

Technical Paper No. 479

Alaska Subsistence Harvest of Birds and Eggs, 2019–2020, Alaska Migratory Bird Co-Management Council

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September 2021

Alaska Department of Fish and Game
Division of Subsistence



Alaska Migratory Bird
Co-Management Council



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Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft ³ /s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols

alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly-accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly-accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	\$, ¢
months (tables and figures)	first three letters (Jan,...,Dec)
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	two-letter abbreviations (e.g., AK, WA)

Measures (fisheries)

fork length	FL
mid-eye-to-fork	MEF
mid-eye-to-tail-fork	METF
standard length	SL
total length	TL

Mathematics, statistics

<i>all standard mathematical signs, symbols and abbreviations</i>	
alternate hypothesis	H _A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2 , etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	log ₂ , etc.
minute (angular)	'
not significant	NS
null hypothesis	H ₀
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

TECHNICAL PAPER NO. 479

**ALASKA SUBSISTENCE HARVEST OF BIRDS AND EGGS, 2019–2020,
ALASKA MIGRATORY BIRD CO-MANAGEMENT COUNCIL**

by

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Technical Paper series reports are available through the Alaska Resources Library and Information Services (ARLIS), the Alaska State Library and on the Internet: <http://www.adfg.alaska.gov/sf/publications/>. This publication has undergone editorial and professional review.

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Cover Photo: Practice bird hunting with a slingshot, Gambell, Alaska, 1940s. Steve McCutcheon Collection, Anchorage Museum, B1990.14.4.06263. Alaska Native cultures and economies evolved based on a complete reliance on foods and materials procured within the natural environment. From an early age, boys' education focuses on the knowledge and skills needed to become successful hunters and fishers. Traditionally, small birds are the first quarry for young children learning hunting skills. As children learn, they move on to larger birds and other animals and more powerful hunting tools. Until some decades ago, children hunted with bow and arrow and slingshot. Nowadays, children usually start hunting with a BB-gun. Children are also taught to give their catches to grandparents and other elders, even though their catches are small. This early lesson highlights key values in Alaska Native cultures such as gratitude, sharing, and the important role of elders as knowledge and culture bearers. Despite the increasing pressures of development, technology, and environmental change on indigenous communities in Alaska, harvesting and sharing wild foods provides nutrition, supports socio-cultural structure, and is linked to identity and self-worthiness.

“When I was growing up, I used bow and arrow and slingshot [...], those were my weapons, my hunting tools. It teaches a child how to stalk a bird without spooking it, try to get as close to it as possible and that is a challenge [...]. It teaches you patience to get to the bird, how to crawl, or stoop down, or hide behind a knoll, it teaches those skills.” (John Mark, Quinhagak, in Naves and Keating 2019).

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ABSTRACT

This report presents subsistence harvest estimates of birds and their eggs in Alaska for the data years 2019 and 2020. Data were collected through the Harvest Assessment Program of the Alaska Migratory Bird Co-Management Council. In 2020, the five-region survey was canceled due to the COVID-19 pandemic and only the Cordova harvest mail survey was conducted. 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 2019, the survey covered five 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 Alaska-wide harvest. The sampling design treats regions as strata and uses two-stage sampling 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 non-surveyed communities in the same region. Data are reported at the region and survey-wide levels. This report also includes 2019 and 2020 harvest estimates for the Cordova spring bird and egg harvest in the Gulf of Alaska-Cook Inlet region, where a mail 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, ptarmigan, grouse, seabirds, shorebirds, grebes, loons

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Bristol Bay

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- Terry Fuller (Togiak NWR, Nondalton)
- Thomas Dock (Togiak NWR, Refuge Information Technician; Togiak)

Yukon-Kuskokwim Delta

- Catherine G. Williams (Akiak)
- Cynthia Allen (Bethel)
- Daniel Askoak (Russian Mission)
- David Therchik (Yukon Delta NWR, Refuge Information Technician; Toksook Bay)
- Janelle Carl (Bethel)
- Jerry L. Moses (Hooper Bay)
- Katie Tall (Chevak)
- Leonard Olrund (Mekoryuk)
- Maryann Frank (Tuntutuliak)
- Mildred Fitka (Marshall)
- Nick Nicholai (Atmoutluak)
- Wassilie Guy (Oscarville)

Bering Strait-Norton Sound

- Arley D. Nanouk (Unalakleet)
- Orlin Gologergan (Nome)
- Paul Nagaruk (Elim)

North Slope

- Frances “JakyLou” Olemaun (Utqiagvik)
- Michael Tuzroyluk Jr. (Point Hope)
- Olive Kanayurak (Atqasuk)

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- Gayla Hoseth (Bristol Bay)
- Jennifer Hooper (Yukon-Kuskokwim Delta)
- Jack Fagerstrom and Brandon Ahmasuk (Bering Strait-Norton Sound)
- Randy Mayo (Interior Alaska)
- Taqulik Hepa (North Slope)

1. 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–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–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 2000.¹ The AMBCC is composed of representatives from the USFWS, Alaska Department of Fish and Game (ADF&G), and regional Native organizations (65 FR 16405–16409²). 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 (Y-K) Delta region in the context of the Goose Management Plan (Copp 1985; Copp and Roy 1986; Wentworth 2007b; Zavaleta 1999). Surveys were also conducted in the Bristol Bay region every other year in 1995–2002 (Wentworth 2007a). These earlier surveys were important to refine survey methods, develop acceptance of harvest surveys in subsistence communities, and engage users in the management process. Together with the AMBCC survey (below), they provide a long-term dataset needed for understanding harvest patterns.

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).³ The AMBCC survey has been conducted annually since 2004, relying on collaboration among USFWS, ADF&G, and Alaska Native partners. The USFWS and 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 includes participation of regional and local Native partners. 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 2014–2019, the survey program underwent a second revision, which addressed the distribution of sampling effort among regions and communities as well as data analysis (George et al. 2015; Otis et al. 2016). In 2016, the survey piloted the newly revised sampling design (Naves and Otis 2017). Based on results of the 2016

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1. For more information, visit the websites of the AMBCC (<http://www.alaskamigratorybirds.com/>) and the U.S. Fish and Wildlife Service “Alaska Migratory Bird Co-Management Council” at <https://www.fws.gov/alaska/pages/alaska-migratory-bird-co-management-council-ambcc>.
 2. 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>.
 3. 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.

survey, an optimal allocation analysis was conducted to adjust the sampling design used in the 2017 survey (Otis et al. 2017). A second round of optimal allocation analysis based on 2017 survey results was used to adjust the sampling design used in the 2018 survey (Otis and Doherty 2018). A third and final round of optimal allocation analysis based on 2016–2018 survey results was conducted to adjust the sampling design used in the 2019 survey and upcoming years (Otis and Naves 2019).

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 public. This report is the thirteenth 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; Naves and Otis 2017; Naves and Keating 2018; 2020). The AMBCC-HAP also conducts research, outreach, and education to address priority information needs and management issues (Naves and Zeller 2013; Naves 2014b; Rothe et al. 2015; Naves 2015a; Naves and Fall 2017; Naves and Zeller 2017; Naves 2018; Naves et al. 2019). Annual harvest reports, electronic data, program information, and other products are available at the webpage of the AMBCC-HAP.⁴ 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.

In 2020, the five-region survey was canceled due to the COVID-19 pandemic and only the Cordova harvest mail survey was conducted (see Methods). This report includes 2019 harvest estimates for the five-regions survey and 2019 and 2020 harvest estimates for the Cordova harvest.

4. Alaska Migratory Bird Co-Management Council Harvest Assessment Program (AMBCC-HAP) <http://www.adfg.alaska.gov/index.cfm?adfg=subsistence.AMBCC>

2. METHODS

ETHICAL STANDARDS

From the perspective of subsistence harvesters, 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 essential to develop and maintain trust and collaboration between subsistence users and resource management agencies. Ethical principles for social science research are closely observed including informed consent of communities and households; anonymity and confidentiality of raw data; participation in development of survey methods, data collection, and data review; and sharing of survey results in audience-specific formats (Naves 2012:7).^{1,2} Community and household participation in the survey is voluntary. Community consent to conduct surveys is formally granted through tribal council resolutions. Data at the household level are confidential (AS 16.05.815). AMBCC-HAP data are usually reported at the region level, although specific data release agreements may allow data release at the community level (e.g., Naves and Zeller 2013; Naves 2014b; 2015c). Archived survey 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 distributed to AMBCC partners for their review and approval. Information from subsistence harvest surveys 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 early 1980s.

FIVE-REGIONS SURVEY: INDEX FOR THE ALASKA-WIDE HARVEST

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 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 serves as an index for the Alaska-wide harvest. The same regions are 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 provides technical assistance in harvest data collection and analysis upon request. Also, depending on priorities, dedicated studies may be conducted to address specific data needs in non-surveyed regions. These additional data are not 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 (used in 2004–2015) was eliminated because harvest estimates at the region and Alaska-wide levels were considered a priority during the last survey revision, and

-
1. See also National Science Foundation, Interagency Arctic Research Policy Committee (IARPC). 2018. “Principles for Conducting Research in the Arctic” Accessed June 26, 2020. <https://www.nsf.gov/geo/opp/arctic/conduct.jsp>
 2. See also Alaska Federation of Natives. 2013. “Alaska Federation of Natives Guidelines for Research.” Alaska Native Knowledge Network. Accessed June 25, 2020. <http://www.ankn.uaf.edu/IKS/afnguide.html>

providing accurate harvest estimates at the subregion level requires increased sampling effort at increased survey cost (Naves 2012; George et al. 2015).

Table 1.–Commonly-harvested species used to define statistical precision goals for the survey.

Species	Scientific, Latin 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</i> and <i>B. 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</i> and <i>A. affinis</i>
Snow goose ¹	<i>Chen caerulescens</i>
Surf scoter ²	<i>Melanitta perspicillata</i>
White-winged scoter ¹	<i>Melanitta fusca</i>

Source George et al. (2015:69–70)

- 1: Important subsistence resources; >2% of the total subsistence harvest of birds in Alaska, based on 2004–2008 AMBCC harvest estimates.
- 2: Large proportion (>5%) of Alaska breeding population is harvested by subsistence users.
- 3: Large proportion (>5%) of Alaska breeding population is harvested by subsistence users, and 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 was selected to be surveyed. To obtain 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 was randomly selected, which defined the other selected communities (e.g., every fourth community in the sequentially numbered route). Communities were selected randomly regardless of their total number of households. Based on results from the 2016–2018 surveys, optimal allocation analyses were conducted to fine-tune the distribution of sampling effort among regions; i.e., the number of communities and households to be sampled in each region (Table 2) (Otis et al. 2017; Otis and Doherty 2018; Otis and Naves 2019).

To increase the accuracy of harvest estimates, starting with the 2017 survey, communities with more than 200 households were divided into parcels so that individual parcels had a maximum of 200 households (Otis et al. 2017). In the 2016 survey, large communities were divided into parcels of up to 300 households (Naves and Otis 2017). For purposes of sampling, each parcel was treated as an individual community. The number of parcels per community was based on the 2010 census: it was fixed across years and will be updated based on the 2020 census (Table 2). This approach was adopted to simplify the annual selection of communities/parcels to be surveyed, because using annual population estimates to derive number of parcels per community could lead to variation in the number of parcels across years.

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 n.d.; ADLWD n.d.) (Bristol Bay region: Ivanof Bay, Portage Creek, Ugashik, and Pope-Vannoy Landing; Interior Alaska region: Lake Minchumina, Coldfoot, Wiseman, Livengood, Chicken, and Healy Lake).

Participation in the survey is voluntary for communities and households. If a selected community declined to participate or could not be surveyed because of a major logistical constraint, an alternate community was selected. Following the geographic route established for the systematic random sampling of communities, the first alternate community was the one immediately before the originally selected community (figures 1–5). If a first-alternate community declined to participate or could not be surveyed because of a major logistical constraint, the community immediately after the originally selected community was selected as the second alternate. Within communities, if a selected household declined to participate or could not be contacted after three reasonable attempts (as described in Naves [2012]), an alternate household was randomly selected, and this process was repeated until the household sampling goal was met.

Table 2.–Sampling design implemented in the 2016–2019 harvest surveys.

Year	Region	Total communities/ parcels ¹	Communities to be surveyed (achieved)	Households to be surveyed per community	Total households to be surveyed (achieved)
2016 ²	Bristol Bay	29	4 (4)	10	40 (38)
	Yukon-Kuskokwim Delta	53	21 (21)	10	210 (209)
	Bering Strait-Norton Sound	20	5 (4)	10	50 (46)
	North Slope	12	5 (5)	10	50 (52)
	Interior Alaska	41	10 (7)	10	100 (72)
Total, 2016		155	45 (41)	-	450 (417)
2017 ³	Bristol Bay	33	11 (9)	10	100 (89)
	Yukon-Kuskokwim Delta	58	18 (16)	10	180 (164)
	Bering Strait-Norton Sound	23	6 (5)	19	114 (102)
	North Slope	14	5 (5)	30	150 (150)
	Interior Alaska	43	10 (10)	10	100 (132)
Total, 2017		171	50 (45)	-	654 (637)
2018 ³	Bristol Bay	33	10 (6)	20	200 (81)
	Yukon-Kuskokwim Delta	58	25 (24)	10	250 (252)
	Bering Strait-Norton Sound	23	6 (4)	20	120 (80)
	North Slope	14	4 (5)	30	120 (151)
	Interior Alaska	43	6 (6)	10	60 (52)
Total, 2018		171	51 (45)	-	750 (686)
2019 ³	Bristol Bay	33	6 (4)	20	120 (66)
	Yukon-Kuskokwim Delta	58	20 (13)	20	400 (265)
	Bering Strait-Norton Sound	23	6 (3)	30	180 (116)
	North Slope	14	4 (3)	40	160 (119)
	Interior Alaska	43	7 (6)	20	140 (104)
Total, 2019		171	43 (29)	-	1,000 (669)

-continued-

Source Otis et al. (2017), Otis and Doherty (2018), Otis and Naves (2019)

1. “Communities/parcels” refer to sampling units, accounting for (a) division of large communities into parcels and (b) communities with fewer than 10 households, which were excluded from the sampling frame. Total households per community based on 2010 census.
2. Large communities were divided in parcels with ≤ 300 households.
3. Large communities were divided in parcels with ≤ 200 households.

Starting with the 2016 survey (revised methods), harvest level stratification (harvester, non-harvester) was no longer used. This change was made to simplify data collection because of challenges in reliably assigning households to strata, especially in larger communities. Within each selected community, households were selected to be surveyed by simple random sampling. The number of households to be surveyed in each region was defined based on optimal allocation and discussion with AMBCC partners (Otis and Naves 2019; Table 2). 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 are a priority for integrating Alaska harvest data at the flyway level (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 are only 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 proportion of harvesters and nonharvesters at the region level.

Statistical Precision Goals

The sampling design of the harvest survey of the Alaska Migratory Bird Co-Management Council (AMBCC) was reviewed in 2014–2015 and the revised sampling methods were first implemented in 2016 (George et al. 2015). The revised sampling design was developed based on statistical precision goals defined for the annual harvest of 15 commonly-harvested species (Table 1). Each year the survey includes five regions, which together account for about 90% of the statewide harvest: Yukon-Kuskokwim Delta, Bristol Bay, Bering Strait-Norton Sound, North Slope, and Interior Alaska. The sum of harvest estimates in these regions serves as an index to the Alaska-wide harvest.

- Alaska-wide (five-regions index) estimate of total harvest for commonly-harvested species combined: target coefficient of variation (CV) ≤ 0.25 ;
- Regional level estimates of total harvest for commonly-harvested species combined: target average CV ≤ 0.50 ;
- Statistical goals were not defined for individual species at the Alaska-wide (five-regions index) or regional levels.

Dividing Large Communities into Parcels

Lists of addresses were obtained for communities with more than 200 households. Using the software Microsoft Excel,³ 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. Thus, parcels were composed of a random set of addresses within a community. This process ensures that the composition of parcels was not potentially biased by demographic characteristics of individual neighborhoods, such as ethnicity or distribution of age classes.

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

Utqiagvik—A list of residential addresses was obtained from the Planning Department of the North Slope Borough. The list included 1,223 residential addresses and was divided into 7 parcels of equal size. Based on the 2019 estimated community size, data analysis used parcel sizes of 173 households.

Bethel—A list of addresses used for the salmon harvest survey in 2016 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 residential) and was divided into 10 parcels. Based on the 2019 estimated community size, data analysis used parcel sizes of 196 households.

Dillingham—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, of which 76 addresses were identified as non-residential and were excluded, resulting in 1,033 total addresses. The address list was divided into 5 parcels. Based on the 2019 estimated community size, data analysis used parcel sizes of 168 households.

Nome—A list including 2,204 addresses was obtained from the Planning Department of the City of Nome. A total of 1,472 addresses were identified as having a structure, and this list was divided into 7 parcels. Based on the 2019 estimated community size, data analysis used parcel sizes of 178 households.

Random Selection of Households

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 had lived in the community for at least 12 months prior to the survey. Household lists did not include unoccupied dwellings, commercial buildings, and public buildings.

For small communities, a list of households based on family names was compiled or updated by the local surveyor, often with assistance of the local tribal council. People move between communities and households within communities; thus household lists need to be frequently updated. For large communities, it was impractical to compile household lists based on family names, and instead, surveys used lists of physical addresses. Address lists were obtained, for example, from the planning department, electric utility, or emergency services. For each community, all addresses identified as residential were considered for household selection. Addresses identified as non-residential were excluded from the selection. Address lists do not always distinguish between residential and non-residential units, and alternate addresses were used to replace selected non-residential addresses. Also, lists of addresses do not always identify individual units within multi-unit buildings (apartment buildings, duplexes, etc.), and in this case a secondary random selection was used to select individual housing units.

For small communities (up to 200 households), local surveyors were responsible for randomly selecting households from their local household list. Local surveyors most often used a manual process to randomly select households by writing household identification codes on paper and drawing selected households from a “hat.” For communities divided into parcels, addresses were electronically sorted based on a randomly assigned number. The top-listed addresses were selected to be surveyed as the original sample. Additional addresses were pre-selected as potential alternates to replace addresses of the original sample that were non-residential, unoccupied, could not be contacted, or declined to participate in the survey. 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). 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 harvesters 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–H). 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 (e.g., goldeneye, scaup, murre). The form had a sheet for each survey season (winter: 1 November–9 March, spring: 2 April–30 June, summer: 1 July–31 August, and fall: 1 September–31 October). Because of bird migration phenology, winter data were collected only in the Bristol Bay region, and in the North Slope region the survey included spring and summer data only. The bird identification guide had color drawings of birds (appendices I–M). A poster with color photographs of all species included in the survey assisted in species identification and outreach (appendices N–Q). On the poster, the species' English name and a blank field for writing Native and local names appeared close to each photograph. Lists of local and Alaska Native species names were available to data collection staff to help in communicating with respondents and in species identification (Naves 2010rev.).

Since 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 other differences between local ethnotaxonomy and Western taxonomy (Naves and Zeller 2013). 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 (*Gavia pacifica* and *G. arctica*), loon 2: unidentified loon in nonbreeding plumage, loon 3: yellow-billed loon (*G. adamsii*), loon 4: common loon (*G. immer*), and loon 5: red-throated loon (*G. stellata*)].

Data Analysis

Electronic data entry of completed surveys was done using Microsoft Office Access forms. The raw data were stored in a Microsoft SQL Server Management Studio relational database. Double data entry and logic checks ensured accuracy of the data stored in the database (reported harvest, sample size, strata size). Logic checks and data analysis were done with IBM SPSS Statistics. 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 non-surveyed communities in the same region. There are several alternative statistical methods to estimate total harvest for multi-stage sampling designs. During the survey review, 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 because the ratio estimator is not unbiased (Appendix R).

For non-surveyed communities, the number of occupied households was calculated by dividing 2019 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 were calculated for each region and then summed to produce survey-wide harvest estimates and variances. Minor differences (if present) between annual harvest estimates and the sum of seasonal estimates or between Alaska-wide harvest estimates and the sum of regional estimates were due to rounding of decimal places. Decimal places were used in analyses but were not presented in this report to facilitate

reading of results and avoid overstating the precision of harvest estimates. In 2019, a total of 30 communities/parcels were surveyed and 30 communities/parcels were included in data analysis (Table 3 and Appendix A; includes Cordova mail survey).

