

Alaska Subsistence Harvest of Birds and Eggs, 2016, Alaska Migratory Bird Co-Management Council

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November 2017

Alaska Department of Fish and Game
Division of Subsistence



Alaska Migratory Bird
Co-Management Council



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Weights and measures (metric)		General		Mathematics, statistics	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly-accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H_A
gram	g			base of natural logarithm	e
hectare	ha			catch per unit effort	CPUE
kilogram	kg	all commonly-accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	coefficient of variation	CV
kilometer	km			confidence interval	CI
liter	L	at	@	correlation coefficient (multiple)	R
meter	m	compass directions:		correlation coefficient (simple)	r
milliliter	mL	east	E	covariance	cov
millimeter	mm	north	N	degree (angular)	°
		south	S	degrees of freedom	df
Weights and measures (English)		west	W	expected value	E
cubic feet per second	ft ³ /s	copyright	©	greater than	>
foot	ft	corporate suffixes:		greater than or equal to	≥
gallon	gal	Company	Co.	harvest per unit effort	HPUE
inch	in	Corporation	Corp.	less than	<
mile	mi	Incorporated	Inc.	less than or equal to	≤
nautical mile	nmi	Limited	Ltd.	logarithm (natural)	ln
ounce	oz	District of Columbia	D.C.	logarithm (base 10)	log
pound	lb	et alii (and others)	et al.	logarithm (specify base)	log ₂ , etc.
quart	qt	et cetera (and so forth)	etc.	minute (angular)	'
yard	yd	exempli gratia (for example)	e.g.	not significant	NS
		Federal Information Code	FIC	null hypothesis	H_0
Time and temperature		id est (that is)	i.e.	percent	%
day	d	latitude or longitude	lat. or long.	probability	P
degrees Celsius	°C	monetary symbols (U.S.)	\$, ¢	probability of a type I error (rejection of the null hypothesis when true)	α
degrees Fahrenheit	°F	months (tables and figures)	first three letters (Jan.,...,Dec)	probability of a type II error (acceptance of the null hypothesis when false)	β
degrees kelvin	K	registered trademark	®	second (angular)	"
hour	h	trademark	™	standard deviation	SD
minute	min	United States (adjective)	U.S.	standard error	SE
second	s	United States of America (noun)	USA	variance	
		U.S.C.	United States Code	population	Var
Physics and chemistry		U.S. state	two-letter abbreviations (e.g., AK, WA)	sample	var
<i>all atomic symbols</i>					
alternating current	AC	Measures (fisheries)			
ampere	A	fork length	FL		
calorie	cal	mideye-to-fork	MEF		
direct current	DC	mideye-to-tail-fork	METF		
hertz	Hz	standard length	SL		
horsepower	hp	total length	TL		
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

TECHNICAL PAPER NO. 434

**ALASKA SUBSISTENCE HARVEST OF BIRDS AND EGGS, 2016,
ALASKA MIGRATORY BIRD CO-MANAGEMENT COUNCIL**

by

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November 2017

This report was funded by the U.S. Fish and Wildlife Service
(cooperative agreements F12AC00653 and F17AC00179) and
the Alaska Department of Fish and Game Division of Wildlife Conservation (RSAs 1155353 and 1166085).

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This document should be cited as:

Naves, L. C. and Otis D. 2017. Alaska subsistence harvest of birds and eggs, 2016, Alaska Migratory Bird Co-Management Council. Alaska Department of Fish and Game Division of Subsistence Technical Paper No. 434, Anchorage.

Front cover photo: Data collection for the subsistence harvest survey of the Alaska Migratory Bird Co-Management Council relies on collaboration with diverse partners including tribal councils, National Wildlife Refuges, and Alaska Native local and regional organizations. Harvest reports are completed in in-person interviews conducted by Alaska Native surveyors. Regional field coordinators and local surveyors are trained annually following standard survey methods. This picture was taken in a training session conducted in October 2017, at Anchorage. From left to right are: Cora Demit (Northway Refuge Information Technician - RIT, Tetlin National Wildlife Refuge - NWR), Julie Mahler (Forth Yukon RIT, Yukon Flats NWR), David Therchik (Toksook Bay RIT, Yukon Delta NWR), Shandara Swatling (Huslia RIT, Koyukuk-Nowitna NWR), Mildred Allen (standing; Arctic Village RIT, Arctic NWR), Natalia Bond (New Stuyahok local surveyor), and Jon Dyasuk (Interpreter, Togiak NWR). Refuge Information Technicians are Alaska Native refuge staff that work in the frontline of communication among refuges and subsistence communities in Alaska. Photo by Jacqueline Keating (ADF&G Division of Subsistence).

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ABSTRACT

This report presents subsistence harvest estimates of birds and their eggs in Alaska for the data year 2016. Data were collected through the Harvest Assessment Program of the Alaska Migratory Bird Co-Management Council. This program relies on collaboration among the U.S. Fish and Wildlife Service, the Alaska Department of Fish and Game, and regional and local Alaska Native organizations. Information obtained by this program is used to inform subsistence harvest regulations, to document customary and traditional uses of migratory birds in Alaska, and to support sustainable harvest opportunities and conservation of birds. Participation by communities and households in the harvest survey is voluntary. In 2016, the study piloted a revised sampling design. The survey covered 5 migratory bird management regions: Bristol Bay, Yukon-Kuskokwim Delta, Bering Strait-Norton Sound, North Slope, and Interior Alaska. These regions represent more than 90% of the total subsistence bird harvest in Alaska and are used as an index to the total harvest. The survey covers spring, summer, and fall harvest, except that the North Slope region has no fall survey. The survey design treats regions as strata and uses a two-stage sampling design in each region. Within regions, communities are selected by systematic random sampling. Within communities, households are selected by simple random sampling. Harvest reported by surveyed communities is extrapolated to nonsurveyed communities in the same region. Data are reported at the region and survey-wide levels. This report also includes harvest estimates for the Cordova spring bird and egg harvest in the Gulf of Alaska-Cook Inlet region, where a mail-out survey is administered to all households that register to participate in that harvest.

Key words: Alaska Migratory Bird Co-Management Council, AMBCC, migratory birds, migratory bird eggs, subsistence harvest, subsistence hunting, subsistence harvest estimates, ducks, geese, swans, cranes, ptarmigans, grouses, seabirds, shorebirds, grebes, loons.

ACKNOWLEDGMENTS

This survey relies on collaboration of the local communities. The Alaska Migratory Bird Co-Management Council (AMBCC) and the Alaska Department of Fish and Game (ADF&G) Division of Subsistence are grateful to all households that agreed to report their harvest. The AMBCC and the ADF&G Division of Subsistence are thankful for the collaboration of the Alaska Native organizations, national wildlife refuges (NWR), village councils, local surveyors, and other partners that facilitated and conducted data collection. The mail-out survey for the Cordova harvest was conducted in partnership with the Eyak Tribe, U.S. Forest Service, and the Alaska Department of Fish and Game. John Whissel, Milo Burcham, and Charlotte Westing greatly facilitated this collaboration. Staff of the Information Management Unit of the ADF&G Division of Subsistence provided data entry and management support. Adam Knight edited this report. We acknowledge the following local surveyors (in parenthesis are the communities they surveyed):

- John O. Mark (Togiak NWR Refuge Information Technician; Iliamna and Quinhagak)
- Jon Dyasuk (Togiak NWR Refuge Information Technician; Chignik Lagoon and Dillingham)
- Keemuel Kenrud (Togiak NWR Refuge Information Technician; Levelock)
- Alexie Stone (Atmautluak)
- Catherine Williams (Akiak)
- David Philips (Yukon Delta NWR, Refuge Information Technician; Aniak, Bethel, and Stony River)
- David Therchik (Yukon Delta NWR, Refuge Information Technician; Bethel and Toksook Bay)
- Elias G. Alexie (Upper Kalskag)
- Hilda Stern (Emmonak and Nunam Iqua)
- James Chris (Nunapitchuk)
- Jerry L. Moses (Hooper Bay)
- Joanne Sakar (Chuathbaluk)
- Lincoln Shavings (Mekoryuk)
- Margaret Michael (Kwethluk)
- Maryann Frank (Tuntutuliak)
- Nick Henry (Oscarville)
- Noah Agnus (Nightmute)
- Robyn Kasayulie (Akiachak)
- Wassilie Guy (Napaskiak)
- Carl Brown (White Mountain)
- Clyde Jacson (Shaktoolik)
- Clyde Oxereok (Wales)
- Jacob Martin (Nome)
- Robert Soolook Jr. (Diomedea)
- Carla Kayotuk (Kaktovik)
- Qaiyaan Harcharek (North Slope Borough; Barrow and Wainwright)
- Tariiek Oviok (Point Hope)
- Julie Mahler (Birch Creek, Fort Yukon, and Nenana)
- Ken Chase (Yukon Delta NWR Refuge Information Technician; Anvik, Nulato, and Takotna)
- Mildred Allen (Arctic NWR Refuge Information Technician, Venetie)
- Steven Bergman Sr. (Allakaket-Alatna and Bettles-Evansville)

We acknowledge other regional partners that facilitated and coordinated data collection:

- Allen Miller (Togiak NWR, Dillingham)
- Amanda Cochran (Togiak NWR, Dillingham)
- Cristopher Tulik (Yukon Delta NWR, Refuge Information Technician, Bethel)
- Brandon Ahmasuk (Kawerak, Inc., Nome)
- Bill Trigg (Kawerak, Inc., Nome)
- Mike Pederson (North Slope Borough)
- Vince Mathews (Arctic, Kanuti, and Yukon Flats NWRs Subsistence Specialist, Fairbanks)
- Jeremy Havener (Koyukuk, Nowitna and Innoko NWRs, Subsistence Specialist, Galena)
- Mike Spindler (Kanuti NWR)
- Donna Dewhurst (USFWS-AMBCC Staff Support, Anchorage)

INTRODUCTION

In 1916, Canada and the United States ratified the Migratory Bird Treaty (the treaty) to protect migratory bird populations. Among other provisions, the treaty set an annual hunting closure between 10 March and 1 September. However, this provision failed to provide for the spring and summer harvest of migratory birds by northern peoples; this harvest has been historically necessary to their subsistence way of life. Despite the closure, customary and traditional bird hunting in spring and summer continued.

In 1997, the U.S. Congress ratified a treaty amendment recognizing traditional spring and summer subsistence bird harvest by northern peoples. The goal of the amendment was to promote conservation of migratory birds by including subsistence hunting in the regulatory process. The amendment authorized the U.S. Fish and Wildlife Service (USFWS) to open regulated spring and summer subsistence hunts of migratory birds in Alaska. The amendment also mandated that Alaska's Native peoples have a meaningful role in harvest management. As a result of this direction, the Alaska Migratory Bird Co-Management Council (AMBCC) was formed in 2000. The AMBCC is composed of representatives from the USFWS, Alaska Department of Fish and Game (ADF&G), and regional Native entities (65 FR 16405–16409¹). The AMBCC identified the need for harvest assessment to document traditional uses of migratory birds and harvest amounts. Harvest assessment is also needed to meet the intentions of the amended treaty: (1) subsistence harvest should remain at traditional levels relative to bird population sizes; (2) subsistence harvest data should be integrated with flyway and national harvest management programs; and (3) regulatory processes for all migratory bird hunting should be inclusive of users and responsive to conservation needs. The first legal spring–summer subsistence hunting season was in 2003.

Subsistence bird and egg harvest assessment occurred annually in 1985–2002 in the Yukon-Kuskokwim Delta region (Y-K Delta) in the context of the Goose Management Plan (Copp 1985; Copp and Roy 1986; Wentworth 2007b; Zavaleta 1999). Similar surveys were conducted in the Bristol Bay region about every other year in 1995–2002 (Wentworth 2007a). These earlier surveys had an important role in refining survey methods, developing acceptance of harvest surveys in subsistence communities, engaging users in the management process, and together with the AMBCC harvest data (below) constitute a long-term dataset necessary for the understanding of harvest data.

The AMBCC Harvest Assessment Program (AMBCC-HAP) was based on the Goose Management Plan surveys conducted in the Y-K Delta and Bristol Bay and expanded the geographic coverage of bird and egg harvest monitoring to other regions in Alaska (Reynolds 2007)². The AMBCC survey has been conducted annually since 2004 relying on collaboration among USFWS, ADF&G, and Alaska Native partners. The USFWS and the ADF&G have funded the AMBCC-HAP. The ADF&G Division of Subsistence currently coordinates the AMBCC-HAP on behalf of the AMBCC. Data collection is usually implemented by Native partners at the regional and local levels. Data collection in 2004–2009 followed methods described in Naves (2010rev.). In 2008–2009, the survey program underwent a first revision to streamline program structure and data collection, analysis, and reporting (Naves et al. 2008). Revised survey methods were implemented in 2010–2015 following methods described in Naves (2012). In 2014–2016, the survey program underwent a second revision, which addressed the distribution of sampling effort among regions and communities and data analysis (George et al. 2015; Otis et al. 2016). The revised survey methods are described in this report. In 2016, the survey piloted the newly revised sampling design.

Information generated by the AMBCC-HAP is available to Alaska rural communities (or villages), Native organizations, state and federal resource management and conservation agencies, the Pacific Flyway Council, and the general public. This report is the tenth in a series presenting annual harvest estimates for birds and their eggs based on data collected by the AMBCC-HAP (Naves 2010rev., 2010, 2011, 2012, 2014a; Naves and Braem 2014; Naves 2015b, 2015c, 2016). All reports are available at the websites of the AMBCC (<https://www.fws.gov/alaska/ambcc/harvest.htm>) and the ADF&G (<http://www.adfg.alaska.gov/sf/publications/>). Harvest estimates produced by the AMBCC-HAP can also be downloaded in electronic version at the AMBCC data portal hosted at the ADF&G website (http://www.adfg.alaska.gov/index.cfm?adfg=subsistence.migratorybird_cmc). The AMBCC-HAP also conducts research, outreach, and education to address specific information needs and

1. Federal Register Vol. 65, No. 60 (March 28, 2000) available online: <http://www.gpo.gov/fdsys/pkg/FR-2000-03-28/pdf/00-7550.pdf>.

2. See also AMBCC (Alaska Migratory Bird Co-Management Council). 2003. Recommendations for a statewide Alaska migratory bird subsistence harvest survey. Unpublished report by the Subsistence Harvest Survey Committee. U.S. Fish and Wildlife Service, Division of Migratory Bird Management, Anchorage.

management issues (Naves and Zeller 2013; Naves 2014b; Rothe et al. 2015; Naves 2015a; Naves and Fall 2017; Naves and Zeller 2017). Some uses of the data are:

- Document the importance of customary and traditional subsistence uses of migratory birds by Alaska communities so that these uses will be protected and conducted in a sustainable manner;
- Document subsistence harvest trends and track changes in harvest;
- Inform spring–summer migratory bird harvest regulations; and
- Assist in the development of management plans.

METHODS

ETHICAL STANDARDS

From a subsistence harvester's perspective, harvest surveys collect information that commonly is private and sensitive. Subsistence bird harvest data are sensitive because spring and summer hunting was illegal until recently. Subsistence users fear that information provided in harvest surveys may be used to direct law enforcement efforts and to limit harvest practices that are essential for their diet and culture. To meet survey objectives, it is necessary to develop and maintain trust and collaboration between subsistence users and resource management agencies. Community and household participation in the survey is voluntary. Community consent to conduct surveys is granted as tribal council resolutions and ethical principles for social science research are closely observed (Arctic Research Consortium of the United States (ARCUS) 1999:55–59; Naves 2012:7)³. Data at the household level are considered confidential. AMBCC-HAP data have been usually reported at the subregion and region levels. Specific data release agreements may allow data release at the community level (e.g., Naves and Zeller 2013; Naves 2014b, 2015c). Archived materials do not include household names or other personal information to maintain anonymity of household harvest reports (a numeric household identifier is used). Names on household lists are covered; lists not showing names are then scanned for digital archiving together with other survey materials. Preliminary harvest estimates are submitted to Alaska Native regional partners and other AMBCC partners for review before being adopted by the AMBCC. Information from the survey is not to be used for punitive law enforcement purposes, and there are no known instances when this may have happened since regular bird harvest surveys started in the 1980s.

FIVE-REGIONS SURVEY

Sampling Design

The revised sampling design was based on the objectives, priorities, and funding level for the survey program identified by AMBCC partners during the review process (George et al. 2015; Otis et al. 2016). Alaska-wide harvest estimates were considered the main priority and region-level harvest estimates were considered a secondary priority. Because of challenges in accurately estimating harvest for rarely-harvested species, optimal allocation analyses to distribute sampling effort were based on past harvest estimates for commonly-harvested species ([George et al. 2015:69–70]; Table 1).

The sampling frame includes five regions, which together represent about 90% of the total subsistence bird harvest in Alaska: Yukon-Kuskokwim Delta, Bering Strait-Norton Sound, Interior Alaska, Bristol Bay, and North Slope (Appendix A). Harvest in these five regions is used as an index of the Alaska-wide harvest. The same regions are to be sampled each year (Otis et al. 2016). Harvest data for non-surveyed regions may be occasionally available depending on surveys conducted by other organizations, including Native organizations. The AMBCC-HAP can provide technical assistance in harvest data collection and analysis upon request. Also, depending on priorities, the AMBCC-HAP may conduct dedicated studies to address specific data needs in the nonsurveyed regions. These additional data will not be incorporated in the regular five regions' harvest estimates, but may be provided as separate reports.

The survey uses a stratified, two-stage sampling design. Regions are considered strata. Within each region, communities are first-stage sampling units and households are second-stage sampling units. The clustering of communities into subregions was eliminated because harvest estimates at the region and Alaska-wide levels were considered a priority during the survey revision (Naves 2012; George et al 2015).

3. See also Alaska Federation of Natives. 2013. "Alaska Federation of Natives Guidelines for Research." Alaska Native Knowledge Network. Accessed February 25, 2014. <http://www.ankn.uaf.edu/IKS/afnguide.html>.

Table 1.–Commonly-harvested species used in analyses of survey performance.

Species	Scientific name
American Widgeon ¹	<i>Anas americana</i>
Black brant ^{1, 2, 4}	<i>Branta bernicla</i>
Black Scoter ^{1, 2, 4}	<i>Melanitta americana</i>
Cackling/Canada Goose ¹	<i>Branta hutchinsi/canadensis</i>
Canvasback ²	<i>Aythya valisineria</i>
Common Eider ^{3, 4}	<i>Somateria mollissima</i>
Greater White-fronted Goose ¹	<i>Anser albifrons</i>
King Eider ^{1, 4}	<i>Somateria spectabilis</i>
Long-tailed Duck ²	<i>Clangula hyemalis</i>
Mallard ^{1, 2}	<i>Anas platyrhynchos</i>
Northern Pintail ¹	<i>Anas acuta</i>
Greater/Lesser Scaup ¹	<i>Aythya marila/affinis</i>
Snow Goose ¹	<i>Chen caerulescens</i>
Surf Scoter ²	<i>Melanitta perspicillata</i>
White-winged Scoter ¹	<i>Melanitta fusca</i>

- 1: Important subsistence resources (more than 2% of the total subsistence harvest of birds in Alaska, based on 2004–2008 AMBCC harvest estimates).
- 2: Large proportion (more than 5%) of Alaska breeding population is harvested by subsistence users.
- 3: Large proportion (more than 5%) of Alaska breeding population is harvested by subsistence users. Harvest during fall and winter includes birds breeding outside of Alaska (mixed populations).
- 4: Species of conservation concern that are harvested in significant numbers.

For each region and year, a systematic random sample of communities is selected to be surveyed. With the objective of obtaining a geographically dispersed set of communities, in each region, communities were sequentially numbered following a geographic route (south to north, coastal to inland; figures 1–5). A starting-point community is randomly selected, which then defines the other selected communities (e.g., every 4th community in the sequentially numbered route). Communities are selected randomly regardless of their total number of households. The number of communities to be sampled in each region was based on optimal sampling allocation (Table 2) (Otis et al. 2016).

In the 2016 survey, communities with more than 300 households were divided into parcels. For purposes of sampling, each parcel was treated as an individual community (Dillingham=3 parcels, Bethel=7 parcels, Nome=5 parcels, Utqiagvik (formerly Barrow)=5 parcels, Tok=2 parcels). Communities with fewer than 10 households in the 2010 census and in the 2011–2015 population estimates were excluded from the sampling frame (U.S. Census Bureau 2011; ADLWD n.d.) (Bristol Bay region: Ivanof Bay, Portage Creek, Ugashik, Pope Vannoy Landing; Interior Alaska region: Lake Minchumina, Coldfoot, Wiseman, Livengood, Chicken, Healy Lake).

Participation in the survey is voluntary at the community and household levels. For each survey year, if a selected community declines to participate or cannot be surveyed because of a major logistical constraint, an alternate community is selected. Following the geographic route established for the systematic random sampling of communities, the first alternate community is that immediately before the originally selected community (Figures 1–5). If a first-alternate community declines to participate or cannot be surveyed because of a major logistical constraint, the community immediately after the originally selected community is selected as the second alternate. Within communities, if a selected household declines to participate or cannot be contacted after three reasonable attempts (as described in Naves [2012]), an alternate household is randomly selected among those not selected in the original drawing, and this process is repeated until the household sampling goal is met.

