



# Archiving Southwest Alaska's National Park Bird Survey Data in the Avian Knowledge Network (AKN) Database

## *Project Overview*

Natural Resource Data Series NPS/SWAN/NRDS—2011/207



ANIA Bird Survey  
N 56.809197° W 157.901508°

145°  
Lat / Lon NAD 83

E of Meshik Lake from Pinnacle Mtn  
06/02/2008 12:15:56 PM

**ON THE COVER**

Bird Survey photo point in Aniakchak National Monument, Southwest Alaska  
Photograph by: William L. Thompson

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Natural Resource Data Series NPS/SWAN/NRDS—2011/207

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November 2011

U.S. Department of the Interior  
National Park Service  
Natural Resource Stewardship and Science  
Fort Collins, Colorado

The National Park Service, Natural Resource Stewardship and Science office in Fort Collins, Colorado publishes a range of reports that address natural resource topics of interest and applicability to a broad audience in the National Park Service and others in natural resource management, including scientists, conservation and environmental constituencies, and the public.

The Natural Resource Data Series is intended for the timely release of basic data sets and data summaries. Care has been taken to assure accuracy of raw data values, but a thorough analysis and interpretation of the data has not been completed. Consequently, the initial analyses of data in this report are provisional and subject to change.

All manuscripts in the series receive the appropriate level of peer review to ensure that the information is scientifically credible, technically accurate, appropriately written for the intended audience, and designed and published in a professional manner.

This report received informal peer review by a subject-matter expert who were not directly involved in the collection, or reporting of the data.

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Please cite this publication as:

Walton, K., J. McGrath, and T. Gotthardt. 2011. Archiving Southwest Alaska's National Park bird survey data in the Avian Knowledge Network (AKN) database: Project overview. Natural Resource Data Series NPS/SWAN/NRDS—2011/207. National Park Service, Fort Collins, Colorado.

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## List of Acronyms

AKN	Avian Knowledge Network
ANIA	Aniakchak National Monument and Preserve
LACL	Lake Clark National Park and Preserve
KATM	Katmai National Park and Preserve
KEFJ	Kenai Fjords National Park
SWAN	Southwest Alaska Network Inventory and Monitoring Program



## Introduction

The Southwest Alaska Network (SWAN) of the National Park Service (NPS) is assessing status and monitoring long-term trends of key natural resources or "vital signs" in its five national park units, including: Alagnak Wild River (ALAG), Aniakchak National Monument and Preserve (ANIA), Katmai National Park and Preserve (KATM), Kenai Fjords National Park (KEFJ), and Lake Clark National Park and Preserve (LACL). The goal of this project was to improve the understanding of the status of bird populations in SWAN parks, and to inform management and promotion of public understanding of park resources by making contemporary avian survey data accessible via a nationally recognized avian archival database that is accessible on-line.

The database chosen for the SWAN avian data repository was the Avian Knowledge Network database (AKN; [www.avianknowledge.net](http://www.avianknowledge.net)). AKN is an international organization of government and non-government institutions focused on understanding the patterns and dynamics of bird populations across the western hemisphere. The goal of AKN is to organize observational data and provide tools to discover, access, and analyze these data. Over time, AKN will educate the public on the dynamics of bird populations, provide interactive decision-making tools for land managers, and make data available for scientific research.

We also developed a user's guide of standard operating procedures for NPS staff that describes the process of downloading AKN data for individual parks using the AKN web-portal, and formatting the data so it can be used to annually update park bird checklists. AKN does not allow users to perform customized location queries more specific than at the state level (e.g., Alaska); therefore we were limited to describing the process of downloading AKN data for the entire state.



## Methods

In 2010, we initiated an effort to enter historical records from SWAN area parks into AKN and its sister database, eBird (Gotthardt et al. 2010). We summarized 8,704 incidental observations for 183 bird species from 82 unique data sources, spanning the time period 1919 to 2004. Here, we continue with that effort with the goal of archiving additional bird datasets into the AKN, and to provide park personnel with a guide to instruct them how to access the now archived information.

The following 16 datasets were formatted and uploaded to AKN during this phase of the project:

- Inventory of breeding birds in Aniakchak National Monument and Preserve, summer 2008 (Ruthrauff and Tibbitts 2009).
- Inventory of montane-nesting birds in Katmai and Lake Clark National Parks, summer 2004-2006 (Ruthrauff et al. 2007).
- Summer inventory of landbirds in Kenai Fjords National Park, summer 2005 (Van Hemert et al. 2006).
- Katmai nearshore marine bird surveys, summer 2006-2010, winter 2009 (Bodkin et al. 2007, Bodkin et al. 2008, Coletti et al. 2009, Coletti et al. 2010, Coletti et al. 2011).
- Lake Clark nearshore marine bird survey, summer 2009 (Coletti et al. 2010).
- Kenai Fjords nearshore marine bird survey, summer 2007-2010, winter 2008, 2010 (Bodkin et al. 2008, Coletti et al. 2009, Coletti et al. 2010, Coletti et al. 2011).