The subsistence harvest survey covers a large geographic area and 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 that used in 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 precise harvest estimates and wider confidence intervals as compared to commonly-harvested species. Dedicated harvest surveys and specific analytical procedures are needed 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.

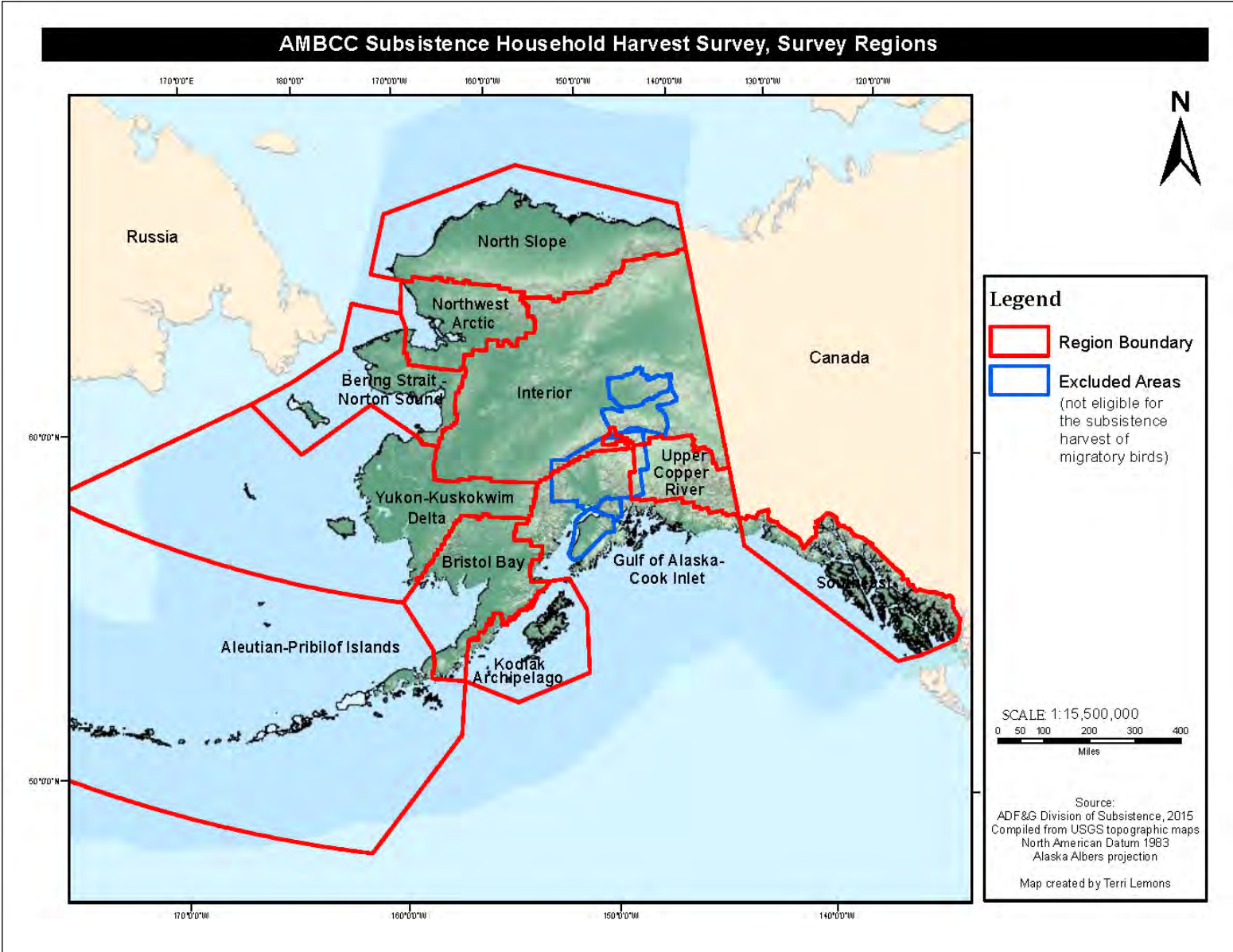


Figure 1.-Management regions for the Alaska migratory bird subsistence harvest.

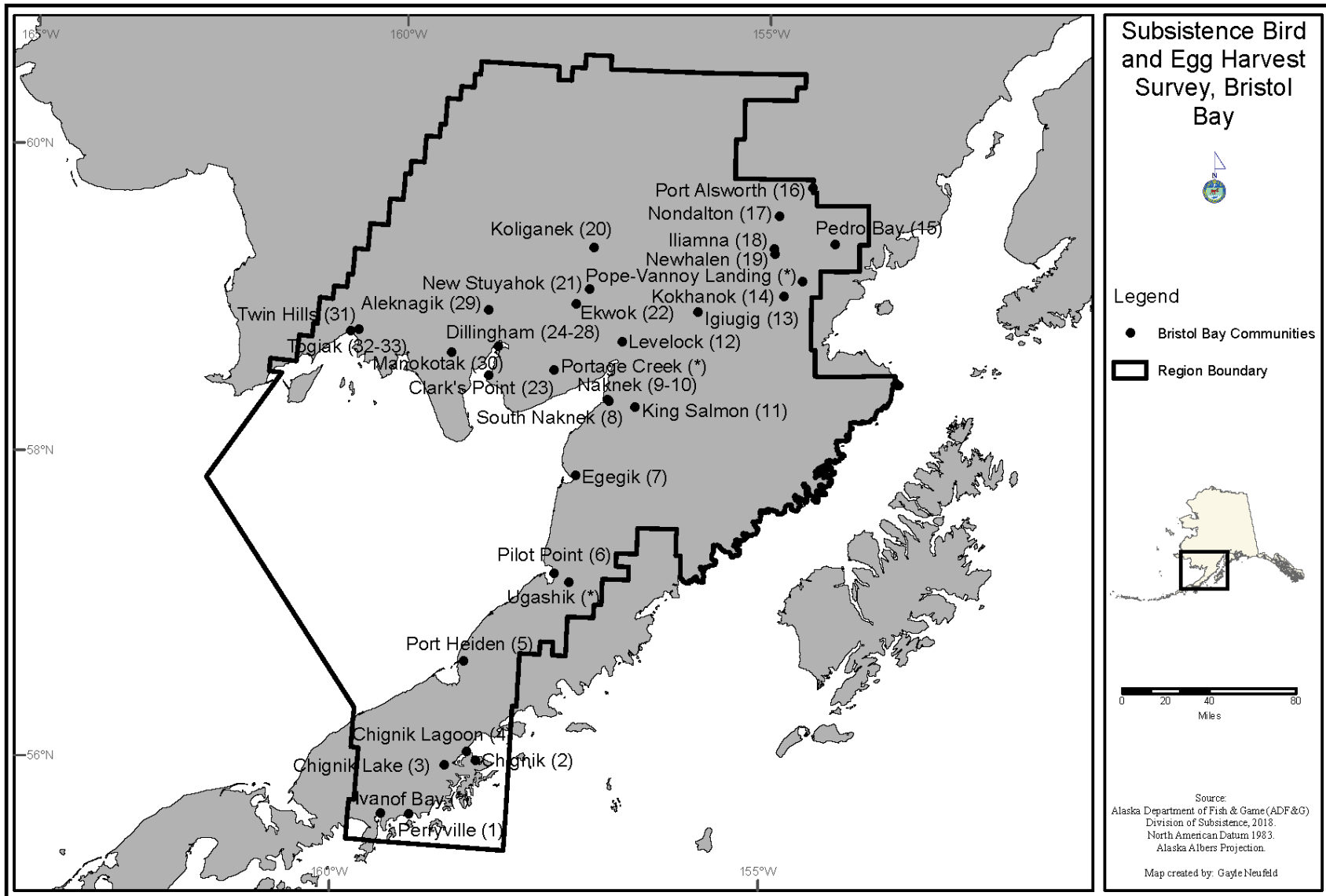


Figure 2.—Bristol Bay region with sequential numbering of communities for systematic random sampling. An asterisk “*” indicates communities with fewer than 10 households, which were excluded from the sampling frame.

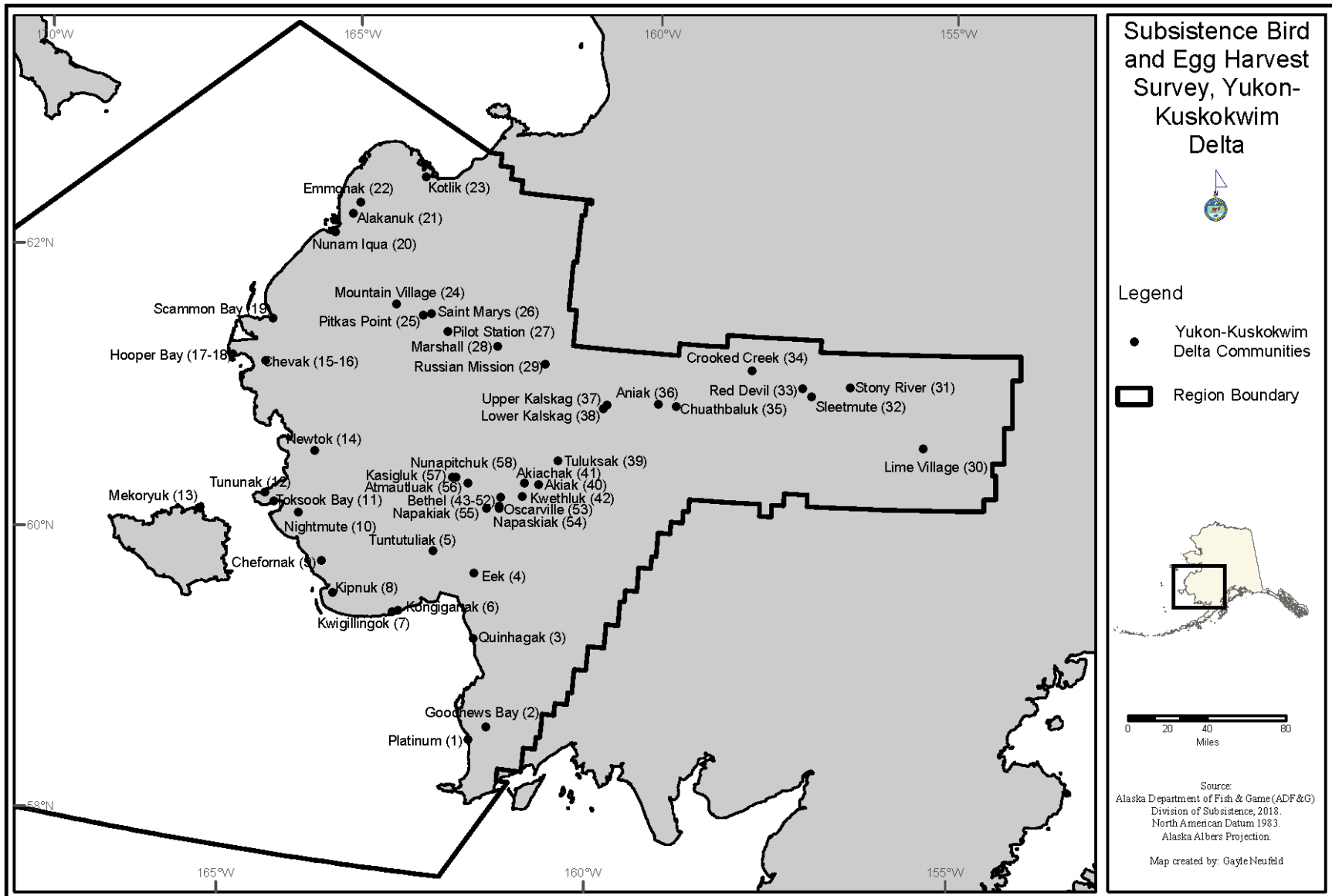


Figure 3.—Yukon-Kuskokwim Delta region with sequential numbering of communities for systematic random sampling.

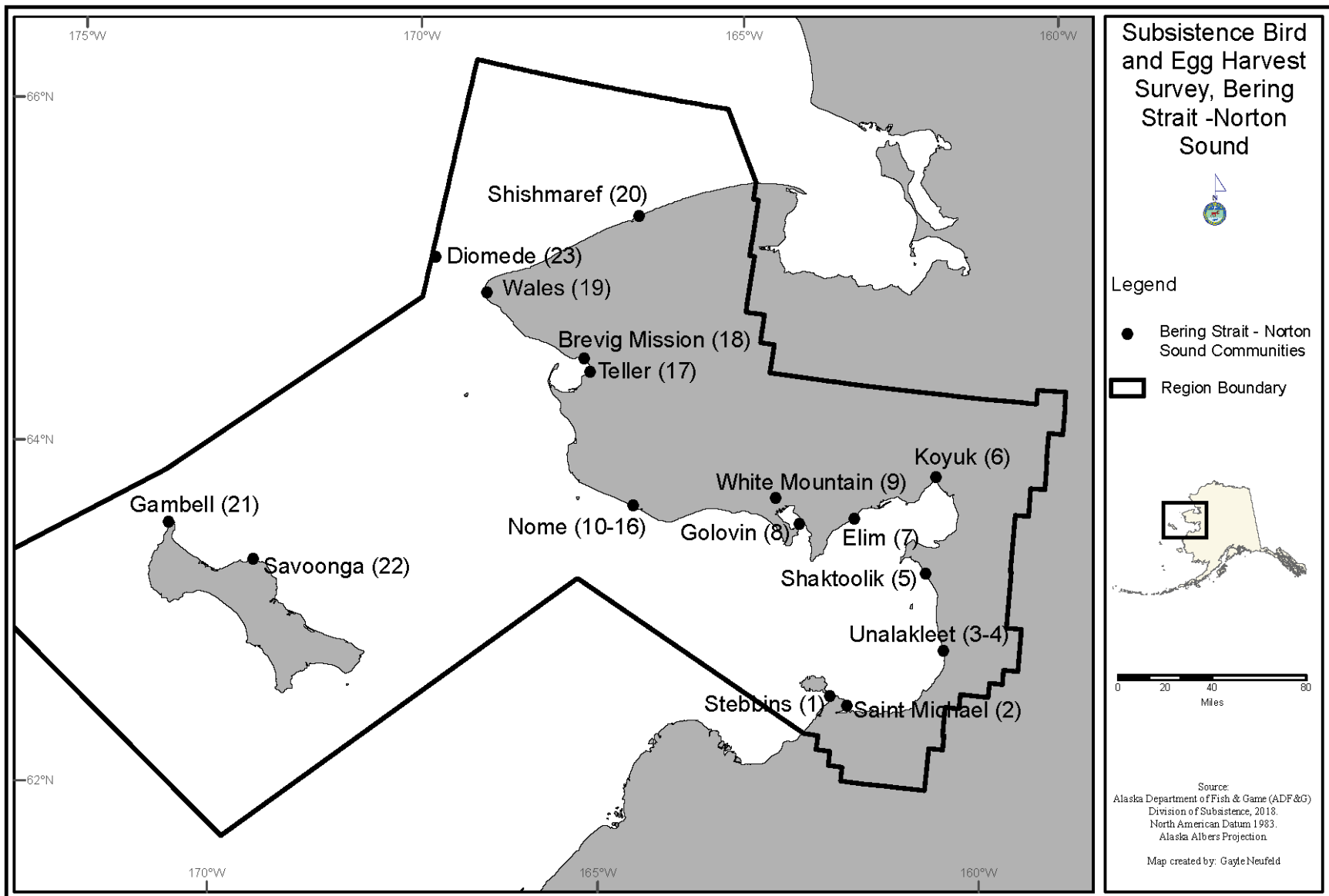


Figure 4.-Bering Strait-Norton Sound region with sequential numbering of communities for systematic random sampling.

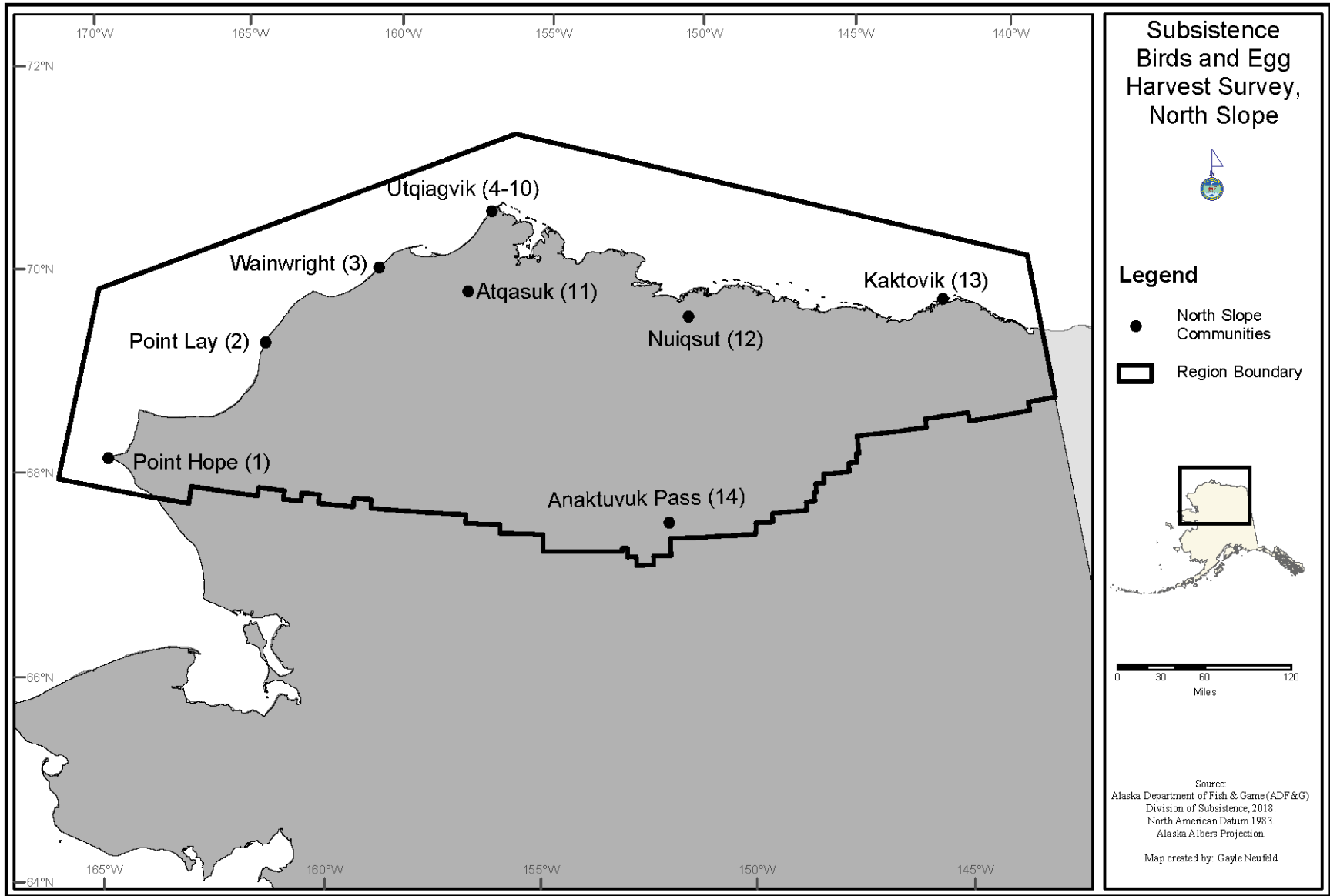


Figure 5.–North Slope region with sequential numbering of communities for systematic random sampling.