With the objective of simplifying survey methods, harvest level stratification (harvester, non-harvester) is no longer used. Within each selected community, households are selected by simple random sampling to be surveyed. For the 2016 survey, based on optimal allocation and discussion with AMBCC partners, it was decided that 10 households were to be surveyed in each selected community (Otis et al. 2016). The number of households surveyed per community is lower in the revised AMBCC survey than in other surveys conducted in Alaska because Alaska-wide estimates were defined as a priority during the AMBCC survey revision (George et al. 2015). This change generated concerns among some AMBCC partners because a reduced sample size within communities may incur the possibility of missing some high harvesters, which would in turn result in underestimated harvest at the community level. However, the intent of the survey is to reflect a large scale perspective of the subsistence bird harvest. Harvest estimates will only be produced at the region and survey-wide levels. Harvest estimates at the region level are based on the total number of households sampled in the region, and this larger sample size accurately represents the true proportions of nonharvesters, low harvesters, and high harvesters. An evaluation of the 2016 pilot survey will include an assessment of the optimum allocation analysis. A significant change in the estimated variance of components might lead to an adjustment of the number of villages and households to be sampled in each region.

Table 2.—Distribution of sampling effort, 2016 survey.

Region	Total communities	Total communities/parcels ^a	Total households ^b	Communities to be surveyed	Households to be surveyed ^c
Bristol Bay	31	29	2,490	4	40
Yukon-Kuskokwim Delta	47	53	6,854	21	210
Bering Strait-Norton Sound	16	20	2,744	5	50
North Slope	8	12	2,022	5	50
Interior Alaska	48	41	2,962	10	100
Total	150	155	17,072	45	450

a. “Communities/parcels” refer to sampling units, accounting for (a) division of communities with more than 300 households into parcels (Dillingham=3 parcels, Bethel=7 parcels, Nome=5 parcels, Utqiagvik=5 parcels, Tok=2 parcels); (b) exclusion of communities with fewer than 10 households from the sampling frame; and (c) neighboring communities combined for survey purposes (Bettles-Evansville, Allakakeet-Alatna).

b. Based on 2010 census data.

c. Based on a fixed number of 10 households to be surveyed in each selected community.

Dividing Large Communities into Parcels

For small communities, a list of households based on family names can be compiled by a person who knows the community well. People often move between communities and between households within communities, thus household lists need to be frequently updated. For large communities, it is impractical to keep updated lists of all households based on family names, and instead, surveys often use lists of physical addresses. Lists of addresses may be obtained from the planning department or other service entities in a community (e.g., electrical company, emergency services). Lists of addresses may identify individual units in multi-unit buildings (apartment buildings, duplexes, etc).

Utqiagvik—A list of residential addresses and a set of plat maps were obtained from the Planning Department of the North Slope Borough. A set of aerial photographs also showing plot numbers was obtained online (<http://www.north-slope.org/our-communities/barrow>). Consultation with staff of the North Slope Borough Department of Wildlife Management indicated that distribution of demographic categories is homogenous among neighborhoods (e.g., Alaska Native population is not concentrated in some neighborhoods). The list included 1,223 residential addresses. The parcels were composed of sets of nearby streets within recognized parts of the city (Barrow: parcels 1 [227 addresses] and 2 [244 addresses]; Browerville: parcels 3 [264 addresses] and 4 [248 addresses]; and Cakeeater: parcel 5 [240 addresses]).

Bethel—A list of addresses used for a salmon harvest survey was obtained from the Division of Commercial Fisheries of the Alaska Department of Fish and Game. This list has been updated and ground-truthed over the years. The list included 2,130 addresses, most of them were residential. A set of plat maps was obtained from the Planning

Department of the city of Bethel (http://www.cityofbethel.org/vertical/sites/%7B86032ACB-92B0-4505-919A-3F45B84FECD9%7D/uploads/City_of_Bethel_Address_Map.pdf). Consultation with staff of the Division of Commercial Fisheries of the Alaska Department of Fish and Game and with staff of the Yukon Delta National Wildlife Refuge indicated that distribution of demographic categories is homogenous among neighborhoods (e.g., Alaska Native population is not concentrated in some neighborhoods). The parcels were composed of sets of close-by streets based on the city maps. Neighborhoods with few addresses were combined (parcel 1 [350 addresses], parcel 2 [290 addresses], parcel 3 [295 addresses], parcel 4 [285 addresses], parcel 5 [381 addresses], parcel 6 [298 addresses], parcel 7 [231 addresses]).

Dillingham and Nome—A list of addresses was obtained from the Planning Department of the City of Dillingham. The list was last updated in 2014 and a more recent list was unavailable. The list included 1,109 addresses, but 76 addresses were identified as non-residential and were excluded. Data analysis was based on 726 total households (Evans et al. 2013), which yields three adjusted parcels, each including 242 residential, yearlong households. A list including 2,204 addresses was obtained from the Planning Department of the City of Nome, among which 1,472 addresses were identified as having a structure. For Dillingham and Nome, all addresses not identified as non-residential were considered for household selection. Using the software Microsoft Excel⁴, a formula assigned a random number to each address. The lists were sorted from the smallest to the largest random number and divided into sequential parts according to the number of parcels defined for each community (Dillingham had three parcels, and Nome had five parcels). This way, parcels were composed of a random set of addresses within a community. This process ensures that parcels are not biased by potential demographic characteristics of neighborhoods, such as ethnic groups or age classes.

For all communities divided into parcels, within parcels, the top-listed addresses based on the randomly assigned number were selected to be surveyed as the original sample. Many additional addresses were pre-selected as potential alternates to replace addresses of the original sample that were non-residential, non-occupied, or could not be contacted. Alternate addresses were used as needed following the random order in which they were listed.

Data Collection, Household Visits

Data collection followed methods described in Naves (2012). At the community level, data collection relied on household lists including all resident households, except for the largest communities, where the survey used lists of addresses as described above (Appendix B). A household was considered resident if its members have lived in the community for at least the 12 months prior to the survey. Household lists did not include unoccupied dwellings, commercial buildings, and public buildings.

Local surveyors were trained by a regional partner or survey coordination staff. Harvest surveys were completed during in-person interviews conducted by a local surveyor. Survey respondents were instructed (1) to report all bird and egg harvests by all hunters in the household, including those given to other household(s); (2) to report the household's share of any harvest done by a multi-individual harvesting party; and (3) not to report birds or eggs received from other household(s). A tracking sheet was used to document household contacts and participation (Appendix C). Alternate households or addresses were selected to replace households that declined to participate and households that could not be contacted after three reasonable attempts. Alternate addresses were selected as needed until the household sampling goal was achieved.

The harvest report form was used to record the harvest of birds and eggs (Appendices D–G). The survey form included species important for subsistence uses or of management interest. Harvest of species not represented in the form can be reported in the field “other bird.” Some species that are difficult to tell apart were combined in categories. The form had a sheet for each survey season (spring: 2 April–30 June, summer: 1 July–31 August, and fall: 1 September–31 October). The bird identification guide had color drawings of birds (Appendices G–K). A poster with color photographs of all species included in the survey assisted in species identification and outreach (Appendices L–O). On the poster, close to each photograph, appeared the species' English name and a blank field for writing Native and local names. Data collection staff used lists of local and Alaska Native species names to help in communicating with respondents and in species identification (Naves 2010rev.).

4. Product names are given because they are established standards for the State of Alaska or for scientific completeness: they do not constitute product endorsement.

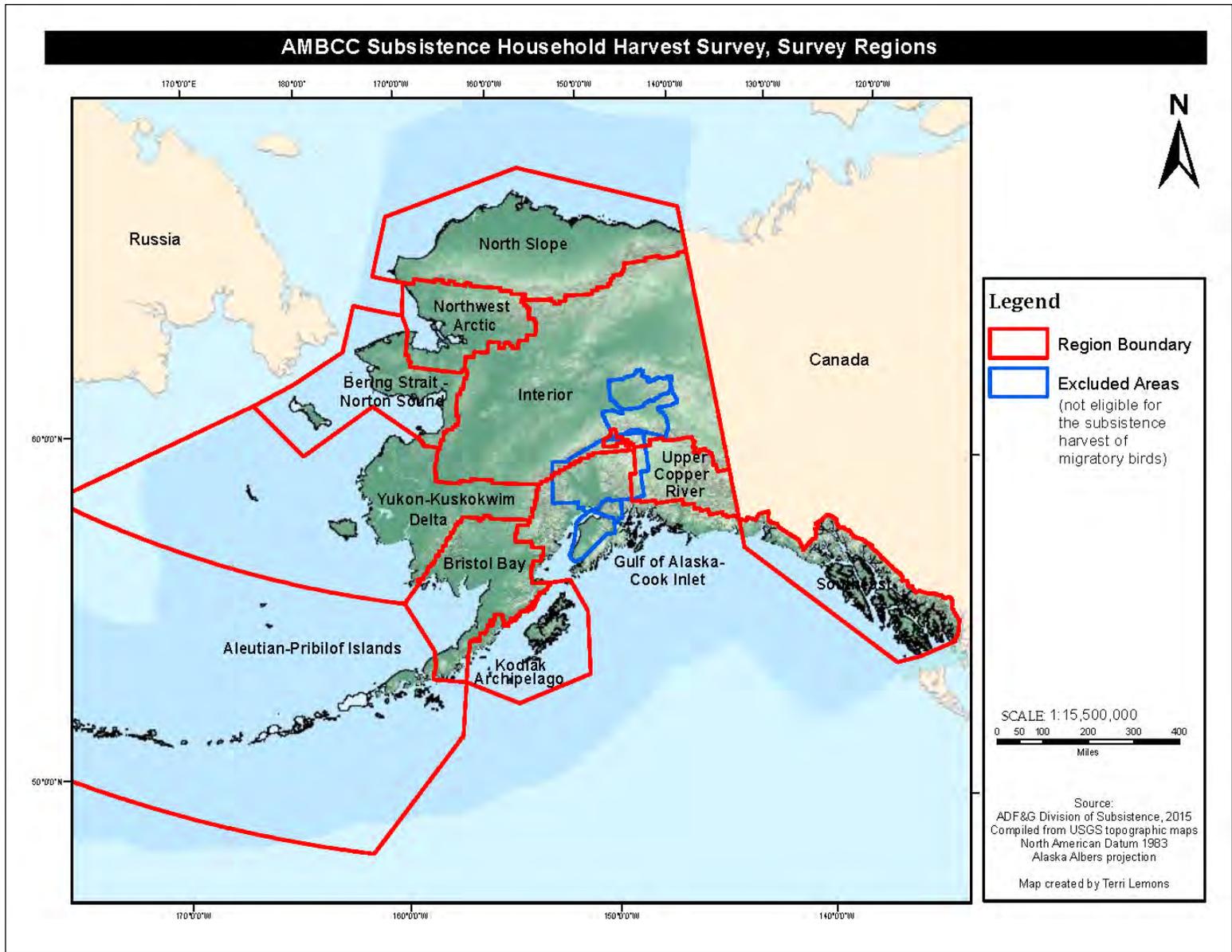


Figure 1.-Management regions for the Alaska migratory bird subsistence harvest.

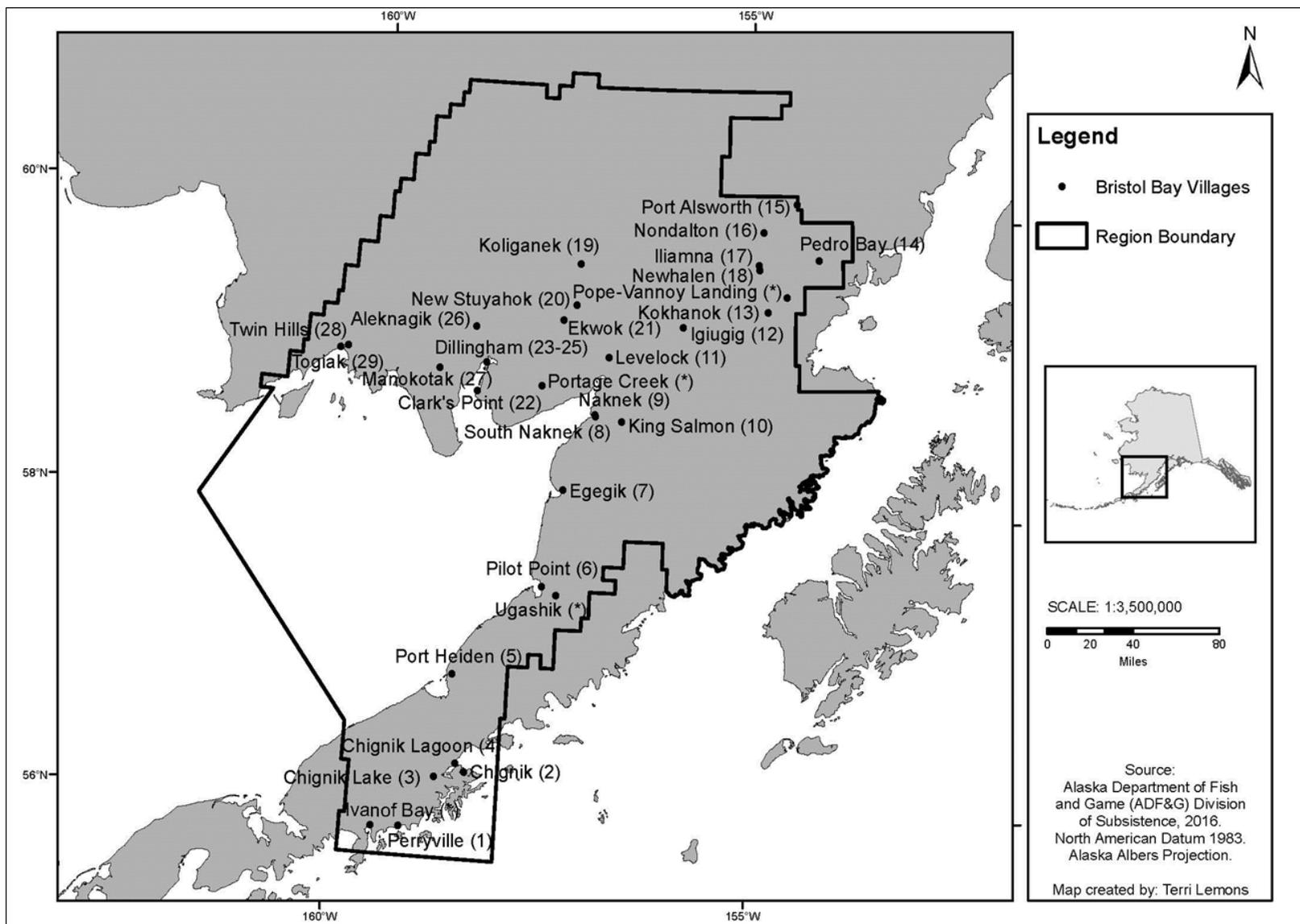


Figure 2.—Bristol Bay region with sequential numbering of communities for systematic random sampling. An asterisk “*” indicates communities with fewer than 10 households, which were excluded from the sampling frame.

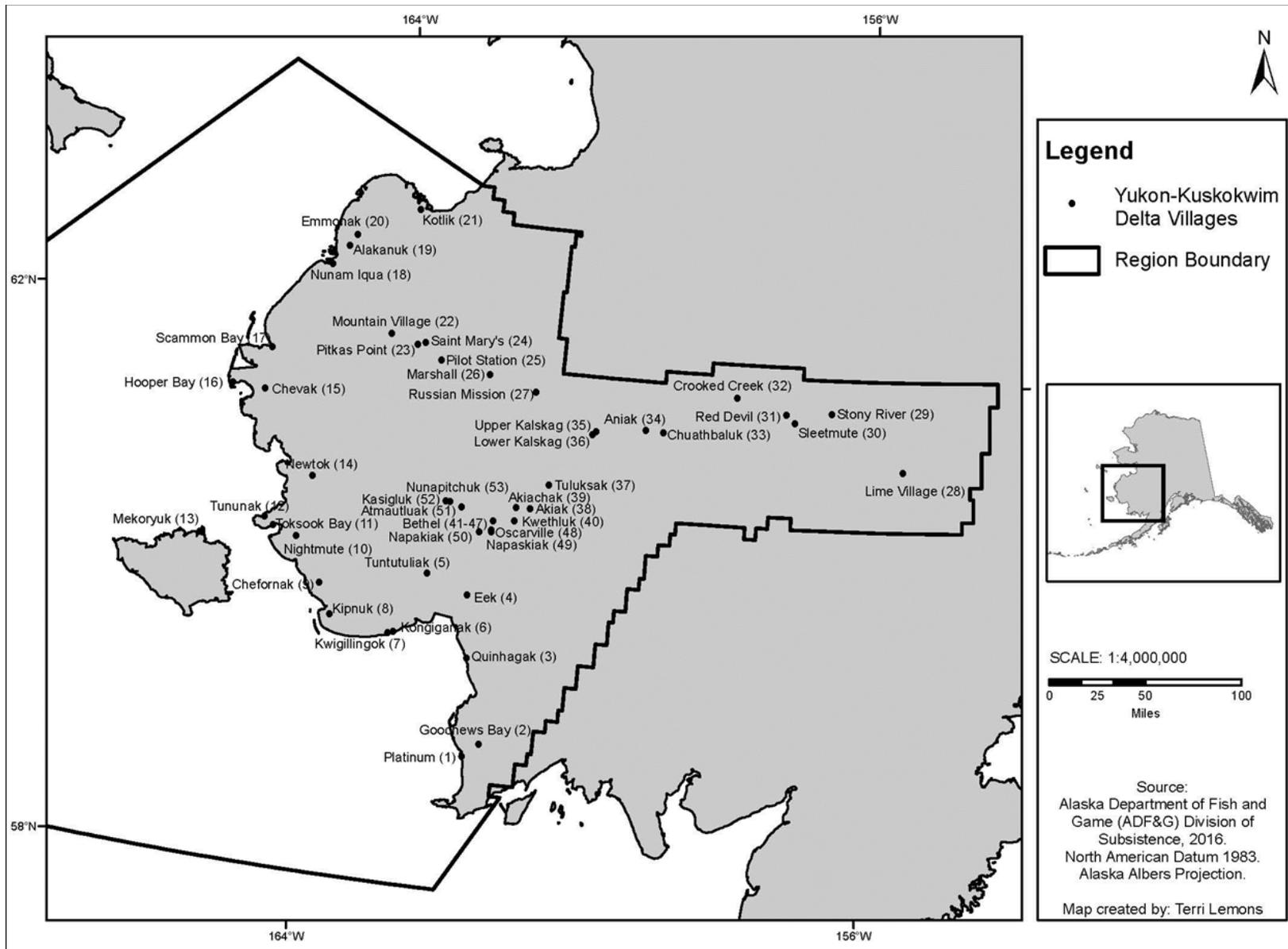


Figure 3.—Yukon-Kuskokwim Delta region with sequential numbering of communities for systematic random sampling.

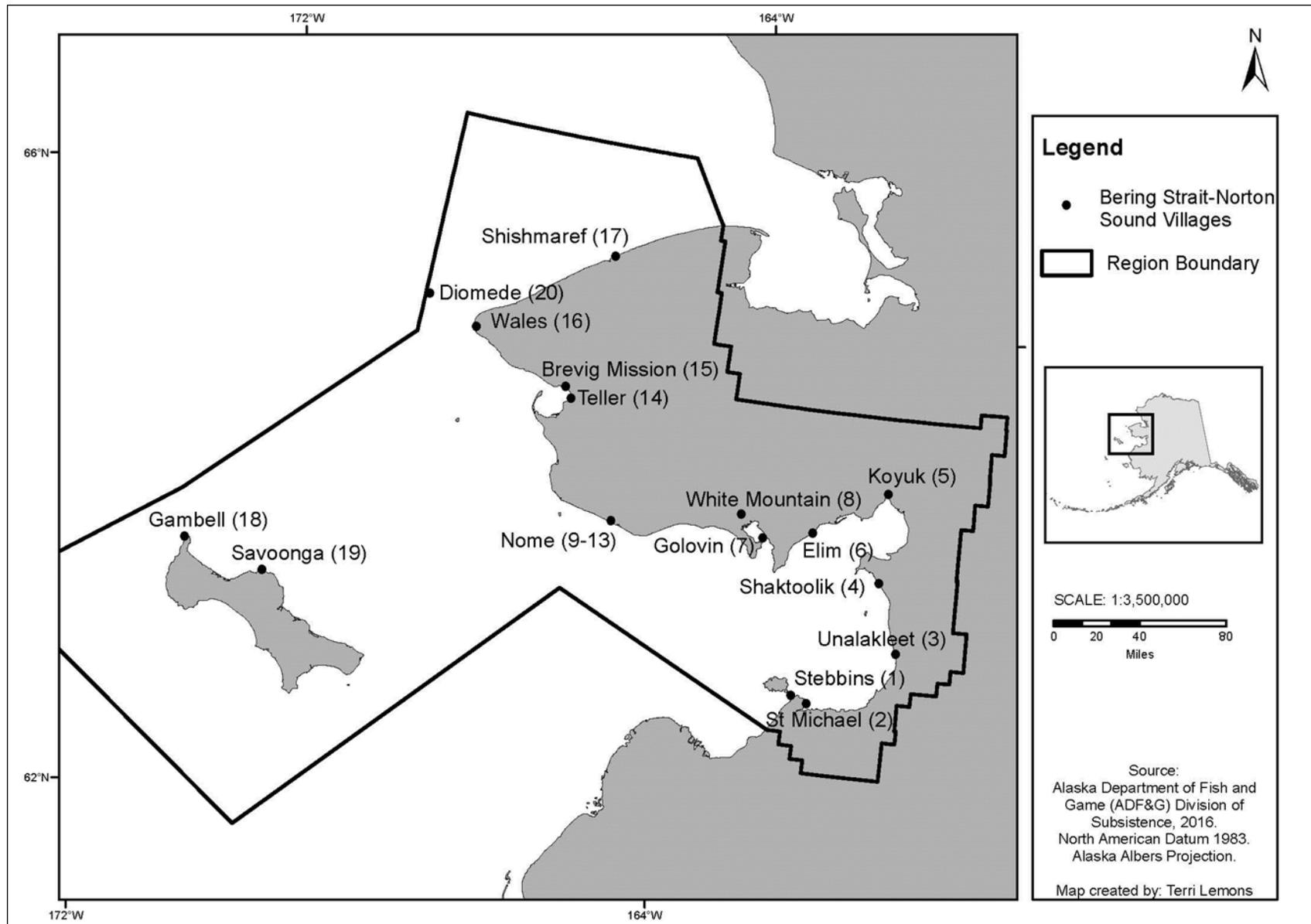


Figure 4.—Bering Strait-Norton Sound region with sequential numbering of communities for systematic random sampling.