An effort was made to crosswalk as many fields from the NPS bird survey datasets with fields acceptable for data entry into AKN. Of the sixteen total datasets, inventory of breeding birds in Aniakchak National Monument and Preserve (summer 2008), and inventory of montane-nesting birds in Katmai and Lake Clark National Parks (summer 2004-2006) used similar survey techniques and data entry fields; the summer inventory of landbirds in Kenai Fjords National Park (summer 2005) was unique and data entry fields were cross-walked independent of other surveys; and Katmai (summer 2006-2010, winter 2009), Lake Clark (summer 2009), and Kenai Fjords nearshore marine bird survey (summer 2007-2010, winter 2008, 2010) all used similar survey techniques. The crosswalk for each of the three surveys types is presented in Appendices A, B, and C, respectively. Only bird survey data identified to the species level (except for Redpoll spp.) with spatial coordinates were uploaded to AKN. All data were collected by trained personnel; therefore, we assumed species were identified correctly. For each survey uploaded to AKN, the standard AKN metadata questionnaire was completed and the data were uploaded into a project specific geodatabase with associated metadata information.

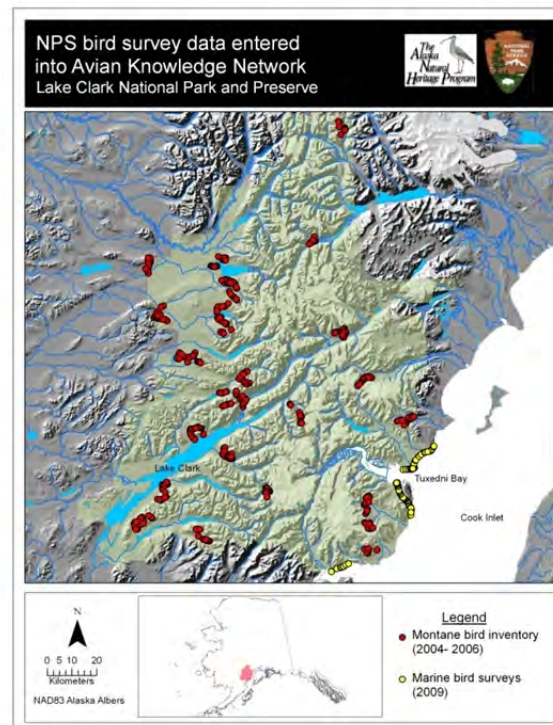
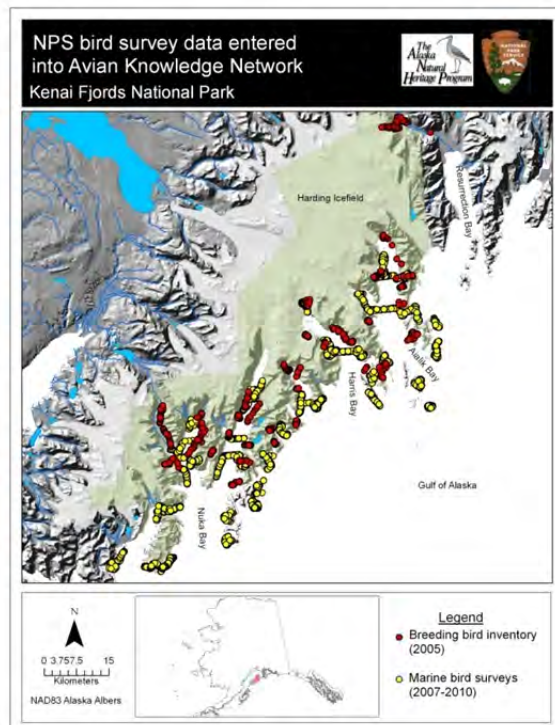
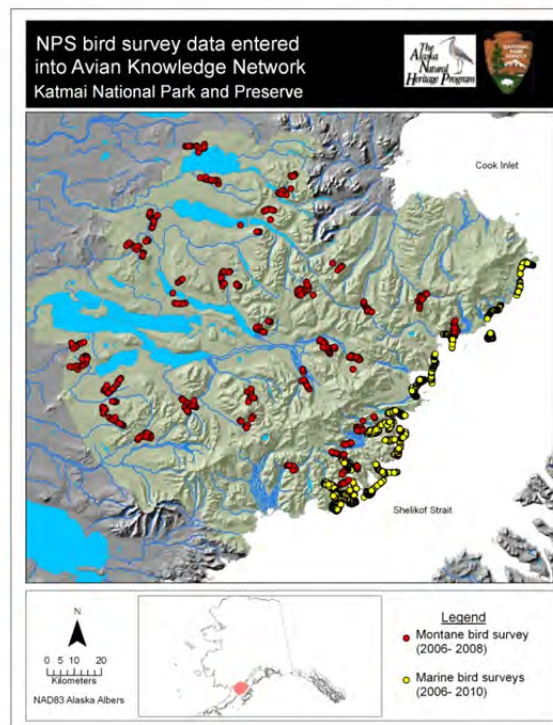
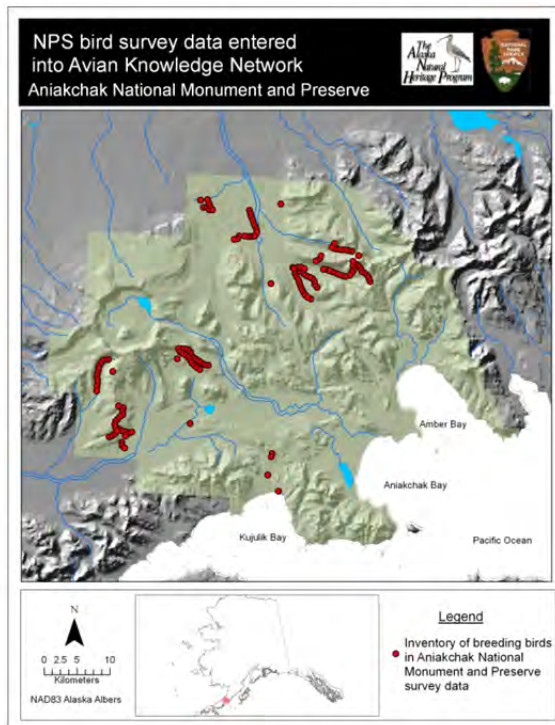
## Results and Discussion