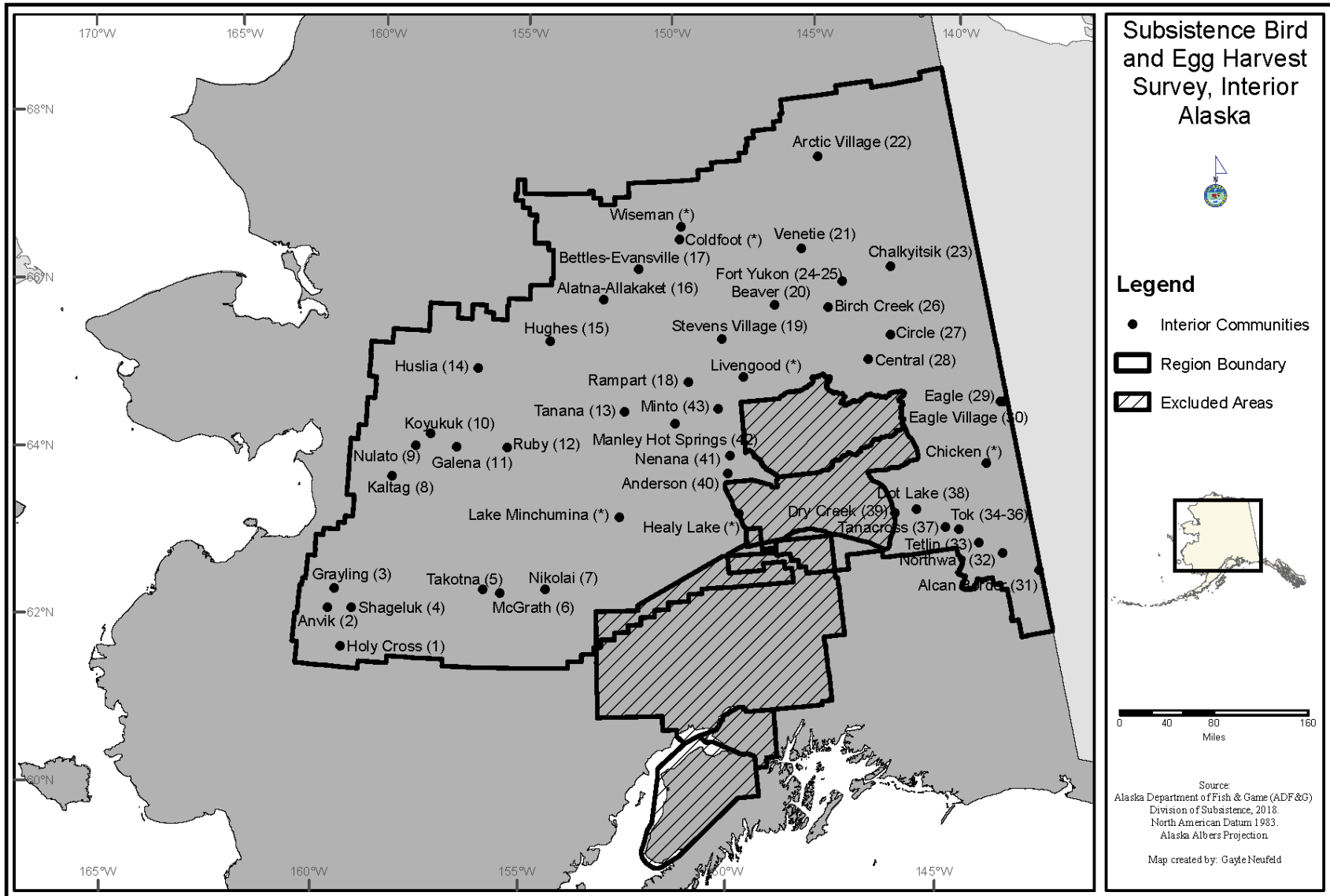


Figure 6.—Interior Alaska region with sequential numbering of communities for systematic random sampling. An asterisk “*” indicates communities with fewer than 10 households, which were excluded from the sampling frame.

CORDOVA HARVEST: MAIL SURVEY

The Cordova migratory bird subsistence harvest was first authorized in 2014.¹ The season was opened 2–30 April for waterfowl hunting and 1–31 May for gull egg harvesting, with a limited set of species legally authorized for harvest. Households are required to register for this harvest. The ADF&G Division of Subsistence coordinated the household registration and mail survey in collaboration with the local partners (Eyak Tribe, U. S. Forest Service, Alaska Department of Fish and Game, Chugach Regional Resources Commission, Native Village of Chenega, and Native Village of Tatitlek). In 2019, a total of 31 households registered for this harvest. In 2020, a total of 60 households registered for this harvest. A higher number of registrations in 2020 was likely related to the fact that, to facilitate obtaining registrations and to support social distancing amid the COVID-19 pandemic, in advance of the opening of the harvest season, ADF&G mailed registrations to all households that obtained a permit in 2019 and additional communication efforts advertised alternative means to obtain a permit.

Harvest surveys were mailed in June 2019 and June 2020 to all registered households (Appendix U). Survey reminders were sent in July and again in August to registered households that had not yet provided a completed survey. The survey was conducted in the context of the AMBCC-HAP. Harvests reported in completed surveys were extrapolated to registered households that did not provide a completed survey (Appendix S). In 2019, a total of 23 surveys were completed (out of 31 registered households) resulting in a response rate of 74%. In 2020, a total of 44 surveys were completed (out of 60 registered households) resulting in a response rate of 73%.

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 (1) communities that agreed to participate, (2) communities that did not agree to participate, and (3) 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 unrelated 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 is often difficult to differentiate between reasons for non-response, a conservative approach was chosen to calculate community participation rates.

In regions surveyed by in-person interviews (five-regions survey), the household participation rate was calculated as the number of households that agreed to participate divided by the number of households contacted. Detailed information on calculation of household participation rates was presented in Naves (2015b:19–20). For the Cordova mail survey, the household participation rate was calculated as the proportion of registered households that provided a completed survey.

1. 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>.

3. RESULTS AND DISCUSSION

OVERVIEW

In 2004–2015, sampling effort depended on funding, monitoring priorities, and size of the communities surveyed (Table 3). Starting in 2016, the same five regions were surveyed annually, and within regions, a fixed number of communities and households were surveyed. In 2019, 43 communities were invited to participate in the survey and 40 communities agreed to participate (Table 4). Survey performance metrics are presented in tables 5 and 6, and 2019 household participation rates are presented in Table 7.

Annual harvest estimates (all species combined) were summarized in tables 8 (birds) and 9 (eggs), and estimates detailed by species and seasons are available in tables 10–22. Starting in 2016, the revised sampling design defined the annual geographic coverage of the survey to five regions. While the revised sampling design provides Alaska-wide harvest estimates with good precision through the five-regions index, estimates at the region level may be less precise than in previous years. The 2016–2020 five-regions index was comparable to the 2004–2009 and 2010–2015 averages at the same geographic scale (tables 8 and 9). Comments provided by the North Slope Borough Fish and Game Management Committee to draft harvest estimates offer context to harvest numbers and limitations of the survey in depicting harvest patterns at the region level on an annual basis (Appendix T; Naves and Keating 2018:58). The current survey design prioritizes Alaska-wide harvest estimates and relies on multi-year data to depict harvest patterns. A summary was produced to facilitate data review and community communication regarding the Cordova harvest (Table 22, Appendix V).

Table 3.—Number of communities/parcels and households included in data analysis, 2004–2020.

Survey year	Communities/parcels included in harvest estimates	Households surveyed			
		Spring ^a	Summer ^c	Fall (or Fall–Winter)	Winter
2004	77	1,770	1,707	1,673	b
2005	75	2,226	2,251	1,742	b
2006	62	1,793	1,773	1,687	b
2007	74	2,076	2,051	1,491	b
2008	44	1,630	1,568	1,189	b
2009	27	923	909	762	b
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	c
2014	7	250	222	222	c
2015	20	907	892	892	c
2016	43	447	425	373	10 ^d
2017	46	664	639	489	101 ^e
2018	46	686	653	502	83 ^e
2019	30	692	669	550	66 ^e
2020	1	44	0	0	0

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Table 3.–Page 2 of 2.

Sources Survey results for 2004–2018 were reported in Naves (2010rev.; 2010; 2011; 2012; 2014a; 2015b; 2015c; 2016), Naves and Braem (2014), Naves and Otis (2017), and Naves and Keating (2018; 2020).

- a. The Cordova survey covers April–May harvest only, and North Slope survey covers spring and summer only.
- b. In 2004–2009, for regions and subregions with a winter survey, data were recorded as fall–winter.
- c. The subregions and regions surveyed usually have no winter survey.
- d. Only one community had winter survey, thus winter data were not included in harvest expansion.
- e. Starting in 2017, winter surveys are conducted in all communities in the Bristol Bay region.

Table 4.–Community participation rate, five-regions survey, 2019.

Regions	Total communities	Contacted communities	Communities that agreed to participate in the survey	Community participation rate
Bristol Bay	31	6	6	100%
Yukon-Kuskokwim Delta	47	19	17	90%
Bering Strait-Norton Sound	16	5	5	100%
North Slope	8	3	3	100%
Interior Alaska	48	8	7	88%
Total	151	43	40	93%

Note Community participation rates were calculated as the number of communities that agreed to participate divided by the number of communities contacted.

SURVEY PERFORMANCE

Completion of the 2019 data collection was impacted by the pandemic, especially in the Bristol Bay and Bering Strait-Norton Sound regions where sampling achievement at the community level was 50% (both regions) and at the household level was 47% and 64% respectively (Table 2). Lower sampling achievement in 2019 as compared to previous years likely resulted in less precise estimates at the species and region levels especially for the Bristol Bay and Bering Strait-Norton Sound region. These estimates are better interpreted in the broader context of the time series available. Despite these limitations, the 2019 survey performance was within the defined statistical goals (below).

- Bristol Bay region: the 2019 survey did not record harvest of some duck species that have been recorded in all previous years (wigeon, scaup, harlequin duck), and harvest estimates were relatively high for mallard and unidentified ducks.
- Bering Strait-Norton Sound region: harvest estimates were relatively low for eiders, emperor goose, seabirds, and loons, likely because the sample did not include communities on the St. Lawrence-Diomedes islands. The estimated 2019 total bird harvest was lower than in previous years.
- North Slope region: as compared to previous years, 2019 harvest estimates were lower for king eider and higher for murre eggs.
- Alaska-wide (five-region index), total for commonly-harvested species combined: the 2019 estimated harvest (186,817 birds) was within the 2016–2018 range (139,067–293,359 birds), and its coefficient of variation (CV=0.15) performed better than the target value of 0.25 (Table 5).
- Regional level, total for commonly-harvested species combined: the 2019 estimated harvest was within the 2016–2018 range for four of the five regions; the harvest estimate for the Bering Strait-Norton Sound region was slightly below range (Table 5). The coefficient of variation performed better than the target value of 0.50 in all 5 regions (CV range=0.19–0.43, mean=0.30).

- Alaska-wide (five-region index), commonly-harvested species: 2019 harvest estimates were within or near the 2016–2018 range for 10 of the 15 species, estimates were below the range for two species (black scoter and king eider) and above the range for three species (snow goose, surf scoter, and white-winged scoter) (Table 6). The 2019 mean CV at the species level was comparable to 2016 and 2017, but higher than 2018 (which was considered “reasonably precise” [Otis and Naves 2019]).

Table 5.—Total harvest (number of birds) and coefficient of variation (CV) for the 15 commonly-harvested species by region.

Regions	2016		2017		2018		2019	
	Harvest	CV	Harvest	CV	Harvest	CV	Harvest	CV
Bristol Bay	42,710	0.88	48,198	0.42	21,897	0.36	25,608	0.31
Yukon-Kuskokwim Delta	56,626	0.22	47,960	0.26	102,773	0.23	94,174	0.23
Bering Strait-Norton Sound	31,582	0.60	15,079	0.55	35,407	0.66	13,192	0.19
North Slope	72,941	0.23	14,489	0.31	35,212	0.23	28,550	0.43
Interior Alaska	89,499	0.82	13,341	0.41	22,201	0.53	25,293	0.34
Region mean		0.55		0.39		0.40		0.30
Five-region total	293,359	0.30	139,067	0.19	217,490	0.17	186,817	0.15

Sources Otis et al. (2017) for 2016, Otis and Doherty (2018) for 2017, and Otis and Naves (2019) for 2018, and this study for 2019.

Note CV = Coefficient of variation. Confidence Interval Percentage (CIP) = $2 \times CV$.

Table 6.—Harvest (number of birds) and coefficient of variation (CV) for each of the commonly-harvested species, Alaska-wide index.

Species	2016		2017		2018		2019	
	Harvest	CV	Harvest	CV	Harvest	CV	Harvest	CV
American wigeon	21,165	0.58	3,562	0.48	7,594	0.34	5,765	0.27
Black scoter	12,304	0.35	9,476	0.33	9,414	0.35	5,929	0.42
Black brant	16,502	0.52	11,111	0.49	8,868	0.29	10,156	0.41
Cackling/Canada goose	45,565	0.26	23,433	0.19	28,933	0.22	36,128	0.16
Canvasback	1,117	0.58	179	0.71	297	0.83	206	0.94
Common eider	9,127	0.43	3,278	0.40	13,222	0.48	5,626	0.45
Greater white-fronted goose	88,338	0.38	26,057	0.18	52,445	0.19	49,095	0.22
King eider	20,297	0.34	22,928	0.48	26,798	0.32	7,697	0.60
Long-tailed duck	2,520	0.41	454	0.49	10,754	0.66	418	0.48
Mallard	28,246	0.54	15,004	0.31	15,250	0.19	26,170	0.27
Northern pintail	26,137	0.42	9,025	0.26	20,023	0.35	8,986	0.24
Scaup	6,792	0.41	7,607	0.53	12,088	0.36	6,470	0.60
Snow goose	11,421	0.59	5,602	0.68	7,471	0.28	15,360	0.65
Surf scoter	1,033	0.43	452	0.51	2,726	0.44	3,290	0.63
White-winged scoter	2,796	0.36	898	0.76	1,606	0.41	5,522	0.47
Species mean		0.44		0.45		0.38		0.45
Total	293,359	0.30	139,067	0.19	217,490	0.17	186,817	0.15

Sources Otis et al. (2017) for 2016, Otis and Doherty (2018) for 2017, and Otis and Naves (2019) for 2018, and this study for 2019.

Note CV = Coefficient of variation. Confidence Interval Percentage (CIP) = $2 \times CV$.

Table 7.—Household participation rate, 2004–2020.

Region Subregion	2004		2005		2006		2007		2008		2009		2010		2011		2012		
	Partici- pation	N	Partici- pation	N	Partici- pation	N	Partici- pation	N	Partici- pation	N	Partici- pation	N	Partici- pation	N	Partici- pation	N	Partici- pation	N	
Gulf of Alaska-Cook Inlet	98%	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Gulf of Alaska Villages	100%	41	-	-	85%	26	-	-	-	-	-	-	100%	65	-	-	-	-	
Cordova	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cook Inlet	93%	14	71%	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Kodiak Archipelago	-	-	-	-	85%	137	-	-	-	-	-	-	95%	289	-	-	-	-	
Kodiak Villages	100%	†65	-	-	99%	76	-	-	-	-	-	-	97%	115	-	-	-	-	
Kodiak City and 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	-	-	76%	306	-	-	93%	312	98%	360	-	-	-	-	96%	407	-	-	
South Alaska Peninsula	*	*	-	-	-	-	93%	29	*	*	-	-	-	-	89%	44	-	-	
Southwest Bristol Bay	77%	73	72%	170	62%	93	90%	166	96%	156	-	-	-	-	96%	243	-	-	
Dillingham	-	-	81%	136	-	-	97%	117	100%	204	-	-	-	-	99%	120	-	-	
Yukon-Kuskokwim Delta	82%	704	88%	801	75%	883	71%	713	71%	463	67%	523	89%	609	96%	493	-	-	
Y-K Delta South Coast	85%	168	100%	138	74%	186	93%	175	*	*	68%	95	97%	112	100%	115	-	-	
Y-K Delta Middle Coast	82%	214	81%	232	90%	175	77%	92	72%	111	61%	168	80%	155	90%	156	-	-	
Y-K Delta North Coast	100%	58	92%	38	58%	107	57%	92	79%	87	80%	99	100%	77	100%	56	-	-	
Lower Yukon	83%	42	86%	180	89%	72	67%	231	*	*	*	*	100%	65	99%	88	-	-	
Lower Kuskokwim	76%	222	90%	213	69%	270	55%	123	65%	238	63%	161	81%	186	96%	78	-	-	
Central Kuskokwim	*	*	-	-	74%	73	*	*	-	-	-	-	100%	14	-	-	-	-	
Bethel	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	-	-
Bering Strait-Norton Sound	71%	528	81%	347	-	-	90%	439	-	-	-	-	81%	489	-	-	-	-	
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
North Slope Villages	-	-	90%	395	-	-	*	*	*	*	*	*	-	-	-	-	-	-	
Barrow	-	-	98%	224	-	-	*	*	*	*	*	*	-	-	-	-	-	-	
Interior	-	-	-	-	98%	544	-	-	-	-	-	-	99%	523	-	-	-	-	
Middle Yukon-Upper Kuskokwim	*	*	*	*	*	*	-	-	-	-	-	-	100%	90	-	-	-	-	
Yukon-Koyukuk	*	*	*	*	90%	83	100%	52	100%	52	-	-	97%	132	-	-	-	-	
Upper Yukon	*	*	-	-	98%	274	100%	144	-	-	-	-	100%	109	-	-	-	-	
Tanana Villages	99%	102	-	-	100%	127	-	-	-	-	-	-	100%	60	-	-	-	-	
Tok	-	-	-	-	100%	60	-	-	-	-	-	-	100%	132	-	-	-	-	
Upper Copper River	100%	55	-	-	-	-	94%	33	-	-	-	-	-	-	-	-	-	-	

-continued-

Table 7.–Page 2 of 2.

	2013		2014		2015		2016		2017		2018		2019		2020	
	Partici- pation	N	Partici- pation	N	Partici- pation	N	Partici- pation	N	Partici- pation	N	Partici- pation	N	Partici- pation	N	Partici- pation	N
Gulf of Alaska-Cook Inlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gulf of Alaska Villages	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cordova	-	-	78%	36	75%	20	85%	26	93%	27	80%	41	74%	31	73%	60
Cook Inlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kodiak Archipelago	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kodiak Villages	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kodiak City and Road Connected	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aleutian-Pribilof Islands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aleutian-Pribilof Villages	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unalaska	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bristol Bay	-	-	-	-	-	-	95%	40	97%	105	98%	60	97%	70	-	-
South Alaska Peninsula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Southwest Bristol Bay	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dillingham	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yukon-Kuskokwim Delta	98%	521	-	-	95%	930	92%	232	97%	169	98%	260	95%	281	-	-
Y-K Delta South Coast	99%	120	-	-	93%	128	-	-	-	-	-	-	-	-	-	-
Y-K Delta Middle Coast	94%	90	-	-	85%	113	-	-	-	-	-	-	-	-	-	-
Y-K Delta North Coast	100%	93	-	-	100%	122	-	-	-	-	-	-	-	-	-	-
Lower Yukon	100%	101	-	-	100%	98	-	-	-	-	-	-	-	-	-	-
Lower Kuskokwim	98%	117	-	-	99%	227	-	-	-	-	-	-	-	-	-	-
Central Kuskokwim	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bethel	-	-	-	-	92%	242	-	-	-	-	-	-	-	-	-	-
Bering Strait-Norton Sound	-	-	-	-	-	-	96%	56	85%	121	93%	86	80%	146	-	-
St. Lawrence-Diomed Islands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bering Strait Mainland Villages	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nome	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Northwest Arctic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Northwest Arctic Villages	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kotzebue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
North Slope	-	-	-	-	-	-	100%	52	99%	154	90%	140	92%	133	-	-
North Slope Villages	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barrow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interior	-	-	-	-	-	-	90%	80	94%	116	100%	52	97%	108	-	-
Middle Yukon-Upper Kuskokwim	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yukon-Koyukuk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upper Yukon	-	-	99%	228	-	-	-	-	-	-	-	-	-	-	-	-
Tanana Villages	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tok	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upper Copper River	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note Household participation rates 2004–2017 updated in 2018 annual report to include historical data recovered (Naves and Keating 2020).

N: Number of households contacted ("N" may differ from the number of households surveyed). Household participation rates were calculated as the number of households that agreed to participate divided by the number of households contacted.

-: Subregion, region not surveyed. *: Household consent data not available for analysis. †: 2004 Data collection not completed in Kodiak Villages subregion, harvest data unavailable although household participation data were provided.

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

Table 8.—Annual estimated bird harvest (all birds, spring, summer, fall, and winter), AMBCC survey, 2004–2020.