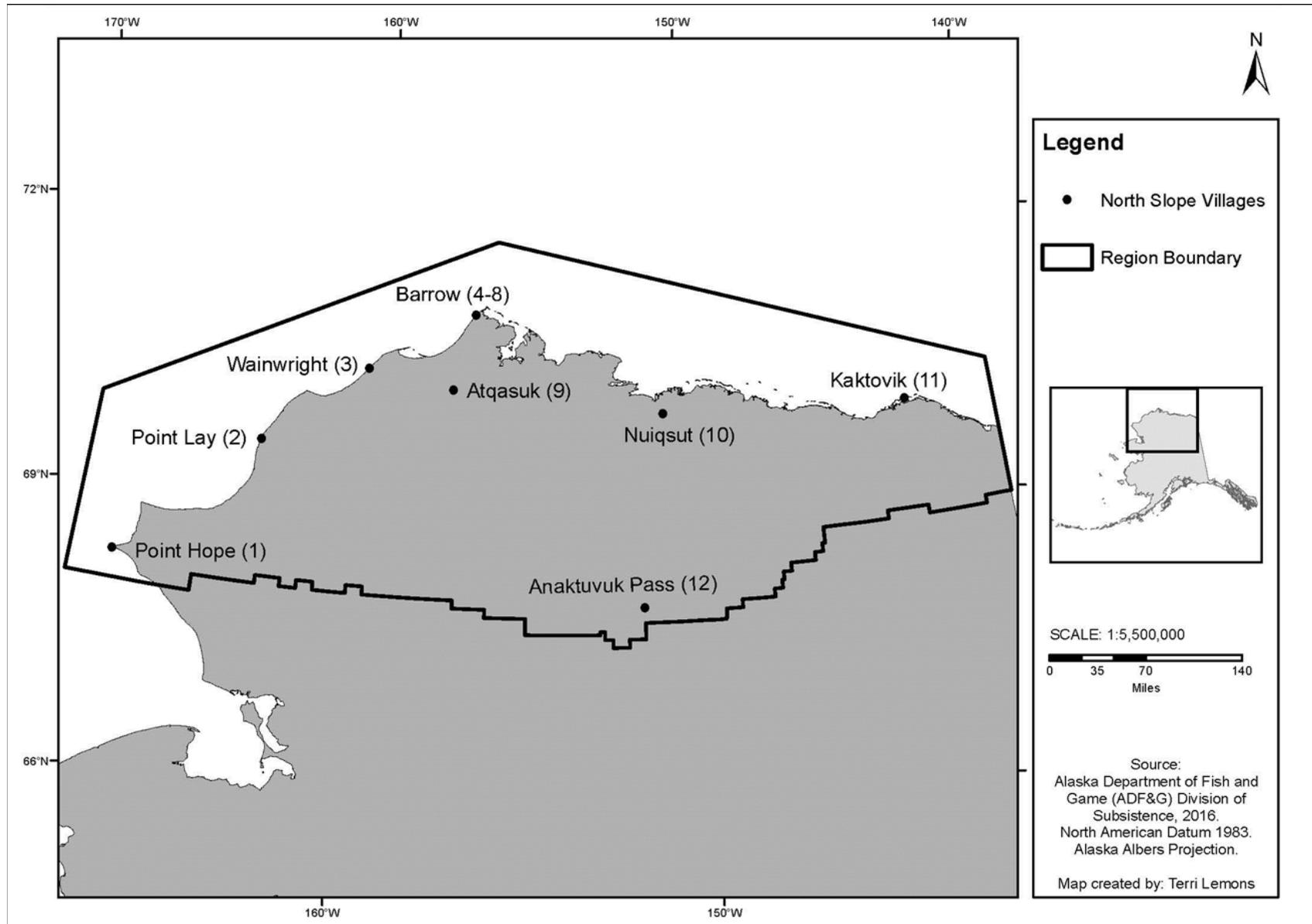


Figure 5.—North Slope region with sequential numbering of communities for systematic random sampling.

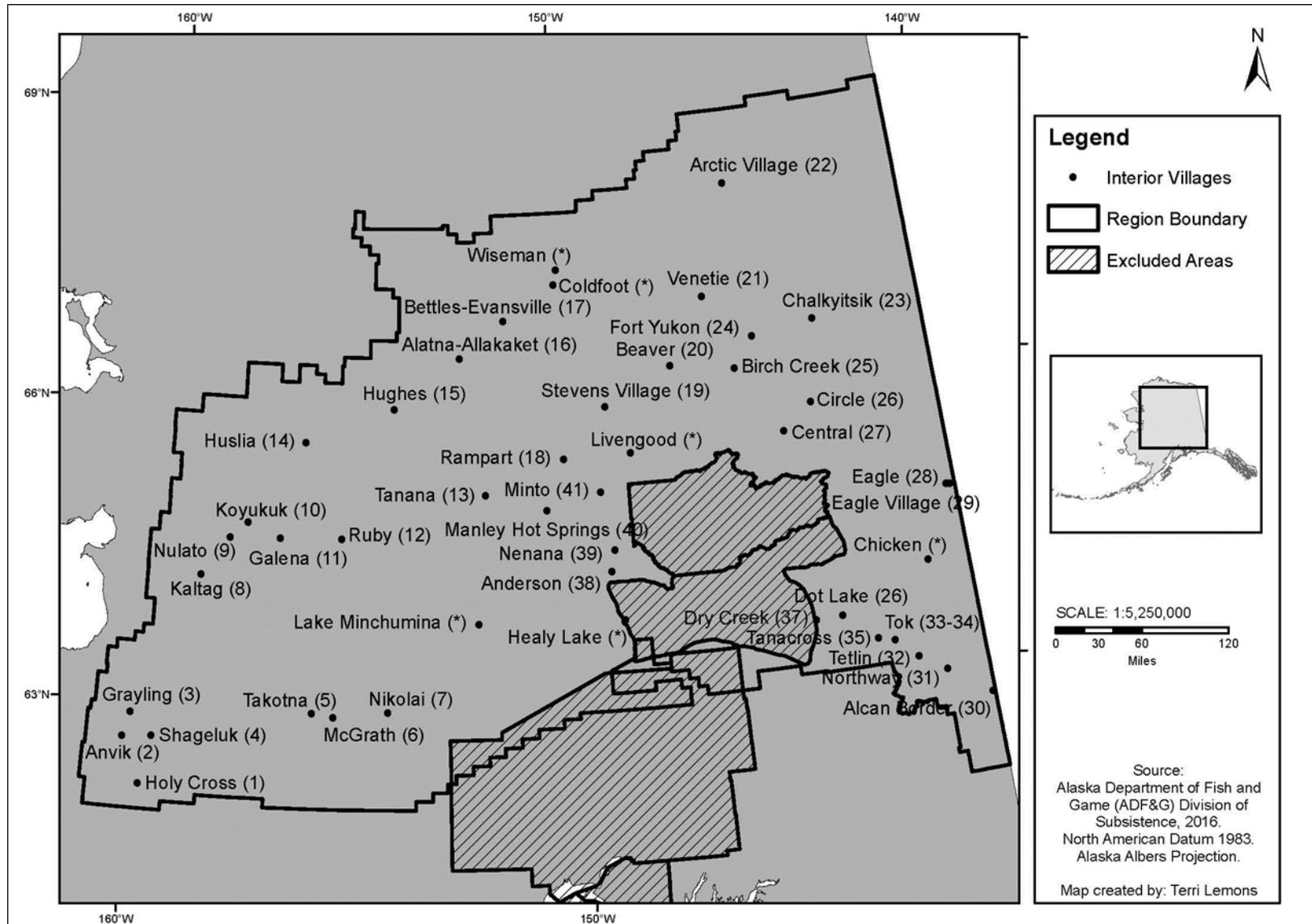


Figure 6.—Interior Alaska region with sequential numbering of communities for systematic random sampling. An asterisk “*” indicates communities with fewer than 10 households, which were excluded from the sampling frame.

Starting in 2012, loon species names have not been displayed on the bird identification guide and harvest report form because of confusion with the English name “common loon,” which is frequently understood as the locally most common species of loon, and because of differences between local ethnotaxonomy and western taxonomy (Naves and Zeller 2013). A juvenile Pacific loon (*Gavia pacifica*) was added to represent nonbreeding plumages. Drawings depicted size differences among species. The common (*G. immer*) and the yellow-billed loons (*G. adamsii*) were presented side-by-side for comparison. The Pacific and Arctic (*G. arctica*) loons were combined, and adults in nonbreeding plumage and juveniles were treated as “nonbreeding” because these categories are difficult to tell apart. Loon harvest data were presented in this report by species names corresponding to the numeric labels used in survey forms [loon 1: Pacific-Arctic loon, loon 2: unidentified loon in nonbreeding plumage, loon 3: yellow-billed loon, loon 4: common loon, and loon 5: red-throated loon (*G. stellata*)].

Data Analysis

Electronic data entry of completed surveys was done using Microsoft Office Access 2010 forms. The raw data were stored in a Microsoft SQL Server Management Studio 2008 relational database. Double data entry and logic checks ensured accuracy of the data stored in the database (reported harvest, sampling method used, sample size, strata size). Logic checks and data analysis were done with IBM SPSS Statistics 19.0.0, 2010. Original survey forms were scanned and archived as digital files. To ensure anonymity of household harvest reports, household names and other personal information provided were covered prior to scanning, and the original forms were not archived.

Reported harvests from surveyed communities were extrapolated to nonsurveyed communities in the same region. There are several alternative estimators of total harvest for multi-stage sampling designs, and the use of a simple unbiased estimator and a ratio estimator were explored (Cochran 1977; Otis et al. 2016). The unbiased estimator can have slightly larger variance than the ratio estimator in some applications. However, the unbiased estimator was chosen because of its simplicity in estimation of regional and survey-wide harvests and also because the ratio estimator is not unbiased (Appendix P).

For nonsurveyed communities, the number of occupied households was calculated by dividing 2016 population estimates (ADLWD n.d.) by the number of people per household reported in the 2010 census (U.S. Census Bureau 2011). Harvest estimates and variances were calculated for each season and annual estimates were calculated as the sum of seasonal harvest. Harvest estimates and their variances are calculated for each region and then summed to produce survey-wide harvest estimates and variances. In 2016, a total of 43 communities/parcels were surveyed and 41 communities/parcels were included in data analysis (Appendix A).

The subsistence harvest survey covers a large geographic area and a large number of species. Some species are abundant and harvested in relatively large numbers. Other species are harvested only occasionally because they have small populations, restricted distribution, or are not widely used for subsistence purposes. Wide-coverage sampling designs such as the AMBCC survey cannot address both commonly- and rarely-harvested species with the same level of precision (Copp and Roy 1986:11, H-15; Otis et al. 2016). Few data points for rarely-harvested species results in less accurate harvest estimates and wider confidence intervals as compared to commonly-harvested species. Dedicated harvest surveys and specific analytical procedures would be required to accurately estimate harvest of species that have small populations, low densities, or limited distributions, and that are less likely to be precisely documented in the regular statewide subsistence harvest survey.

CORDOVA HARVEST MAIL-OUT SURVEY

The Cordova migratory bird subsistence harvest was first authorized in 2014⁵. The season was opened 2–30 April for waterfowl hunting and 1–31 May for gull egg harvesting. A limited list of species was opened to harvest, and only Cordova residents were eligible to participate. Participants were required to register at the Cordova offices of the U.S. Forest Service or Native Village of Eyak. In 2016, a total of 26 households registered for this harvest. The ADF&G Division of Subsistence coordinated the household registration and mail-out survey in collaboration with the local partners (Eyak Tribe, U.S. Forest Service, Alaska Department of Fish and Game, Chugach Regional Resources Commission).

A mail-out harvest survey was sent in late June, 2016 to all registered households (Appendix Q). Survey reminders were sent in late July and again in late August to registered households that had not yet provided completed surveys.

5. Federal Register Vol. 79, No. 67 (April 8, 2014) available online: <https://www.gpo.gov/fdsys/pkg/FR-2014-04-08/pdf/FR-2014-04-08.pdf>.

The survey was conducted in the context of the AMBCC-HAP. A total of 22 completed surveys were returned (out of 26 registered households) resulting in a response rate of 85%. Harvests reported in returned surveys were extrapolated to non-returned surveys.

COMMUNITY AND HOUSEHOLD PARTICIPATION RATES

The community participation rate was calculated as the number of communities that agreed to participate divided by the number of communities where contact was attempted. The number of communities where contact was attempted included (a) communities that agreed to participate, (b) communities that did not agree to participate, and (c) communities where multiple contact attempts were made without a response. No response from communities may suggest lack of interest or willingness to participate in the survey, but it also may also be related to conditions proper to individual communities not related to the survey (e.g., tribal office not staffed, malfunction of local communication systems). Thus, as calculated, the community participation rates may underestimate communities' willingness to participate in the survey. Because it may be difficult to differentiate between causes of no-response, a conservative approach was chosen to calculate community participation rates.

In communities surveyed by in-person interviews (five-region survey), the household participation rate was calculated as the number of households that agreed to participate divided by the number of households contacted. The number of households contacted included households that agreed to participate and households that did not agree to participate. For communities with available household consent information, household consent was considered as agreement all for households for which a harvest survey form was provided for any of the survey seasons. This procedure has not been implemented for communities for which household participation information was not available in order to not artificially inflate participation rates in the absence of information on cases of no consent. Detailed information on calculation of household participation rates was presented in Naves (2015b:19–20). In the Cordova mail-out survey, the household participation rate was calculated as the proportion of registered households that provided a completed survey.

RESULTS AND DISCUSSION

In 2004–2015, the sampling effort varied depending on funding, monitoring priorities, and size of the communities surveyed (Table 3). Starting in 2016, the same 5 regions are to be surveyed annually, and within regions, a fixed number of communities and households are to be surveyed. In 2016, 56 communities were invited to participate in the survey and 48 communities agreed to participate (Table 4). The 2016 household participation rates are presented in Table 5.

Annual harvest estimates (all species combined) were summarized in tables 5 (birds) and 6 (eggs), which also indicate that estimates detailed by species and seasons are available in the following tables 7–19. Harvest estimate tables include all species represented in the harvest report form. The categories duck (unidentified), goose (unidentified), gull (unidentified), and other/unknown bird are included only if harvest in these categories was reported.

A summary was produced to facilitate data review and community communication regarding the Cordova harvest (Table 20, Appendix R).

The points below reflect discussion among AMBCC partners, including the AMBCC regional bird councils, pertaining to the 2016 harvest estimates:

- Starting in 2016, the revised sampling design defined the annual geographic coverage of the survey to five regions. This design provides Alaska-wide harvest estimates with good precision through the five-regions index. The 2016 five-regions index for all birds (all seasons combined) was comparable to the 2004–2009, 2010–2015, and 2004–2015 averages at the same geographic scale (Tables 6 and 7).
- Using the revised sampling design, the 2016 harvest estimates for all birds (all seasons combined) were similar to the 2004–2015 average for the Bering Strait-Norton Sound region; lower for the Yukon-Kuskokwim Delta; and higher for the Bristol Bay, North Slope, and Interior Alaska regions. Annual harvest estimates show large variation because of socio-economic and environmental factors, natural fluctuations in bird population sizes, and other factors related to the harvest estimation methods (Wolfe et al. 1990; Fall et al. 2013). With the revised survey design, several years of data will be needed to accurately describe the range and trend of annual harvests.

- Overall, the revised survey methods were primarily designed to accurately depict Alaska-wide harvest composition and amounts, while harvest patterns at smaller geographic scales will be less accurate.
- Harvest estimates for individual species at the regional level may be less accurate than in previous survey years, especially for species that are harvested infrequently or in relatively small numbers.
- At its Fall 2017 meeting, the AMBCC and its Harvest Survey Committee supported an evaluation of the upcoming 2017 survey results and allocation of the sampling effort.

Table 3.–Number of communities and households included in data analysis, 2004–2016.

Survey year	Communities/parcels included in harvest estimates	Households surveyed			
		Spring	Summer	Fall (or Fall–Winter)	Winter
2004	77	1,770	1,707	1,673	a
2005	75	2,226	2,251	1,742	a
2006	62	1,793	1,773	1,687	a
2007	74	2,076	2,051	1,491	a
2008	44	1,630	1,568	1,189	a
2009	27	923	909	762	a
2010	50	1,875	1,845	1,675	215
2011	25	1,335	1,176	1,197	36
2012	3	473	473	445	216
2013	20	600	600	599	b
2014	7	250	222 ^c	222 ^c	b
2015	20	907	892 ^c	892 ^c	b
2016	43	447	425 ^c	373 ^c	10 ^d

Sources Survey results for 2004–2015 were reported in Naves (2010rev., 2010, 2011, 2012, 2014a, 2015b, 2015c, 2016) and Naves and Braem (2014).

- a. In 2004–2009, for regions and subregions with a winter survey, data were recorded as fall–winter.
 b. The subregions and regions surveyed usually have no winter survey.
 c. The Cordova survey covers April–May harvest only and North Slope survey covers spring and summer only.
 d. Only one community had winter survey, thus winter data were not included in harvest expansion.

Table 4.–Community participation rate, 2016.

Regions	Total communities	Contacted communities	Communities that agreed to participate in the survey	Community participation rate
Bristol Bay	31	5	4	80%
Yukon-Kuskokwim Delta	47	28	23	82%
Bering Strait-Norton Sound	16	5	5	100%
North Slope	8	4	4	100%
Interior Alaska	48	13	11	85%
Cordova harvest	1	1	1	100%
Total	151	56	48	86%

Note Community participation rate equals (=) number of communities that agreed to participate divided by (÷) number of communities contacted.

Table 5.–Household participation rate, 2004–2016.

Region Subregion	2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		
	Participation	N	Participation	N	Participation	N	Participation	N	Participation	N	Participation	N															
Gulf of Alaska-Cook Inlet	98%	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Gulf of Alaska Villages	100%	41	-	-	85%	26	-	-	-	-	-	-	100%	65	-	-	-	-	-	-	-	-	-	-	-	-	
Cordova	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78%	36	75%	20	-	-	
Cook Inlet	93%	14	71%	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Kodiak Archipelago	-	-	-	-	85%	137	-	-	-	-	-	-	95%	289	-	-	-	-	-	-	-	-	-	-	-		
Kodiak Villages	100%	†65	-	-	99%	76	-	-	-	-	-	-	97%	115	-	-	-	-	-	-	-	-	-	-	-		
Kodiak City & Road Connected	-	-	-	-	69%	61	-	-	-	-	-	-	93%	174	-	-	-	-	-	-	-	-	-	-	-		
Aleutian-Pribilof Islands	-	-	-	-	-	-	-	-	100%	226	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Aleutian-Pribilof Villages	-	-	98%	40	-	-	100%	25	99%	87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Unalaska	-	-	-	-	-	-	-	-	100%	139	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Bristol Bay	-	-	78%	249	-	-	93%	312	98%	360	-	-	-	-	96%	407	-	-	-	-	-	-	-	95%	40		
South Alaska Peninsula	*	*	-	-	-	-	93%	29	*	*	-	-	-	-	89%	44	-	-	-	-	-	-	-	-	-		
Southwest Bristol Bay	*	*	73%	113	*	*	90%	166	96%	156	-	-	-	-	96%	243	-	-	-	-	-	-	-	-	-		
Dillingham	-	-	81%	136	-	-	97%	117	100%	204	-	-	-	-	99%	120	-	-	-	-	-	-	-	-	-		
Yukon-Kuskokwim Delta	84%	642	88%	787	75%	787	70%	682	72%	464	67%	523	89%	609	96%	493	-	-	98%	521	-	-	95%	930	92%	232	
Y-K Delta South Coast	95%	106	100%	124	78%	90	92%	144	*	*	68%	95	97%	112	100%	115	-	-	99%	120	-	-	93%	128	-	-	
Y-K Delta Mid Coast	82%	214	81%	232	90%	175	77%	92	72%	111	61%	168	80%	155	90%	156	-	-	94%	90	-	-	85%	113	-	-	
Y-K Delta North Coast	100%	58	92%	38	58%	107	57%	92	79%	87	80%	99	100%	77	100%	56	-	-	100%	93	-	-	100%	122	-	-	
Lower Yukon	83%	42	86%	180	89%	72	67%	231	*	*	*	*	100%	65	99%	88	-	-	100%	101	-	-	100%	98	-	-	
Lower Kuskokwim	76%	222	90%	213	69%	270	55%	123	65%	239	63%	161	81%	186	96%	78	-	-	98%	117	-	-	99%	227	-	-	
Central Kuskokwim	*	*	-	-	74%	73	*	*	-	-	-	-	100%	14	-	-	-	-	-	-	-	-	-	-	-		
Bethel	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	-	-	-	-	-	-	-	92%	242	-	-
Bering Strait-Norton Sound	71%	528	81%	347	-	-	90%	439	-	-	-	-	81%	489	-	-	-	-	-	-	-	-	-	-	96%	56	
St. Lawrence-Diomed Islands	76%	112	87%	75	-	-	95%	86	-	-	42%	‡191	76%	308	94%	283	96%	272	-	-	-	-	-	-	-	-	
Bering Strait Mainland Villages	84%	206	79%	142	-	-	93%	161	-	-	-	-	91%	181	-	-	-	-	-	-	-	-	-	-	-		
Nome	57%	210	81%	130	-	-	86%	192	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Northwest Arctic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Northwest Arctic Villages	-	-	-	-	98%	220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Kotzebue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	82%	266	-	-	-	-	-	-	-		
North Slope	-	-	93%	619	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	52	
North Slope Villages	-	-	90%	395	-	-	*	*	*	*	*	*	-	-	-	-	-	-	-	-	-	-	-	-	-		
Barrow	-	-	98%	224	-	-	*	*	*	*	*	*	-	-	-	-	-	-	-	-	-	-	-	-	-		
Interior	-	-	-	-	98%	544	-	-	-	-	-	-	99%	523	-	-	-	-	-	-	-	-	-	-	90%	80	
Mid Yukon-Upper Kuskokwim	*	*	*	*	*	*	-	-	-	-	-	-	100%	90	-	-	-	-	-	-	-	-	-	-	-		
Yukon-Koyukuk	*	*	*	*	90%	83	100%	52	100%	52	-	-	97%	132	-	-	-	-	-	-	-	-	-	-	-		
Upper Yukon	*	*	-	-	98%	274	100%	144	-	-	-	-	100%	109	-	-	-	-	-	99%	228	-	-	-	-		
Tanana Villages	99%	102	-	-	100%	127	-	-	-	-	-	-	100%	60	-	-	-	-	-	-	-	-	-	-	-		
Tok	-	-	-	-	100%	60	-	-	-	-	-	-	100%	132	-	-	-	-	-	-	-	-	-	-	-		
Upper Copper River	100%	55	-	-	-	-	94%	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Source: Household participation rates 2004–2015 (Naves 2016).