A total of 29,575 records were formatted and uploaded into AKN (see Figure 1 for spatial distribution): 1,215 in Aniakchak National Monument and Preserve, 10,837 in Katmai National Park and Preserve (4,732 from montane bird inventory and 6,105 from marine bird surveys), 12,468 in Kenai Fjords National Park (4,725 from breeding bird inventory and 7,743 from marine bird surveys), and 5,055 in Lake Clark National Park and Preserve (4,810 from montane bird inventory and 245 from marine bird survey). The records uploaded had a total of 173 unique bird species.

To download data from AKN, go to the Avian Knowledge Network website (<http://www.avianknowledge.net/content/>), and choose “download” from the main menu bar. Accept the data liability disclaimer and terms, and you will be directed to the main download page where you can select one of two primary ways to download data; via the “prepackaged data options” or using the “database query tool.” At this time, AKN does not have the capabilities to query data for a specific location (e.g., a specific national park) beyond the state level.

The database query tool (Figure 2) allows more customization of the download process, including downloading data for a specific date (temporal) range; thus the process is described below. The database query tool allows the user to choose the location and range of the data. Remember that the location cannot be queried in more detail than at the state level. To download data for all species for the chosen location and dates, leave the species box empty or narrow the search to only certain bird species by typing them in. To return data for all projects that are compiled in the AKN database, select all projects from the project box, and enter the number of records you want returned (leave blank if you want all records returned). Download type refers to whether the data includes positive observations only, or both positive and negative (absence) observations, and also the type of file (file extension) that will be downloaded. We suggest selecting the default, “positive obs data- Full BMDE (tab delimited. txt),” which returns all positive observations and can be easily opened in Excel.

To further analyze the data, such as using it to update NPS bird checklists, the data will need to be queried and clipped by the desired spatial location using software outside of AKN, such as ArcGIS. Records formatted for this project included the park name at the beginning of the locality field, allowing users to query by location within Excel, but data uploaded by other users may not follow this format.



**Figure 1.** Maps depicting spatial locations of Southwest Alaska Network bird survey data formatted and uploaded into the Avian Knowledge Network database for Aniakchak, Katmai, Kenai Fjords, and Lake Clark National Parks.

## Download Data

**Location (required)**

Country

State

**Date Range**  Continuous  Periodic

Start Month -- Year --

End Month -- Year --

**Species**

**Projects**  Banding  Observation

- eBird
- eBird Canada
- eBird Peru
- eBird Puerto Rico

**Maximum Number of Returned Records**

**Download Data Type**

Positive obs data - Full BMDE (tab delimited, .bt)

I have read and understand the AKN Data Sharing Policy, and Recommended Citations.

**Help**

**Location**

Data for a particular country can be queried by choosing the country from the pull-down list. If you are interested in data for a state/province, type in a postal code or fragment of a state name and press 'Find Location.' Select the state/s of interest. To query for data from multiple locations see instructions for Multiple Species and Location Selections below.

**Date Range**

Date Range criteria is not required for a well-formed data request. If you are interested in data for a particular date range, select either a Continuous or Periodic date range and enter the required Start and End criteria. Any set of months may be selected for a Periodic date range.

**Species**

Queries use scientific name/s to lookup data records. If you know the scientific name for the data you are interested in, enter it in the 'Species' text widget. If you do not know the scientific name, you can do searches on common names or name fragments by typing in some text into the 'Species' text widget and pressing 'Search.' You can then select from the search results. To query for multiple species see instructions for Multiple Species and Location Selections below.