Regions, subregions (all birds, all seasons)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2004- 2009 Average	2010- 2015 Average	2016	2017	2018	2019	2020	2016- 2020 Average
Gulf of Alaska-Cook Inlet	2,995												1,802	1,196						
Gulf of Alaska Villages	2,756		596				1,049						1,676	1,049						
Cordova											42	0		21	80	174	42	57	120	95
Cook Inlet	239	13											126							
Kodiak Archipelago							6,926						10,531	6,926						
Kodiak Villages			5,552				1,947						5,552	1,947						
Kodiak City & Road-connected							4,979							4,979						
Aleutian-Pribilof Islands							8,401						11,390							
Aleutian-Pribilof Villages		16,876		7,371	7,642								10,630							
Unalaska					760								760							
Bristol Bay*		47,336		28,285	32,995			30,081					32,901	30,084	63,880	53,464	29,476	47,900		48,680
South Alaska Peninsula	801			968	115			833					628	833						
Southwest Bristol Bay	14,955	32,769	26,715	20,169	29,352			26,601					24,792	26,601						
Dillingham		11,769		7,148	3,527			2,650						2,650						
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	78,602	70,942	140,381	124,120	103,511
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						
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						
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
Lower Yukon	6,201	6,815	10,269	3,988	4,727	6,904	7,748			10,863			17,114	6,484						11,908
Lower Kuskokwim	46,033	16,557	48,849	58,983	22,813	44,934	71,317	32,826		65,081			39,695	48,919						
Central Kuskokwim	440		1,167	219			659						609	659						
Bethel	8,618	23,954	13,163	6,654	7,789	7,478	3,290	2,539				11,978	11,276	5,936						
Bering Strait-Norton Sound*	53,576	74,115		123,257									83,649	32,379	36,458	27,429	98,568	19,374		45,457
St. Lawrence-Diomedes Is.						41,176	14,054	12,077	8,848				41,176	11,660						
Bering Strait Mainland Villages							20,719							20,719						
Nome																				
Northwest Arctic																				
Northwest Arctic Villages			9,676										9,676							
Kotzebue									4,437					4,437						
North Slope*		15,615		44,270	45,123	19,075							31,021		76,315	16,383	38,240	29,462		40,100
North Slope Villages																				
Barrow																				
Interior Alaska*	50,995		37,068				32,611						45,100	30,957	108,742	24,794	30,412	33,492		49,360
Mid Yukon-Upper Kuskokwim	3,086	2,744	697				786						2,176	786						
Yukon-Koyukuk	3,108	930	1,764	3,031	6,908		4,532						3,148	4,532						
Upper Yukon	14,418		10,927	18,402			12,692			9,384			14,582	11,038						
Tanana Villages	20,388		17,358				14,086						18,873	14,086						
Tok			6,321				515						6,321	515						
Upper Copper River	1,120			247									684							
Alaska-wide (all regions)													355,827	279,358						
Five-regions index (regions indicated by *)													331,420	259,163	363,998	193,012	337,077	254,348		287,109

Source Survey results for 2004–2018 were reported in Naves (2010a; 2010b; 2011; 2012; 2014b; 2015b; 2015c; 2016), Naves and Braem (2014), Naves and Otis (2017), Naves and Keating (2018, 2020).

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

Table 9.—Annual estimated egg harvest (all eggs), AMBCC survey, 2004–2020.

Regions, subregions (all eggs)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2004- 2009 Average	2010- 2015 Average	2016	2017	2018	2019	2020	2016- 2020 Average
Gulf of Alaska-Cook Inlet	2,178												1,140	1,566						
Gulf of Alaska Villages	2,173		102				1,366						1,137	1,366						
Cordova											131	263		197	105	113	171	294	728	282
Cook Inlet	5	0											3							
Kodiak Archipelago			5,222				803						5,222	803						
Kodiak Villages			4,545				771						4,545	771						
Kodiak City & Road-connected			677				32						677	32						
Aleutian-Pribilof Islands					4,778								8,053							
Aleutian-Pribilof Villages		11,733		6,127	4,018								7,293							
Unalaska					760								760							
Bristol Bay*	47,799		30,801	47,653			25,211						44,831	25,213	69,367	28,029	6,005	34,252		34,413
South Alaska Peninsula	409			651	106			392					389	392						
Southwest Bristol Bay	54,437	39,206	31,292	25,118	37,630			21,105					37,537	21,105						
Dillingham		5,768		5,032	9,917			3,716					6,906	3,716						
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	35,450	35,970	43,886	65,826	45,283
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						
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						
Y-K Delta North Coast	2,466	3,921	188	22	554	345	1,619			8,240		14,654	1,249	8,171						
Lower Yukon	191	652	232	565	0	386	0			1,392		3,902	338	1,765						
Lower Kuskokwim	2,265	1,302	1,498	4,891	5,298	3,087	0	877		6,995		6,873	3,057	3,686						
Central Kuskokwim	0		15	0			0						5	0						
Bethel	0	261	29	0	23	179	0	0				1,169	82	390						
Bering Strait-Norton Sound*	99,494	113,082		146,557									119,711	49,371	37,072	120,926	32,091	25,399		53,872
St. Lawrence-Diomedes Is.						117,174	55,682	20,999	29,701				117,174	35,461						
Bering Strait Mainland Villages							13,910							13,910						
Nome																				
Northwest Arctic																				
Northwest Arctic Villages			10,081										10,081							
Kotzebue									5,896					5,896						
North Slope*	4,705		2,388	858	2,430								2,595		26,745	2,121	11,168	37,893		19,482
North Slope Villages																				
Barrow																				
Interior Alaska*	1,009		911				65						870	65	888	0	17	154		265
Mid Yukon-Upper Kuskokwim	0	2	0				0						1	0						
Yukon-Koyukuk	11	0	0	0	0		22						2	22						
Upper Yukon	40		0	0			0				110		13	55						
Tanana Villages	760		875				43						817	43						
Tok			36				0						36	0						
Upper Copper River	82			0									41							
Alaska-wide (all regions)													213,645	133,078						
Five-regions index (regions indicated by *)													199,189	122,616	169,521	187,047	93,167	163,523	-	153,315

Source: Survey results for 2004–2018 were reported in Naves (2010a; 2010b; 2011; 2012; 2014b; 2015b; 2015c; 2016), Naves and Braem (2014), Naves and Otis (2017), Naves and Keating (2018, 2020).

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

Table 10.—Estimated bird harvest, Alaska-wide (five-regions index), 2019.

Species	Yearly bird harvest			Spring		Summer		Fall		Winter‡	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks											
* American wigeon	242	5,765	55%	2,616	62%	712	123%	2,436	70%	0	
Gadwall	43	1,838	136%	416	198%	350	198%	1,072	139%	0	
Teal	153	3,326	63%	1,181	96%	678	127%	1,393	77%	75	189%
* Mallard	872	26,170	54%	14,988	57%	2,083	136%	8,747	65%	352	189%
* Northern pintail	345	8,986	48%	5,355	67%	367	165%	3,253	54%	11	190%
Northern shoveler	89	2,195	78%	852	107%	0		1,343	105%	0	
* Black scoter	251	5,929	83%	5,048	95%	842	144%	39	195%	0	
* Surf scoter	135	3,290	125%	902	110%	61	192%	2,326	178%	0	
* White-winged scoter	188	5,522	94%	2,747	156%	886	186%	1,889	143%	0	
Bufflehead	59	1,736	107%	422	168%	636	195%	657	145%	21	190%
Goldeneye	87	2,067	87%	1,630	81%	49	184%	388	141%	0	
* Canvasback	6	206	187%	195	197%	0		0		11	190%
* Scaup	351	6,470	119%	6,041	118%	0		428	165%	0	
* Common eider	282	5,626	89%	4,415	96%	1,211	180%	0		0	
* King eider	242	7,697	120%	7,243	125%	454	183%	0		0	
Spectacled eider	2	10	178%	10	178%	0		0		0	
Steller's eider	0	0		0		0		0		0	
Harlequin duck	54	869	123%	167	169%	74	192%	629	138%	0	
* Long-tailed duck	25	418	96%	380	106%	0		38	192%	0	
Merganser	0	0		0		0		0		0	
Duck (unidentified)	124	5,292	128%	1,796	169%	438	192%	3,058	115%	0	
Total ducks	3,550	93,411	33%	56,405	35%	8,841	76%	27,696	57%	470	189%
Geese											
* Black brant	366	10,156	81%	6,004	83%	1,395	161%	2,757	128%	0	
* Cackling/Canada goose	1,544	36,128	33%	26,299	36%	1,472	96%	8,335	57%	21	190%
* Greater white-fronted goose	2,038	49,095	43%	41,449	45%	638	111%	7,008	110%	0	
Emperor goose	200	5,018	107%	4,741	113%	0		255	115%	21	190%
* Snow goose	641	15,360	130%	15,018	133%	0		342	130%	0	
Goose (unidentified)	5	47	183%	47	183%	0		0		0	
Total geese	4,794	115,804	33%	93,559	35%	3,505	79%	18,697	69%	43	190%
Swan	306	7,119	93%	3,408	60%	170	167%	3,541	137%	0	
Sandhill crane	176	3,736	58%	3,083	63%	16	194%	637	86%	0	
Seabirds											
Cormorant	0	0		0		0		0		0	
Tern	0	0		0		0		0		0	
Black-legged kittiwake	0	0		0		0		0		0	
Red-legged kittiwake	0	0		0		0		0		0	
Bonaparte's/Sabine's gull	0	0		0		0		0		0	
Mew gull	0	0		0		0		0		0	
Large gull	23	1,160	166%	1,160	166%	0		0		0	
Auklet	0	0		0		0		0		0	
Murre	0	0		0		0		0		0	
Guillemot	0	0		0		0		0		0	
Puffin	0	0		0		0		0		0	
Total seabirds	23	1,160	166%	1,160	166%	0		0		0	
Shorebirds											
Black oystercatcher	0	0		0		0		0		0	
Whimbrel/Curlew	0	0		0		0		0		0	
Godwit	0	0		0		0		0		0	
Golden/Black-bellied plover	0	0		0		0		0		0	
Turnstone	0	0		0		0		0		0	
Phalarope	0	0		0		0		0		0	
Small shorebird	0	0		0		0		0		0	
Total shorebirds	0	0		0		0		0		0	
Loons and grebes											
Common loon	1	21	195%	21	195%	0		0		0	
Pacific loon	2	42	195%	42	195%	0		0		0	
Red-throated loon	0	0		0		0		0		0	
Yellow-billed loon	1	21	195%	0		0		21	195%	0	
Loon (non-breeding plumage)	0	0		0		0		0		0	
Grebe	1	60	198%	60	198%	0		0		0	
Total loons and grebes	5	144	114%	123	122%	0		21	195%	0	
Snowy owl	0	0		0		0		0		0	
Other/unknown bird	0	0		0		0		0		0	
Total commonly-harvested species	7,528	186,817	29%	138,702	30%	10,122	58%	37,598	69%	395	190%
* Total migratory birds	8,854	221,375	29%	157,738	29%	12,532	64%	50,592	64%	512	189%
Ptarmigans and grouses											
Grouse	634	21,796	88%	2,529	102%	794	179%	14,252	73%	4,222	
Ptarmigan	407	11,176	78%	6,361	88%	106		2,349	128%	2,360	152%
Total ptarmigans and grouses	1,041	32,973	69%	8,890	76%	900	179%	16,601	69%	6,581	127%
Total birds	9,895	254,348	28%	166,628	28%	13,433	60%	67,194	54%	7,094	112%

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

‡ : Winter estimates only reflect harvest in the Bristol Bay region.

Table 11.—Estimated egg harvest, Alaska-wide (five-regions index), 2019.

Species	Yearly egg harvest			Spring		Summer	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks							
* American wigeon	103	2,407	184%	2,407	184%	0	
Gadwall	0	0		0		0	
Teal	50	1,250	163%	1,250	163%	0	
* Mallard	145	4,223	114%	4,223	114%	0	
* Northern pintail	100	2,283	106%	2,271	107%	13	192%
Northern shoveler	2	25	192%	25	192%	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	38	533	114%	340	149%	193	196%
* Common eider	122	2,489	137%	2,489	137%	0	
* King eider	0	0		0		0	
Spectacled eider	0	0		0		0	
Steller's eider	0	0		0		0	
Harlequin duck	2	25	192%	25	192%	0	
* Long-tailed duck	10	333	197%	333	197%	0	
Merganser	0	0		0		0	
Duck (unidentified)	80	3,059	134%	3,059	134%	0	
Total ducks	652	16,626	93%	16,421	94%	205	183%
Geese							
* Black brant	110	2,457	129%	1,796	162%	661	173%
* Cackling/Canada goose	672	14,612	110%	14,612	110%	0	
* Greater white-fronted goose	866	18,594	88%	18,437	88%	158	113%
Emperor goose	153	3,242	182%	3,242	182%	0	
* Snow goose	0	0		0		0	
Goose (unidentified)	0	0		0		0	
Total geese	1,801	38,905	103%	38,087	105%	819	125%
Swan	130	2,659	95%	2,659	95%	0	
Sandhill crane	73	1,506	130%	1,506	130%	0	
Seabirds							
Cormorant	0	0		0		0	
Tern	132	2,548	88%	2,499	90%	49	192%
Black-legged kittiwake	25	832	197%	832	197%	0	
Red-legged kittiwake	0	0		0		0	
Bonaparte's/Sabine's gull	23	496	159%	496	159%	0	
Mew gull	266	8,737	125%	8,663	126%	74	192%
Large gull	1,112	33,420	65%	33,112	66%	308	132%
Auklet	0	0		0		0	
Murre	2,013	55,568	116%	55,568	116%	0	
Guillemot	0	0		0		0	
Puffin	0	0		0		0	
Total seabirds	3,571	101,601	72%	101,171	73%	431	136%
Shorebirds							
Black oystercatcher	0	0		0		0	
Whimbrel/Curlew	9	210	196%	210	196%	0	
Godwit	0	0		0		0	
Golden/Black-bellied plover	29	777	136%	777	136%	0	
Turnstone	0	0		0		0	
Phalarope	4	49	192%	49	192%	0	
Small shorebird	14	327	196%	327	196%	0	
Total shorebirds	56	1,363	140%	1,363	140%	0	
Loons and grebes							
Common loon	0	0		0		0	
Pacific loon	10	202	142%	202	142%	0	
Red-throated loon	0	0		0		0	
Yellow-billed loon	0	0		0		0	
Grebe	0	0		0		0	
Total loons and grebes	10	202	142%	202	142%	0	
Snowy owl	0	0		0		0	
Other/unknown bird	0	0		0		0	
* Total commonly-harvested species	2,166	47,931	82%	46,907	84%	1,024	106%
Total migratory birds	6,293	162,863	56%	161,409	57%	1,455	84%
Ptarmigans and grouses							
Grouse	0	0		0		0	
Ptarmigan	29	660	117%	660	117%	0	
Total ptarmigans and grouses	29	660	117%	660	117%	0	
Total eggs	6,322	163,523	56%	162,069	56%	1,455	84%

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

‡ : Winter estimates only reflect harvest in the Bristol Bay region.

Table 12.—Estimated bird harvest, Bristol Bay region, 2019.

Species	Yearly bird harvest			Spring		Summer		Fall		Winter	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks											
* American wigeon	0	0		0		0		0		0	
Gadwall	0	0		0		0		0		0	
Teal	21	571	161%	497	193%	0		0		75	189%
* Mallard	232	11,363	111%	7,515	101%	1,494	184%	2,001	167%	352	189%
* Northern pintail	47	1,643	189%	1,632	190%	0		0		11	190%
Northern shoveler	12	426	192%	426	192%	0		0		0	
* Black scoter	15	532	197%	0		532	197%	0		0	
* Surf scoter	1	35	197%	35	197%	0		0		0	
* White-winged scoter	0	0		0		0		0		0	
Bufflehead	2	21	190%	0		0		0		21	190%
Goldeneye	2	71	197%	71	197%	0		0		0	
* Canvasback	1	11	190%	0		0		0		11	190%
* Scaup	0	0		0		0		0		0	
* Common eider	0	0		0		0		0		0	
* King eider	82	4,228	192%	4,228	192%	0		0		0	
Spectacled eider	0	0		0		0		0		0	
Steller's 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	
Duck (unidentified)	45	3,283	188%	1,605	188%	438	192%	1,240	189%	0	
Total ducks	460	22,184	73%	16,009	65%	2,464	139%	3,241	175%	470	189%
Geese											
* Black brant	27	1,392	197%	1,392	197%	0		0		0	
* Cackling/Canada goose	93	4,615	79%	3,318	77%	692	177%	584	190%	21	190%
* Greater white-fronted goose	45	1,789	121%	1,789	121%	0		0		0	
Emperor goose	10	434	181%	413	193%	0		0		21	190%
* Snow goose	0	0		0		0		0		0	
Total geese	175	8,231	66%	6,912	84%	692	177%	584	190%	43	190%
Swan	10	692	177%	181	153%	146	193%	365	191%	0	
Sandhill crane	1	73	199%	0		0		73	199%	0	
Seabirds											
Cormorant	0	0		0		0		0		0	
Tern	0	0		0		0		0		0	
Black-legged kittiwake	0	0		0		0		0		0	
Red-legged kittiwake	0	0		0		0		0		0	
Bonaparte's/Sabine's gull	0	0		0		0		0		0	
Mew gull	0	0		0		0		0		0	
Large gull	13	948	199%	948	199%	0		0		0	
Auklet	0	0		0		0		0		0	
Murre	0	0		0		0		0		0	
Guillemot	0	0		0		0		0		0	
Puffin	0	0		0		0		0		0	
Total seabirds	13	948	199%	948	199%	0		0		0	
Shorebirds											
Black oystercatcher	0	0		0		0		0		0	
Whimbrel/Curlew	0	0		0		0		0		0	
Godwit	0	0		0		0		0		0	
Golden/Black-bellied plover	0	0		0		0		0		0	
Turnstone	0	0		0		0		0		0	
Phalarope	0	0		0		0		0		0	
Small shorebird	0	0		0		0		0		0	
Total shorebirds	0	0		0		0		0		0	
Loons and grebes											
Common loon	0	0		0		0		0		0	
Pacific loon	0	0		0		0		0		0	
Red-throated loon	0	0		0		0		0		0	
Yellow-billed loon	0	0		0		0		0		0	
Loon (non-breeding plumage)	0	0		0		0		0		0	
Grebe	0	0		0		0		0		0	
Total loons and grebes	0	0		0		0		0		0	
Other/unknown bird											
* Total commonly-harvested species	543	25,608	62%	19,910	67%	2,719	140%	2,585	172%	395	190%
Total migratory birds	659	32,127	69%	24,050	64%	3,302	148%	4,262	178%	512	189%
Ptarmigans and grouses											
Grouse	316	12,597	141%	922	195%	745	190%	6,708	115%	4,222	191%
Ptarmigan	61	3,176	117%	35	197%	106	192%	674	193%	2,360	152%
Total ptarmigans and grouses	377	15,772	126%	958	194%	851	189%	7,382	118%	6,581	127%
Total birds	1,036	47,900	75%	25,008	65%	4,154	119%	11,644	112%	7,094	112%

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

Table 13.—Estimated egg harvest, Bristol Bay region, 2019.

Species	Yearly egg harvest			Spring		Summer	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks							
* American wigeon	0	0		0		0	
Gadwall	0	0		0		0	
* Teal	0	0		0		0	
* Mallard	25	1,824	189%	1,824	189%	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	
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	
Duck (unidentified)	24	1,751	188%	1,751	188%	0	
* Total ducks	49	3,574	189%	3,574	189%	0	
Geese							
* Black brant	0	0		0		0	
* Cackling/Canada goose	18	676	171%	676	171%	0	
Greater white-fronted goose	24	851	197%	851	197%	0	
* Emperor goose	0	0		0		0	
Snow goose	0	0		0		0	
Total geese	42	1,527	185%	1,527	185%	0	
Swan	0	0		0		0	
Sandhill crane	0	0		0		0	
Seabirds							
Cormorant	0	0		0		0	
Tern	0	0		0		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	100	5,156	198%	5,156	198%	0	
Large gull	266	16,517	113%	16,517	113%	0	
Auklet	0	0		0		0	
Murre	145	7,477	192%	7,477	192%	0	
Guillemot	0	0		0		0	
Puffin	0	0		0		0	
Total seabirds	511	29,150	123%	29,150	123%	0	
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	
Other/unknown bird	0	0		0		0	
* Total commonly-harvested species	67	3,351	114%	3,351	114%	0	
Total migratory birds	602	34,252	105%	34,252	105%	0	
Ptarmigans and grouses							
Grouse	0	0		0		0	
Ptarmigan	0	0		0		0	
Total ptarmigans and grouses	0	0		0		0	
Total eggs	602	34,252	105%	34,252	105%	0	

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

Table 14.–Estimated bird harvest, Yukon-Kuskokwim Delta region, 2019.