Household participation rate equals (=) number of households that agreed to participate divided by (÷) number of households contacted.

N: Number of households contacted ("N" may differ from the number of households surveyed).

Gray background: surveyed subregions. -: Subregion, region not surveyed. *: Household consent data not available for analysis.

‡: 2009 Reduced household participation in St. Lawrence-Diomed Islands subregion may have been related to other surveys being conducted in that year.

†: 2004 Data collection not completed in Kodiak Villages subregion, harvest data not available although household participation data were provided.

Table 6.—Annual estimated bird harvest (all birds, spring, summer, fall, and winter), AMBCC survey, 2004–2016.

Regions, subregions (all birds, all seasons)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2004-2009 Average	2010-2015 Average	2004-2015 Average	2016	
Gulf of Alaska-Cook Inlet	2,995												1,802	1,196	1,614		
Gulf of Alaska Villages	2,756		596				1,049						1,676	1,049	1,467		
Cordova											42	0		21	21	80	
Cook Inlet	239	13											126		126		
Kodiak Archipelago							6,926						10,531	6,926	8,729		
Kodiak Villages			5,552				1,947						5,552	1,947	3,750		
Kodiak City & Road-connected							4,979							4,979	4,979		
Aleutian-Pribilof Islands					8,401								11,390		11,390		
Aleutian-Pribilof Villages		16,876		7,371	7,642								10,630		10,630		
Unalaska					760								760		760		
Bristol Bay*	47,336		28,285	32,995			30,081						32,901	30,084	32,046	63,880	
South Alaska Peninsula	801			968	115			833					628	833	679		
Southwest Bristol Bay	14,955	32,769	26,715	20,169	29,352			26,601					24,792	26,601	25,094		
Dillingham		11,769		7,148	3,527			2,650					7,481	2,650	6,273		
Yukon-Kuskokwim Delta*	130,343	114,514	171,856	148,715	79,088	195,082	142,834	110,611					110,836	138,748	134,723	137,152	78,602
Y-K Delta South Coast	25,764	35,508	31,918	33,927	19,999	35,203	17,537	37,834		33,417			30,387	27,542	29,249		
Y-K Delta Mid Coast	34,480	17,546	61,998	43,737	17,160	82,654	37,363	13,899		58,770			21,164	42,929	32,799	38,877	
Y-K Delta North Coast	8,806	11,206	4,493	1,206	4,867	13,637	4,920			5,839			10,121	7,369	6,960	7,233	
Lower Yukon	6,201	6,815	10,269	3,988	4,727	6,904	7,748			10,863			17,114	6,484	11,908	8,292	
Lower Kuskokwim	46,033	16,557	48,849	58,983	22,813	44,934	71,317	32,826		65,081			26,450	39,695	48,919	43,384	
Central Kuskokwim	440		1,167	219			659						609	659	621		
Bethel	8,618	23,954	13,163	^{6,654}	7,789	7,478	3,290	2,539				11,978	11,276	5,936	9,496		
Bering Strait-Norton Sound*	53,576	74,115		123,257									83,649	32,379	39,758	36,458	
St. Lawrence-Diomedes Is.						41,176	14,054	12,077	8,848				41,176	11,660	19,039		
Bering Strait Mainland Villages							20,719							20,719	20,719		
Nome																	
Northwest Arctic																14,113	
Northwest Arctic Villages			9,676											9,676		9,676	
Kotzebue									4,437					4,437		4,437	
North Slope*	15,615		44,270	45,123	19,075								31,021		31,021	76,315	
North Slope Villages																	
Barrow																	
Interior Alaska*	50,995		37,068				32,611						45,100	30,957	39,067	108,742	
Mid Yukon-Upper Kuskokwim	3,086	2,744	697				786						2,176	786	1,828		
Yukon-Koyukuk	3,108	930	1,764	3,031	6,908		4,532						3,148	4,532	3,379		
Upper Yukon	14,418		10,927	18,402			12,692				9,384		14,582	11,038	13,165		
Tanana Villages	20,388		17,358				14,086						18,873	14,086	17,277		
Tok			6,321				515						6,321	515	3,418		
Upper Copper River	1,120			247									684		684		
Alaska-wide (all regions)													355,827	279,358	301,460		
Five-regions index (regions indicated by *)													331,420	259,163	279,044	363,998	

Source: Survey results for 2004–2015 were reported in Naves (2010a; 2010b; 2011; 2012; 2014b; 2015b; 2015c; 2016) and Naves and Braem (2014).

Region-level averages calculated as the sum of the averages for the subregions. Empty cells denote lack of data.

Table 7.—Annual estimated egg harvest (all eggs), AMBCC survey, 2004–2016.

Regions, subregions (all eggs)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2004-2009 Average	2010-2015 Average	2004-2015 Average	2016
Gulf of Alaska-Cook Inlet	2,178												1,140	1,566	1,413	
Gulf of Alaska Villages	2,173		102				1,366						1,137	1,366	1,214	
Cordova											131	263		197	197	105
Cook Inlet	5	0											3		3	
Kodiak Archipelago			5,222				803						5,222	803	3,012	
Kodiak Villages			4,545				771						4,545	771	2,658	
Kodiak City & Road-connected			677				32						677	32	355	
Aleutian-Pribilof Islands					4,778								8,053		8,053	
Aleutian-Pribilof Villages		11,733		6,127	4,018								7,293		7,293	
Unalaska					760								760		760	
Bristol Bay*	47,799		30,801	47,653			25,211						44,831	25,213	41,296	69,367
South Alaska Peninsula	409			651	106			392					389	392	390	
Southwest Bristol Bay	54,437	39,206	31,292	25,118	37,630			21,105					37,537	21,105	34,798	
Dillingham		5,768		5,032	9,917			3,716					6,906	3,716	6,108	
Yukon-Kuskokwim Delta*	27,288	22,268	30,723	19,153	31,195	58,995	26,965	54,075				56,767	31,182	45,372	36,282	35,450
Y-K Delta South Coast	7,768	13,424	7,406	1,746	8,442	29,065	6,208	26,492		21,605		15,424	11,309	17,432	13,758	
Y-K Delta Mid Coast	14,598	2,140	21,354	11,930	16,195	24,640	19,137	15,213		7,963		13,400	15,143	13,928	14,657	
Y-K Delta North Coast	2,466	3,921	188	22	554	345	1,619			8,240		14,654	1,249	8,171	3,557	
Lower Yukon	191	652	232	565	0	386	0			1,392		3,902	338	1,765	813	
Lower Kuskokwim	2,265	1,302	1,498	4,891	5,298	3,087	0	877		6,995		6,873	3,057	3,686	3,309	
Central Kuskokwim	0		15	0			0						5	0	4	
Bethel	0	261	29	0	23	179	0	0				1,169	82	390	185	
Bering Strait-Norton Sound*	99,494	113,082		146,557									119,711	49,371	69,799	37,072
St. Lawrence-Diomedes Is.						117,174	55,682	20,999	29,701				117,174	35,461	55,889	
Bering Strait Mainland Villages							13,910							13,910	13,910	
Nome																
Northwest Arctic																15,977
Northwest Arctic Villages			10,081										10,081		10,081	
Kotzebue									5,896					5,896	5,896	
North Slope*		4,705		2,388	858	2,430							2,595		2,595	26,745
North Slope Villages																
Barrow																
Interior Alaska*	1,009		911				65						870	65	662	888
Mid Yukon-Upper Kuskokwim	0	2	0				0						1	0	1	
Yukon-Koyukuk	11	0	0	0	0		22						2	22	6	
Upper Yukon	40		0	0			0				110		13	55	30	
Tanana Villages	760		875				43						817	43	559	
Tok			36				0						36	0	18	
Upper Copper River	82			0									41		41	
Alaska-wide (all regions)													213,645	133,078	163,153	
Five-regions index (regions indicated by *)													199,189	122,616	150,634	169,521

Source Survey results for 2004–2015 were reported in Naves (2010a; 2010b; 2011; 2012; 2014b; 2015b; 2015c; 2016) and Naves and Braem (2014).

Region-level averages calculated as the sum of the averages for the subregions. 'Empty cells denote lack of data.

Table 8.—Estimated bird harvest, Alaska-wide (5-regions index), 2016.

Species	Annual bird harvest			Spring		Summer		Fall	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks									
★ American wigeon	265	21,107	116%	11,183	121%	53	164%	9,871	112%
Teal	223	7,587	74%	4,389	116%	147	104%	3,051	78%
★ Mallard	511	28,191	109%	16,166	108%	1,211	174%	10,814	121%
★ Northern pintail	466	25,057	85%	17,695	102%	2,793	132%	4,569	103%
Northern shoveler	77	2,398	80%	1,346	71%	61	165%	992	175%
★ Black scoter	415	12,304	71%	9,974	82%	490	114%	1,840	81%
★ Surf scoter	53	1,033	87%	955	91%	0		78	197%
★ White-winged scoter	119	2,708	73%	2,121	79%	31	193%	557	131%
Bufflehead	20	387	154%	85	136%	0		302	193%
Goldeneye	89	3,916	90%	3,297	101%	0		619	103%
★ Canvasback	40	1,117	117%	1,033	125%	69	132%	15	186%
★ Scaup	290	6,615	82%	5,434	86%	215	193%	966	131%
★ Common eider	275	9,127	86%	8,453	97%	674	138%	0	
★ King eider	467	20,297	69%	11,273	73%	8,922	134%	102	146%
Spectacled eider	0	0		0		0		0	
Steller's eider	0	0		0		0		0	
Harlequin duck	19	2,180	140%	2,102	145%	0		78	197%
★ Long-tailed duck	95	2,402	82%	2,136	87%	110	136%	156	197%
Merganser	6	68	135%	68	135%	0		0	
Duck (unidentified)	109	2,728	110%	381	126%	1,424	158%	923	111%
Total ducks	3,539	149,222	61%	98,089	66%	16,200	87%	34,933	73%
Geese									
★ Black brant	361	14,802	95%	13,912	102%	468	195%	422	143%
★ Cackling/Canada goose	1,207	43,233	53%	30,470	60%	869	104%	11,895	68%
★ Greater white-fronted goose	1,505	88,313	77%	79,308	80%	412	154%	8,593	118%
Emperor goose	64	1,468	98%	1,173	114%	139	144%	156	123%
★ Snow goose	309	11,202	120%	10,881	123%	120	195%	201	111%
Total geese	3,446	159,019	57%	135,743	61%	2,008	81%	21,267	75%
Swans	107	3,237	64%	2,322	63%	23	164%	892	95%
Sandhill crane	135	5,167	75%	3,285	78%	15	170%	1,867	81%
Seabirds									
Comorant	3	43	193%	0		0		43	193%
Tem	0	0		0		0		0	
Black-legged kittiwake	0	0		0		0		0	
Red-legged kittiwake	0	0		0		0		0	
Bonaparte's/Sabine's gull	0	0		0		0		0	
Mew gull	0	0		0		0		0	
Large gull	0	0		0		0		0	
Auklet	120	1,728	183%	0		1,728	183%	0	
Murre	0	0		0		0		0	
Guillemot	0	0		0		0		0	
Puffin	0	0		0		0		0	
Total seabirds	123	1,771	182%	0		1,728	183%	43	193%
Shorebirds									
Black oystercatcher	0	0		0		0		0	
Whimbrel/Curlew	4	42	190%	42	190%	0		0	
Godwit	8	317	181%	21	190%	296	193%	0	
Golden/Black-bellied plover	0	0		0		0		0	
Tumstone	0	0		0		0		0	
Phalarope	1	58	198%	0		58	198%	0	
Small shorebird	4	230	198%	0		230	198%	0	
Total shorebirds	17	647	177%	64	190%	584	196%	0	
Loons and grebes									
Common loon	2	31	193%	31	193%	0		0	
Pacific loon	1	16	194%	16	194%	0		0	
Red-throated loon	0	0		0		0		0	
Yellow-billed loon	0	0		0		0		0	
Loon (non-breeding plumage)	0	0		0		0		0	
Grebe	4	65	194%	65	194%	0		0	
Total loons and grebes	7	112	148%	112	148%	0		0	
Snowy owl	0	0		0		0		0	
★ Total commonly-harvested species	6,378	287,508	60%	220,991	62%	16,437	85%	50,080	71%
Total migratory birds	7,374	319,175	57%	239,614	61%	20,557	71%	59,003	63%
Ptarmigans and grouses									
Grouse	732	30,912	88%	3,483	105%	0		27,429	96%
Ptarmigan	462	13,911	63%	12,346	58%	146	194%	1,419	198%
Total ptarmigans and grouses	1,194	44,824	66%	15,829	50%	146	194%	28,848	91%
Total birds	8,568	363,998	56%	255,444	59%	20,703	70%	87,851	67%

★ : Commonly-harvested species. CIP: Confidence interval as percentage of the estimated harvest.

Table 9.—Estimated egg harvest, Alaska-wide (5-regions index), 2016.

Species	Annual egg harvest			Spring		Summer	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks							
★ American wigeon	12	91	186%	91	186%	0	
Teal	20	307	193%	307	193%	0	
★ Mallard	61	971	98%	971	98%	0	
★ Northern pintail	72	914	108%	914	108%	0	
Northern shoveler	11	83	186%	83	186%	0	
★ Black scoter	0	0		0		0	
★ Surf scoter	0	0		0		0	
★ White-winged scoter	12	102	188%	102	188%	0	
Bufflehead	0	0		0		0	
Goldeneye	0	0		0		0	
★ Canvasback	0	0		0		0	
★ Scaup	8	123	193%	123	193%	0	
★ Common eider	144	2,783	107%	2,489	122%	294	196%
★ King eider	0	0		0		0	
Spectacled eider	0	0		0		0	
Steller's eider	0	0		0		0	
Harlequin duck	0	0		0		0	
★ Long-tailed duck	22	289	135%	289	135%	0	
Merganser	0	0		0		0	
Duck (unidentified)	125	2,939	138%	2,804	138%	136	198%
Total ducks	487	8,603	62%	8,173	64%	430	148%
Geese							
★ Black brant	34	633	148%	633	148%	0	
★ Cackling/Canada goose	291	7,609	67%	7,609	67%	0	
★ Greater white-fronted goose	286	9,328	64%	9,328	64%	0	
Emperor goose	39	671	142%	671	142%	0	
★ Snow goose	18	588	183%	588	183%	0	
Total geese	668	18,829	58%	18,829	58%	0	
Swans	75	1,136	78%	1,136	78%	0	
Sandhill crane	37	522	74%	522	74%	0	
Seabirds							
Cormorant	0	0		0		0	
Tem	90	1,516	84%	1,516	84%	0	
Black-legged kittiwake	211	2,770	140%	2,770	140%	0	
Red-legged kittiwake	0	0		0		0	
Bonaparte's/Sabine's gull	4	42	190%	42	190%	0	
Mew gull	755	69,090	174%	69,090	174%	0	
Large gull	881	18,550	55%	17,462	58%	1,088	191%
Auklet	12	173	193%	0		173	193%
Murre	1,802	44,926	92%	10,022	92%	34,904	111%
Guillemot	0	0		0		0	
Puffin	0	0		0		0	
Total seabirds	3,755	137,068	96%	100,903	125%	36,164	108%
Shorebirds							
Black oystercatcher	0	0		0		0	
Whimbrel/Curlew	0	0		0		0	
Godwit	0	0		0		0	
Golden/Black-bellied plover	7	108	177%	108	177%	0	
Tumstone	0	0		0		0	
Phalarope	14	215	174%	215	174%	0	
Small shorebird	81	2,279	121%	2,187	124%	92	193%
Total shorebirds	102	2,602	115%	2,510	116%	92	193%
Loons and grebes							
Common loon	0	0		0		0	
Pacific loon	5	73	193%	73	193%	0	
Red-throated loon	0	0		0		0	
Yellow-billed loon	5	384	184%	384	184%	0	
Grebe	0	0		0		0	
Total loons and grebes	10	456	152%	456	152%	0	
Snowy owl	0	0		0		0	
Other/unknown bird	20	151	186%	151	186%	0	
★ Total commonly-harvested species	960	23,431	47%	23,137	48%	294	196%
Total migratory birds	5,154	169,368	78%	132,682	95%	36,686	106%
Ptarmigans and grouses							
Grouse	0	0		0		0	
Ptarmigan	10	154	193%	154	193%	0	
Total ptarmigans and grouses	10	154	193%	154	193%	0	
Total eggs	5,164	169,521	78%	132,835	95%	36,686	106%

★ : Commonly-harvested species. CIP: Confidence interval as percentage of the estimated harvest.

Table 10.—Estimated bird harvest, Bristol Bay region, 2016.

Species	Annual bird harvest			Spring		Summer		Fall	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks									
★ American wigeon	49	5,972	192%	3,245	193%	0		2,727	191%
Teal	63	3,328	146%	3,089	163%	0		240	161%
★ Mallard	105	7,341	163%	4,076	167%	1,053	199%	2,213	148%
★ Northern pintail	73	7,417	181%	5,608	178%	1,755	199%	54	191%
Northern shoveler	1	175	199%	175	199%	0		0	
★ Black scoter	35	1,225	125%	570	180%	218	191%	438	153%
★ Surf scoter	0	0		0		0		0	
★ White-winged scoter	0	0		0		0		0	
Bufflehead	16	302	193%	0		0		302	193%
Goldeneye	10	189	195%	0		0		189	195%
★ Canvasback	0	0		0		0		0	
★ Scaup	0	0		0		0		0	
★ Common eider	0	0		0		0		0	
★ King eider	0	0		0		0		0	
Spectacled eider	0	0		0		0		0	
Steller's eider	0	0		0		0		0	
Harlequin duck	8	1,404	199%	1,404	199%	0		0	
★ Long-tailed duck	0	0		0		0		0	
Merganser	0	0		0		0		0	
Total ducks	360	27,353	164%	18,166	173%	3,025	181%	6,162	140%
Geese									
★ Black brant	2	351	199%	351	199%	0		0	
★ Cackling/Canada goose	56	7,367	184%	5,087	182%	0		2,281	194%
★ Greater white-fronted goose	121	13,037	182%	8,124	174%	0		4,913	197%
Emperor goose	0	0		0		0		0	
★ Snow goose	0	0		0		0		0	
Total geese	179	20,755	182%	13,562	177%	0		7,193	196%
Swans	4	373	185%	373	185%	0		0	
Sandhill crane	8	1,239	190%	888	189%	0		351	192%
Seabirds									
Cormorant	0	0		0		0		0	
Tem	0	0		0		0		0	
Black-legged kittiwake	0	0		0		0		0	
Red-legged kittiwake	0	0		0		0		0	
Bonaparte's/Sabine's gull	0	0		0		0		0	
Mew gull	0	0		0		0		0	
Large gull	0	0		0		0		0	
Auklet	0	0		0		0		0	
Murre	0	0		0		0		0	
Guillemot	0	0		0		0		0	
Puffin	0	0		0		0		0	
Total seabirds	0	0		0		0		0	
Shorebirds									
Black oystercatcher	0	0		0		0		0	
Whimbrel/Curlew	0	0		0		0		0	
Godwit	0	0		0		0		0	
Golden/Black-bellied plover	0	0		0		0		0	
Turnstone	0	0		0		0		0	
Phalarope	0	0		0		0		0	
Small shorebird	0	0		0		0		0	
Total shorebirds	0	0		0		0		0	
Loons and grebes									
Common loon	0	0		0		0		0	
Pacific loon	0	0		0		0		0	
Red-throated loon	0	0		0		0		0	
Yellow-billed loon	0	0		0		0		0	
Loon (non-breeding plumage)	0	0		0		0		0	
Grebe	0	0		0		0		0	
Total loons and grebes	0	0		0		0		0	
Total commonly-harvested species	441	42,710	176%	27,061	176%	3,025	181%	12,625	182%
★ Total migratory birds	551	49,720	172%	32,989	175%	3,025	181%	13,706	170%
Ptarmigans and grouses									
Grouse	142	13,394	177%	87	191%	0		13,307	179%
Ptarmigan	10	767	178%	767	178%	0		0	
Total ptarmigans and grouses	152	14,161	177%	854	157%	0		13,307	179%
Total birds	703	63,880	172%	33,843	174%	3,025	181%	27,013	170%

★ : Commonly-harvested species. CIP: Confidence interval as percentage of the estimated harvest.