**Project**

Select 'All projects', a specific project, or make a multi-project query using the CTRL or SHIFT keys while making your selection. Not selecting a project defaults to 'All projects.'

**Number of Return Records**

Figure 2. Screen shot from Avian Knowledge Network's database query tool.



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# Appendix A: Crosswalk table for Aniakchak, Lake Clark, and Katmai

**Table A1.** AKN fields and the corresponding NPS bird survey field used for data entry of the Aniakchak, Lake Clark, and Katmai breeding landbird surveys. Text in bold in the NPS Field column are the actual field names from the dataset.

AKN Field	AKN Field Definition	NPS Field
<b>BasisOfRecord</b>	A descriptive term indicating whether the record represents an object or observation.	Derived from report
<b>ScientificName</b>	The full name of the lowest level taxon to which the organism can be identified.	Derived from species code
<b>HigherTaxon</b>	The combination of names of taxonomic ranks less specific than Genus.	Derived from taxonomic fields below
<b>Kingdom</b>	The name of the kingdom in which the organism is classified.	Derived from species code
<b>Phylum</b>	The name of the phylum in which the organism is classified.	Derived from species code
<b>Class</b>	The name of the class in which the organism is classified.	Derived from species code
<b>Order</b>	The name of the order in which the organism is classified.	Derived from species code
<b>Family</b>	The name of the family in which the organism is classified.	Derived from species code
<b>Genus</b>	The name of the genus in which the organism is classified.	Derived from species code
<b>SpecificEpithet</b>	The specific epithet of the scientific name applied to the organism.	Derived from species code
<b>HigherGeography</b>	The combination of all geographic elements less specific than locality.	Derived from geography fields below
<b>Continent</b>	The full, unabbreviated name of the continent from which the organism was collected.	Derived from location
<b>Country</b>	The full, unabbreviated name of the country or major political unit from which the organism was collected.	Derived from location
<b>StateProvince</b>	The full, unabbreviated name of the state, province, or region from which the organism was collected.	Derived from location
<b>Locality</b>	The description of the locality from which the organism was collected. This includes park name and ecological subsection.	Park name: <b>Subs</b> (ecological subsection)

<b>AKN Field</b>	<b>AKN Field Definition</b>	<b>NPS Field</b>
<b>MinimumElevationInMeters</b>	The minimum altitude in meters above (positive) or below (negative) sea level of the collecting locality.	<b>Elevation</b>
<b>MaximumElevationInMeters</b>	The maximum altitude in meters above (positive) or below (negative) sea level of the collecting locality.	<b>Elevation</b>
<b>DecimalLatitude</b>	The latitude of the location from which the organism was collected, expressed in decimal degrees.	<b>Lat_decdeg_WGS84</b>
<b>DecimalLongitude</b>	The longitude of the location from which the organism was collected, expressed in decimal degrees.	<b>Long_decdeg_WGS84</b>
<b>GeodeticDatum</b>	The geodetic datum to which the latitude and longitude refer.	Derived from report
<b>CoordinateUncertaintyInMeters</b>	The upper limit of the distance (in meters) from the given latitude and longitude describing a circle within which the whole of the described locality must lie. Use NULL where the uncertainty is unknown, cannot be estimated, or is not applicable (because there are no coordinates).	Derived from report
<b>YearCollected</b>	The four digit year in which the organism was collected from the field.	<b>Date</b>
<b>MonthCollected</b>	The two digit month of year during which the organism was collected from the field.	<b>Date</b>
<b>DayCollected</b>	The two digit day of the month which the organism was collected from the field.	<b>Date</b>
<b>TimeCollected</b>	The time of day the observation was collected from the field, expressed as decimal hours from midnight.	Derived from <b>TimeCollected</b> and <b>Elapsed_seconds</b>
<b>Collector</b>	The name(s) of the collector(s) of the original data for the observation.	<b>Observer</b>
<b>Sex</b>	The sex of a biological individual observed.	<b>Sex</b>
<b>FieldNotes</b>	A flag marking the existence of, or a reference to, notes taken in the field for the observation.	<b>Notes</b>
<b>OriginalCoordinateSystem</b>	The name of the system in which the original geographic coordinates were recorded.	Derived from report
<b>Remarks</b>	Free text comments accompanying observation record.	<b>Precipitation; Wind_kt</b>