Species	Yearly bird harvest			Spring		Summer		Fall	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks									
* American wigeon	202	4,363	65%	1,462	83%	712	123%	2,188	76%
Gadwall	43	1,838	136%	416	198%	350	198%	1,072	139%
Teal	120	2,352	77%	415	93%	678	127%	1,259	83%
* Mallard	537	11,973	52%	5,033	70%	589	125%	6,352	71%
* Northern pintail	218	4,767	53%	1,346	64%	367	165%	3,054	56%
Northern shoveler	75	1,649	89%	306	102%	0		1,343	105%
* Black scoter	212	4,944	97%	4,905	97%	0		39	195%
* Surf scoter	134	3,254	127%	867	115%	61	192%	2,326	178%
* White-winged scoter	141	3,063	97%	288	126%	886	186%	1,889	143%
Bufflehead	42	1,077	134%	25	192%	636	195%	416	198%
Goldeneye	67	1,177	114%	981	111%	49	184%	147	183%
* Canvasback	0	0		0		0		0	
* Scaup	350	6,409	121%	5,981	119%	0		428	165%
* Common eider	0	0		0		0		0	
* King eider	79	2,097	179%	2,097	179%	0		0	
Spectacled eider	2	10	178%	10	178%	0		0	
Steller's eider	0	0		0		0		0	
Harlequin duck	53	836	128%	167	169%	74	192%	596	145%
* Long-tailed duck	25	418	96%	380	106%	0		38	192%
Merganser	0	0		0		0		0	
Duck (unidentified)	79	2,009	140%	191	144%	0		1,818	144%
Total ducks	2,379	52,236	46%	24,869	58%	4,402	112%	22,965	64%
Geese									
* Black brant	167	3,654	83%	2,458	95%	191	186%	1,005	101%
* Cackling/Canada goose	1,222	24,906	44%	17,064	50%	780	89%	7,062	65%
* Greater white-fronted goose	1,092	23,842	56%	16,404	53%	449	137%	6,989	110%
Emperor goose	187	4,484	119%	4,229	125%	0		255	115%
* Snow goose	24	483	150%	249	134%	0		234	182%
Total geese	2,692	57,370	47%	40,405	52%	1,419	94%	15,546	79%
Swan	288	6,213	105%	3,032	67%	25	192%	3,157	152%
Sandhill crane	129	2,787	63%	2,536	69%	16	194%	235	103%
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	10	212	195%	212	195%	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	10	212	195%	212	195%	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	
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	1	21	195%	21	195%	0		0	
Pacific loon	0	0		0		0		0	
Red-throated loon	0	0		0		0		0	
Yellow-billed loon	1	21	195%	0		0		21	195%
Loon (non-breeding plumage)	0	0		0		0		0	
Grebe	0	0		0		0		0	
Total loons and grebes	2	42	185%	21	195%	0		21	195%
Other/unknown bird	0	0		0		0		0	
* Total commonly-harvested species	4,403	94,174	45%	58,535	45%	4,035	90%	31,604	80%
Total migratory birds	5,500	118,861	44%	71,075	44%	5,862	99%	41,924	74%
Ptarmigans and grouses									
Grouse	142	2,569	98%	1,251	136%	49	192%	1,269	138%
Ptarmigan	148	2,690	115%	2,690	115%	0		0	
Total ptarmigans and grouses	290	5,259	95%	3,941	120%	49	192%	1,269	138%
Total birds	5,790	124,120	42%	75,016	43%	5,911	98%	43,193	75%

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

Table 15.—Estimated egg harvest, Yukon-Kuskokwim Delta region, 2019.

Species	Yearly egg harvest			Spring		Summer	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks							
* American wigeon	103	2,407	184%	2,407	184%	0	
Gadwall	0	0		0		0	
Teal	50	1,250	163%	1,250	163%	0	
* Mallard	120	2,399	139%	2,399	139%	0	
* Northern pintail	87	1,920	124%	1,907	125%	13	192%
Northern shoveler	2	25	192%	25	192%	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	38	533	114%	340	149%	193	196%
* Common eider	29	466	189%	466	189%	0	
* King eider	0	0		0		0	
Spectacled eider	0	0		0		0	
Steller's eider	0	0		0		0	
Harlequin duck	2	25	192%	25	192%	0	
* Long-tailed duck	0	0		0		0	
Merganser	0	0		0		0	
Duck (unidentified)	56	1,309	185%	1,309	185%	0	
Total ducks	487	10,333	130%	10,127	133%	205	183%
Geese							
* Black brant	79	1,696	171%	1,696	171%	0	
* Cackling/Canada goose	648	13,831	116%	13,831	116%	0	
* Greater white-fronted goose	705	15,703	102%	15,703	102%	0	
Emperor goose	153	3,242	182%	3,242	182%	0	
* Snow goose	0	0		0		0	
Total geese	1,585	34,472	116%	34,472	116%	0	
Swan	119	2,474	101%	2,474	101%	0	
Sandhill crane	73	1,506	130%	1,506	130%	0	
Seabirds							
Cormorant	0	0		0		0	
Tern	118	2,111	100%	2,062	102%	49	192%
Black-legged kittiwake	0	0		0		0	
Bonaparte's/Sabine's gull	23	496	159%	496	159%	0	
Mew gull	121	2,082	117%	2,009	121%	74	192%
Large gull	525	10,533	84%	10,225	85%	308	132%
Auklet	0	0		0		0	
Murre	0	0		0		0	
Guillemot	0	0		0		0	
Puffin	0	0		0		0	
Total seabirds	787	15,223	70%	14,793	71%	431	136%
Shorebirds							
Whimbrel/Curlew	9	210	196%	210	196%	0	
Godwit	0	0		0		0	
Golden/Black-bellied plover	19	444	186%	444	186%	0	
Turnstone	0	0		0		0	
Phalarope	4	49	192%	49	192%	0	
Small shorebird	14	327	196%	327	196%	0	
Total shorebirds	46	1,031	174%	1,031	174%	0	
Loons and grebes							
Common loon	0	0		0		0	
Pacific loon	6	127	195%	127	195%	0	
Red-throated loon	0	0		0		0	
Yellow-billed loon	0	0		0		0	
Grebe	0	0		0		0	
Total loons and grebes	6	127	195%	127	195%	0	
Other/unknown bird	0	0		0		0	
* Total commonly-harvested species	1,809	38,955	100%	38,749	100%	205	183%
Total migratory birds	3,103	65,166	86%	64,530	87%	636	104%
Ptarmigans and grouses							
Grouse	0	0		0		0	
Ptarmigan	29	660	117%	660	117%	0	
Total ptarmigans and grouses	29	660	117%	660	117%	0	
Total eggs	3,132	65,826	86%	65,190	87%	636	104%

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

Table 16.—Estimated bird harvest, Bering Strait-Norton Sound region, 2019.

Species	Yearly bird harvest			Spring		Summer		Fall	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks									
* American wigeon	11	206	193%	206	193%	0		0	
Gadwall	0	0		0		0		0	
Teal	4	133	193%	0		0		133	193%
* Mallard	18	337	188%	319	188%	0		19	195%
* Northern pintail	41	972	96%	772	109%	0		200	194%
Northern shoveler	0	0		0		0		0	
* Black scoter	0	0		0		0		0	
* Surf scoter	0	0		0		0		0	
* White-winged scoter	0	0		0		0		0	
Bufflehead	0	0		0		0		0	
Goldeneye	0	0		0		0		0	
* Canvasback	0	0		0		0		0	
* Scaup	0	0		0		0		0	
* Common eider	8	150	195%	150	195%	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	1	33	197%	0		0		33	197%
* Long-tailed duck	0	0		0		0		0	
Merganser	0	0		0		0		0	
Duck (unidentified)	0	0		0		0		0	
Total ducks	83	1,832	107%	1,447	140%	0		385	177%
Geese									
* Black brant	118	3,804	180%	2,053	170%	0		1,752	193%
* Cackling/Canada goose	169	3,517	59%	2,905	69%	0		612	113%
* Greater white-fronted goose	45	874	109%	856	108%	0		19	195%
Emperor goose	3	100	197%	100	197%	0		0	
* Snow goose	161	3,331	73%	3,222	73%	0		108	120%
Total geese	496	11,626	34%	9,135	24%	0		2,491	139%
Swan	6	127	124%	108	116%	0		19	195%
Sandhill crane	42	831	156%	502	170%	0		329	142%
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	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	2	42	195%	42	195%	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	2	42	195%	42	195%	0		0	
Other/unknown bird	0	0		0		0		0	
* Total commonly-harvested species	571	13,192	39%	10,482	39%	0		2,709	140%
Total migratory birds	629	14,458	43%	11,234	43%	0		3,223	127%
Ptarmigans and grouses									
Grouse	36	675	188%	356	190%	0		319	189%
Ptarmigan	134	4,242	170%	2,825	164%	0		1,417	189%
Total ptarmigans and grouses	170	4,917	138%	3,181	138%	0		1,735	141%
Total birds	799	19,374	57%	14,416	41%	0		4,959	129%

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

Table 17.—Estimated egg harvest, Bering Strait-Norton Sound region, 2019.

Species	Yearly egg harvest			Spring		Summer	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks							
* American wigeon	0	0		0		0	
Gadwall	0	0		0		0	
Teal	0	0		0		0	
* Mallard	0	0		0		0	
* Northern pintail	10	210	195%	210	195%	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	93	2,023	162%	2,023	162%	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	10	333	197%	333	197%	0	
Merganser	0	0		0		0	
Duck (unidentified)	0	0		0		0	
Total ducks	113	2,565	136%	2,565	136%	0	
Geese							
Black brant	0	0		0		0	
* Cackling/Canada goose	2	37	195%	37	195%	0	
* Greater white-fronted goose	0	0		0		0	
* Emperor goose	0	0		0		0	
* Snow goose	0	0		0		0	
Total geese	2	37	195%	37	195%	0	
Swan	0	0		0		0	
Sandhill crane	0	0		0		0	
Seabirds							
Cormorant	0	0		0		0	
Tern	14	437	173%	437	173%	0	
Black-legged kittiwake	25	832	197%	832	197%	0	
Bonaparte's/Sabine's gull	0	0		0		0	
Mew gull	45	1,498	197%	1,498	197%	0	
Large gull	278	5,668	128%	5,668	128%	0	
Auklet	0	0		0		0	
Murre	507	13,953	110%	13,953	110%	0	
Guillemot	0	0		0		0	
Puffin	0	0		0		0	
Total seabirds	869	22,389	81%	22,389	81%	0	
Shorebirds							
Whimbrel/Curlew	0	0		0		0	
Godwit	0	0		0		0	
Golden/Black-bellied plover	10	333	197%	333	197%	0	
Turnstone	0	0		0		0	
Phalarope	0	0		0		0	
Small shorebird	0	0		0		0	
Total shorebirds	10	333	197%	333	197%	0	
Loons and grebes							
Common loon	0	0		0		0	
Pacific loon	4	75	195%	75	195%	0	
Red-throated loon	0	0		0		0	
Yellow-billed loon	0	0		0		0	
Grebe	0	0		0		0	
Total loons and grebes	4	75	195%	75	195%	0	
Other/unknown bird	0	0		0		0	
* Total commonly-harvested species	115	2,603	132%	2,603	132%	0	
Total migratory birds	998	25,399	80%	25,399	80%	0	
Ptarmigans and grouses							
Grouse	0	0		0		0	
Ptarmigan	0	0		0		0	
Total ptarmigans and grouses	0	0		0		0	
Total eggs	998	25,399	80%	25,399	80%	0	

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

Table 18.—Estimated bird harvest, North Slope region, 2019.

Species	Yearly bird harvest			Spring		Summer	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks							
* American wigeon	0	0		0		0	
Gadwall	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	274	5,476	92%	4,265	99%	1,211	180%
* King eider	81	1,372	171%	917	171%	454	183%
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	
Duck (unidentified)	0	0		0		0	
Total ducks	355	6,848	97%	5,183	93%	1,665	180%
Geese							
* Black brant	54	1,305	164%	101	189%	1,204	184%
* Cackling/Canada goose	14	351	183%	351	183%	0	
* Greater white-fronted goose	564	8,898	92%	8,709	96%	190	189%
* Snow goose	447	11,148	177%	11,148	177%	0	
Goose (unidentified)	5	47	183%	47	183%	0	
Total geese	1,084	21,750	93%	20,356	91%	1,394	149%
Swan	1	9	189%	9	189%	0	
Sandhill crane	4	45	104%	45	104%	0	
Seabirds							
Tern	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	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	
Loon (non-breeding plumage)	0	0		0		0	
Total loons and grebes	0	0		0		0	
Snowy owl	0	0		0		0	
Other/unknown bird	0	0		0		0	
* Total commonly-harvested species	1,434	28,550	85%	25,491	89%	3,059	80%
Total migratory birds	1,444	28,652	85%	25,593	88%	3,059	80%
Ptarmigans and grouses							
Grouse	0	0		0		0	
Ptarmigan	59	810	45%	810	45%	0	
Total ptarmigans and grouses	59	810	45%	810	45%	0	
Total birds	1,503	29,462	82%	26,403	85%	3,059	80%

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

Table 19.—Estimated egg harvest, North Slope region, 2019.

Species	Yearly egg harvest			Spring		Summer	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks							
* American wigeon	0	0		0		0	
Gadwall	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	0	0		0		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	
Duck (unidentified)	0	0		0		0	
Total ducks	0	0		0		0	
Geese							
* Black brant	31	761	173%	100	196%	661	173%
* Cackling/Canada goose	4	67	194%	67	194%	0	
* Greater white-fronted goose	137	2,040	141%	1,882	145%	158	113%
* Snow goose	0	0		0		0	
Goose (unidentified)	0	0		0		0	
Total geese	172	2,869	86%	2,050	134%	819	125%
Swan	11	185	191%	185	191%	0	
Sandhill crane	0	0		0		0	
Seabirds							
Tern	0	0		0		0	
Bonaparte's/Sabine's gull	0	0		0		0	
Large gull	43	701	179%	701	179%	0	
Murre	1,361	34,138	179%	34,138	179%	0	
Guillemot	0	0		0		0	
Total seabirds	1,404	34,840	174%	34,840	174%	0	
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	
Other/unknown bird	0	0		0		0	
* Total commonly-harvested species	172	2,869	86%	2,050	134%	819	125%
Total migratory birds	1,587	37,893	158%	37,075	159%	819	125%
Ptarmigans and grouses							
Grouse	0	0		0		0	
Ptarmigan	0	0		0		0	
Total ptarmigans and grouses	0	0		0		0	
Total eggs	1,587	37,893	158%	37,075	159%	819	125%

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

Table 20.—Estimated bird harvest, Interior Alaska region, 2019.

Species	Yearly bird harvest			Spring		Summer		Fall	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks									
* American wigeon	29	1,196	113%	948	107%	0		248	161%
Gadwall	0	0		0		0		0	
Teal	8	269	175%	269	175%	0		0	
* Mallard	85	2,497	95%	2,122	83%	0		376	190%
* Northern pintail	39	1,605	82%	1,605	82%	0		0	
Northern shoveler	2	120	198%	120	198%	0		0	
* Black scoter	24	453	138%	143	186%	310	199%	0	
* Surf scoter	0	0		0		0		0	
* White-winged scoter	47	2,459	174%	2,459	174%	0		0	
Bufflehead	15	638	186%	397	178%	0		241	198%
Goldeneye	18	819	144%	578	128%	0		241	198%
* Canvasback	5	195	197%	195	197%	0		0	
* Scaup	1	60	198%	60	198%	0		0	
Harlequin duck	0	0		0		0		0	
* Long-tailed duck	0	0		0		0		0	
Merganser	0	0		0		0		0	
Duck (unidentified)	0	0		0		0		0	
Total ducks	273	10,312	65%	8,897	67%	310	199%	1,105	147%
Geese									
* Cackling/Canada goose	46	2,738	88%	2,660	86%	0		77	199%
* Greater white-fronted goose	292	13,691	103%	13,691	103%	0		0	
* Snow goose	9	398	127%	398	127%	0		0	
Total geese	347	16,827	92%	16,750	92%	0		77	199%
Swan	1	77	199%	77	199%	0		0	
Sandhill crane	0	0		0		0		0	
Seabirds									
Tern	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	1	60	198%	60	198%	0		0	
Total loons and grebes	1	60	198%	60	198%	0		0	
Other/unknown bird	0	0		0		0		0	
* Total commonly-harvested species	577	25,293	68%	24,282	72%	310	199%	701	101%
Total migratory birds	622	27,277	63%	25,785	68%	310	199%	1,182	135%
Ptarmigans and grouses									
Grouse	140	5,957	114%	0		0		5,957	114%
Ptarmigan	5	259	141%	0		0		259	141%
Total ptarmigans and grouses	145	6,215	110%	0		0		6,215	110%
Total birds	767	33,492	48%	25,785	68%	310	199%	7,398	101%

* : Commonly-harvested species.

CIP: Confidence interval as percentage of the estimated harvest.

Table 21.—Estimated egg harvest, Interior Alaska region, 2019.

Species	Yearly egg harvest			Spring		Summer	
	Reported	Estimated	CIP	Estimated	CIP	Estimated	CIP
Ducks							
* American wigeon	0	0		0		0	
Gadwall	0	0		0		0	
Teal	0	0		0		0	
* Mallard	0	0		0		0	
* Northern pintail	3	154	198%	154	198%	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	
Harlequin duck	0	0		0		0	
* Long-tailed duck	0	0		0		0	
Merganser	0	0		0		0	
Duck (unidentified)	0	0		0		0	
Total ducks	3	154	198%	154	198%	0	
Geese							
* Cackling/Canada goose	0	0		0		0	
* Greater white-fronted goose	0	0		0		0	
* Snow goose	0	0		0		0	
Total geese	0	0		0		0	
Swan	0	0		0		0	
Sandhill crane	0	0		0		0	
Seabirds							
Tern	0	0		0		0	
Bonaparte's/Sabine's gull	0	0		0		0	
Mew gull	0	0		0		0	
Large gull	0	0		0		0	
Total seabirds	0	0		0		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	
Other/unknown bird	0	0		0		0	
* Total commonly-harvested species	3	154	198%	154	198%	0	
Total migratory birds	3	154	198%	154	198%	0	
Ptarmigans and grouses							
Grouse	0	0		0		0	
Ptarmigan	0	0		0		0	
Total ptarmigans and grouses	0	0		0		0	
Total eggs	3	154	198%	154	198%	0	

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

Table 22.—Estimated April–May Cordova bird and egg harvest, 2014–2020.