Table 11.—Estimated egg harvest, Bristol Bay region, 2016.

Species	Annual egg harvest			Spring		Summer	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks							
★ American wigeon	0	0		0		0	
Teal	0	0		0		0	
★ Mallard	6	65	191%	65	191%	0	
★ Northern pintail	24	348	193%	348	193%	0	
Northern shoveler	0	0		0		0	
★ Black scoter	0	0		0		0	
★ Surf scoter	0	0		0		0	
★ White-winged scoter	0	0		0		0	
Bufflehead	0	0		0		0	
Goldeneye	0	0		0		0	
★ Canvasback	0	0		0		0	
★ Scaup	0	0		0		0	
★ Common eider	0	0		0		0	
★ King eider	0	0		0		0	
Spectacled eider	0	0		0		0	
Steller's eider	0	0		0		0	
Harlequin duck	0	0		0		0	
★ Long-tailed duck	0	0		0		0	
Merganser	0	0		0		0	
Total ducks	30	413	156%	413	156%	0	
Geese							
★ Black brant	0	0		0		0	
★ Cackling/Canada goose	0	0		0		0	
★ Greater white-fronted goose	0	0		0		0	
Emperor goose	0	0		0		0	
★ Snow goose	0	0		0		0	
Total geese	0	0		0		0	
Swans	0	0		0		0	
Sandhill crane	0	0		0		0	
Seabirds							
Cormorant	0	0		0		0	
Tern	25	272	188%	272	188%	0	
Black-legged kittiwake	0	0		0		0	
Red-legged kittiwake	0	0		0		0	
Bonaparte's/Sabine's gull	0	0		0		0	
Mew gull	369	61,450	196%	61,450	196%	0	
Large gull	329	7,232	84%	6,144	98%	1,088	191%
Auklet	0	0		0		0	
Murre	0	0		0		0	
Guillemot	0	0		0		0	
Puffin	0	0		0		0	
Total seabirds	723	68,953	180%	67,866	184%	1,088	191%
Shorebirds							
Black oystercatcher	0	0		0		0	
Whimbrel/Curlew	0	0		0		0	
Godwit	0	0		0		0	
Golden/Black-bellied plover	0	0		0		0	
Turnstone	0	0		0		0	
Phalarope	0	0		0		0	
Small shorebird	0	0		0		0	
Total shorebirds	0	0		0		0	
Loons and grebes							
Common loon	0	0		0		0	
Pacific loon	0	0		0		0	
Red-throated loon	0	0		0		0	
Yellow-billed loon	0	0		0		0	
Grebe	0	0		0		0	
Total loons and grebes	0	0		0		0	
★ Total commonly-harvested species	30	413	156%	413	156%	0	
Total migratory birds	753	69,367	179%	68,279	182%	1,088	191%
Ptarmigans and grouses							
Grouse	0	0		0		0	
Ptarmigan	0	0		0		0	
Total ptarmigans and grouses	0	0		0		0	
Total eggs	753	69,367	179%	68,279	182%	1,088	191%

★ : Commonly-harvested species. CIP: Confidence interval as percentage of the estimated harvest.

Table 12.—Estimated bird harvest, Yukon-Kuskokwim Delta region, 2016.

Species	Annual bird harvest			Spring		Summer		Fall	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks									
★ American wigeon	100	3,249	84%	1,042	105%	53	164%	2,154	97%
Teal	77	1,951	93%	488	74%	101	125%	1,361	132%
★ Mallard	180	3,655	50%	2,402	56%	84	147%	1,169	58%
★ Northern pintail	229	4,018	52%	1,754	63%	646	147%	1,618	61%
Northern shoveler	71	2,014	93%	962	88%	61	165%	992	175%
★ Black scoter	349	7,211	62%	5,536	64%	273	136%	1,402	94%
★ Surf scoter	45	836	98%	758	103%	0		78	197%
★ White-winged scoter	108	2,239	82%	1,652	91%	31	193%	557	131%
Bufflehead	4	85	136%	85	136%	0		0	
Goldeneye	56	1,540	104%	1,110	106%	0		430	121%
★ Canvasback	30	446	98%	363	108%	69	132%	15	186%
★ Scaup	274	5,664	92%	4,717	96%	215	193%	731	161%
★ Common eider	1	16	194%	16	194%	0		0	
★ King eider	30	972	111%	870	124%	0		102	146%
Spectacled eider	0	0		0		0		0	
Steller's eider	0	0		0		0		0	
Harlequin duck	6	189	166%	111	149%	0		78	197%
★ Long-tailed duck	49	956	91%	689	88%	110	136%	156	197%
Merganser	2	31	193%	31	193%	0		0	
Duck (unidentified)	109	2,728	110%	381	126%	1,424	158%	923	111%
Total ducks	1,720	37,801	47%	22,967	58%	3,066	88%	11,767	64%
Geese									
★ Black brant	59	1,142	75%	1,031	78%	8	186%	103	145%
★ Cackling/Canada goose	641	14,409	43%	10,053	44%	432	103%	3,924	69%
★ Greater white-fronted goose	449	11,593	57%	8,952	63%	8	186%	2,633	86%
Emperor goose	64	1,468	98%	1,173	114%	139	144%	156	123%
★ Snow goose	14	219	124%	136	178%	0		83	162%
Total geese	1,227	28,832	47%	21,345	51%	586	98%	6,900	58%
Swans	99	2,487	74%	1,596	69%	23	164%	868	97%
Sandhill crane	79	1,664	52%	1,220	58%	15	170%	428	76%
Seabirds									
Cormorant	0	0		0		0		0	
Tern	0	0		0		0		0	
Black-legged kittiwake	0	0		0		0		0	
Bonaparte's/Sabine's gull	0	0		0		0		0	
Mew gull	0	0		0		0		0	
Large gull	0	0		0		0		0	
Auklet	0	0		0		0		0	
Murre	0	0		0		0		0	
Guillemot	0	0		0		0		0	
Puffin	0	0		0		0		0	
Total seabirds	0	0		0		0		0	
Shorebirds									
Whimbrel/Curlew	4	42	190%	42	190%	0		0	
Godwit	3	29	147%	21	190%	8	186%	0	
Golden/Black-bellied plover	0	0		0		0		0	
Tumstone	0	0		0		0		0	
Phalarope	0	0		0		0		0	
Small shorebird	0	0		0		0		0	
Total shorebirds	7	71	171%	64	190%	8	186%	0	
Loons and grebes									
Common loon	2	31	193%	31	193%	0		0	
Pacific loon	1	16	194%	16	194%	0		0	
Red-throated loon	0	0		0		0		0	
Yellow-billed loon	0	0		0		0		0	
Loon (non-breeding plumage)	0	0		0		0		0	
Grebe	4	65	194%	65	194%	0		0	
Total loons and grebes	7	112	148%	112	148%	0		0	
★ Total commonly-harvested species	2,558	56,626	45%	39,972	49%	1,928	87%	14,727	56%
Total migratory birds	3,139	70,965	42%	47,304	49%	3,698	77%	19,963	54%
Ptarmigans and grouses									
Grouse	59	1,278	108%	288	124%	0		990	119%
Ptarmigan	295	6,359	79%	6,351	79%	0		8	187%
Total ptarmigans and grouses	354	7,637	68%	6,639	76%	0		998	118%
Total birds	3,493	78,602	43%	53,943	50%	3,698	77%	20,961	53%

★ : Commonly-harvested species. CIP: Confidence interval as percentage of the estimated harvest.

Table 13.—Estimated egg harvest, Yukon-Kuskokwim Delta region, 2016.

Species	Annual egg harvest			Spring		Summer	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks							
★ American wigeon	12	91	186%	91	186%	0	
Teal	20	307	193%	307	193%	0	
★ Mallard	55	906	104%	906	104%	0	
★ Northern pintail	42	474	151%	474	151%	0	
Northern shoveler	11	83	186%	83	186%	0	
★ Black scoter	0	0		0		0	
★ Surf scoter	0	0		0		0	
★ White-winged scoter	0	0		0		0	
Bufflehead	0	0		0		0	
Goldeneye	0	0		0		0	
★ Canvasback	0	0		0		0	
★ Scaup	8	123	193%	123	193%	0	
★ Common eider	15	242	194%	242	194%	0	
★ King eider	0	0		0		0	
Spectacled eider	0	0		0		0	
Steller's eider	0	0		0		0	
Harlequin duck	0	0		0		0	
★ Long-tailed duck	22	289	135%	289	135%	0	
Merganser	0	0		0		0	
Duck (unidentified)	125	2,939	138%	2,804	138%	136	198%
Total ducks	310	5,455	81%	5,319	80%	136	198%
Geese							
★ Black brant	34	633	148%	633	148%	0	
★ Cackling/Canada goose	275	7,377	69%	7,377	69%	0	
★ Greater white-fronted goose	229	6,687	79%	6,687	79%	0	
Emperor goose	39	671	142%	671	142%	0	
★ Snow goose	18	588	183%	588	183%	0	
Total geese	595	15,957	67%	15,957	67%	0	
Swans	50	633	99%	633	99%	0	
Sandhill crane	26	340	95%	340	95%	0	
Seabirds							
Cormorant	0	0		0		0	
Tern	65	1,244	94%	1,244	94%	0	
Black-legged kittiwake	79	856	160%	856	160%	0	
Bonaparte's/Sabine's gull	4	42	190%	42	190%	0	
Mew gull	216	2,564	100%	2,564	100%	0	
Large gull	380	5,621	103%	5,621	103%	0	
Auklet	0	0		0		0	
Murre	0	0		0		0	
Guillemot	0	0		0		0	
Puffin	0	0		0		0	
Total seabirds	744	10,327	70%	10,327	70%	0	
Shorebirds							
Whimbrel/Curlew	0	0		0		0	
Godwit	0	0		0		0	
Golden/Black-bellied plover	7	108	177%	108	177%	0	
Tumstone	0	0		0		0	
Phalarope	14	215	174%	215	174%	0	
Small shorebird	71	2,079	131%	1,987	135%	92	193%
Total shorebirds	92	2,402	123%	2,310	125%	92	193%
Loons and grebes							
Common loon	0	0		0		0	
Pacific loon	0	0		0		0	
Red-throated loon	0	0		0		0	
Yellow-billed loon	2	31	193%	31	193%	0	
Grebe	0	0		0		0	
Total loons and grebes	2	31	193%	31	193%	0	
Other/unknown bird	20	151	186%	151	186%	0	
★ Total commonly-harvested species	710	17,410	60%	17,410	60%	0	
Total migratory birds	1,839	35,296	45%	35,069	45%	228	139%
Ptarmigans and grouses							
Grouse	0	0		0		0	
Ptarmigan	10	154	193%	154	193%	0	
Total ptarmigans and grouses	10	154	193%	154	193%	0	
Total eggs	1,849	35,450	45%	35,222	45%	228	139%

★ : Commonly-harvested species. CIP: Confidence interval as percentage of the estimated harvest.

Table 14.–Estimated bird harvest, Bering Strait-Norton Sound region, 2016.

Species	Annual bird harvest			Spring		Summer		Fall	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks									
★ American wigeon	2	235	199%	235	199%	0		0	
Teal	34	1,531	135%	353	199%	0		1,178	122%
★ Mallard	14	220	133%	102	183%	0		118	123%
★ Northern pintail	57	4,565	161%	1,678	169%	0		2,887	159%
Northern shoveler	1	118	199%	118	199%	0		0	
★ Black scoter	0	0		0		0		0	
★ Surf scoter	0	0		0		0		0	
★ White-winged scoter	3	353	199%	353	199%	0		0	
Bufflehead	0	0		0		0		0	
Goldeneye	5	588	199%	588	199%	0		0	
★ Canvasback	0	0		0		0		0	
★ Scaup	6	706	199%	470	199%	0		235	199%
★ Common eider	0	0		0		0		0	
★ King eider	0	0		0		0		0	
Spectacled eider	0	0		0		0		0	
Steller's eider	0	0		0		0		0	
Harlequin duck	5	588	199%	588	199%	0		0	
★ Long-tailed duck	4	470	185%	470	185%	0		0	
Merganser	0	0		0		0		0	
Total ducks	131	9,373	156%	4,955	174%	0		4,419	140%
Geese									
★ Black brant	143	8,390	152%	8,071	160%	0		319	183%
★ Cackling/Canada goose	288	9,327	108%	3,305	113%	400	195%	5,622	109%
★ Greater white-fronted goose	5	100	184%	20	195%	40	195%	40	195%
Emperor goose	0	0		0		0		0	
★ Snow goose	43	1,366	106%	1,128	121%	120	195%	118	152%
Total geese	479	19,183	109%	12,524	133%	560	195%	6,099	98%
Swans									
Sandhill crane	4	377	173%	353	187%	0		25	196%
	44	2,149	137%	1,061	168%	0		1,088	121%
Seabirds									
Comorant	3	43	193%	0		0		43	193%
Tem	0	0		0		0		0	#NULL!
Black-legged kittiwake	0	0		0		0		0	
Bonaparte's/Sabine's gull	0	0		0		0		0	
Mew gull	0	0		0		0		0	
Large gull	0	0		0		0		0	
Auklet	120	1,728	183%	0		1,728	183%	0	
Murre	0	0		0		0		0	
Guillemot	0	0		0		0		0	
Puffin	0	0		0		0		0	
Total seabirds	123	1,771	182%	0		1,728	183%	43	193%
Shorebirds									
Whimbrel/Curlew	0	0		0		0		0	
Godwit	0	0		0		0		0	
Golden/Black-bellied plover	0	0		0		0		0	
Tumstone	0	0		0		0		0	
Phalarope	0	0		0		0		0	
Small shorebird	0	0		0		0		0	
Total shorebirds	0	0		0		0		0	
Loons and grebes									
Common loon	0	0		0		0		0	
Pacific loon	0	0		0		0		0	
Red-throated loon	0	0		0		0		0	
Yellow-billed loon	0	0		0		0		0	
Loon (non-breeding plumage)	0	0		0		0		0	
Grebe	0	0		0		0		0	
Total loons and grebes	0	0		0		0		0	
★ Total commonly-harvested species	565	25,731	119%	15,832	138%	560	195%	9,339	103%
Total migratory birds	781	32,853	112%	18,892	144%	2,288	136%	11,673	103%
Ptarmigans and grouses									
Grouse	0	0		0		0		0	
Ptarmigan	54	3,605	172%	2,194	155%	0		1,411	199%
Total ptarmigans and grouses	54	3,605	172%	2,194	155%	0		1,411	199%
Total birds	835	36,458	116%	21,086	142%	2,288	136%	13,084	108%

★ : Commonly-harvested species. CIP: Confidence interval as percentage of the estimated harvest.

Table 15.—Estimated egg harvest, Bering Strait-Norton Sound region, 2016.

Species	Annual egg harvest			Spring		Summer	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks							
★ American wigeon	0	0		0		0	
Teal	0	0		0		0	
★ Mallard	0	0		0		0	
★ Northern pintail	6	93	149%	93	149%	0	
Northern shoveler	0	0		0		0	
★ Black scoter	0	0		0		0	
★ Surf scoter	0	0		0		0	
★ White-winged scoter	0	0		0		0	
Bufflehead	0	0		0		0	
Goldeneye	0	0		0		0	
★ Canvasback	0	0		0		0	
★ Scaup	0	0		0		0	
★ Common eider	76	1,574	150%	1,280	188%	294	196%
★ King eider	0	0		0		0	
Spectacled eider	0	0		0		0	
Steller's eider	0	0		0		0	
Harlequin duck	0	0		0		0	
★ Long-tailed duck	0	0		0		0	
Merganser	0	0		0		0	
Total ducks	82	1,667	141%	1,373	176%	294	196%
Geese							
★ Black brant	0	0		0		0	
★ Cackling/Canada goose	16	232	193%	232	193%	0	
★ Greater white-fronted goose	0	0		0		0	
Emperor goose	0	0		0		0	
★ Snow goose	0	0		0		0	
Total geese	16	232	193%	232	193%	0	
Swans							
Sandhill crane	11	182	120%	182	120%	0	
Seabirds							
Cormorant	0	0		0		0	
Tern	0	0		0		0	
Black-legged kittiwake	132	1,914	190%	1,914	190%	0	
Bonaparte's/Sabine's gull	0	0		0		0	
Mew gull	170	5,077	99%	5,077	99%	0	
Large gull	155	4,942	113%	4,942	113%	0	
Auklet	12	173	193%	0		173	193%
Murre	1,122	21,942	94%	10,022	92%	11,920	130%
Guillemot	0	0		0		0	
Puffin	0	0		0		0	
Total seabirds	1,591	34,048	71%	21,955	67%	12,093	129%
Shorebirds							
Whimbrel/Curlew	0	0		0		0	
Godwit	0	0		0		0	
Golden/Black-bellied plover	0	0		0		0	
Tumstone	0	0		0		0	
Phalarope	0	0		0		0	
Small shorebird	10	200	195%	200	195%	0	
Total shorebirds	10	200	195%	200	195%	0	
Loons and grebes							
Common loon	0	0		0		0	
Pacific loon	5	73	193%	73	193%	0	
Red-throated loon	0	0		0		0	
Yellow-billed loon	3	353	199%	353	199%	0	
Grebe	0	0		0		0	
Total loons and grebes	8	425	162%	425	162%	0	
Total commonly-harvested species	98	1,899	121%	1,605	148%	294	196%
★ Total migratory birds	1,740	37,072	69%	24,685	64%	12,387	125%
Ptarmigans and grouses							
Grouse	0	0		0		0	
Ptarmigan	0	0		0		0	
Total ptarmigans and grouses	0	0		0		0	
Total eggs	1,740	37,072	69%	24,685	64%	12,387	125%

★ : Commonly-harvested species. CIP: Confidence interval as percentage of the estimated harvest.

Table 16.—Estimated bird harvest, North Slope region, 2016.

Species	Annual bird harvest			Spring		Summer	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks							
★ American wigeon	0	0		0		0	
Teal	0	0		0		0	
★ Mallard	0	0		0		0	
★ Northern pintail	6	346	198%	0		346	198%
Northern shoveler	0	0		0		0	
★ Black scoter	0	0		0		0	
★ Surf scoter	0	0		0		0	
★ White-winged scoter	0	0		0		0	
★ Scaup	0	0		0		0	
★ Common eider	274	9,111	86%	8,437	97%	674	138%
★ King eider	437	19,325	72%	10,403	79%	8,922	134%
Spectacled eider	0	0		0		0	
Steller's eider	0	0		0		0	
★ Long-tailed duck	9	164	166%	164	166%	0	
Merganser	0	0		0		0	
Total ducks	726	28,945	56%	19,004	77%	9,942	128%
Geese							
★ Black brant	157	4,920	116%	4,459	131%	461	198%
★ Cackling/Canada goose	37	939	114%	903	117%	36	194%
★ Greater white-fronted goose	610	29,767	77%	29,402	78%	365	173%
★ Snow goose	242	8,370	157%	8,370	157%	0	
Total geese	1,046	43,996	46%	43,134	47%	862	122%
Swans	0	0		0		0	
Sandhill crane	1	58	198%	58	198%	0	
Seabirds							
Tem	0	0		0		0	
Bonaparte's/Sabine's gull	0	0		0		0	
Large gull	0	0		0		0	
Murre	0	0		0		0	
Guillemot	0	0		0		0	
Total seabirds	0	0		0		0	
Shorebirds							
Whimbrel/Curlew	0	0		0		0	
Godwit	5	288	198%	0		288	198%
Golden/Black-bellied plover	0	0		0		0	
Tumstone	0	0		0		0	
Phalarope	1	58	198%	0		58	198%
Small shorebird	4	230	198%	0		230	198%
Total shorebirds	10	576	198%	0		576	198%
Loons and grebes							
Pacific loon	0	0		0		0	
Red-throated loon	0	0		0		0	
Yellow-billed loon	0	0		0		0	
Loon (non-breeding plumage)	0	0		0		0	
Total loons and grebes	0	0		0		0	
Snowy owl	0	0		0		0	
★ Total commonly-harvested species	1,772	72,941	46%	62,137	44%	10,804	118%
Total migratory birds	1,783	73,575	46%	62,195	44%	11,380	113%
Ptarmigans and grouses							
Grouse	0	0		0		0	
Ptarmigan	75	2,740	125%	2,594	132%	146	194%
Total ptarmigans and grouses	75	2,740	125%	2,594	132%	146	194%
Total birds	1,858	76,315	44%	64,789	42%	11,526	111%

★ : Commonly-harvested species. CIP: Confidence interval as percentage of the estimated harvest.

Table 17.—Estimated egg harvest, North Slope region, 2016.