<b>AKN Field</b>	<b>AKN Field Definition</b>	<b>NPS Field</b>
<b>ProtocolType</b>	Broad categories of protocols, such as Point Count, Transect, Banding, Aerial Survey, Area Search, etc.	Derived from report
<b>ProtocolSpeciesTargeted</b>	A short description of the species or taxonomic group targeted by the survey protocol.	Derived from report
<b>ProtocolReference</b>	A published reference describing the protocol used to collect the observation data.	Derived from report
<b>ProtocolURL</b>	The URL of the reference describing the protocol used to collect the observation data.	Derived from report
<b>SamplingEventIdentifier</b>	A unique identifier identifying the sampling event during which the observations were made.	<b>PTP</b> (derived from plot, transect, and point number)
<b>RouteIdentifier</b>	A unique identifier for a route, a transect or any higher organizational unit that comprises a collection of sampling events.	<b>Plot</b> (derived from statewide GIS grid of 10-km X 10-km blocks)
<b>TimeObservationsStarted</b>	The time of day the entire observation event started, expressed as decimal hours from midnight, local time.	<b>Time</b>
<b>TimeObservationsEnded</b>	The time of day the entire observation event ended, expressed as decimal hours from midnight, local time.	Derived from Time and duration
<b>DurationInHours</b>	The total duration of the entire observation event during which this particular observation was made, expressed as decimal hours.	Derived from duration
<b>NumberOfObservers</b>	The total number of observers who participated in the observation event.	Derived from report
<b>EffortMeasurement1</b>	A measure of the effort that was devoted to the observation event. Units are defined by the matching EffortUnits field.	<b>Elapsed_seconds</b> (elapsed time since the start of point survey when the detection occurred)
<b>EffortUnits1</b>	Units of measurement for the matching effort field.	Derived from Elapsed_seconds
<b>EffortMeasurement2</b>	A measure of the effort that was devoted to the observation event. Units are defined by the matching EffortUnits field.	<b>150_50M</b> (variable referring to whether the percent cover by vegetation type was assessed within a 150-m or 50-m radius of the point count)
<b>EffortUnits2</b>	Units of measurement for the matching effort field.	Derived from 150_50M

<b>AKN Field</b>	<b>AKN Field Definition</b>	<b>NPS Field</b>
<b>EffortMeasurement3</b>	A measure of the effort that was devoted to the observation event. Units are defined by the matching EffortUnits field.	<b>Aspect</b>
<b>EffortUnits3</b>	Units of measurement for the matching effort field.	Derived from Aspect
<b>EffortMeasurement4</b>	A measure of the effort that was devoted to the observation event. Units are defined by the matching EffortUnits field.	<b>Slope</b>
<b>EffortUnits4</b>	Units of measurement for the matching effort field.	Derived from Slope
<b>DistanceFromObserver</b>	Distance (in meters) between the observer and the specimen being observed.	<b>Exact_distance</b>
<b>DistanceFromObserverMin</b>	Minimum distance of a range (in meters) between the observer and the specimen being observed.	<b>Minimum_distance</b>
<b>DistanceFromObserverMax</b>	Maximum distance of a range (in meters) between the observer and the specimen being observed.	<b>Maximum_distance</b>
<b>ObservationDescriptor</b>	Other descriptor that provides further information on the behavior or location of the specimen observed.	<b>Behavior</b>
<b>ObservationCount</b>	Number of individuals detected or observed during this observation event.	<b>Number</b>
<b>AllIndividualsReported</b>	Whether the ObservationCount for a given taxon includes all individuals that have been detected during the sampling event.	Derived from report
<b>AllSpeciesReported</b>	Whether the ObservationCount for a given taxon includes all individuals that have been detected within a higher taxonomic group.	Derived from report
<b>CommonName</b>	Common vernacular name to describe the taxon.	<b>Common_Name</b>
<b>RecordPermissions</b>	Permissions regarding the display and distribution of this record.	Derived from report
<b>TaxonomicAuthorityAuthors</b>	Name of the author(s) who published the taxonomic authority used for this record.	Derived from report
<b>TaxonomicAuthorityVersion</b>	Version number of the taxonomic authority.	Derived from report

<b>AKN Field</b>	<b>AKN Field Definition</b>	<b>NPS Field</b>
<b>TaxonomicAuthorityYear</b>	Year of publication of the taxonomic authority, including minor version and supplement.	Derived from report
<b>SpeciesCode</b>	Alphanumerical code describing a species.	<b>Species</b>
<b>HabitatDescription</b>	General description of the habitat within the survey area.	<b>USGS_Viereck_Code</b> and <b>Percent_Circle</b> (modified Viereck classification used to define vegetation cover. Percent of the circle covered by the vegetation cover type. Top two habitats listed.)
<b>Remarks2</b>	Additional remarks field.	<b>Type_detection</b> (describes manner in which bird was detected); <b>Vocalization</b>





## Appendix B: Crosswalk Table for Kenai Fjords

**Table B1.** AKN fields and the corresponding NPS bird survey field used for data entry of the Kenai Fjords breeding bird surveys. Text in bold in the NPS Field column are the actual field names from the dataset.