Species	2014			2015			2016			2017			2018			2019			2020		
	Re-ported	Esti-mated	CIP	Re-ported	Esti-mated	CIP	Re-ported	Esti-mated	CIP	Re-ported	Esti-mated	CIP	Re-ported	Esti-mated	CIP	Re-ported	Esti-mated	CIP	Re-ported	Esti-mated	CIP
Bird harvest																					
American wigeon	1	1	97%	0	0		1	1	82%	5	5	40%	0	0		0	0		0	0	
Gadwall	0	0		0	0		0	0		1	1	56%	0	0		0	0		0	0	
Teal	1	1	97%	0	0		0	0		14	15	25%	1	1	90%	0	0		0	0	
Mallard	11	14	43%	0	0		16	19	36%	42	45	22%	8	10	65%	16	22	99%	11	15	47%
Northern pintail	12	15	47%	0	0		56	66	31%	82	89	28%	1	1	90%	10	13	105%	13	18	63%
Northern shoveler	0	0		0	0		2	2	82%	0	0		0	0		0	0		1	1	104%
Black scoter	0	0		0	0		0	0		0	0		0	0		0	0		0	0	
Surf scoter	0	0		0	0		0	0		0	0		0	0		0	0		0	0	
White-winged scoter	0	0		0	0		0	0		0	0		0	0		0	0		0	0	
Bufflehead	0	0		0	0		0	0		0	0		0	0		0	0		0	0	
Goldeneye	0	0		0	0		0	0		4	4	56%	0	0		0	0		0	0	
Canvasback	0	0		0	0		0	0		0	0		0	0		0	0		0	0	
Scaup	0	0		0	0		0	0		0	0		0	0		0	0		0	0	
Common eider	0	0		0	0		0	0		0	0		0	0		0	0		0	0	
King eider	0	0		0	0		0	0		0	0		0	0		0	0		0	0	
Harlequin duck	0	0		0	0		0	0		0	0		0	0		0	0		0	0	
Long-tailed duck	0	0		0	0		0	0		0	0		0	0		0	0		0	0	
Merganser	0	0		0	0		0	0		0	0		0	0		0	0		0	0	
Total ducks	25	32	38%	0	0		75	89	29%	147	159	24%	10	12	64%	26	35	101%	25	34	52%
Greater white-fronted goose	4	5	67%	0	0		0	0		7	8	30%	4	5	54%	3	4	105%	10	14	76%
Snow goose	4	5	57%	0	0		5	6	67%	3	3	56%	20	25	65%	13	18	63%	53	72	60%
Total geese	8	10	49%	0	0		5	6	67%	10	11	29%	24	30	62%	16	22	65%	63	86	62%
Sandhill crane	0	0		0	0		0	0		3	3	56%	0	0		0	0		0	0	
Total birds	33	42	37%	0	0		80	95	27%	161	174	23%	34	42	56%	42	57	71%	88	120	58%
Egg harvest																					
Gull (unidentified)	102	131	37%	197	263	51%	105	124	47%	105	113	27%	138	171	48%	218	294	43%	534	728	27%
Total eggs	102	131	37%	197	263	51%	105	124	47%	105	113	27%	138	171	48%	218	294	43%	534	728	27%

CIP: confidence interval as a percentage of the estimated harvest.

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APPENDICES

Appendix A.—Regions and communities included in the 2004–2020 harvest estimates.

Region, community	Households ^a	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Gulf of Alaska-Cook Inlet																			
Chenega	31	-	-	x	-	-	-	x	-	-	-	-	-	-	-	-	-	-	
Cordova†	922	-	-	-	-	-	-	-	-	-	-	x	x	x	x	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

-continued-

Region, community	House-holds ^a	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Saint George	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Saint Paul	162	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand Point	246	-	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-
Unalaska	927	-	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-
Bristol Bay																		
Aleknagik	71	x	-	-	x	x	-	-	x	-	-	-	-	-	-	x	-	-
Chignik	41	x	-	-	x	-	-	-	x	-	-	-	-	-	x	-	-	-
Chignik Lagoon	29	x	-	-	-	-	-	-	-	-	-	-	-	x	-	-	x	x
Chignik Lake	27	x	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-
Clarks Point	24	x	x	-	x	x	-	-	-	-	-	-	-	-	-	x	-	-
Dillingham	855	-	x	-	x	x	-	-	x	-	-	-	-	x	x	-	x	x
Egegik	29	-	x	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-
Ekwok	37	x	-	-	x	x	-	-	x	-	-	-	-	-	-	-	-	-
Igiugig	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iliamna	39	-	x	-	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	x	-	-	-
Manokotak	121	-	x	-	x	-	-	-	x	-	-	-	-	-	x	x	-	-
Naknek	231	x	-	-	x	-	-	-	x	-	-	-	-	-	-	-	-	-
New Stuyahok	114	-	x	-	x	-	-	-	-	-	-	-	-	-	x	-	-	-
Newhalen	50	x	x	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-
Nondalton	57	x	x	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x
Pedro Bay	19	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perryville	38	x	-	-	x	-	-	-	x	-	-	-	-	-	-	-	-	-
Pilot Point	27	-	x	-	-	-	-	-	-	-	-	-	-	-	-	x	-	-
Pope-Vannoy Landing‡	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Port Alsworth‡	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

-continued-

Region, community	House-holds ^a	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Port Heiden	35	-	x	-	-	-	-	-	x	-	-	-	-	-	x	x	-	-	
Portage Creek‡	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
South Naknek	35	-	x	-	x	-	-	-	-	-	-	-	-	-	x	-	-	-	
Togiak	231	x	-	x	x	-	-	-	x	-	-	-	-	-	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	-	x	x	x	
Alakanuk	160	x	-	x	-	-	x	x	-	-	x	-	x	-	x	x	-	-	
Aniak	166	x	x	-	-	x	-	-	-	-	-	-	x	x	x	-	-	-	
Atmautluak	63	x	-	-	x	x	-	-	-	-	x	-	-	x	-	x	x	x	
Bethel	1,896	x	x	x	x	x	x	x	x	-	-	-	x	x	x	x	x	x	
Chefornak	92	x	-	x	x	-	x	x	-	-	x	-	-	-	x	x	-	-	
Chevak	209	x	-	-	-	-	x	x	-	-	-	-	x	-	x	-	x	x	
Chuathbaluk	36	x	-	-	-	-	-	-	-	-	-	-	-	x	-	x	-	-	
Crooked Creek	38	x	-	x	-	-	-	-	-	-	-	-	-	-	-	x	-	-	
Eek	91	x	x	-	x	x	-	x	x	-	-	-	x	-	-	-	-	-	
Emmonak	185	-	x	x	x	x	x	-	-	-	x	-	-	x	-	x	-	-	
Goodnews Bay	76	-	-	x	-	-	-	x	-	-	x	-	-	-	-	x	-	-	
Hooper Bay	256	x	x	-	-	x	-	-	x	-	-	-	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	x	x	-	-	
Kwigillingok	82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Lime Village	11	-	-	x	-	-	-	x	-	-	-	-	-	-	-	-	-	-	
Lower Kalskag	75	x	-	x	x	x	x	x	-	-	-	-	-	-	-	-	-	-	
Marshall	100	x	x	-	x	x	-	x	-	-	-	-	x	-	-	x	x	x	

-continued-

Region, community	House- holds^a	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Mekoryuk	70	-	x	-	x	x	-	-	x	-	-	-	-	x	-	-	x	x
Mountain Village	184	-	x	-	x	x	-	-	-	-	x	-	-	-	-	x	-	-
Napakiak	96	-	-	-	x	-	-	-	-	-	x	-	-	-	-	-	-	-
Napaskiak	94	-	x	x	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	-	x	-	-
Oscarville	15	-	-	x	x	-	x	x	-	-	x	-	-	x	-	-	x	x
Pilot Station	121	-	x	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	-	x	-	x	x
Saint Marys	151	-	x	-	x	-	x	-	-	-	x	-	-	-	-	x	-	-
Scammon Bay	96	-	-	x	-	x	x	x	-	-	x	-	-	-	-	-	-	-
Sleetmute	36	-	-	x	x	-	-	-	-	-	-	-	-	-	-	-	-	-
Stony River	20	x	-	x	-	-	-	-	-	-	-	-	-	x	x	x	-	-
Toksook Bay	125	x	x	-	x	-	-	-	-	-	x	-	x	x	-	x	x	x
Tuluksak	92	-	x	x	-	x	-	-	x	-	-	-	x	-	x	-	-	-
Tuntutuliak	96	x	-	x	-	x	x	x	-	-	x	-	x	x	x	x	x	x
Tununak	84	x	x	-	x	x	-	-	x	-	x	-	-	-	x	x	-	-
Upper Kalskag	60	-	x	x	-	-	-	-	x	-	x	-	-	x	-	x	-	-
Bering Strait-Norton Sound																		
Brevig Mission	93	x	-	-	x	-	-	x	-	-	-	-	-	-	x	x	-	-
Diomedede	38	-	x	-	x	-	-	x	-	-	-	-	-	x	-	-	-	-
Elim	89	x	x	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x
Gambell	164	x	x	-	x	-	x	x	x	x	-	-	-	-	-	x	-	-
Golovin	49	-	x	-	x	-	-	x	-	-	-	-	-	-	-	-	-	-

-continued-

Region, community	House- holds^a	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Koyuk	89	-	x	-	x	-	-	x	-	-	-	-	-	-	-	-	-	-	
Nome	1,216	x	x	-	x	-	-	-	-	-	-	-	-	x	x	-	x	x	
Saint Michael	96	x	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	
Savoonga	166	x	x	-	x	-	x	x	x	x	-	-	-	-	x	-	-	-	
Shaktoolik	64	-	-	-	x	-	-	x	-	-	-	-	-	x	-	-	-	-	
Shishmaref	141	x	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Stebbins	134	-	x	-	x	-	-	x	-	-	-	-	-	-	-	-	-	-	
Unalakleet	225	x	-	-	x	-	-	-	-	-	-	-	-	-	x	x	x	x	
Teller	72	x	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Wales	43	x	x	-	-	-	-	-	-	-	-	-	-	x	x	-	-	-	
White Mountain	65	x	-	-	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	-	-	-	-	-	-	-	-	-	x	-	-	-	
Atkasuk	64	-	x	-	x	-	-	-	-	-	-	-	-	-	x	-	x	x	
Kaktovik	72	-	x	-	x	x	x	-	-	-	-	-	-	x	-	x	-	-	
Nuiqsut	114	-	-	-	-	x	x	-	-	-	-	-	-	-	-	-	-	-	
Point Hope	186	-	x	-	-	x	-	-	-	-	-	-	-	x	-	x	x	x	
Point Lay	60	-	x	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-	

-continued-

Region, community	House-holds ^a	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Utqiagvik (Barrow)	1,280	-	x	-	x	x	x	-	-	-	-	-	-	x	x	x	x	x	
Wainwright	147	-	x	-	x	x	x	-	-	-	-	-	-	x	-	x	-	-	
Interior Alaska																			
Alatna	12	x	-	x	x	x	-	x	-	-	-	-	-	-	-	-	-	-	
Alcan Border‡		-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	-	-	
Allakaket	62	x	-	x	x	x	-	x	-	-	-	-	-	-	-	-	-	-	
Allakaket-Alatna	74	-	-	-	-	-	-	-	-	-	-	-	-	x	-	x	-	-	
Anderson‡	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Anvik	33	x	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	-	-	x	-	-	-	
Coldfoot	6	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-	-	
Dot Lake	26	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Dry Creek	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	-	-	
Eagle Village	31	x	-	-	-	-	-	-	-	-	-	-	-	-	x	-	x	x	
Eagle	41	x	-	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-	
Fort Yukon	246	x	-	x	x	-	-	-	-	-	-	x	-	x	x	x	x	x	
Galena	190	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x	
Grayling	55	-	x	x	-	-	-	-	-	-	-	-	-	-	-	x	-	-	
Healy Lake	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Holy Cross	64	x	x	x	-	-	-	x	-	-	-	-	-	-	-	-	-	-	
Hughes	31	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Huslia	91	x	-	-	-	-	-	x	-	-	-	-	-	-	x	-	-	-	
Kaltag	70	x	-	-	-	-	-	-	-	-	-	-	-	-	-	x	-	-	

-continued-

Region, community	House- holds^a	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Koyukuk	42	x	x	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-
Lake Minchumina	6	x	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Livengood‡	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manley Hot Springs	41	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
McGrath	147	-	-	-	-	-	-	-	-	-	-	-	-	-	x	-	x	x
Minto	65	-	-	x	-	-	-	x	-	-	-	-	-	-	-	-	-	-
Nenana‡	185	x	-	x	-	-	-	-	-	-	-	-	-	-	x	-	-	-
Nikolai	37	x	x	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Northway	77	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nulato	92	x	x	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-
Rampart	10	-	-	-	-	-	-	x	-	-	-	-	-	-	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	-	-	-	-	-	-	-	-	x	x
Venetie	61	-	-	x	X	-	-	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

-continued-

Region, community	Households ^a	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Southeast Alaska^b																			
Craig	470	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hoonah	305	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yakutat	270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydaburg	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sources Survey results for 2004–2017 were reported in Naves (2010rev.; 2010; 2011; 2012; 2014a; 2015b; 2016), Naves and Braem (2014), Naves and Otis (2017) and Naves and Keating (2018).

- a. Total number of occupied households based on 2010 Census.
- b. 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 frame in 2014. Also at this revision, the Four Mile Road CDP was combined to the community of Nenana for the purposes of this survey.

Note † Starting in 2014, a mail survey has been conducted in Cordova.

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

Note Dot Lake includes Dot Lake Village and Dot Lake CDP for the purposes of this survey.

Note Bettles-Evansville includes both Bettles and Evansville for the purposes of this survey.

Note Northway includes Northway Village, Northway Junction, and Northway CDPs for the purposes of this survey.

Note Nenana includes Nenana City and Four Mile Road CDP for the purposes of this survey.

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

page ____ / ____

Tracking Sheet & Household Consent Form

Copy here only the households **selected** to be surveyed.

Community: _____ Harvest Year: _____ Surveyor: _____

Household ID	Household name	Household consent					Harvest report completed Date (mm/dd/yy)	Please note: <i>Why refused? Why no contact? out of town, vacant dwelling, non-residential, non-yearlong resident, moved to community less than 12 months ago</i>
		Attempt	Date (mm/dd/yy)	Agreed	Refused	No contact		
		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, Bristol Bay (winter sheet, both sides, original size 8.5x11 inches).

49

Start here!

Bristol Bay, Household Harvest Report

Community:
Household ID:
Harvest Year:

In the last 12 months, how many permanent household members **tried to harvest?** birds eggs

(write number of people in each box)

First, let's recall harvest in the previous winter. Then we'll follow this year's seasons.

Winter:

Did the household harvest birds or eggs from **1 November to 9 March?** (check one) Yes No

Please write number of birds and eggs harvested by all members of this household.

American widgeon Birds: <input style="width: 40px;" type="text"/>	Teal Birds: <input style="width: 40px;" type="text"/>	Mallard Birds: <input style="width: 40px;" type="text"/>	Northern pintail Birds: <input style="width: 40px;" type="text"/>	Gadwall Birds: <input style="width: 40px;" type="text"/>
Northern shoveler Birds: <input style="width: 40px;" type="text"/>	Black scoter Birds: <input style="width: 40px;" type="text"/>	Surf scoter Birds: <input style="width: 40px;" type="text"/>	White-winged scoter Birds: <input style="width: 40px;" type="text"/>	
Bufflehead Birds: <input style="width: 40px;" type="text"/>	Goldeneye Birds: <input style="width: 40px;" type="text"/>	Canvasback Birds: <input style="width: 40px;" type="text"/>	Scaup Birds: <input style="width: 40px;" type="text"/>	
Common eider Birds: <input style="width: 40px;" type="text"/>	King eider Birds: <input style="width: 40px;" type="text"/>	Spectacled eider Birds: <input style="width: 40px;" type="text"/>	Steller's eider Birds: <input style="width: 40px;" type="text"/>	
Harlequin duck Birds: <input style="width: 40px;" type="text"/>	Long-tailed duck Birds: <input style="width: 40px;" type="text"/>	Merganser Birds: <input style="width: 40px;" type="text"/>	Unknown duck Birds: <input style="width: 40px;" type="text"/>	
Black brant Birds: <input style="width: 40px;" type="text"/>	Cackling/Canada goose Birds: <input style="width: 40px;" type="text"/>	Greater white-fronted goose Birds: <input style="width: 40px;" type="text"/>	Emperor goose Birds: <input style="width: 40px;" type="text"/>	Snow goose Birds: <input style="width: 40px;" type="text"/>

Turn to page 2 to continue reporting winter harvest. →

Yukon-Kuskokwim Delta, Household Harvest Report, Winter (1 Nov–9 Mar)

Community:
Household ID:

Please write number of birds and eggs harvested by all members of this household.

Swan Birds: <input style="width: 40px;" type="text"/>	Sandhill crane Birds: <input style="width: 40px;" type="text"/>	Grouse Birds: <input style="width: 40px;" type="text"/>	Ptarmigan Birds: <input style="width: 40px;" type="text"/>	
Pacific loon Birds: <input style="width: 40px;" type="text"/>	Pacific loon nonbreeding Birds: <input style="width: 40px;" type="text"/>	Yellow-billed loon Birds: <input style="width: 40px;" type="text"/>	Loon 4 Birds: <input style="width: 40px;" type="text"/>	Red-Throated loon Birds: <input style="width: 40px;" type="text"/>
Grebe Birds: <input style="width: 40px;" type="text"/>	Cormorant Birds: <input style="width: 40px;" type="text"/>	Murre Birds: <input style="width: 40px;" type="text"/>	Guillemot Birds: <input style="width: 40px;" type="text"/>	Puffin Birds: <input style="width: 40px;" type="text"/>
Mew gull Birds: <input style="width: 40px;" type="text"/>	Black-legged kittiwake Birds: <input style="width: 40px;" type="text"/>	Bonaparte's/Sabine's gull Birds: <input style="width: 40px;" type="text"/>	Large gull Birds: <input style="width: 40px;" type="text"/>	Tern Birds: <input style="width: 40px;" type="text"/>
Godwit/Tevatevaaq Birds: <input style="width: 40px;" type="text"/>	Whimbrel/Pipipiaq/Ikikikiaq Birds: <input style="width: 40px;" type="text"/>	Kukukuaq Birds: <input style="width: 40px;" type="text"/>	Black-bellied/Golden plover/Tuyik Birds: <input style="width: 40px;" type="text"/>	Turnstone/Cilimak/Quacetaaq Birds: <input style="width: 40px;" type="text"/>

Phalarope/Imaqcaar/Augtuar
Birds:

Small sandpiper/Iisuraar
Birds:

Other or unknown bird:
Birds:

Comments:

Turn to page 3 to report spring harvest. →

Appendix E.–Harvest report form, Yukon-Kuskokwim Delta Alaska (spring sheet, both sides, original size 8.5x11 inches).



























Yukon-Kuskokwim Delta, Household Harvest Report

Community: Household ID: Harvest Year:

In the last 12 months, how many permanent household members **tried to harvest?** birds eggs
(write number of people in each box)

Spring: Did the household harvest birds or eggs from **2 April to 30 June**? (check one) Yes No

Please write number of birds and eggs harvested by all members of this household.

American widgeon Birds: <input type="text"/>  Eggs: <input type="text"/>	Teal Birds: <input type="text"/>  Eggs: <input type="text"/>	Mallard Birds: <input type="text"/>  Eggs: <input type="text"/>	Northern pintail Birds: <input type="text"/>  Eggs: <input type="text"/>	Gadwall Birds: <input type="text"/>  Eggs: <input type="text"/>
Northern shoveler Birds: <input type="text"/>  Eggs: <input type="text"/>	Black scoter Birds: <input type="text"/>  Eggs: <input type="text"/>	Surf scoter Birds: <input type="text"/>  Eggs: <input type="text"/>	White-winged scoter Birds: <input type="text"/>  Eggs: <input type="text"/>	
Bufflehead Birds: <input type="text"/>  Eggs: <input type="text"/>	Goldeneye Birds: <input type="text"/>  Eggs: <input type="text"/>	Canvasback Birds: <input type="text"/>  Eggs: <input type="text"/>	Scaup Birds: <input type="text"/>  Eggs: <input type="text"/>	
Common eider Birds: <input type="text"/>  Eggs: <input type="text"/>	King eider Birds: <input type="text"/>  Eggs: <input type="text"/>	Spectacled eider Birds: <input type="text"/>  Eggs: <input type="text"/>	Steller's eider Birds: <input type="text"/>  Eggs: <input type="text"/>	
Harlequin duck Birds: <input type="text"/>  Eggs: <input type="text"/>	Long-tailed duck Birds: <input type="text"/>  Eggs: <input type="text"/>	Merganser Birds: <input type="text"/>  Eggs: <input type="text"/>	Unknown duck Birds: <input type="text"/>  Eggs: <input type="text"/>	
Black brant Birds: <input type="text"/>  Eggs: <input type="text"/>	Cackling/Canada goose Birds: <input type="text"/>  Eggs: <input type="text"/>	Greater white-fronted goose Birds: <input type="text"/>  Eggs: <input type="text"/>	Emperor goose Birds: <input type="text"/>  Eggs: <input type="text"/>	Snow goose Birds: <input type="text"/>  Eggs: <input type="text"/>

Turn to page 2 to continue reporting spring harvest. →

Yukon-Kuskokwim Delta, Household Harvest Report, Spring (2 April-30 June)

Community: Household ID:

Please write number of birds and eggs harvested by all members of this household.