Species	Annual egg harvest			Spring		Summer	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks							
★ American wigeon	0	0		0		0	
Teal	0	0		0		0	
★ Mallard	0	0		0		0	
★ Northern pintail	0	0		0		0	
Northern shoveler	0	0		0		0	
★ Black scoter	0	0		0		0	
★ Surf scoter	0	0		0		0	
★ White-winged scoter	0	0		0		0	
★ Scaup	0	0		0		0	
★ Common eider	53	967	184%	967	184%	0	
★ King eider	0	0		0		0	
Spectacled eider	0	0		0		0	
Steller's eider	0	0		0		0	
★ Long-tailed duck	0	0		0		0	
Merganser	0	0		0		0	
Total ducks	53	967	184%	967	184%	0	
Geese							
★ Black brant	0	0		0		0	
★ Cackling/Canada goose	0	0		0		0	
★ Greater white-fronted goose	49	2,573	103%	2,573	103%	0	
★ Snow goose	0	0		0		0	
Total geese	49	2,573	103%	2,573	103%	0	
Swans	3	184	141%	184	141%	0	
Sandhill crane	0	0		0		0	
Seabirds							
Tem	0	0		0		0	
Bonaparte's/Sabine's gull	0	0		0		0	
Large gull	2	36	194%	36	194%	0	
Murre	680	22,984	155%	0		22,984	155%
Guillemot	0	0		0		0	
Total seabirds	682	23,020	155%	36	194%	22,984	155%
Shorebirds							
Whimbrel/Curlew	0	0		0		0	
Godwit	0	0		0		0	
Golden/Black-bellied plover	0	0		0		0	
Turnstone	0	0		0		0	
Phalarope	0	0		0		0	
Small shorebird	0	0		0		0	
Total shorebirds	0	0		0		0	
Loons and grebes							
Pacific loon	0	0		0		0	
Red-throated loon	0	0		0		0	
Yellow-billed loon	0	0		0		0	
Total loons and grebes	0	0		0		0	
Snowy owl	0	0		0		0	
★ Total commonly-harvested species	102	3,540	77%	3,540	77%	0	
Total migratory birds	787	26,745	129%	3,761	78%	22,984	155%
Ptarmigans and grouses							
Grouse	0	0		0		0	
Ptarmigan	0	0		0		0	
Total ptarmigans and grouses	0	0		0		0	
Total eggs	787	26,745	129%	3,761	78%	22,984	155%

★ : Commonly-harvested species. CIP: Confidence interval as percentage of the estimated harvest.

Table 18.—Estimated bird harvest, Interior Alaska region, 2016.

Species	Annual bird harvest			Spring		Summer		Fall	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks									
★ American wigeon	114	11,651	184%	6,660	179%	0		4,990	192%
Teal	49	778	107%	459	97%	46	189%	272	188%
★ Mallard	212	16,975	167%	9,587	167%	74	189%	7,314	172%
★ Northern pintail	101	8,711	168%	8,656	169%	46	189%	9	189%
Northern shoveler	4	91	158%	91	158%	0		0	
★ Black scoter	31	3,867	190%	3,867	190%	0		0	
★ Surf scoter	8	197	188%	197	188%	0		0	
★ White-winged scoter	8	116	129%	116	129%	0		0	
Bufflehead	0	0		0		0		0	
Goldeneye	18	1,599	180%	1,599	180%	0		0	
★ Canvasback	10	670	184%	670	184%	0		0	
★ Scaup	10	246	189%	246	189%	0		0	
Harlequin duck	0	0		0		0		0	
★ Long-tailed duck	33	812	185%	812	185%	0		0	
Merganser	4	37	189%	37	189%	0		0	
Total ducks	602	45,750	163%	32,998	160%	167	189%	12,585	174%
Geese									
★ Cackling/Canada goose	185	11,190	129%	11,122	130%	0		68	194%
★ Greater white-fronted goose	320	33,816	174%	32,809	173%	0		1,007	197%
★ Snow goose	10	1,248	191%	1,248	191%	0		0	
Total geese	515	46,254	162%	45,179	162%	0		1,075	183%
Swans									
Sandhill crane	3	58	157%	58	157%	0		0	
Seabirds									
Tem	0	0		0		0		0	
Bonaparte's/Sabine's gull	0	0		0		0		0	
Mew gull	0	0		0		0		0	
Large gull	0	0		0		0		0	
Total seabirds	0	0		0		0		0	
Shorebirds									
Whimbrel/Curlew	0	0		0		0		0	
Godwit	0	0		0		0		0	
Golden/Black-bellied plover	0	0		0		0		0	
Phalarope	0	0		0		0		0	
Small shorebird	0	0		0		0		0	
Total shorebirds	0	0		0		0		0	
Loons and grebes									
Common loon	0	0		0		0		0	
Pacific loon	0	0		0		0		0	
Red-throated loon	0	0		0		0		0	
Loon (non-breeding plumage)	0	0		0		0		0	
Grebe	0	0		0		0		0	
Total loons and grebes	0	0		0		0		0	
★ Total commonly-harvested species	1,042	89,499	164%	75,990	162%	121	189%	13,389	177%
Total migratory birds	1,120	92,062	162%	78,235	161%	167	189%	13,661	173%
Ptarmigans and grouses									
Grouse	531	16,241	81%	3,108	117%	0		13,133	84%
Ptarmigan	28	440	126%	440	126%	0		0	
Total ptarmigans and grouses	559	16,680	77%	3,548	100%	0		13,133	84%
Total birds	1,679	108,742	147%	81,782	157%	167	189%	26,793	120%

★ : Commonly-harvested species. CIP: Confidence interval as percentage of the estimated harvest.

Table 19.—Estimated egg harvest, Interior Alaska region, 2016.

Species	Annual egg harvest			Spring		Summer	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks							
★ American wigeon	0	0		0		0	
Teal	0	0		0		0	
★ Mallard	0	0		0		0	
★ Northern pintail	0	0		0		0	
Northern shoveler	0	0		0		0	
★ Black scoter	0	0		0		0	
★ Surf scoter	0	0		0		0	
★ White-winged scoter	12	102	188%	102	188%	0	
Bufflehead	0	0		0		0	
Goldeneye	0	0		0		0	
★ Canvasback	0	0		0		0	
★ Scaup	0	0		0		0	
Harlequin duck	0	0		0		0	
★ Long-tailed duck	0	0		0		0	
Merganser	0	0		0		0	
Total ducks	12	102	188%	102	188%	0	
Geese							
★ Cackling/Canada goose	0	0		0		0	
★ Greater white-fronted goose	8	68	188%	68	188%	0	
★ Snow goose	0	0		0		0	
Total geese	8	68	188%	68	188%	0	
Swans	0	0		0		0	
Sandhill crane	0	0		0		0	
Seabirds							
Tem	0	0		0		0	
Bonaparte's/Sabine's gull	0	0		0		0	
Mew gull	0	0		0		0	
Large gull	15	719	198%	719	198%	0	
Total seabirds	15	719	198%	719	198%	0	
Shorebirds							
Whimbrel/Curlew	0	0		0		0	
Godwit	0	0		0		0	
Golden/Black-bellied plover	0	0		0		0	
Phalarope	0	0		0		0	
Small shorebird	0	0		0		0	
Total shorebirds	0	0		0		0	
Loons and grebes							
Common loon	0	0		0		0	
Pacific loon	0	0		0		0	
Red-throated loon	0	0		0		0	
Grebe	0	0		0		0	
Total loons and grebes	0	0		0		0	
★ Total commonly-harvested species	20	169	188%	169	188%	0	
Total migratory birds	35	888	159%	888	159%	0	
Ptarmigans and grouses							
Grouse	0	0		0		0	
Ptarmigan	0	0		0		0	
Total ptarmigans and grouses	0	0		0		0	
Total eggs	35	888	159%	888	159%	0	

★ : Commonly-harvested species.

CIP: Confidence interval as percentage of the estimated harvest.

Table 20.—Estimated April–May Cordova bird and egg harvest, 2014–2016.

Species	2014			2015			2016		
	Reported	Estimated	CIP	Reported	Estimated	CIP	Reported	Estimated	CIP
Birds									
American wigeon	1	1	97%	0	0		1	1	82%
Teal	1	1	97%	0	0		0	0	
Mallard	11	14	43%	0	0		16	19	36%
Northern pintail	12	15	47%	0	0		56	66	31%
Northern shoveler	0	0		0	0		2	2	82%
Black scoter	0	0		0	0		0	0	
Surf scoter	0	0		0	0		0	0	
White-winged scoter	0	0		0	0		0	0	
Bufflehead	0	0		0	0		0	0	
Goldeneye	0	0		0	0		0	0	
Canvasback	0	0		0	0		0	0	
Scaup	0	0		0	0		0	0	
Common eider	0	0		0	0		0	0	
King eider	0	0		0	0		0	0	
Harlequin duck	0	0		0	0		0	0	
Long-tailed duck	0	0		0	0		0	0	
Merganser	0	0		0	0		0	0	
Total ducks	25	32	38%	0	0		75	89	29%
Greater white-fronted goose	4	5	67%	0	0		0	0	
Snow goose	4	5	57%	0	0		5	6	67%
Total geese	8	10	49%	0	0		5	6	67%
Sandhill crane	0	0		0	0		0	0	
Total birds	33	42	37%	0	0		80	95	27%
Eggs									
Gull (unidentified)	102	131	37%	197	263	51%	105	124	47%
Total eggs	102	131	37%	197	263	51%	105	124	47%

CIP: confidence interval as percentage of the estimated harvest.

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APPENDICES

Appendix A.—Regions and communities included in the 2004–2016 harvest estimates.

Region, community	House- holds¶	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Gulf of Alaska-Cook Inlet														
Chenega	31	-	-	x	-	-	-	x	-	-	-	-	-	-
Cordova†	922	-	-	-	-	-	-	-	-	-	-	x	x	x
Nanwalek	55	x	-	-	-	-	-	x	-	-	-	-	-	-
Port Graham	79	x	-	x	-	-	-	-	-	-	-	-	-	-
Tatitlek	36	x	-	-	-	-	-	-	-	-	-	-	-	-
Tyonek	70	x	x	-	-	-	-	-	-	-	-	-	-	-
Kodiak Archipelago														
Akhiok	19	-	-	x	-	-	-	x	-	-	-	-	-	-
Aleneva	9	-	-	-	-	-	-	-	-	-	-	-	-	-
Balance of Kodiak Is. Borough	1,665	-	-	-	-	-	-	x	-	-	-	-	-	-
Chiniak	20	-	-	-	-	-	-	-	-	-	-	-	-	-
Karluk	12	-	-	x	-	-	-	x	-	-	-	-	-	-
Kodiak City	2,039	-	-	x	-	-	-	-	-	-	-	-	-	-
Kodiak Station	332	-	-	-	-	-	-	-	-	-	-	-	-	-
Larsen Bay	34	-	-	x	-	-	-	x	-	-	-	-	-	-
Old Harbor	84	-	-	x	-	-	-	-	-	-	-	-	-	-
Ouzinkie	56	-	-	x	-	-	-	-	-	-	-	-	-	-
Port Lions	77	-	-	-	-	-	-	x	-	-	-	-	-	-
Womens Bay	283	-	-	-	-	-	-	x	-	-	-	-	-	-
Aleutian-Pribilof Islands														
Adak	44	-	-	-	-	-	-	-	-	-	-	-	-	-
Akutan	40	-	x	-	x	x	-	-	-	-	-	-	-	-
Atka	24	-	x	-	-	-	-	-	-	-	-	-	-	-
Cold Bay	46	-	x	-	-	-	-	-	-	-	-	-	-	-
False Pass	15	-	-	-	-	x	-	-	-	-	-	-	-	-
King Cove	181	-	x	-	-	x	-	-	-	-	-	-	-	-
Nelson Lagoon	22	-	-	-	-	-	-	-	-	-	-	-	-	-
Nikolski	13	-	-	-	-	-	-	-	-	-	-	-	-	-
Saint George	42	-	-	-	-	-	-	-	-	-	-	-	-	-
Saint Paul	162	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand Point	246	-	-	-	-	x	-	-	-	-	-	-	-	-
Unalaska	927	-	-	-	-	x	-	-	-	-	-	-	-	-
Bristol Bay														
Aleknagik	71	x	-	-	x	x	-	-	x	-	-	-	-	-
Chignik	41	x	-	-	x	-	-	-	x	-	-	-	-	-
Chignik Lagoon	29	x	-	-	-	-	-	-	-	-	-	-	-	x
Chignik Lake	27	x	-	-	-	x	-	-	-	-	-	-	-	-
Clarks Point	24	x	x	-	x	x	-	-	-	-	-	-	-	-
Dillingham	855	-	x	-	x	x	-	-	x	-	-	-	-	x
Egegik	29	-	x	-	x	-	-	-	-	-	-	-	-	-
Ekwok	37	x	-	-	x	x	-	-	x	-	-	-	-	-
Igiugig	16	-	-	-	-	-	-	-	-	-	-	-	-	-

-continued-

Region, community	House- holds¶	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Iliamna	39	-	x	-	x	-	-	-	-	-	-	-	-	x
Ivanof Bay	2	-	-	-	-	-	-	-	-	-	-	-	-	-
King Salmon	157	-	x	-	-	-	-	-	-	-	-	-	-	-
Kokhanok	52	x	x	-	x	x	-	-	x	-	-	-	-	-
Koliganek	55	-	x	-	x	-	-	-	-	-	-	-	-	-
Levelock	27	x	x	-	-	x	-	-	x	-	-	-	-	x
Manokotak	121	-	x	-	x	-	-	-	x	-	-	-	-	-
Naknek	231	x	-	-	x	-	-	-	x	-	-	-	-	-
New Stuyahok	114	-	x	-	x	-	-	-	-	-	-	-	-	-
Newhalen	50	x	x	-	-	x	-	-	-	-	-	-	-	-
Nondalton	57	x	x	-	-	-	-	-	-	-	-	-	-	-
Pedro Bay	19	-	x	-	-	-	-	-	-	-	-	-	-	-
Perryville	38	x	-	-	x	-	-	-	x	-	-	-	-	-
Pilot Point	27	-	x	-	-	-	-	-	-	-	-	-	-	-
Pope-Vannoy Landing‡	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Port Alsworth‡	44	-	-	-	-	-	-	-	-	-	-	-	-	-
Port Heiden	35	-	x	-	-	-	-	-	x	-	-	-	-	-
Portage Creek‡	1	-	-	-	-	-	-	-	-	-	-	-	-	-
South Naknek	35	-	x	-	x	-	-	-	-	-	-	-	-	-
Togiak	231	x	-	x	x	-	-	-	x	-	-	-	-	-
Twin Hills	29	x	x	-	x	-	-	-	-	-	-	-	-	-
Ugashik‡	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Yukon-Kuskokwim Delta														
Akiachak	150	-	-	x	-	-	x	-	-	-	-	-	x	x
Akiak	90	-	x	x	x	-	-	x	-	-	-	-	x	x
Alakanuk	160	x	-	x	-	-	x	x	-	-	x	-	x	-
Aniak	166	x	x	-	-	x	-	-	-	-	-	-	x	x
Atmautluak	63	x	-	-	x	x	-	-	-	-	x	-	-	x
Bethel	1,896	x	x	x	x	x	x	x	x	-	-	-	x	x
Chefornak	92	x	-	x	x	-	x	x	-	-	x	-	-	-
Chevak	209	x	-	-	-	-	x	x	-	-	-	-	x	-
Chuathbaluk	36	x	-	-	-	-	-	-	-	-	-	-	-	x
Crooked Creek	38	x	-	x	-	-	-	-	-	-	-	-	-	-
Eek	91	x	x	-	x	x	-	x	x	-	-	-	x	-
Emmonak	185	-	x	x	x	x	x	-	-	-	x	-	-	x
Goodnews Bay	76	-	-	x	-	-	-	x	-	-	x	-	-	-
Hooper Bay	256	x	x	-	-	x	-	-	x	-	-	-	x	x
Kasigluk	113	x	-	x	x	-	x	-	-	-	x	-	-	-
Kipnuk	153	-	x	x	x	-	x	-	x	-	-	-	-	-
Kongiganak	94	-	x	x	x	x	-	-	-	-	-	-	-	-
Kotlik	128	x	x	-	-	-	-	-	-	-	-	-	x	-
Kwethluk	172	x	x	x	x	-	x	x	-	-	-	-	x	x
Kwigillingok	82	-	-	-	-	-	-	-	-	-	-	-	-	-

-continued-

Region, community	House- holds¶	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Lime Village	11	-	-	x	-	-	-	x	-	-	-	-	-	-
Lower Kalskag	75	x	-	x	x	x	x	x	-	-	-	-	-	-
Marshall	100	x	x	-	x	x	-	x	-	-	-	-	x	-
Mekoryuk	70	-	x	-	x	x	-	-	x	-	-	-	-	x
Mountain Village	184	-	x	-	x	x	-	-	-	-	x	-	-	-
Napakiak	96	-	-	-	x	-	-	-	-	-	x	-	-	-
Napaskiak	94	-	x	x	x	x	x	-	x	-	-	-	x	x
Newtok	70	-	x	x	-	x	x	-	-	-	x	-	-	-
Nightmute	59	x	-	x	x	-	x	-	x	-	-	-	-	x
Nunam Iqua	43	-	x	x	-	x	x	x	-	-	-	-	x	x
Nunapitchuk	124	x	x	-	x	x	-	-	x	-	-	-	-	x
Oscarville	15	-	-	x	x	-	x	x	-	-	x	-	-	x
Pilot Station	121	-	x	x	-	x	x	-	-	-	-	-	x	-
Pitkas Point	31	x	-	x	x	-	x	x	-	-	x	-	-	-
Platinum	19	-	x	x	-	-	-	x	-	-	x	-	-	-
Quinhagak	165	x	x	x	x	-	-	-	x	-	x	-	x	x
Red Devil	12	-	-	-	x	-	-	-	-	-	-	-	-	-
Russian Mission	73	-	x	x	-	x	x	-	-	-	-	-	x	-
Saint Marys	151	-	x	-	x	-	x	-	-	-	x	-	-	-
Scammon Bay	96	-	-	x	-	x	x	x	-	-	x	-	-	-
Sleetmute	36	-	-	x	x	-	-	-	-	-	-	-	-	-
Stony River	20	x	-	x	-	-	-	-	-	-	-	-	-	x
Toksook Bay	125	x	x	-	x	-	-	-	-	-	x	-	x	x
Tuluksak	92	-	x	x	-	x	-	-	x	-	-	-	x	-
Tuntutuliak	96	x	-	x	-	x	x	x	-	-	x	-	x	x
Tununak	84	x	x	-	x	x	-	-	x	-	x	-	-	-
Upper Kalskag	60	-	x	x	-	-	-	-	x	-	x	-	-	x
Bering Strait-Norton Sound														
Brevig Mission	93	x	-	-	x	-	-	x	-	-	-	-	-	-
Diomedede	38	-	x	-	x	-	-	x	-	-	-	-	-	x
Elim	89	x	x	-	-	-	-	-	-	-	-	-	-	-
Gambell	164	x	x	-	x	-	x	x	x	x	-	-	-	-
Golovin	49	-	x	-	x	-	-	x	-	-	-	-	-	-
Koyuk	89	-	x	-	x	-	-	x	-	-	-	-	-	-
Nome	1,216	x	x	-	x	-	-	-	-	-	-	-	-	x
Saint Michael	96	x	-	-	x	-	-	-	-	-	-	-	-	-
Savoonga	166	x	x	-	x	-	x	x	x	x	-	-	-	-
Shaktoolik	64	-	-	-	x	-	-	x	-	-	-	-	-	x
Shishmaref	141	x	x	-	-	-	-	-	-	-	-	-	-	-
Stebbins	134	-	x	-	x	-	-	x	-	-	-	-	-	-
Teller	72	x	x	-	-	-	-	-	-	-	-	-	-	-
Unalakleet	225	x	-	-	x	-	-	-	-	-	-	-	-	-
Wales	43	x	x	-	-	-	-	-	-	-	-	-	-	x

-continued-

Region, community	House- holds¶	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
White Mountain	65	x	-	-	x	-	-	-	-	-	-	-	-	x
Northwest Arctic														
Ambler	75	-	-	-	-	-	-	-	-	-	-	-	-	-
Buckland	98	-	-	x	-	-	-	-	-	-	-	-	-	-
Deering	44	-	-	-	-	-	-	-	-	-	-	-	-	-
Kiana	101	-	-	-	-	-	-	-	-	-	-	-	-	-
Kivalina	85	-	-	-	-	-	-	-	-	-	-	-	-	-
Kobuk	36	-	-	x	-	-	-	-	-	-	-	-	-	-
Kotzebue	954	-	-	-	-	-	-	-	-	x	-	-	-	-
Noatak	114	-	-	-	-	-	-	-	-	-	-	-	-	-
Noorvik	153	-	-	-	-	-	-	-	-	-	-	-	-	-
Selawik	186	-	-	x	-	-	-	-	-	-	-	-	-	-
Shungnak	62	-	-	x	-	-	-	-	-	-	-	-	-	-
North Slope														
Anaktuvuk Pass	99	-	x	-	x	-	-	-	-	-	-	-	-	-
Atkasuk	64	-	x	-	x	-	-	-	-	-	-	-	-	-
Kaktovik	72	-	x	-	x	x	x	-	-	-	-	-	-	x
Nuiqsut	114	-	-	-	-	x	x	-	-	-	-	-	-	-
Point Hope	186	-	x	-	-	x	-	-	-	-	-	-	-	x
Point Lay	60	-	x	-	-	-	-	-	-	-	-	-	-	-
Utqiagvik (Barrow)	1,280	-	x	-	x	x	x	-	-	-	-	-	-	x
Wainwright	147	-	x	-	x	x	x	-	-	-	-	-	-	x
Interior Alaska														
Alatna	12	x	-	x	x	x	-	x	-	-	-	-	-	-
Alcan Border‡		-	-	-	-	-	-	-	-	-	-	-	-	-
Allakaket	62	x	-	x	x	x	-	x	-	-	-	-	-	-
Allakaket-Alatna	74	-	-	-	-	-	-	-	-	-	-	-	-	x
Anderson‡	90	-	-	-	-	-	-	-	-	-	-	-	-	-
Anvik	33	x	x	x	-	-	-	x	-	-	-	-	-	x
Arctic Village	65	-	-	x	-	-	-	-	-	-	-	x	-	-
Beaver	36	-	-	x	x	-	-	x	-	-	-	x	-	-
Bettles-Evansville	21	-	-	x	-	-	-	-	-	-	-	-	-	x
Birch Creek	17	-	-	-	x	-	-	-	-	-	-	-	-	x
Central	53	-	-	x	-	-	-	x	-	-	-	-	-	-
Chalkyitsik	24	-	-	x	x	-	-	x	-	-	-	x	-	-
Chicken‡	5	-	-	-	-	-	-	-	-	-	-	-	-	-
Circle	40	-	-	x	x	-	-	-	-	-	-	x	-	-
Coldfoot	6	-	-	-	-	-	-	x	-	-	-	-	-	-
Dot Lake	26	x	-	-	-	-	-	-	-	-	-	-	-	-
Dry Creek	29	-	-	-	-	-	-	-	-	-	-	-	-	-
Eagle	41	x	-	-	-	-	-	-	-	-	-	-	-	-
Eagle Village	31	x	-	-	-	-	-	-	-	-	-	-	-	-
Fort Yukon	246	x	-	x	x	-	-	-	-	-	-	x	-	x

