_UseAccessDatabase.pdf – a pdf document for users, describing how to link the front and back end of the Access database.</p>
Data Management Resources:	US Fish and Wildlife Service
Format:	Data are housed in a Microsoft Access database with a built-in function to export excel or csv files.
Exclusive Use:	
Restrictions:	
Quality Checks:	
Data Processing & Scientific Workflows:	
Metadata:	
Volume Estimate:	Estimate the volume of information generated: 60 MB
Backup & Storage:	
Repository for Data:	
Citation:	
Digital Object Identifier (DOI)/Link:	
Lifespan of Data	50+ years.