Swan Birds: <input type="text"/>  Eggs: <input type="text"/>	Sandhill crane Birds: <input type="text"/>  Eggs: <input type="text"/>	Grouse Birds: <input type="text"/>  Eggs: <input type="text"/>	Ptarmigan Birds: <input type="text"/>  Eggs: <input type="text"/>	
Pacific loon Birds: <input type="text"/>  Eggs: <input type="text"/>	Pacific loon nonbreeding Birds: <input type="text"/>  Eggs: <input type="text"/>	Yellow-billed loon Birds: <input type="text"/>  Eggs: <input type="text"/>	Loon 4 Birds: <input type="text"/>  Eggs: <input type="text"/>	Red-throated loon Birds: <input type="text"/>  Eggs: <input type="text"/>
Grebe Birds: <input type="text"/>  Eggs: <input type="text"/>	Cormorant Birds: <input type="text"/>  Eggs: <input type="text"/>	Murre Birds: <input type="text"/>  Eggs: <input type="text"/>	Guillemot Birds: <input type="text"/>  Eggs: <input type="text"/>	Puffin Birds: <input type="text"/>  Eggs: <input type="text"/>
Mew gull Birds: <input type="text"/>  Eggs: <input type="text"/>	Black-legged kittiwake Birds: <input type="text"/>  Eggs: <input type="text"/>	Bonaparte's/Sabine's gull Birds: <input type="text"/>  Eggs: <input type="text"/>	Large gull Birds: <input type="text"/>  Eggs: <input type="text"/>	Tern Birds: <input type="text"/>  Eggs: <input type="text"/>
Godwit/Tevatevaaq Birds: <input type="text"/>  Eggs: <input type="text"/>	Whimbrel/Pipipiaq/Itkikiklaq Birds: <input type="text"/>  Eggs: <input type="text"/>	Kukukuaq Birds: <input type="text"/>  Eggs: <input type="text"/>	Black-bellied/Golden plover/Tuyik Birds: <input type="text"/>  Eggs: <input type="text"/>	Turnstone/Cillmak/Quuracetaaq Birds: <input type="text"/>  Eggs: <input type="text"/>
Phalarope/Imaqcaar/Augtuar Birds: <input type="text"/>  Eggs: <input type="text"/>	Small sandpiper/Isuraar Birds: <input type="text"/>  Eggs: <input type="text"/>	Other or unknown bird: Birds: <input type="text"/> Eggs: <input type="text"/>	Comments: <input style="width: 100%; height: 50px;" type="text"/> <i>Turn to page 3 to report summer harvest. →</i>	

Appendix F.–Harvest report form, Bering Strait Norton Sound (spring sheet, both sides, original size 8.5x11 inches).

51

Bering Strait-Norton Sound, Household Harvest Report

Community: Household ID: Harvest Year:

In the last 12 months, how many permanent household members tried to harvest? birds eggs
(write number of people in each box)

Spring: Did the household harvest birds or eggs from **2 April to 30 June**? (check one) Yes No

Please write number of birds and eggs harvested by all members of this household.



American widgeon Birds: <input type="text"/>  Eggs: <input type="text"/>	Teal Birds: <input type="text"/>  Eggs: <input type="text"/>	Mallard Birds: <input type="text"/>  Eggs: <input type="text"/>	Northern pintail Birds: <input type="text"/>  Eggs: <input type="text"/>	Gadwall Birds: <input type="text"/>  Eggs: <input type="text"/>
Northern shoveler Birds: <input type="text"/>  Eggs: <input type="text"/>	Black scoter Birds: <input type="text"/>  Eggs: <input type="text"/>	Surf scoter Birds: <input type="text"/>  Eggs: <input type="text"/>	White-winged scoter Birds: <input type="text"/>  Eggs: <input type="text"/>	
Bufflehead Birds: <input type="text"/>  Eggs: <input type="text"/>	Goldeneye Birds: <input type="text"/>  Eggs: <input type="text"/>	Canvasback Birds: <input type="text"/>  Eggs: <input type="text"/>	Scaup Birds: <input type="text"/>  Eggs: <input type="text"/>	
Common eider Birds: <input type="text"/>  Eggs: <input type="text"/>	King eider Birds: <input type="text"/>  Eggs: <input type="text"/>	Spectacled eider Birds: <input type="text"/>  Eggs: <input type="text"/>	Steller's eider Birds: <input type="text"/>  Eggs: <input type="text"/>	
Harlequin duck Birds: <input type="text"/>  Eggs: <input type="text"/>	Long-tailed duck Birds: <input type="text"/>  Eggs: <input type="text"/>	Merganser Birds: <input type="text"/>  Eggs: <input type="text"/>	Unknown duck Birds: <input type="text"/>  Eggs: <input type="text"/>	
Black brant Birds: <input type="text"/>  Eggs: <input type="text"/>	Cackling/Canada goose Birds: <input type="text"/>  Eggs: <input type="text"/>	Greater white-fronted goose Birds: <input type="text"/>  Eggs: <input type="text"/>	Emperor goose Birds: <input type="text"/>  Eggs: <input type="text"/>	Snow goose Birds: <input type="text"/>  Eggs: <input type="text"/>

Turn to page 2 to continue reporting spring harvest. →

Bering Strait-Norton Sound, Household Harvest Report, Spring (2 April–30 June)

Community: Household ID:

Please write number of birds and eggs harvested by all members of this household.

Swan Birds: <input type="text"/>  Eggs: <input type="text"/>	Sandhill crane Birds: <input type="text"/>  Eggs: <input type="text"/>	Grouse Birds: <input type="text"/>  Eggs: <input type="text"/>	Ptarmigan Birds: <input type="text"/>  Eggs: <input type="text"/>	
Loon "1" Birds: <input type="text"/>  Eggs: <input type="text"/>	Loon "2" Birds: <input type="text"/>  Eggs: <input type="text"/>	Loon "3" Birds: <input type="text"/>  Eggs: <input type="text"/>	Loon "4" Birds: <input type="text"/>  Eggs: <input type="text"/>	Loon "5" Birds: <input type="text"/>  Eggs: <input type="text"/>
Grebe Birds: <input type="text"/>  Eggs: <input type="text"/>	Cormorant Birds: <input type="text"/>  Eggs: <input type="text"/>	Murre Birds: <input type="text"/>  Eggs: <input type="text"/>	Guillemot Birds: <input type="text"/>  Eggs: <input type="text"/>	Puffin Birds: <input type="text"/>  Eggs: <input type="text"/>
Mew gull Birds: <input type="text"/>  Eggs: <input type="text"/>	Black-legged kittiwake Birds: <input type="text"/>  Eggs: <input type="text"/>	Bonaparte's/Sabine's gull Birds: <input type="text"/>  Eggs: <input type="text"/>	Large gull Birds: <input type="text"/>  Eggs: <input type="text"/>	Tern Birds: <input type="text"/>  Eggs: <input type="text"/>
Godwit/Turraatauraq Birds: <input type="text"/>  Eggs: <input type="text"/>	Whimbrel Birds: <input type="text"/>  Eggs: <input type="text"/>	Kuukukiaq Birds: <input type="text"/>  Eggs: <input type="text"/>	Black-bellied/Golden plover/Tullik Birds: <input type="text"/>  Eggs: <input type="text"/>	Turnstone Birds: <input type="text"/>  Eggs: <input type="text"/>
Phalarope Birds: <input type="text"/>  Eggs: <input type="text"/>	Small sandpiper Birds: <input type="text"/>  Eggs: <input type="text"/>	Other or unknown bird: Birds: <input type="text"/> Eggs: <input type="text"/>	Comments: <div style="border: 1px solid black; height: 80px; width: 100%;"></div>	

Turn to page 3 to report summer harvest. →

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

52

North Slope, Household Harvest Report

Community: Household ID: Harvest Year:

In the last 12 months, how many permanent household members **tried to harvest?** birds eggs
(write number of people in each box)

Spring: Did the household harvest birds or eggs from **2 April to 30 June**? (check one) Yes No

Please write number of birds and eggs harvested by all members of this household.

American widgeon Birds: <input type="text"/> Eggs: <input type="text"/>	Teal Birds: <input type="text"/> Eggs: <input type="text"/>	Mallard Birds: <input type="text"/> Eggs: <input type="text"/>	Northern pintail Birds: <input type="text"/> Eggs: <input type="text"/>	Gadwall Birds: <input type="text"/> Eggs: <input type="text"/>
Northern shoveler Birds: <input type="text"/> Eggs: <input type="text"/>	Black scoter Birds: <input type="text"/> Eggs: <input type="text"/>	Surf scoter Birds: <input type="text"/> Eggs: <input type="text"/>	White-winged scoter Birds: <input type="text"/> Eggs: <input type="text"/>	
Common eider Birds: <input type="text"/> Eggs: <input type="text"/>	king eider Birds: <input type="text"/> Eggs: <input type="text"/>	Spectacled eider Birds: <input type="text"/> Eggs: <input type="text"/>	Steller's eider Birds: <input type="text"/> Eggs: <input type="text"/>	
Scaup Birds: <input type="text"/> Eggs: <input type="text"/>	Long-tailed duck Birds: <input type="text"/> Eggs: <input type="text"/>	Merganser Birds: <input type="text"/> Eggs: <input type="text"/>	Unknown duck Birds: <input type="text"/> Eggs: <input type="text"/>	
Black brant Birds: <input type="text"/> Eggs: <input type="text"/>	Cackling/Canada goose Birds: <input type="text"/> Eggs: <input type="text"/>	Greater white-fronted goose Birds: <input type="text"/> Eggs: <input type="text"/>	Snow goose Birds: <input type="text"/> Eggs: <input type="text"/>	Unknown goose Birds: <input type="text"/> Eggs: <input type="text"/>

Turn to page 2 to continue reporting spring harvest. →

North Slope, Household Harvest Report, Spring (2 April–30 June)

Community: Household ID:

Please write number of birds and eggs harvested by all members of this household.

Swan Birds: <input type="text"/> Eggs: <input type="text"/>	Sandhill crane Birds: <input type="text"/> Eggs: <input type="text"/>	Snowy owl Birds: <input type="text"/> Eggs: <input type="text"/>	Grouse Birds: <input type="text"/> Eggs: <input type="text"/>	Ptarmigan Birds: <input type="text"/> Eggs: <input type="text"/>
Pacific loon Birds: <input type="text"/> Eggs: <input type="text"/>	Pacific loon nonbreeding Birds: <input type="text"/> Eggs: <input type="text"/>	Yellow-billed loon Birds: <input type="text"/> Eggs: <input type="text"/>	Red-throated loon Birds: <input type="text"/> Eggs: <input type="text"/>	
Tern Birds: <input type="text"/> Eggs: <input type="text"/>	Sabine's gull Birds: <input type="text"/> Eggs: <input type="text"/>	Large gull Birds: <input type="text"/> Eggs: <input type="text"/>	Murre Birds: <input type="text"/> Eggs: <input type="text"/>	Guillemot Birds: <input type="text"/> Eggs: <input type="text"/>
Godwit Birds: <input type="text"/> Eggs: <input type="text"/>	Whimbrel Birds: <input type="text"/> Eggs: <input type="text"/>	Kuukuklaq Birds: <input type="text"/> Eggs: <input type="text"/>	Black-bellied/Golden plover Birds: <input type="text"/> Eggs: <input type="text"/>	Turnstone Birds: <input type="text"/> Eggs: <input type="text"/>
Phalarope Birds: <input type="text"/> Eggs: <input type="text"/>	Small sandpiper Birds: <input type="text"/> Eggs: <input type="text"/>	Other/unknown bird: Birds: <input type="text"/> Eggs: <input type="text"/>	Comments: <input style="width: 100%; height: 100%;" type="text"/>	

Turn to page 3 to report summer harvest. →

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

53

Interior Alaska, Household Harvest Report

Community:
Household ID:
Harvest Year:

In the last 12 months, how many permanent household members tried to harvest? birds eggs
(write number of people in each box)

Spring: Did the household harvest birds or eggs from 2 April to 30 June? (check one) Yes No

Please write number of birds and eggs harvested by all members of this household.

<p>American widgeon</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Teal</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Mallard</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Northern pintail</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Gadwall</p> <p>Birds: _____</p> <p>Eggs: _____</p>
<p>Northern shoveler</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Black scoter</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Surf scoter</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>White-winged scoter</p> <p>Birds: _____</p> <p>Eggs: _____</p>	
<p>Bufflehead</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Goldeneye</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Canvasback</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Scaup</p> <p>Birds: _____</p> <p>Eggs: _____</p>	
<p>Harlequin duck</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Long-tailed duck</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Merganser</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Unknown duck</p> <p>Birds: _____</p> <p>Eggs: _____</p>	
<p>Cackling/Canada goose</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Greater white-fronted goose</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Snow goose</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Swan</p> <p>Birds: _____</p> <p>Eggs: _____</p>	

Turn to page 2 to continue reporting spring harvest. →

Interior Alaska, Household Harvest Report, Spring (2 April–30 June)

Community:
Household ID:

Please write number of birds and eggs harvested by all members of this household.

<p>Sandhill crane</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Grouse</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Ptarmigan</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Grebe</p> <p>Birds: _____</p> <p>Eggs: _____</p>	
<p>Pacific loon</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Pacific loon nonbreeding</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Loon 4</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Red-throated loon</p> <p>Birds: _____</p> <p>Eggs: _____</p>	
<p>Mew gull</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Bonaparte's gull</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Large gull</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Tern</p> <p>Birds: _____</p> <p>Eggs: _____</p>	
<p>Godwit</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Whimbrel</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Kukukuaq</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Black-bellied/Golden plover</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Small sandpiper</p> <p>Birds: _____</p> <p>Eggs: _____</p>
<p>Phalarope</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Other or unknown bird:</p> <p>Birds: _____</p> <p>Eggs: _____</p>	<p>Comments:</p> <div style="height: 80px;"></div>		

Turn to page 3 to report summer harvest. →

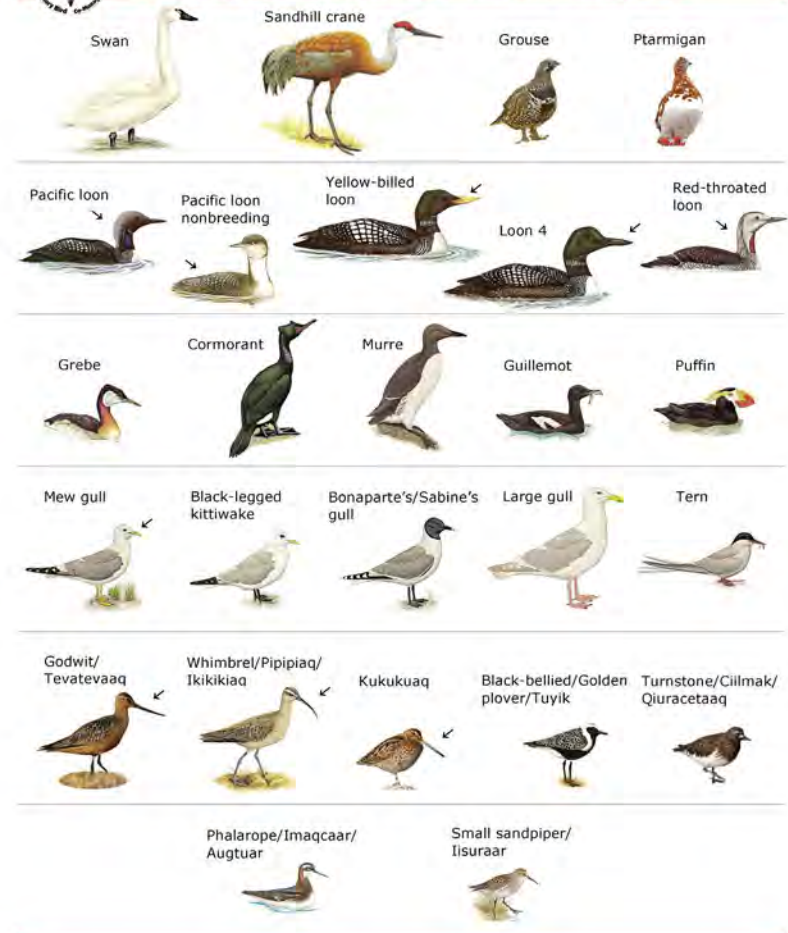
Appendix I.–Bird identification guide, Bristol Bay (both sides, original size 8.5x11 inches).



Alaska Migratory Bird Co-Management Council, Subsistence Harvest Survey
Bird Identification Guide, Yukon-Kuskokwim Delta

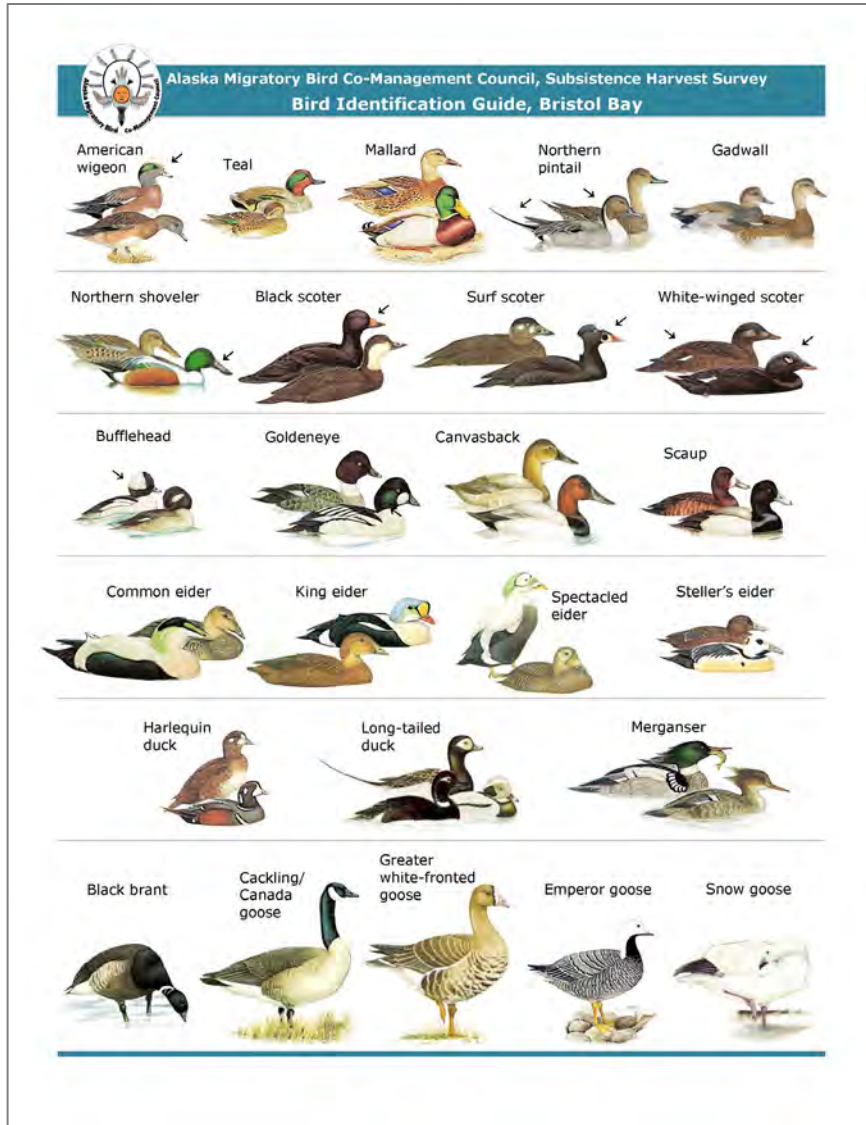


Alaska Migratory Bird Co-Management Council, Subsistence Harvest Survey
Bird Identification Guide, Yukon-Kuskokwim Delta

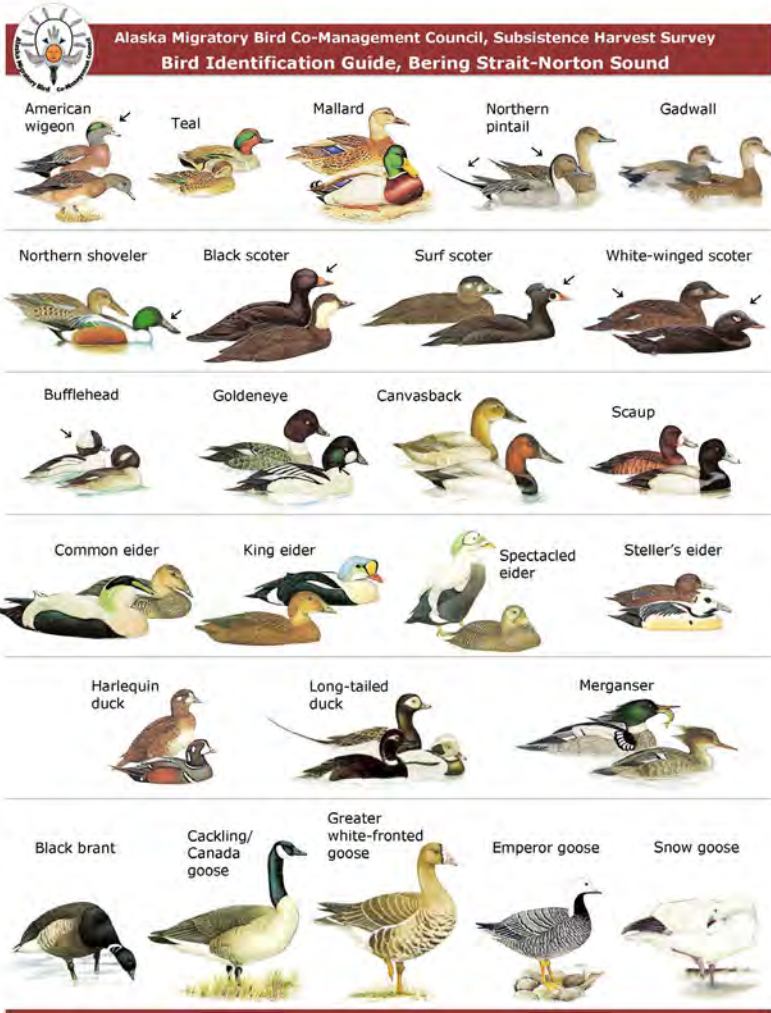


Appendix J.—Bird identification guide, Yukon-Kuskokwim Delta (both sides, original size 8.5x11 inches).

