

Technical Paper No. 353

Alaska Migratory Bird Subsistence Harvest Estimates, 2008, Alaska Migratory Bird Co-Management Council

Liliana C. Naves



July 2010

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 Department of Fish and Game	ADF&G
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
United States Code	U.S.C.
U.S. state	
use 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

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	HA
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	HO
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. 353

**Alaska Migratory Bird Subsistence Harvest Estimates,
2008,
Alaska Migratory Bird Co-Management Council**

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Cover Photograph

Todd Fritze of Dillingham hunts for sandhill cranes and Canada geese in spring. Photograph by Annie Fritze, used with permission.

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ABSTRACT

This report presents subsistence harvest estimates of migratory birds and their eggs in Alaska for the data year 2008. Data were gathered through the harvest assessment program of the Alaska Migratory Bird Co-Management Council. This program relies on collaboration among the U.S. Fish and Wildlife Service, the Alaska Department of Fish and Game, and a number of regional Alaska Native organizations. Information obtained by this program is used to evaluate federal subsistence harvest regulations, to document customary and traditional uses of migratory birds in Alaska, and to plan for the continued harvest and conservation of birds. Participation in the harvest survey is voluntary at both the village and household levels. The survey covers spring, summer, and fall harvests in most regions. Some regions also have a winter survey. Harvest estimates are based on a stratified clustered sampling. The sample frame encompasses all households in regions eligible for the subsistence harvest of migratory birds and their eggs in Alaska. Households are the primary sampling unit. Data at the household level are confidential and data at the village level are considered sensitive. Clusters of villages (subregions) with similar harvest patterns allow expansion of reported harvests in surveyed villages to nonsurveyed villages in the same subregion. Subregions are grouped into regions, which approximately correspond to the designated migratory bird management regions. Within villages, households are stratified by harvest level. Villages and regions are surveyed on a rotating schedule, which can be adjusted based on monitoring priorities and budget constraints. In 2008, the harvest survey was conducted in 5 regions: Aleutian–Pribilof Islands, Bristol Bay, Yukon–Kuskokwim Delta, North Slope, and Interior Alaska (although only in the Yukon–Koyukuk subregion).

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, grouse, seabirds, shorebirds, grebes, loons.

INTRODUCTION

AMBCC SUBSISTENCE HARVEST ASSESSMENT PROGRAM

In 1918, Canada and the United States ratified the Migratory Bird Treaty Act (the treaty) to protect wild bird populations. The treaty later included agreements with Mexico, Japan, and Russia. The treaty set provisions to protect migratory bird populations, including an annual hunting season closure from March 10 to September 1. However, this provision failed to provide for the harvest of migratory birds by northern peoples of Alaska and Canada in spring and summer; these harvests have been historically necessary to their subsistence way of life. Despite the closure, customary and traditional hunting of migratory birds in spring and summer continued.

In 1997, the U.S. Congress authorized an amendment to the treaty that legally recognized the traditional spring and summer subsistence harvests of migratory birds by northern peoples of Alaska and Canada. The goal of the amendment was to promote conservation of migratory birds by including subsistence hunting in the regulatory process. This amendment authorized the U.S. Fish and Wildlife Service (USFWS) to open regulated spring and summer subsistence hunts of migratory birds in Alaska. The treaty amendment also mandated that Alaska's indigenous inhabitants play a meaningful role in migratory bird conservation by participating in relevant management bodies. As a result of this direction, the Alaska Migratory Bird Co-Management Council (AMBCC) was formed. The AMBCC is composed of representatives from the USFWS, Alaska Department of Fish and Game (ADF&G), and regional Alaska Native entities (CFR vol. 65, No. 60, pp. 16405–16409, March 28, 2000). The AMBCC first met in October 2000, at which time they discussed the assessment of spring–summer subsistence harvests, important for describing traditional historical uses of migratory birds as well as their levels of harvest. Harvest monitoring is also particularly important to meet the intentions of the amended treaty: 1) subsistence harvests generally should remain at traditional levels relative to bird population sizes; 2) subsistence data should be integrated with flyway and national harvest management programs; and 3) regulatory processes for all migratory bird hunting should be inclusive to users and responsive to conservation needs. The AMBCC found the available harvest data insufficient to properly address management issues, and formed the Subsistence Harvest Survey Committee. This group of Alaska agency staff, regional partners, and consultants was charged with designing a statewide migratory bird subsistence harvest survey to assess the magnitude and composition of subsistence harvests.