AKN Field	AKN Definition	NPS Field
<b>BasisOfRecord</b>	A descriptive term indicating whether the record represents an object or observation.	Derived from report
<b>ScientificName</b>	The full name of the lowest level taxon to which the organism can be identified.	<b>Scientific_Name</b>
<b>HigherTaxon</b>	The combination of names of taxonomic ranks less specific than Genus.	Derived from taxonomic fields below
<b>Kingdom</b>	The name of the kingdom in which the organism is classified.	Derived from scientific name
<b>Phylum</b>	The name of the phylum in which the organism is classified.	Derived from scientific name
<b>Class</b>	The name of the class in which the organism is classified.	Derived from scientific name
<b>Order</b>	The name of the order in which the organism is classified.	Derived from scientific name
<b>Family</b>	The name of the family in which the organism is classified.	Derived from scientific name
<b>Genus</b>	The name of the genus in which the organism is classified.	Derived from scientific name
<b>SpecificEpithet</b>	The specific epithet of the scientific name applied to the organism.	Derived from scientific name
<b>HigherGeography</b>	The combination of all geographic elements less specific than locality.	Derived from geography fields below
<b>Continent</b>	The full, unabbreviated name of the continent from which the organism was collected.	Derived from location
<b>Country</b>	The full, unabbreviated name of the country or major political unit from which the organism was collected.	Derived from location
<b>StateProvince</b>	The full, unabbreviated name of the state, province, or region from which the organism was collected.	Derived from location
<b>Locality</b>	The description of the locality from which the organism was collected. This includes park name and ecological subsection.	Park name and <b>Route_name</b>

<b>AKN Field</b>	<b>AKN Definition</b>	<b>NPS Field</b>
<b>MinimumElevationIn Meters</b>	The minimum altitude in meters above (positive) or below (negative) sea level of the collecting locality.	<b>Elevation_m</b>
<b>MaximumElevationIn Meters</b>	The maximum altitude in meters above (positive) or below (negative) sea level of the collecting locality.	<b>Elevation_m</b>
<b>DecimalLatitude</b>	The latitude of the location from which the organism was collected, expressed in decimal degrees.	<b>Latitude</b>
<b>DecimalLongitude</b>	The longitude of the location from which the organism was collected, expressed in decimal degrees.	<b>Longitude</b>
<b>GeodeticDatum</b>	The geodetic datum to which the latitude and longitude refer.	<b>Datum</b>
<b>CoordinateUncertaintyInMeters</b>	The upper limit of the distance (in meters) from the given latitude and longitude describing a circle within which the whole of the described locality must lie.	<b>Location_Error</b> (averaged)
<b>YearCollected</b>	The four digit year in which the organism was collected from the field.	<b>Survey_Date</b>
<b>MonthCollected</b>	The two digit month of year during which the organism was collected from the field.	<b>Survey_Date</b>
<b>DayCollected</b>	The two digit day of the month which the organism was collected from the field.	<b>Survey_Date</b>
<b>Collector</b>	The name(s) of the collector(s) of the original data for the observation.	<b>Observer_ID</b>
<b>FieldNotes</b>	A flag marking the existence of, or a reference to, notes taken in the field for the observation.	<b>Notes</b>
<b>OriginalCoordinateSystem</b>	The name of the system in which the original geographic coordinates were recorded.	Derived from report
<b>Remarks</b>	Free text comments accompanying observation record.	<b>Water_Type</b> (present at survey point)
<b>ProtocolType</b>	Broad categories of protocols, such as Point Count, Transect, Banding, Aerial Survey, Area Search, etc.	Derived from report
<b>ProtocolSpeciesTargeted</b>	A short description of the species or taxonomic group targeted by the survey protocol.	Derived from report

<b>AKN Field</b>	<b>AKN Definition</b>	<b>NPS Field</b>
<b>ProtocolReference</b>	A published reference describing the protocol used to collect the observation data.	Derived from report
<b>ProtocolURL</b>	The URL of the reference describing the protocol used to collect the observation data.	Derived from report
<b>SamplingEventIdentifier</b>	A unique identifier identifying the sampling event during which the observations were made.	<b>Route_Point_ID</b> (Route and point identification number)
<b>RouteIdentifier</b>	A unique identifier for a route, a transect or any higher organizational unit that comprises a collection of sampling events.	<b>Route_Number</b>
<b>TimeObservationsStarted</b>	The time of day the entire observation event started, expressed as decimal hours from midnight, local time.	<b>Hour, Min</b> (combined)
<b>TimeObservationsEnded</b>	The time of day the entire observation event ended, expressed as decimal hours from midnight, local time.	Derived using time and duration
<b>DurationInHours</b>	The total duration of the entire observation event during which this particular observation was made, expressed as decimal hours.	Derived from duration
<b>TimeIntervalStarted</b>	Time (in decimal hours) of the start of the interval where this observation was made, relative to the start of the entire observation event.	<b>Count_Period</b>
<b>TimeIntervalEnded</b>	Time (in decimal hours) of the end of the interval where this observation was made, relative to the start of the entire observation event.	<b>Count_Period</b>
<b>TimeIntervalsAdditive</b>	Indicates whether values in ObservationCount can be added together across different time intervals (Yes or No). Additive intervals mean that only new individuals are reported in each interval.	Derived from report
<b>NumberOfObservers</b>	The total number of observers who participated in the observation event.	Derived from report
<b>EffortMeasurement1</b>	A measure of the effort that was devoted to the observation event. Units are defined by the matching EffortUnits field.	<b>Slope_degree</b>
<b>EffortUnits1</b>	Units of measurement for the matching effort field.	Derived from Slope_degree