-continued-

Region, community	House- holds¶	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Galena	190	x	-	-	-	-	-	-	-	-	-	-	-	-
Grayling	55	-	x	x	-	-	-	-	-	-	-	-	-	-
Healy Lake	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Holy Cross	64	x	x	x	-	-	-	x	-	-	-	-	-	-
Hughes	31	x	-	-	-	-	-	-	-	-	-	-	-	-
Huslia	91	x	-	-	-	-	-	x	-	-	-	-	-	-
Kaltag	70	x	-	-	-	-	-	-	-	-	-	-	-	-
Koyukuk	42	x	x	-	-	-	-	-	-	-	-	-	-	-
Lake Minchumina	6	x	-	x	-	-	-	-	-	-	-	-	-	-
Livengood‡	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Manley Hot Springs	41	x	-	-	-	-	-	-	-	-	-	-	-	-
McGrath	147	-	-	-	-	-	-	-	-	-	-	-	-	-
Minto	65	-	-	x	-	-	-	x	-	-	-	-	-	-
Nenana‡	185	x	-	x	-	-	-	-	-	-	-	-	-	-
Nikolai	37	x	x	x	-	-	-	-	-	-	-	-	-	-
Northway	77	x	-	-	-	-	-	-	-	-	-	-	-	-
Nulato	92	x	x	-	-	-	-	-	-	-	-	-	-	x
Rampart	10	-	-	-	-	-	-	x	-	-	-	-	-	-
Ruby	62	x	x	-	-	-	-	x	-	-	-	-	-	-
Shageluk	36	-	x	-	-	-	-	-	-	-	-	-	-	-
Stevens Village	26	-	-	-	-	-	-	-	-	-	-	-	-	-
Takotna	22	-	x	-	-	-	-	x	-	-	-	-	-	x
Tanacross	53	-	-	x	-	-	-	-	-	-	-	-	-	-
Tanana	100	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetlin	43	-	-	-	-	-	-	x	-	-	-	-	-	-
Tok	532	-	-	x	-	-	-	x	-	-	-	-	-	-
Venetie	61	-	-	x	x	-	-	x	-	-	-	x	-	-
Wiseman	5	-	-	-	-	-	-	x	-	-	-	-	-	-
Upper Copper River														
Cantwell	104	-	-	-	x	-	-	-	-	-	-	-	-	-
Chistochina	36	x	-	-	x	-	-	-	-	-	-	-	-	-
Chitina	52	x	-	-	-	-	-	-	-	-	-	-	-	-
Copper Center	123	x	-	-	x	-	-	-	-	-	-	-	-	-
Gakona	86	x	-	-	x	-	-	-	-	-	-	-	-	-
Gulkana	36	x	-	-	x	-	-	-	-	-	-	-	-	-
Mentasta Lake	46	x	-	-	x	-	-	-	-	-	-	-	-	-
Tazlina	111	-	-	-	-	-	-	-	-	-	-	-	-	-
Southeast Alaska^a														
Craig	470	-	-	-	-	-	-	-	-	-	-	-	-	-
Hoonah	305	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydaburg	128	-	-	-	-	-	-	-	-	-	-	-	-	-
Yakutat	270	-	-	-	-	-	-	-	-	-	-	-	-	-

-continued-

Sources Survey results for 2004–2015 were reported in Naves (2010rev., 2010, 2011, 2012, 2014a, 2015b, 2016) and Naves and Braem (2014).

Households: Total number of occupied households based on 2010 Census.

Note a. Communities eligible only to harvest of glaucous-winged gull eggs (FR vol. 75, No. 70, pp. 18764–18773, April 13, 2010).

Note ‡: The communities of Alcan Border, Anderson, Chicken, Livengood, Pope-Vanoy Landing, Portage Creek, Port Alsworth, and Ugashik were added to the sampling universe in 2014. Also at this revision, the Four Mile Road CDP was added to the community of Nenana.

Note † Cordova was included in 2014 when the spring hunt was first authorized.

Note Allakaket includes Allalaket City and New Allakaket CDP. Starting in 2016, the communities of Alatna and Allakakeet were combined for the purposes of this survey.

Note Dot Lake includes Dot Lake Village and Dot Lake CDP.

Note Bettles-Evansville includes both Bettles and Evansville.

Note Northway includes Northway Village, Northway Junction, and Northway CDPs.

Note Nenana includes Nenana City and Four Mile Road CDP.

Note Balance of Kodiak Island Borough listed as Kodiak at Large in previous AMBCC documents.

Appendix C.–Tracking sheet and household consent form (original size 8.5x11 inches).



AMBCC Harvest Survey
OMB E.O. 13526 Exempt 10/21/2019

page ____ / ____

Tracking Sheet & Household Consent Form
Copy here only the households selected to be surveyed.

Village: _____ Harvest Year: _____ Surveyor: _____

Household ID	Household name	Household consent				Harvest report completed Date (mm/dd/yy)	Comments <i>(Why no contact? Moved?)</i>
		Attempt	Date (mm/dd/yy)	Agreed	Refused		
		1 st	/ /				/ /
		2 nd	/ /				/ /
		3 rd	/ /				/ /
		1 st	/ /				/ /
		2 nd	/ /				/ /
		3 rd	/ /				/ /
		1 st	/ /				/ /
		2 nd	/ /				/ /
		3 rd	/ /				/ /
		1 st	/ /				/ /
		2 nd	/ /				/ /
		3 rd	/ /				/ /
		1 st	/ /				/ /
		2 nd	/ /				/ /
		3 rd	/ /				/ /
		1 st	/ /				/ /
		2 nd	/ /				/ /
		3 rd	/ /				/ /
		1 st	/ /				/ /
		2 nd	/ /				/ /
		3 rd	/ /				/ /

Appendix D.-Harvest report form, Western Alaska (spring sheet, both sides, original size 8.5x11 inches).

OMB FWS Form 3-2381-1 Expires 10/31/2019

AMBCC Subsistence Migratory Bird Household Harvest Survey
Western Alaska Harvest Report - SPRING
Y-K Delta, Bering Strait-Norton Sound, NW Arctic, Bristol Bay (except South AK Peninsula)

Did the household harvest birds or eggs from **April 1 to June 30**? YES NO

Village: _____ Household ID: _____ Harvest Year: _____ Date: ____/____/____

American wigeon birds _____ eggs _____	Teal birds _____ eggs _____	Mallard birds _____ eggs _____	Northern pintail birds _____ eggs _____
Northern shoveler birds _____ eggs _____	Black scoter birds _____ eggs _____	Surf scoter birds _____ eggs _____	White-winged scoter birds _____ eggs _____
Bufflehead birds _____ eggs _____	Goldeneye birds _____ eggs _____	Canvasback birds _____ eggs _____	Scaup birds _____ eggs _____
Common eider birds _____ eggs _____	King eider birds _____ eggs _____	Spectacled eider birds _____ eggs _____	Steller's eider birds _____ eggs _____
Harlequin duck birds _____ eggs _____	Long-tailed duck birds _____ eggs _____	Merganser birds _____ eggs _____	Unknown duck birds _____ eggs _____
Black brant birds _____ eggs _____	Cackling/Canada goose birds _____ eggs _____	Greater white-fronted goose birds _____ eggs _____	Emperor goose birds _____ eggs _____
Snow goose birds _____ eggs _____			

FWS Form 3-2381-1 (03/18) The first appearance of a bird in this form is indicated by a bolded name.

OMB FWS Form 3-2381-1 Expires 10/31/2019

AMBCC Subsistence Migratory Bird Household Harvest Survey
Western Alaska Harvest Report
SPRING - April 1 to June 30

Village: _____ Household ID: _____ Harvest Year: _____ Date: ____/____/____

Swan birds _____ eggs _____	Sandhill crane birds _____ eggs _____	Grouse birds _____ eggs _____	Ptarmigan birds _____ eggs _____
"Loon 1" birds _____ eggs _____	"Loon 2" birds _____ eggs _____	"Loon 3" birds _____ eggs _____	"Loon 4" birds _____ eggs _____
"Loon 5" birds _____ eggs _____			
Grebe birds _____ eggs _____	Cormorant birds _____ eggs _____	Murre birds _____ eggs _____	Guillemot birds _____ eggs _____
Auklet birds _____ eggs _____	Puffin birds _____ eggs _____	Black-legged kittiwake birds _____ eggs _____	Bonaparte's/Sabine's Gull birds _____ eggs _____
Mew gull birds _____ eggs _____	Large gull birds _____ eggs _____	Tern birds _____ eggs _____	Whimbrel/Curlew birds _____ eggs _____
Godwit birds _____ eggs _____			
Golden/Black-bellied plover birds _____ eggs _____	Turnstone birds _____ eggs _____	Phalarope birds _____ eggs _____	Small shorebird birds _____ eggs _____
Other/unknown bird: birds _____ eggs _____			

Comments:

Appendix E.—Harvest report form, Southern Coastal Alaska (spring sheet, both sides, original size 8.5x11 inches).

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OMB PWS Form 5-2381-2 Expires 10/31/2016

AMBCS Subsistence Migratory Bird Household Harvest Survey
Southern Coastal Alaska Harvest Report - WINTER
Gulf of Alaska-Cook Inlet, Kodiak Archipelago, Aleutian-Pribilof Is., South AK Peninsula

Did the household harvest birds or eggs from **November 1 to March 9**? YES NO

Village: _____ Household ID: _____ Harvest Year: _____ Date: _____

American wigeon birds _____ 	Teal birds _____ 	Mallard birds _____ 	Northern pintail birds _____
Northern shoveler birds _____ 	Black scoter birds _____ 	Surf scoter birds _____ 	White-winged scoter birds _____
Bufflehead birds _____ 	Goldeneye birds _____ 	Canvasback birds _____ 	Scaup birds _____
Common eider birds _____ 	King eider birds _____ 	Steller's eider birds _____ 	Harlequin duck birds _____
Long-tailed duck birds _____ 	Merganser birds _____ 	Unknown duck birds _____ 	Black brant birds _____
Cackling/Canada goose birds _____ 	Greater white-fronted goose birds _____ 	Emperor goose birds _____ 	Snow goose birds _____
Swan birds _____ 	Sandhill crane birds _____ 	Grouse birds _____ 	Ptarmigan birds _____

PWS Form 5-2381-2 10/06. This form supersedes form 7-PW-1035, which is obsolete.

OMB PWS Form 5-2381-3 Expires 10/31/2016

AMBCS Subsistence Migratory Bird Household Harvest Survey
Southern Coastal Alaska Harvest Report
WINTER - November 1 to March 9

Village: _____ Household ID: _____ Harvest Year: _____ Date: _____

"Loon 1" birds _____ 	"Loon 2" birds _____ 	"Loon 3" birds _____ 	"Loon 4" birds _____ 	"Loon 5" birds _____
eggs _____ 	eggs _____ 	eggs _____ 	eggs _____ 	eggs _____
Grebe birds _____ 	Cormorant birds _____ 	Murre birds _____ 	Guillemot birds _____ 	
Auklet birds _____ 	Puffin birds _____ 	Black-legged kittiwake birds _____ 	Red-legged kittiwake birds _____ 	
Bonaparte's/Sabine's Gull birds _____ 	Mew gull birds _____ 	Large gull birds _____ 	Tern birds _____ 	
Black oystercatcher birds _____ 	Whimbrel/Curlew birds _____ 	Godwit birds _____ 	Golden/Black-bellied plover birds _____ 	
Turnstone birds _____ 	Phalarope birds _____ 	Small shorebird birds _____ 	Other/unknown bird: birds _____ 	

Comments: _____

Appendix F.—Harvest report form, North Slope (spring sheet, both sides, original size 8.5x11 inches).

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OMB EWS Form 3-2001-4 Expires 12/31/2015

AMBCC Subsistence Migratory Bird Household Harvest Survey North Slope Harvest Report - **SPRING**

Did the household harvest birds or eggs from **April 1 to June 30**? YES NO

Village: _____ Household ID: _____ Harvest Year: _____ Date: _____

<p>Northern wigeon birds _____ eggs _____</p>	<p>Teal birds _____ eggs _____</p>	<p>Mallard birds _____ eggs _____</p>	<p>Northern pintail birds _____ eggs _____</p>	
<p>Northern shoveler birds _____ eggs _____</p>	<p>Black scoter birds _____ eggs _____</p>	<p>Surf scoter birds _____ eggs _____</p>	<p>White-winged scoter birds _____ eggs _____</p>	
<p>Scaup birds _____ eggs _____</p>	<p>Common elder birds _____ eggs _____</p>	<p>King elder birds _____ eggs _____</p>	<p>Spectacled elder birds _____ eggs _____</p>	
<p>Steller's elder birds _____ eggs _____</p>	<p>Long-tailed duck birds _____ eggs _____</p>	<p>Merganser birds _____ eggs _____</p>	<p>Unknown duck birds _____ eggs _____</p>	
<p>Black brant birds _____ eggs _____</p>	<p>Cackling/Canada goose birds _____ eggs _____</p>	<p>Greater white-fronted goose birds _____ eggs _____</p>	<p>Snow goose birds _____ eggs _____</p>	<p>Unknown goose birds _____ eggs _____</p>

PWS Form 3-2001-4 10/08 This form is a reproduction of the PWS Form 3-2001-4 10/08

OMB EWS Form 3-2001-4 Expires 12/31/2015

AMBCC Subsistence Migratory Bird Household Harvest Survey North Slope Harvest Report SPRING - April 1 to June 30

Village: _____ Household ID: _____ Harvest Year: _____ Date: _____

<p>Swan birds _____ eggs _____</p>	<p>Sandhill crane birds _____ eggs _____</p>	<p>Grouse birds _____ eggs _____</p>	<p>Ptarmigan birds _____ eggs _____</p>	
<p>"Loon 1" birds _____ eggs _____</p>	<p>"Loon 2" birds _____ eggs _____</p>	<p>"Loon 3" birds _____ eggs _____</p>	<p>"Loon 5" birds _____ eggs _____</p>	
<p>Tern birds _____ eggs _____</p>	<p>Sabine's gull birds _____ eggs _____</p>	<p>Large gull birds _____ eggs _____</p>	<p>Murre birds _____ eggs _____</p>	<p>Guillemot birds _____ eggs _____</p>
<p>Whimbrel/Curlew birds _____ eggs _____</p>	<p>Godwit birds _____ eggs _____</p>	<p>Golden/Black-bellied plover birds _____ eggs _____</p>	<p>Turnstone birds _____ eggs _____</p>	
<p>Phalarope birds _____ eggs _____</p>	<p>Small shorebird birds _____ eggs _____</p>	<p>Snowy owl birds _____ eggs _____</p>	<p>Other/unknown bird: birds _____ eggs _____</p>	

Comments:

Appendix G.—Harvest report form, Interior Alaska (spring sheet, both sides, original size 8.5x11 inches).

AMB FWS Form 2-2381-3 Expires 10/31/2015

AMBCC Subsistence Migratory Bird Household Harvest Survey
Interior Alaska Harvest Report - SPRING
 Upper Copper River and Interior Alaska

Did the household harvest birds or eggs from **April 1 to June 30**? YES NO

Village: _____ Household ID: _____ Harvest Year: _____ Date: _____

American wigeon birds _____ eggs _____	Teal birds _____ eggs _____	Mallard birds _____ eggs _____	Northern pintail birds _____ eggs _____	
Northern shoveler birds _____ eggs _____	Black scoter birds _____ eggs _____	Surf scoter birds _____ eggs _____	White-winged scoter birds _____ eggs _____	
Bufflehead birds _____ eggs _____	Goldeneye birds _____ eggs _____	Canvasback birds _____ eggs _____	Scaup birds _____ eggs _____	
Harlequin duck birds _____ eggs _____	Long-tailed duck birds _____ eggs _____	Merganser birds _____ eggs _____	Unknown duck birds _____ eggs _____	
Cackling/Canada goose birds _____ eggs _____	Greater white-fronted goose birds _____ eggs _____	Snow goose birds _____ eggs _____	Swan birds _____ eggs _____	Sandhill crane birds _____ eggs _____

FWS Form 2-2381-3 (10/09). This form supersedes form FWS-2381-3 and is obsolete.

AMB FWS Form 2-2391-3 Expires 10/31/2015

AMBCC Subsistence Migratory Bird Household Harvest Survey
Interior Alaska Harvest Report
SPRING - April 1 to June 30

Village: _____ Household ID: _____ Harvest Year: _____ Date: _____

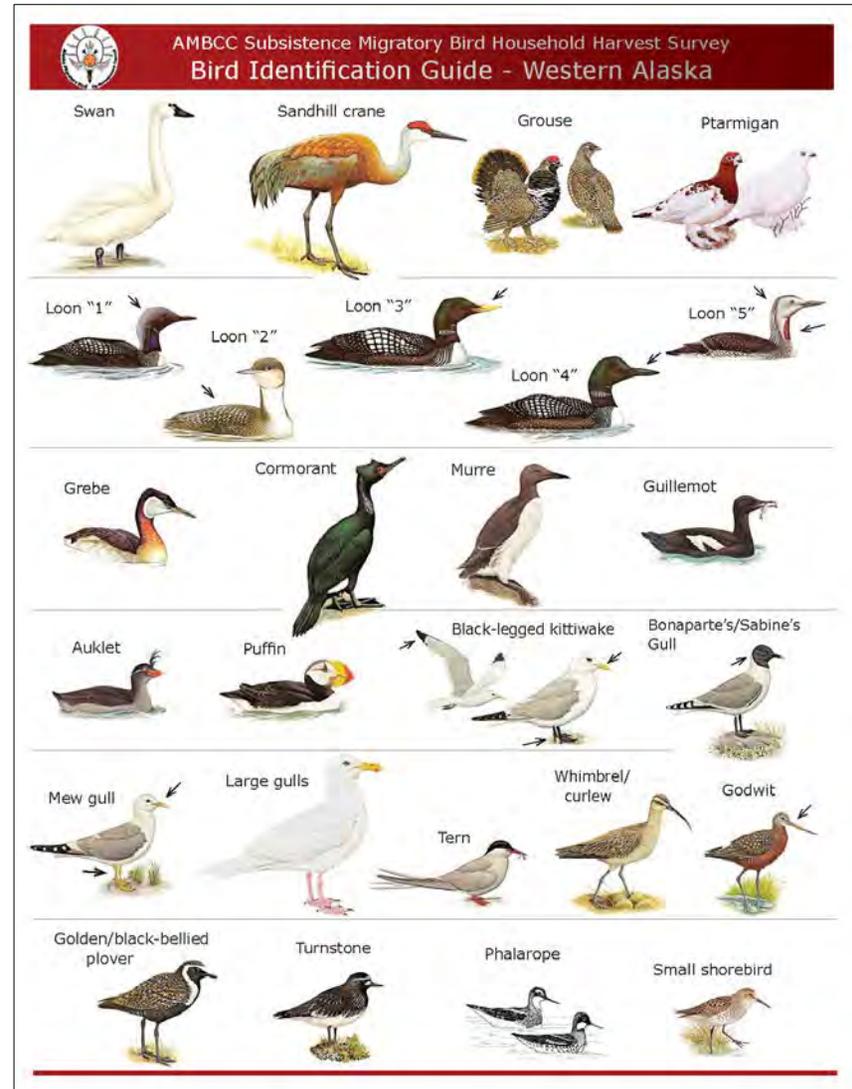
Loon "1" birds _____ eggs _____	Loon "2" birds _____ eggs _____	Loon "4" birds _____ eggs _____	Loon "5" birds _____ eggs _____
Grebe birds _____ eggs _____	Tern birds _____ eggs _____	Bonaparte's gull birds _____ eggs _____	Mew gull birds _____ eggs _____
Large gull birds _____ eggs _____	Grouse birds _____ eggs _____	Ptarmigan birds _____ eggs _____	Whimbrel/Curlew birds _____ eggs _____
Godwit birds _____ eggs _____	Golden/Black-bellied plover birds _____ eggs _____	Phalarope birds _____ eggs _____	Small shorebird birds _____ eggs _____

Other/unknown bird: _____

birds _____ eggs _____

Comments:

Appendix H.–Bird identification guide, Western Alaska (both sides, original size 8.5x11 inches).



Appendix I.–Bird identification guide, Southern Coastal Alaska (both sides, original size 8.5x11 inches).



Appendix J.–Bird identification guide, North Slope (both sides, original size 8.5x11 inches).