A comprehensive statewide harvest survey protocol (AMBCC 2003) was designed based on the harvest surveys conducted in the context of the goose management plan (Pamplin 1986; Zavaleta 1999) for the Bristol Bay (Seim and Wentworth 1996; Wentworth 2007a), Yukon–Kuskokwim delta (Wentworth and Seim 1996; Wentworth 1998, 2004, 2007b), and Bering Strait (Kawerak Inc. 2004), as well as on elements of the USFWS Migratory Bird Harvest Information Program (HIP), which assesses sport harvests of selected migratory bird species (Bales et al. 2002; Padding et al. 2006; Moore et al. 2007). The AMBCC harvest assessment program relies on collaboration between USFWS, ADF&G, and Alaska Native partners; the program is funded by the USFWS. The AMBCC subsistence harvest assessment program was to begin with the first open spring–summer subsistence season in 2003, but delays in survey approval and other procedural problems prevented harvest data collection and the survey was first implemented in 2004. However, funding of the survey program has been 40–50% short every year, and is not

adjusted for inflation. Consequently, cost-cutting measures have resulted in reduced sampling efforts, insufficient village outreach, and insufficient training of survey staff, further compounding intrinsic difficulties of doing the survey in the remote areas of Alaska. In 2005, the Harvest Survey Committee adopted a regional rotation, and since then only the Yukon–Kuskokwim delta region has been surveyed yearly. Other regions are surveyed approximately every other year, depending on monitoring priorities and budget constraints. The necessity of reduced and rotating survey coverage has impaired the accuracy of harvest estimates and greatly extended the time necessary to detect changes in harvest levels.

The AMBCC and its Harvest Survey Committee recognize the need to conduct an effective survey that provides timely and accurate harvest information in order to meet treaty obligations, as well as to sustain migratory bird populations and harvest traditions. In 2007, the AMBCC Harvest Survey Committee asked the ADF&G Division of Subsistence to assess the performance of the original survey design, the effectiveness of the diminished sampling effort, and other operational issues. Based on the survey assessment report (Naves et al. 2008), the AMBCC Subsistence Harvest Survey Committee evaluated problems, considered technical improvements to the survey methods, and collaboratively reformulated an operational plan. The revised survey methods are now being implemented to collect 2010 harvest information. The 2008 harvest information to which this report refers to was collected following the original survey methods (AMBCC 2003; Wentworth 2006).

This report is the second in a series of annual reports with birds and bird eggs harvest estimates at the regional and subregional levels produced with data collected by the AMBCC harvest assessment program. Harvest estimates for 2004 to 2007 were reported in Naves (2010). In 2008, the harvest survey was conducted in 5 regions: Aleutian–Pribilof Islands, Bristol Bay, Yukon–Kuskokwim Delta, North Slope, and Interior Alaska (although only in the Yukon–Koyukuk subregion).

AMBCC MEMBER ORGANIZATIONS

The Alaska Migratory Bird Co-Management Council is composed of representatives from:

- U.S. Fish and Wildlife Service;
- Alaska Department of Fish and Game;
- Chugach Regional Resources Commission;
- Sun’aq Tribe of Kodiak;
- Aleutian–Pribilof Islands Association;
- Bristol Bay Native Association;
- Association of Village Council Presidents;
- Kawerak Inc.;
- Maniilaq Association;
- North Slope Borough;
- Tanana Chiefs Conference;
- Copper River Native Association; and
- Southeast Inter-Tribal Fish and Wildlife Commission.