<b>AKN Field</b>	<b>AKN Definition</b>	<b>NPS Field</b>
<b>EffortMeasurement2</b>	A measure of the effort that was devoted to the observation event. Units are defined by the matching EffortUnits field.	<b>Aspect_degree</b>
<b>EffortUnits2</b>	Units of measurement for the matching effort field.	Derived from Aspect_degree
<b>EffortMeasurement3</b>	A measure of the effort that was devoted to the observation event. Units are defined by the matching EffortUnits field.	<b>Dist_Shore_m</b>
<b>EffortUnits3</b>	Units of measurement for the matching effort field.	Derived from Dist_Shore_m
<b>DistanceFromObserver</b>	Distance (in meters) between the observer and the specimen being observed.	<b>Exact_Dist_m</b>
<b>DistanceFromObserverMin</b>	Minimum distance of a range (in meters) between the observer and the specimen being observed.	<b>Distance_Code_m</b>
<b>DistanceFromObserverMax</b>	Maximum distance of a range (in meters) between the observer and the specimen being observed.	<b>Distance_Code_m</b>
<b>ObservationDescriptor</b>	Other descriptor that provides further information on the behavior or location of the specimen observed.	<b>Behavior_Code</b>
<b>ObservationCount</b>	Number of individuals detected or observed during this observation event.	<b>Total_Number_Birds</b>
<b>AllIndividualsReported</b>	Whether the ObservationCount for a given taxon includes all individuals that have been detected during the sampling event.	Derived from report
<b>AllSpeciesReported</b>	Whether the ObservationCount for a given taxon includes all individuals that have been detected within a higher taxonomic group.	Derived from report
<b>CommonName</b>	Common vernacular name to describe the taxon.	<b>Common_Name</b>
<b>RecordPermissions</b>	Permissions regarding the display and distribution of this record.	Derived from report
<b>TaxonomicAuthorityAuthors</b>	Name of the author(s) who published the taxonomic authority used for this record.	Derived from report
<b>TaxonomicAuthorityVersion</b>	Version number of the taxonomic authority.	Derived from report

<b>AKN Field</b>	<b>AKN Definition</b>	<b>NPS Field</b>
<b>TaxonomicAuthorityYear</b>	Year of publication of the taxonomic authority, including minor version and supplement.	Derived from report
<b>SpeciesCode</b>	Alphanumerical code describing a species.	<b>Species_Code</b>
<b>HabitatDescription</b>	General description of the habitat within the survey area.	<b>Vegetation_Description</b> and <b>Percent_Circle</b> (some values missing, only descriptions derived from Viereck et al. (1992) habitat classification system were entered (Kessel and NWI left out). Percent of the circle covered by the vegetation cover type. Top two habitats listed).
<b>Remarks2</b>	Additional remarks field.	<b>Topo_Feature; Topo_Position</b>

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## Appendix C: Crosswalk table for marine nearshore surveys

**Table C1.** AKN fields and the corresponding NPS bird survey field used for data entry of the nearshore marine bird survey data. Text in bold in the NPS Field column are the actual field names from the dataset.

<b>AKN Field</b>	<b>AKN Definition</b>	<b>NPS (marine bird) Fields</b>
<b>BasisOfRecord</b>	A descriptive term indicating whether the record represents an object or observation.	Derived from report
<b>ScientificName</b>	The full name of the lowest level taxon to which the organism can be identified.	Derived from species code
<b>HigherTaxon</b>	The combination of names of taxonomic ranks less specific than Genus.	Derived from taxonomic fields below
<b>Kingdom</b>	The name of the kingdom in which the organism is classified.	Derived from species code
<b>Phylum</b>	The name of the phylum in which the organism is classified.	Derived from species code
<b>Class</b>	The name of the class in which the organism is classified.	Derived from species code
<b>Order</b>	The name of the order in which the organism is classified.	Derived from species code
<b>Family</b>	The name of the family in which the organism is classified.	Derived from species code
<b>Genus</b>	The name of the genus in which the organism is classified.	Derived from species code
<b>SpecificEpithet</b>	The specific epithet of the scientific name applied to the organism.	Derived from species code
<b>HigherGeography</b>	The combination of all geographic elements less specific than locality.	Derived from location fields below
<b>Continent</b>	The full, unabbreviated name of the continent from which the organism was collected.	Derived from location
<b>Country</b>	The full, unabbreviated name of the country or major political unit from which the organism was collected.	Derived from location
<b>StateProvince</b>	The full, unabbreviated name of the state, province, or region from which the organism was collected.	Derived from location
<b>Locality</b>	The description of the locality from which the organism was collected. This includes park name and ecological subsection.	Park name