55

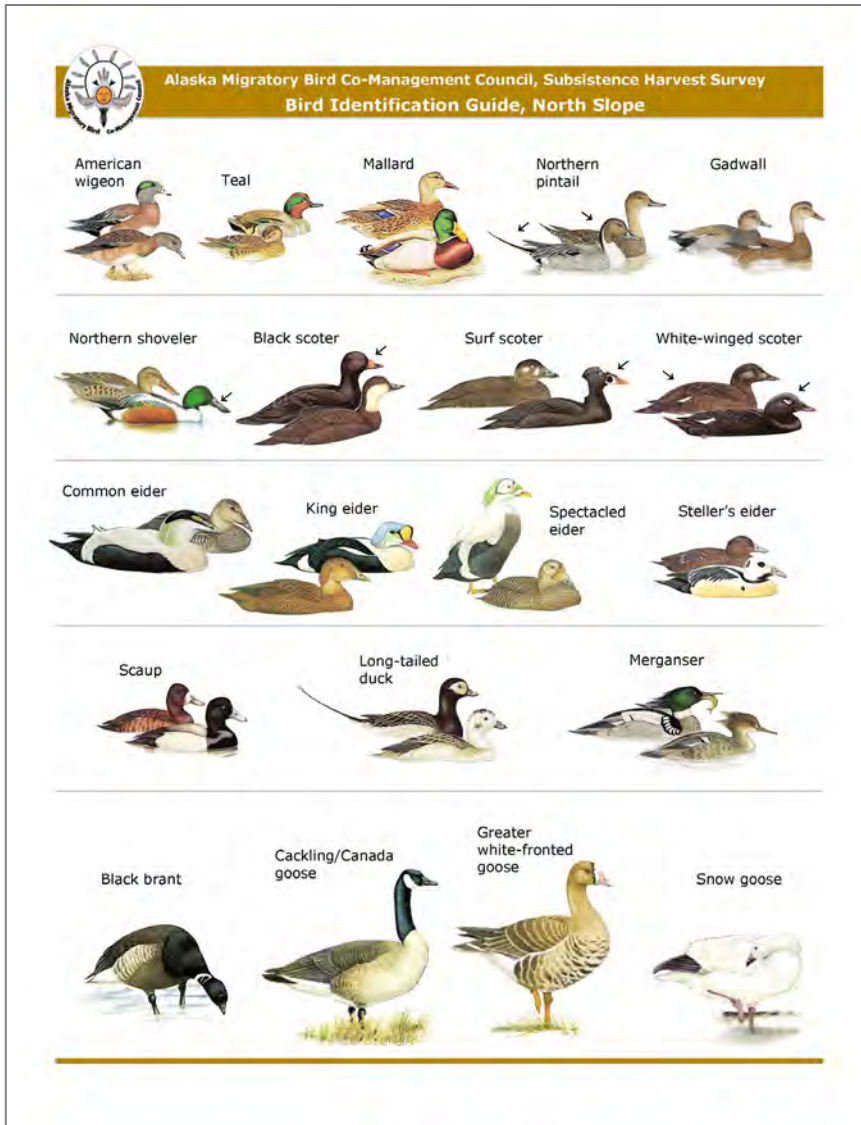


Appendix K.—Bird identification guide, Bering Strait-Norton Sound (both sides, original size 8.5x11 inches).



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

57

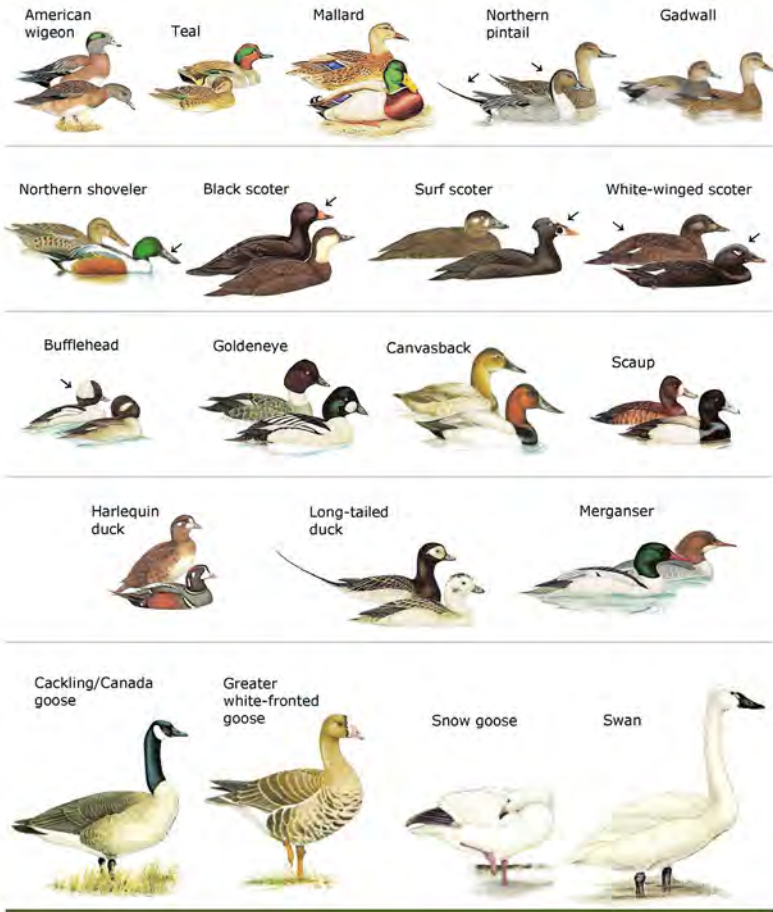


Appendix M.–Bird identification guide, Interior Alaska (both sides, original size 8.5x11 inches).

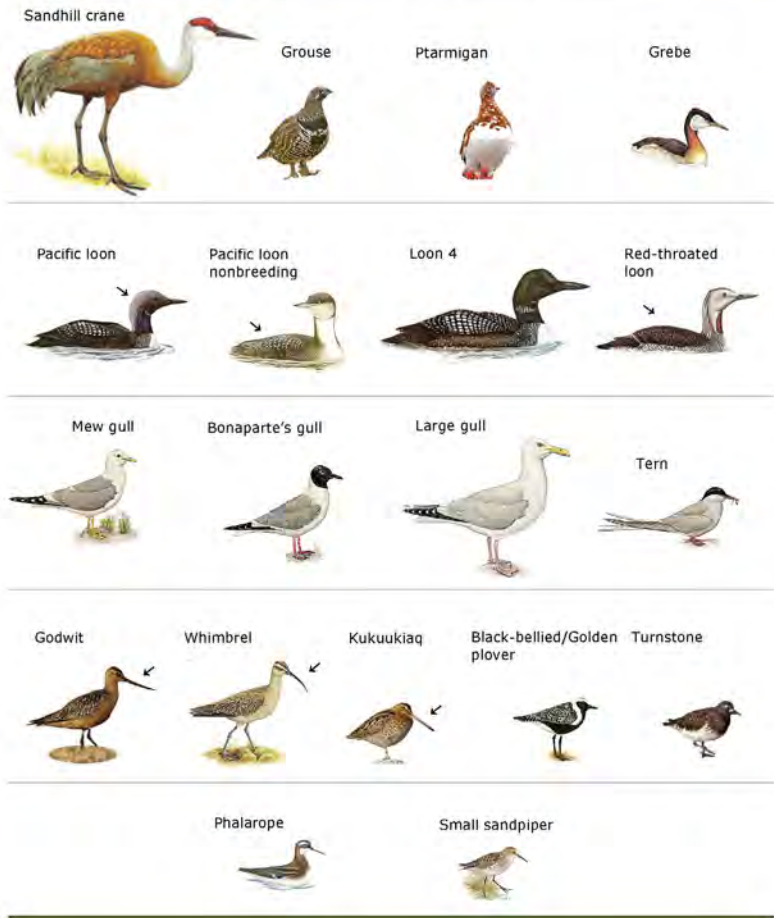
58




Alaska Migratory Bird Co-Management Council, Subsistence Harvest Survey
Bird Identification Guide, Interior Alaska



Alaska Migratory Bird Co-Management Council, Subsistence Harvest Survey
Bird Identification Guide, Interior Alaska



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







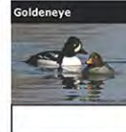







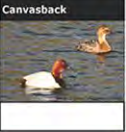



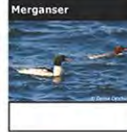



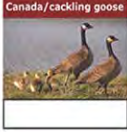

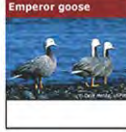


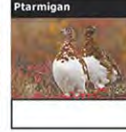













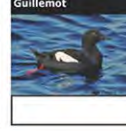
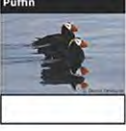



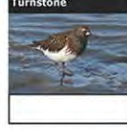




Alaska Migratory Bird Co-Management Council - AMBCC

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!

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





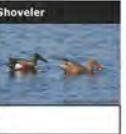


















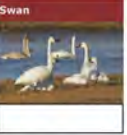


























Alaska Migratory Bird Co-Management Council - AMBCC

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
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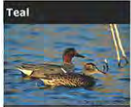



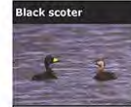































Appendix P.–Bird poster, North Slope (original size 23x36 inches).


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.

 <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"/>
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 <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 Q.–Bird poster, Interior Alaska (original size 23x36 inches).












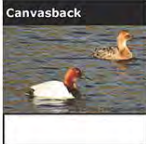


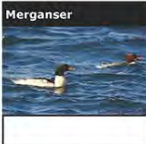
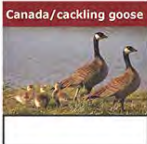
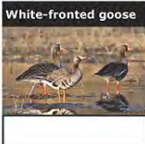





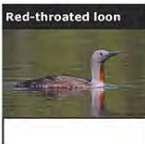













Alaska Migratory Bird Co-Management Council - AMBC

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!

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

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

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

Appendix R.–Formulas used to calculate estimated harvest, variance, and confidence interval percentage at regional and survey-wide levels (five-regions survey).

Community estimated harvest

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

Region estimated harvest

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

Region variance

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

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

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

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

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

Alaska-wide estimated harvest

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

Alaska-wide variance

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

Confidence interval at region and Alaska-wide levels

$$(Equation 6.a) \quad CIP(\hat{Y}) = 2 \times CV \quad (Equation 6.b) \quad CV(\hat{Y}) = \frac{\sqrt{v(\hat{Y})}}{\hat{Y}}$$

Note In equation 6.a, “2” is a Z score, which corresponds to a confidence level of 97.72%.

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

\hat{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 S.–Formulas used to calculate estimated harvest, variance, and confidence interval percentage at community level (Cordova mail survey, non-stratified sampling).

$$\hat{X} = \sum x \times \left(\frac{N}{n}\right)$$

$$SD = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$$

$$SE = \frac{N \times SD}{\sqrt{n}} \times \sqrt{1 - \frac{n}{N}}$$

$$CIP = \frac{SE \times t_{\alpha/2}}{\hat{X}}$$

\hat{X} = estimated community harvest

SD = standard variation

SE = standard error

CIP = 95% confidence interval as a percentage of the harvest estimate

x = harvest reported by individual households

\hat{x} = sample average (average household harvest)

N = total number of households in community

n = number of households surveyed in community

$t_{\alpha/2}$ = Student's t distribution value with tail area probability α

Appendix T.–Comments by the North Slope Borough Fish and Game Management Committee.

North Slope Borough Fish and Game Management Committee

June 2021


Comments by the North Slope Borough Fish and Game Management Committee on the AMBCC 2019
Migratory Bird Harvest Report

The North Slope Borough (NSB) Fish and Game Management Committee (FGMC), as the North Slope regional management body for the Alaska Migratory Bird Co-management Council, reviewed the draft 2019 migratory bird harvest report at its June 2021 meeting. The FGMC appreciates the efforts to collect data from North Slope villages, including from Point Hope on an annual basis. However, the FGMC is also concerned about the usefulness of the harvest data, for 2019, but also in other years. The FGMC understands that the main purpose of collecting the data is to monitor the number of migratory birds taken during the spring and summer subsistence hunts so that changes can be detected if they occur. There is concern that the data are so imprecise that it is unlikely that a change would be detected unless that change was very large. Thus, it appears that the main purpose of collecting harvest data is not being met.

Annual surveys to document the subsistence harvest of migratory birds contribute to informant burnout. Increasingly, people in North Slope villages are declining requests by the NSB to be interviewed about subsistence harvests, whether for migratory birds or other species. The FGMC reached the conclusion that if the migratory bird harvest surveys are not meeting the AMBCC goal and the surveys are contributing to informant burnout, which affects results for other surveys, the migratory bird surveys should not continue.

In conclusion, the FGMC approves the 2019 survey results but unless provided convincing evidence that future harvest surveys for migratory birds will meet the goal of the AMBCC, the FGMC will not approve future survey results.

Appendix U.–Harvest report form, Cordova mail survey (original size 8.5x11 inches).
























Alaska Migratory Bird Co-Management Council (AMBCC)
Cordova Harvest (2 April to 31 May, 2020), Household Harvest Survey

1. Household registration #: _____ 2. Date survey was completed: ____/____/2020
(2 letters followed by 3 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, 2020? YES NO

Please report numbers of birds and eggs harvested by your household from 2 April to 31 May, 2020:

<p>American wigeon birds _____</p> 	<p>Teal birds _____</p> 	<p>Mallard birds _____</p> 	<p>Northern pintail birds _____</p> 
<p>Northern shoveler birds _____</p> 	<p>Black scoter birds _____</p> 	<p>Surf scoter birds _____</p> 	<p>White-winged scoter birds _____</p> 
<p>Bufflehead birds _____</p> 	<p>Goldeneye birds _____</p> 	<p>Canvasback birds _____</p> 	<p>Scaup birds _____</p> 
<p>Common eider birds _____</p> 	<p>King eider birds _____</p> 	<p>Harlequin duck birds _____</p> 	<p>Long-tailed duck birds _____</p> 
<p>Merganser birds _____</p> 	<p>Greater white-fronted goose birds _____</p> 	<p>Snow goose birds _____</p> 	<p>Sandhill crane birds _____</p> 
<p>Gull eggs _____</p> 	<p>Other/unknown bird: birds: _____ eggs: _____</p>	<p>Comments:</p> <div style="border: 1px solid black; height: 80px; width: 100%;"></div>	

(AMB PWS) Form 3-2381-5 Expires 10/31/2022

Instructions for Bird and Egg Household Harvest Survey

TO AVOID FUTURE NOTIFICATIONS, PLEASE COMPLETE AND RETURN THIS SURVEY NOW.
It is 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 in the blue box at the top of the survey form.
3. In the fields provided close to bird drawings, report numbers of all birds and eggs harvested by your household members, 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. If you harvested eggs using a 5-gal bucket or other kind of container, specify how many eggs.
7. Write comments in the green 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. Use the provided postage-paid envelope to mail your completed survey.

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

Questions? 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: 907-786-3887 (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 Amendment (1995) and its letter of submittal 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. We estimate it will take about 5 minutes to report your seasonal bird/egg harvest.
The Office of Management and Budget has approved this information collection and assigned control number 1018-0124, which expires 08/31/2022. 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 the estimated burden or any other aspect of PWS Form 3-2381-5 to the Information Collection Officer, Mail Stop 2042-PDM, U.S. Fish and Wildlife Service, 4401 N Fairfax Dr., Arlington, VA 22203.

Appendix V.–Summary of 2014–2020 Cordova bird and egg harvest estimates produced for community communication.



**Alaska Migratory Bird Co-Management Council (AMBC)
Cordova Bird and Egg Subsistence Harvest Estimates
April–May 2014–2020**

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, and at the tribal councils of the communities of Chenega and Tatitlek. The Division of Subsistence of the Alaska Department of Fish and Game (ADF&G) coordinated the registration process and the mail harvest survey in collaboration with the local partners.

Many thanks to all households that participated in the survey!

John Whissel (Native Village of Eyak), Milo Burcham and Kate McLaughlin (U.S. Forest Service), Tracy Totemoff (community of Tatitlek), Travis King and Pam Kauveyiakul (community of Chenega), Charlotte Westing (ADF&G Wildlife Conservation), and Patty Schwalenberg (Chugach Regional Resources Commission) assisted in household registration and community communication.



Participation	2014	2015	2016	2017	2018	2019	2020
Registered households	36	20	26	27	41	31	60
Surveys completed	28	15	22	25	33	23	44
Survey participation	78%	75%	85%	93%	81%	74%	73%

Harvest estimates, number of birds and eggs	2014		2015		2016		2017		2018		2019		2020	
	Re-ported	Esti-mated	Re-ported	Esti-mated	Re-ported	Esti-mated	Re-ported	Esti-mated	Re-ported	Esti-mated	Re-ported	Esti-mated	Re-ported	Esti-mated
Bird harvest														
American wigeon	1	1	0	0	1	1	5	5	0	0	0	0	0	0
Gadwall	0	0	0	0	0	0	1	1	0	0	0	0	0	0
Teal	1	1	0	0	0	0	14	15	1	1	0	0	0	0
Mallard	11	14	0	0	16	19	42	45	8	10	16	22	11	15
Northern pintail	12	15	0	0	56	66	82	89	1	1	10	13	13	18
Northern shoveler	0	0	0	0	2	2	0	0	0	0	0	0	1	1
Black scoter	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Surf scoter	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White-winged scoter	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bufflehead	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Goldeneye	0	0	0	0	0	0	4	4	0	0	0	0	0	0
Canvasback	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaup	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common eider	0	0	0	0	0	0	0	0	0	0	0	0	0	0
King eider	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harlequin duck	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Long-tailed duck	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Merganser	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Greater white-fronted goose	4	5	0	0	0	0	7	8	4	5	3	4	10	14
Snow goose	4	5	0	0	5	6	3	3	20	25	13	18	53	72
Sandhill crane	0	0	0	0	0	0	3	3	0	0	0	0	0	0
Total birds	33	42	0	0	80	95	161	174	34	42	42	57	88	120
Egg harvest														
Gull (unidentified)	102	131	197	263	105	124	105	113	138	171	218	294	534	728
Total eggs	102	131	197	263	105	124	105	113	138	171	218	294	534	728

For more information on subsistence harvest of birds and eggs see <https://www.fws.gov/alaska/pages/co-management>.

For information about the household registration and survey please email lara.mengak@alaska.gov, call 907-267-2269, and/or see http://www.adfg.alaska.gov/index.cfm?adfg=subsistence.b_surveys, This summary was updated 15 March 2021.

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 Alaskana 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: Agayuliyararput = 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.