USES OF THE INFORMATION OF THE SUBSISTENCE HARVEST SURVEY

Harvest estimates from the subsistence harvest survey are available to the communities (“villages”), Alaska Native organizations, state and federal resource management and conservation agencies, the Pacific Flyway Council, and the general public. Data at the household level are confidential and data at the village level are sensitive. Preliminary harvest estimates based on survey data are submitted to Alaska Native regional partners for review before being adopted by the AMBCC. Information from the survey is not to be used for punitive enforcement purposes, nor has this been reported to have happened. Survey data are used to:

- Document the importance of customary and traditional uses of migratory birds by Alaska rural villages so that subsistence uses will be protected and conducted in a sustainable manner;
- Document subsistence harvest trends and track major changes in harvests;
- Assist the USFWS in the evaluation of spring–summer migratory bird harvest regulations; and
- Assist in the development of management plans by state and federal agencies.

METHODS

DATA COLLECTION

Regions, Subregions, Villages

The harvest survey covers a total of 192 rural villages (Appendix A) within the regions eligible to participate in the subsistence harvest of migratory birds in Alaska (50 CFR, Part 92, Subpart 92.5). According to the Alaska Department of Labor and Workforce Development's 2007 population estimates, these villages have a total population of about 87,000 people in 25,000 households (ADLWD 2009). A census survey to evaluate the subsistence harvests of migratory birds within eligible areas would be impractical and cost prohibitive. Thus, appropriate sampling of regions, subregions, villages, and households is the basis for the calculation of harvest estimates. Data collection from the 2004–2008 survey sometimes deviated from the original survey design (AMBCC 2003; Wentworth 2006) by varying degrees, largely as a result of budget constraints and operational difficulties (Naves et al. 2008; Naves 2010).

The sample frame encompasses all households in regions eligible for the subsistence harvest of migratory birds and their eggs in Alaska. The household is the primary sampling unit. Grouping villages with similar harvest patterns into subregions allows for the expansion of reported harvests from surveyed villages to nonsurveyed villages in the same subregion. The subregions are grouped into regions, which approximately correspond to the 12 designated migratory bird management regions (CFR vol. 68, No. 139, pp. 43010–43030, July 21, 2003). The survey, however, covers 10 of these 12 regions—the Gulf of Alaska and Cook Inlet regions were combined because of their small numbers of eligible villages, and the Southeast Alaska region has not been surveyed (Figure 1). The original survey protocol listed 32 subregions within 10 regions (Wentworth 2006). Subregions in the Bristol Bay and Interior Alaska regions were revised by the AMBCC Harvest Survey Committee in 2009, which resulted in a total of 29 subregions (figures 2–11, Appendix A). Data analysis has been based on this revised configuration of subregions, as reported below and in Naves (2010).

Rotation of regions based on monitoring priorities has been implemented as a cost reduction measure (Table 1). Two-thirds of the villages in each surveyed region are to be sampled every year (Reynolds 2007). Regional hub villages (Bethel, Dillingham, Kotzebue, Barrow, Nome, Kodiak, Unalaska, and Tok) are to be surveyed each year that their region is surveyed because these larger villages may have harvest patterns that differ from those of smaller villages (e.g., fewer harvesters and lower harvests per hunter). However, coverage of regions has occasionally been incomplete because of funding limitations and difficulties related to field operations.

In 2008, the harvest survey was conducted in 5 regions: Aleutian–Pribilof Islands, Bristol Bay, Yukon–Kuskokwim Delta, North Slope, and Interior Alaska (only in the Yukon–Koyukuk subregion). The following organizations participated in the 2008 data collection:

- Aleutian–Pribilof Islands region: The Sentinel Program of the Aleut Marine Mammal Commission, the Qawalangin Tribe of Unalaska, and the ADF&G Division of Subsistence;
- Bristol Bay region: Bristol Bay Native Association;
- Yukon–Kuskokwim delta region: Yukon-Kuskokwim Delta National Wildlife Refuge and Togiak National Wildlife Refuge;

- North Slope region: North Slope Borough;
- Interior Alaska region: Kanuti National Wildlife Refuge.

Table 1.—Regions surveyed from 2004–2008.