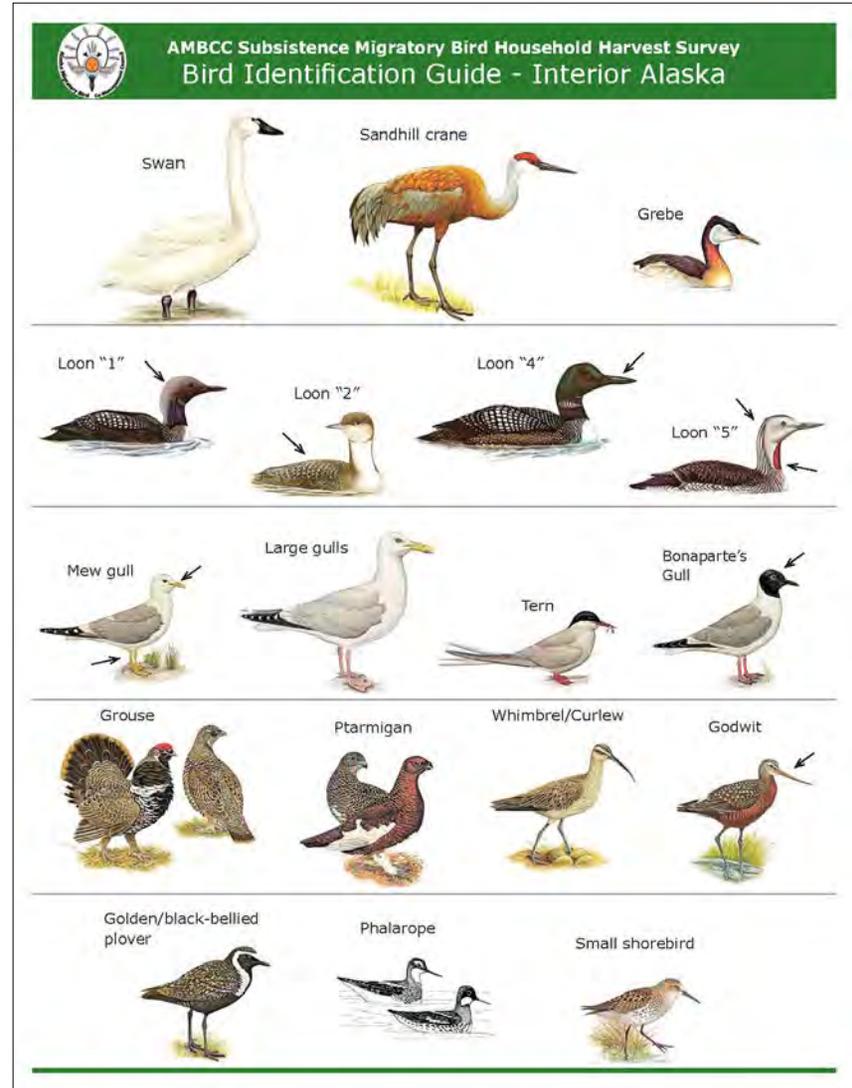
AMBC Subistence Migratory Bird Household Harvest Survey
Bird Identification Guide - North Slope

American Wigeon, Teal, Mallard, Northern Pintail, Northern Shoveler, Black Scoter, Surf Scoter, White-winged Scoter, Scaup, Long-tailed Duck, Merganser, Spectacled Eider, Common Eider, King Eider, Steller's Eider, Black Brant, Cackling/Canada Goose, Greater White-fronted Goose, Snow Goose

AMBC Subistence Migratory Bird Household Harvest Survey
Bird Identification Guide - North Slope

Swan, Sandhill Crane, Grouse, Ptarmigan, Loon "1", Loon "2", Loon "3", Loon "5", Tern, Sabine's Gull, Large Gull, Murre, Guillemot, Whimbrel/Curlew, Godwit, Turnstone, Snowy Owl, Golden/Black-bellied Plover, Phalarope, Small Shorebird

Appendix K.-Bird identification guide, Interior Alaska (both sides, original size 8.5x11 inches).



Appendix L.–Bird poster, Western Alaska (original size 23x36 inches).

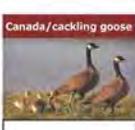


Alaska Migratory Bird Co-Management Council - AMBCC

Birds on the Subsistence Harvest Survey

Y-K Delta, Bering Strait-Norton Sound, NW Arctic, Bristol Bay (except South AK Peninsula)

Write your local bird names in the boxes below the pictures.
Birds/eggs that may be closed to harvest are shown with a red name tag; check the current regulation booklet.

 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>

Please complete the survey so that:

- There is better understanding of the birds important to your culture;
- The subsistence harvest regulations are based on correct information;
- The subsistence harvest of birds will continue for you and your children.

Thank you!

AMBCC website http://alaska.fws.gov/ambcc/index.htm	ADF&G Division of Subsistence 333 Raspberry Rd Anchorage AK 99518 phone (907) 267-2353	AMBCC contact at USFWS Migratory Birds 1011 E. Tudor Rd, MS 201 Anchorage, AK 99503 phone (907) 786-3443
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Appendix M.–Bird poster, Southern Coastal Alaska (original size 23x36 inches).

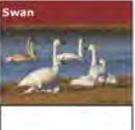
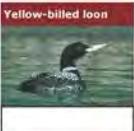
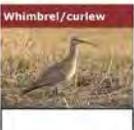


Alaska Migratory Bird Co-Management Council - AMBCC

Birds on the Subsistence Harvest Survey

Gulf of Alaska-Cook Inlet, Kodiak Archipelago, Aleutian-Pribilof Islands, South Alaska Peninsula (Bristol Bay Region)

Write your local bird names in the boxes below the pictures.
 Birds/eggs that may be closed to harvest are shown with a red name tag; check the current regulation booklet.

 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>

Please complete the survey so that:

- There is better understanding of the birds important to your culture;
- The subsistence harvest regulations are based on correct information;
- The subsistence harvest of birds will continue for you and your children.

Thank you!

AMBCC website
<http://alaska.fws.gov/ambcc/index.htm>

ADF&G Division of Subsistence
 333 Raspberry Rd
 Anchorage AK 99518
 phone (907) 267-2353

AMBCC contact at USFWS Migratory Birds
 1011 E. Tudor Rd, MS 201
 Anchorage, AK 99503
 phone (907) 786-3443

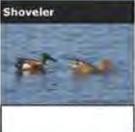
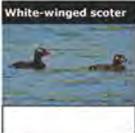
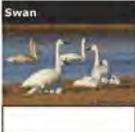
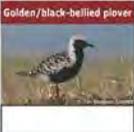
Appendix N.—Bird poster, North Slope (original size 23x36 inches).



Alaska Migratory Bird Co-Management Council - AMBCC

Birds on the Subsistence Harvest Survey
North Slope

Write your local bird names in the boxes below the pictures.
 Birds/eggs that may be closed to harvest are shown with a red name tag; check the current regulation booklet.

Wigeon  <input type="text"/>	Teal  <input type="text"/>	Mallard  <input type="text"/>	Pintail  <input type="text"/>	Shoveler  <input type="text"/>	Black scoter  <input type="text"/>
Surf scoter  <input type="text"/>	White-winged scoter  <input type="text"/>	Scaup  <input type="text"/>	Common eider  <input type="text"/>	King eider  <input type="text"/>	Spectacled eider  <input type="text"/>
Steller's eider  <input type="text"/>	Long-tailed duck  <input type="text"/>	Merganser  <input type="text"/>	Brant  <input type="text"/>	Canada/cockling goose  <input type="text"/>	White-fronted goose  <input type="text"/>
Snow goose  <input type="text"/>	Swan  <input type="text"/>	Crane  <input type="text"/>	Pacific loon  <input type="text"/>	Red-throated loon  <input type="text"/>	Yellow-billed loon  <input type="text"/>
Grouse  <input type="text"/>	Ptarmigan  <input type="text"/>	Tern  <input type="text"/>	Black-headed gulls  <input type="text"/>	Large gulls  <input type="text"/>	Murre  <input type="text"/>
Guillemot  <input type="text"/>	Whimbrel/curlew  <input type="text"/>	Godwit  <input type="text"/>	Golden/black-billed plover  <input type="text"/>	Turnstone  <input type="text"/>	Phalarope  <input type="text"/>
Small shorebird  <input type="text"/>					
Snowy owl  <input type="text"/>					

Please complete the survey so that:

- There is better understanding of the birds important to your culture;
- The subsistence harvest regulations are based on correct information;
- The subsistence harvest of birds will continue for you and your children.

Thank you!

AMBCC website
<http://alaska.fws.gov/ambcc/index.htm>

ADF&G Division of Subsistence
 333 Raspberry Rd
 Anchorage, AK 99518
 phone (907) 267-2353

**AMBCC contact at
 USFWS Migratory Birds**
 1011 E. Tudor Rd, MS 201
 Anchorage, AK 99503
 phone (907) 786-3443

Appendix O.–Bird poster, Interior Alaska (original size 23x36 inches).

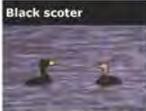

Alaska Migratory Bird Co-Management Council - AMBCC

Birds on the Subsistence Harvest Survey

Interior Alaska & Upper Copper River

Write your local bird names in the boxes below the pictures.

Birds/eggs that may be closed to harvest are shown with a red name tag; check the current regulation booklet.

 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>
 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	 <input type="text"/>	

Please complete the survey so that:

- There is better understanding of the birds important to your culture;
- The subsistence harvest regulations are based on correct information;
- The subsistence harvest of birds will continue for you and your children.

Thank you!

AMBCC website
<http://alaska.fws.gov/ambcc/index.htm>

ADF&G Division of Subsistence
333 Raspberry Rd
Anchorage, AK 99518
phone (907) 267-2353

**AMBCC contact at
USFWS Migratory Birds**
1011 E. Tudor Rd, MS 201
Anchorage, AK 99503
phone (907) 786-3443

Appendix P.–Formulas used to calculate estimated harvest, variance, and confidence interval percentage.

Community estimated harvest

(Equation 1)
$$\hat{Y}_i = \frac{M_i}{m_i} \times \sum_{j=1}^{m_i} y_{ij}$$

Region estimated harvest

(Equation 2)
$$\hat{Y}_{reg} = \frac{N}{n} \sum_{i=1}^n \hat{Y}_i$$

Region variance

(Equation 3.a)
$$v(\hat{Y}_{reg}) = \frac{N^2(1-f_1)}{n} s_u^2 + \frac{N}{n} \sum_{i=1}^n \frac{M_i^2(1-f_{2i})s_i^2}{m_i}$$

(Equation 3.b)
$$s_u^2 = \frac{1}{n-1} \sum_{i=1}^n (\hat{Y}_i - \hat{\bar{Y}})^2$$

(Equation 3.c)
$$s_i^2 = \frac{1}{m_i-1} \sum_{j=1}^{m_i} (y_{ij} - \bar{y}_i)^2$$

(Equation 3.d)
$$\bar{y}_i = \frac{\sum_{j=1}^{m_i} y_{ij}}{m_i}$$

(Equation 3.e)
$$\hat{\bar{Y}} = \frac{\sum_{i=1}^n \hat{Y}_i}{n}$$

Alaska-wide estimated harvest

(Equation 4)
$$\hat{Y}_{AK} = \sum_{R=1}^{reg} \hat{Y}_{reg}$$

Alaska-wide variance

(Equation 5)
$$v(\hat{Y}_{AK}) = \sum_{R=1}^{reg} v(\hat{Y}_{reg})$$

Confidence interval at regiona and Alaska-wide levels

(Equation 6.a)
$$CIP(\hat{Y}) = 2 \times CV$$

(Equation 6.b)
$$CV(\hat{Y}) = \frac{\sqrt{v(\hat{Y})}}{\hat{Y}}$$

i = communities in a region (primary sampling units)

j = households in a community (secondary sampling units)

reg = region

AK = Alaska-wide

\hat{Y} = estimated harvest

y_{ij} = harvest reported by j^{th} surveyed household in the i^{th} community

\bar{Y}_{reg} = average community harvest in a region

\bar{y}_i = mean household harvest in sampled community i

m = sampled households

M = total households

n = sampled communities in region

N = total communities in region

R = number of regions

$v(\hat{Y})$ = variance of harvest estimate

f_1 = sampling fraction in regions (n/N)

f_{2i} = sampling fraction in communities (m_i/M_i)

s_i^2 = variance among households in a community

s_u^2 = variance among communities in a region

$CIP(\hat{Y})$ = confidence interval as a percentage of the harvest estimate

$CV(\hat{Y})$ = coefficient of variation

Appendix Q.–Harvest report form and bird identification guide, Cordova mail-out survey (original size 8.5x11 inches).

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FORM FW-3 (Rev. 3/2016) 2 (Pages: 3/2/2016/2016)

Alaska Migratory Bird Co-Management Council (AMBCC)
 Subsistence Household Harvest Survey, Cordova Harvest Report – **SPRING 2016**

1. Household registration #: _____ 2. Date survey was completed: ____/____/2016
(2 letters followed by 2 numbers)

3. How many people listed under this household registration tried to harvest: birds (____) eggs (____)

4. Did the household harvest birds or eggs from 2 April to 31 May, 2016? (checkmark) YES NO

Below, please report numbers of birds and eggs harvested by your household:

American wigeon birds _____ birds _____	Teal birds _____ birds _____	Mallard birds _____ birds _____	Northern pintail birds _____ birds _____
Northern shoveler birds _____ birds _____	Black scoter birds _____ birds _____	Surf scoter birds _____ birds _____	White-winged scoter birds _____ birds _____
Bufflehead birds _____ birds _____	Goldeneye birds _____ birds _____	Canvasback birds _____ birds _____	Scaup birds _____ birds _____
Common eider birds _____ birds _____	King eider birds _____ birds _____	Harlequin duck birds _____ birds _____	Long-tailed duck birds _____ birds _____
Merganser birds _____ birds _____	Greater white-fronted goose birds _____ birds _____	Snow goose birds _____ birds _____	Sandhill crane birds _____ birds _____
Gull eggs _____ eggs _____	Other/unknown bird: birds _____ eggs _____ eggs _____	Comments: _____ _____ _____	

FW3 Form 3-2016 2 10/09 This form supersedes form 3-FW-103B, which is obsolete.

Instructions for Birds and Eggs Household Harvest Survey

TO AVOID FUTURE NOTIFICATIONS, PLEASE COMPLETE AND RETURN THIS SURVEY NOW.
 It is very important that you participate even if your household did not harvest.

Harvest estimates from this survey are used to:

- Show the importance of subsistence uses of migratory birds.
- Protect subsistence harvests.
- Assess whether harvest regulations are appropriate.
- Plan for the conservation of birds.

1. Please complete one survey per household including harvests by all household members listed in your registration.
2. Respond to questions 1 through 4 at top of survey form.
3. In the fields provided close to bird drawings, report numbers of all birds and eggs harvested by your household, including those that you gave to other household(s).
4. Do not report in your survey birds or eggs received from other household(s).
5. If you harvested with people from other household(s), report in your survey only your household's share of the harvest.
6. Report numbers of birds and eggs as individual units. For instance, if you harvested eggs using a 5-gal bucket or other kind of container, specify how many eggs.
7. Write comments in the box provided at the bottom of the survey form (weather, hunting conditions, access to hunting areas, unusual birds seen, household registration and survey process, etc.).
8. Fold this survey and put it in the pre-stamped envelope provided, close it, and mail it to the pre-printed address.

Thank you for participating in this survey! We'll distribute survey results in your community.

Questions about this survey? Give us a call:

Division of Subsistence, Alaska Department of Fish and Game: 907-267-2302 (Anchorage)
 Migratory Birds Management Division, U.S. Fish and Wildlife Service: 907-786-3499 (Anchorage)



Paperwork Reduction Act Statement

In accordance with the Paperwork Reduction Act (44 U.S.C. 3501 et seq.), please note the following information:
 This survey is authorized by the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) and the Migratory Bird Treaty Act Protocol Amendments (1995) and its letter of collateral from the Department of State to the White House, which specifies the need for harvest monitoring.
 Your participation in the survey is voluntary. We will use the information your household provides to estimate subsistence migratory bird harvest in subsistence eligible areas of Alaska. Household harvest reports are anonymous and no names are used on harvest report forms. Harvest estimates are calculated at the regional and subregional levels. With help of a surveyor, we estimate it will take about 5 minutes each to provide household consent and to report your seasonal bird/egg harvest.
 The Office of Management and Budget has approved this information collection and assigned control number 1010-0124, which expires 9/30/2016. We may not conduct or sponsor and you are not required to respond to a survey unless it displays a current OMB control number.
 You may provide comments on this estimated burden or any other aspect of FW3 Forms 3-2016, 3-2381-1, 3-2381-2, 3-2381-3, and 3-2381-4 to the Information Collection Officer, Mail Stop 2042-POM, U.S. Fish and Wildlife Service, 4401 N Fairfax Dr., Arlington, VA 22203.

Appendix R.–Summary of Cordova bird and egg harvest estimates produced for community communication.



**Alaska Migratory Bird Co-Management Council (AMBCC)
Cordova Bird and Egg Subsistence Harvest Estimates
April–May 2014–2016**

The Cordova migratory bird subsistence harvest was opened 2–30 April for waterfowl hunting and 1–31 May for gull egg harvesting. A limited list of species was opened to harvest. Participants were required to obtain a registration issued at the Cordova offices of the U.S. Forest Service and Native Village of Eyak. The Division of Subsistence of the Alaska Department of Fish and Game (ADF&G) coordinated the registration process and the mail-out harvest survey in collaboration with the local partners. For more information on subsistence harvest of birds and eggs see <https://www.fws.gov/alaska/ambcc/>.



Participation	2014	2015	2016
Registered households	36	20	26
Surveys completed	28	15	22
Survey participation	78%	75%	85%

<i>Harvest estimates, number of birds and eggs</i>	2014		2015		2016	
	Reported	Estimated	Reported	Estimated	Reported	Estimated
Birds						
American wigeon	1	1	0	0	1	1
Teal	1	1	0	0	0	0
Mallard	11	14	0	0	16	19
Northern pintail	12	15	0	0	56	66
Northern shoveler	0	0	0	0	2	2
Black scoter	0	0	0	0	0	0
Surf scoter	0	0	0	0	0	0
White-winged scoter	0	0	0	0	0	0
Bufflehead	0	0	0	0	0	0
Goldeneye	0	0	0	0	0	0
Canvasback	0	0	0	0	0	0
Scaup	0	0	0	0	0	0
Common eider	0	0	0	0	0	0
King eider	0	0	0	0	0	0
Harlequin duck	0	0	0	0	0	0
Long-tailed duck	0	0	0	0	0	0
Merganser	0	0	0	0	0	0
Greater white-fronted goose	4	5	0	0	0	0
Snow goose	4	5	0	0	5	6
Sandhill crane	0	0	0	0	0	0
Total birds	33	42	0	0	80	95
Eggs						
Gull (unidentified)	102	131	197	263	105	124
Total eggs	102	131	197	263	105	124

Many thanks to all households that participated in the survey! John Whissel (Native Village of Eyak), Milo Burcham (U.S. Forest Service), Patty Brown-Schwalenberg (Chugach Regional Resources Commission), and Charlotte Westing (ADF&G Wildlife Conservation) assisted in household registration and community communication.

Prepared by Liliana Naves, ADF&G Division of Subsistence, Anchorage. liliana.naves@alaska.gov. Last updated 24 August, 2017.
For a copy of the Alaska Department of Fish and Game OEO statement, see <http://www.adfg.alaska.gov/index.cfm?adfg=home.oestatement>

A NOTE ON THE AMBCC LOGO

Indigenous Yup'ik peoples live in Western, Southwestern, and Southcentral Alaska, as well as in the Russian Far East. In the traditional Yup'ik universe, each animal species has its own world, where they live in communities, like people, and which shamans can visit. Historically, artists carved masks to represent the shaman's spirit helpers and the spirits of fish and wildlife. The different levels of the universe inhabited by the spirits of the animals were represented by rings around a mask. Masks were used during a winter ceremony called *Kelek*, or "Inviting-In Feast." The host community invited people of other communities, as well as the spirits of people who had died and the spirits of the animals, to participate in the ceremony. During *Kelek*, people sang, drummed, and danced with masks to ask for a plentiful harvest in the coming year, to appease animal spirits that may have been offended, and to avoid misfortune in the relationship between people and animals. The masks also could be funny, abstract, fearsome, representations of human faces, and very small or very large. Most *Kelek* masks were destroyed after the ceremony. Today, masks are important items in Native art and economies and are designed to be displayed rather than worn. Yup'ik animal masks are beautiful materializations of the Yup'ik appreciation and respect for the natural resources they depend upon. To learn more about *Kelek* and Yup'ik masks see Fienup-Riordan (1983, 1996) and Pete (1989).

The logo of the Alaska Migratory Bird Co-Management Council (AMBCC) incorporates the drawing of a Yup'ik mask by artist Katie Curtis from Toksook Bay, Alaska. Some people refer to this drawing as "The Goose Mask." The U.S. Fish and Wildlife Service commissioned this drawing in the late 1990s during the process of creating the AMBCC. An actual mask was not carved. The original drawing is black and white; the colors used here were added in 2009 when new outreach materials were produced for the AMBCC subsistence harvest survey. The choice of colors was based on historical and current Yup'ik artwork. Katie Curtis was consulted during this process and agreed with the use of the colors. The mask depicts a Canada goose surrounded by 8 feathers.

The feathers represent the 8 steps to implement a legal, regulated spring subsistence bird hunt: 1) Notify people of the intent to form management bodies; 2) Meet to share ideas; 3) Send out ideas and listen; 4) Choose the form of management bodies; 5) Start rule-making; 6) Recommend rules for Alaska; 7) Link with management in other U.S. flyways; and 8) Link with the nation. Since its inception, this new regulatory framework has been designed to promote true collaboration among a diversity of stakeholders as cultures intermingle in the history of wildlife management and conservation in Alaska.



References

- Fienup-Riordan, Ann. 1983. *The Nelson Island Eskimo: Social Structure and Ritual Distribution*. The Alaskan Book Series no. 40. Alaska Pacific University Press, Anchorage. Cited in this report as Fienup-Riordan 1983.
- Fienup-Riordan, Ann. 1996. *The Living Tradition of Yup'ik Masks: Agayuliyarput = Our Way of Making Prayer*. University of Washington Press, Seattle. Cited in this report as Fienup-Riordan 1996.
- Pete, Mary C. 1989. "The Universe in a Mask." *Alaska Fish and Game* 21 (6): 38-39. Alaska Department of Fish and Game, Juneau. Cited in this report as Pete 1989.