<b>AKN Field</b>	<b>AKN Definition</b>	<b>NPS (marine bird) Fields</b>
<b>DecimalLatitude</b>	The latitude of the location from which the organism was collected, expressed in decimal degrees.	<b>Latitude</b>
<b>DecimalLongitude</b>	The longitude of the location from which the organism was collected, expressed in decimal degrees.	<b>Longitude</b>
<b>GeodeticDatum</b>	The geodetic datum to which the latitude and longitude refer.	Derived from report
<b>YearCollected</b>	The four digit year in which the organism was collected from the field.	<b>YYYY</b>
<b>MonthCollected</b>	The two digit month of year during which the organism was collected from the field.	<b>MM</b>
<b>DayCollected</b>	The two digit day of the month which the organism was collected from the field.	<b>DD</b>
<b>TimeCollected</b>	The time of day the observation was collected from the field, expressed as decimal hours from midnight.	<b>HH, MM, SS</b> fields merged
<b>Collector</b>	The name(s) of the collector(s) of the original data for the observation.	<b>L_OBS</b> (left observer); <b>R_OBS</b> (right observer)
<b>FieldNotes</b>	A flag marking the existence of, or a reference to, notes taken in the field for the observation.	<b>Comments</b>
<b>Remarks</b>	Free text comments accompanying observation record.	<b>COND; COND_1</b> (observer condition, 1- 5 (excellent to poor))
<b>ProtocolType</b>	Broad categories of protocols, such as Point Count, Transect, Banding, Aerial Survey, Area Search, etc.	Derived from report
<b>ProtocolSpeciesTargeted</b>	A short description of the species or taxonomic group targeted by the survey protocol.	Derived from report
<b>ProtocolReference</b>	A published reference describing the protocol used to collect the observation data.	Derived from report
<b>ProtocolURL</b>	The URL of the reference describing the protocol used to collect the observation data.	Derived from report
<b>SamplingEventIdentifier</b>	A unique identifier identifying the sampling event during which the observations were made.	<b>TRIPID</b> and <b>TX#</b> (Trip ID and transect number combined)
<b>RouteIdentifier</b>	A unique identifier for a route, a transect or any higher organizational unit that comprises a collection of sampling events.	<b>TRIPID</b> and <b>Block</b> (Trip ID and block number combined)
<b>NumberOfObservers</b>	The total number of observers who participated in the observation event.	<b>NumberObs</b>



<b>AKN Field</b>	<b>AKN Definition</b>	<b>NPS (marine bird) Fields</b>
<b>EffortMeasurement1</b>	A measure of the effort that was devoted to the observation event. Units are defined by the matching EffortUnits field.	<b>HH; MM; SS</b> (time as hours:minutes:seconds)
<b>EffortUnits1</b>	Units of measurement for the matching effort field.	Derived from HH; MM; SS
<b>EffortMeasurement2</b>	A measure of the effort that was devoted to the observation event. Units are defined by the matching EffortUnits field.	<b>Tx_Width</b> (transect width)
<b>EffortUnits2</b>	Units of measurement for the matching effort field.	Derived from TX_Width
<b>EffortMeasurement3</b>	A measure of the effort that was devoted to the observation event. Units are defined by the matching EffortUnits field.	<b>Beaufort</b> (Beaufort sea scale)
<b>EffortUnits3</b>	Units of measurement for the matching effort field.	Derived from Beaufort
<b>ObservationDescriptor</b>	Other descriptor that provides further information on the behavior or location of the specimen observed.	<b>Behavior</b>
<b>ObservationCount</b>	Number of individuals detected or observed during this observation event.	<b>Count</b>
<b>AllIndividualsReported</b>	Whether the ObservationCount for a given taxon includes all individuals that have been detected during the sampling event.	Derived from report
<b>AllSpeciesReported</b>	Whether the ObservationCount for a given taxon includes all individuals that have been detected within a higher taxonomic group.	Derived from report
<b>CommonName</b>	Common vernacular name to describe the taxon.	Derived from report
<b>RecordPermissions</b>	Permissions regarding the display and distribution of this record.	Derived from report
<b>TaxonomicAuthorityAuthors</b>	Name of the author(s) who published the taxonomic authority used for this record.	Derived from report
<b>TaxonomicAuthorityVersion</b>	Version number of the taxonomic authority.	Derived from report
<b>SpeciesCode</b>	Alphanumeric code describing a species.	<b>Spp</b> (four letter species code)
<b>HabitatDescription</b>	General description of the habitat within the survey area.	<b>TransType</b> (coastal or pelagic)
<b>Remarks2</b>	Additional remarks field.	<b>REC</b> (record number)