Region	2004	2005	2006	2007	2008
Gulf of Alaska–Cook Inlet	•	•	•		
Kodiak Archipelago			•		
Aleutian–Pribilof Islands		•		•	•
Bristol Bay	•	•	•	•	•
Yukon–Kuskokwim Delta	•	•	•	•	•
Bering Strait–Norton Sound	•	•		•	
Northwest Arctic			•		
North Slope		•		•	•
Interior Alaska	•	•	•	•	•
Upper Copper River	•			•	
Southeast Alaska					

Source Survey results for 2004–2007 were reported in Naves (2010).

Sampling Methods

The original survey design called for a 3-level stratification (“none, low, high”) of households within a village and the evaluation of this sampling method once sufficient statewide data were accumulated (AMBCC 2003; Wentworth 2006). Villages surveyed across the state vary in size from a few households to about 2,000 households. Variation in village size led to the application of other sampling methods (Naves et al. 2008).

The survey relies on a village household list that includes all “resident” households. A household is considered resident if its members live in the village year-round and have lived in the village for at least the 12 previous months. The list of resident households does not include unoccupied dwellings, commercial buildings, and public buildings.

The precision goal of the subsistence harvest survey was derived from the precision goal of the HIP sport hunting monitoring program—95% confidence intervals within 10–20% of the estimated harvest (Bales et al. 2002:70). However, there are difficulties in comparing confidence intervals from these 2 surveys: 1) HIP currently does not report confidence intervals for harvest estimates of individual species, 2) some species harvested for subsistence uses are not included in the HIP survey, 3) different sport and subsistence hunting patterns may have different effects on the precision of harvest estimates, and 4) subsistence harvest estimates are currently available only at the regional and subregional levels while sport hunting estimates are available only at the state level.

The subsistence harvest survey covers a large geographic area and a large number of species. Some species are abundant and harvested in large numbers. Other species are harvested only occasionally because they have small populations, restricted distribution, or are not used for subsistence purposes. Wide-coverage harvest assessment programs cannot address both commonly- and rarely-harvested species with the same level of precision. After the publication of the first spring–summer subsistence harvest regulations in 2003, the public, biologists, and resource managers expressed strong interest in subsistence takes of non game bird species, which are sometimes harvested (although in relatively low numbers). Dedicated harvest surveys are

required to determine the harvests of species that have small populations, low densities, or limited distributions, and that are less likely to be precisely documented in the statewide subsistence harvest survey.

“None, Low, High” Stratification

At the beginning of the survey year, the surveyor classifies the resident households, according to their general harvest patterns of previous years, into only 1 of 3 harvest level strata: “none” (0 birds), “low” (1–10 birds), and “high” (10+ birds). The surveyor then draws a random sample from each harvest level so that 10% of all households in the “none,” 15% of households in the “low,” and 40% in the “high” stratum are sampled.

Census: 100% sampling

In small villages (up to about 40 households), sampling by census (100% sampling) is usually attempted because implementing the 3-level stratification and its stratum-specific sampling proportions with a small total number of households usually results in sample sizes that are too small.

Simple Random Sampling

Random selection without harvest level stratification is occasionally used. Also, sampling is treated as a simple random sampling if a census was attempted but some households could not be contacted.

“Harvester, Other” Stratification

In some cases, expansion of reported harvests is based on a 2-level (“harvester, other”) stratification where “harvester” includes all harvester households (“low” and “high” strata in 3-level stratification) and “other” includes non harvester households (“none” stratum) as well as non listed households or households with unknown harvest patterns. Three-level stratification of “none, low, high” is difficult to implement in large villages because 1) surveyors frequently do not know the general harvest patterns of all households, 2) large rural villages frequently have large population turnover, and 3) household lists for large villages often do not represent all resident households. It is difficult and costly to keep updated household lists of large villages. In the case of an incomplete household list, it would be inappropriate to assume that sampling of large villages approached a simple random sampling. Most likely, the households included in the household list were harvesters as opposed to non harvesters, because field coordinator and surveyor training emphasized the importance of surveying a higher proportion of high harvesters (Wentworth 2006). Also, locally hired surveyors are more likely to be familiar with Alaska Native households, which may include a higher proportion of harvesters when compared to households of other ethnicities. At the AMBCC 2008 spring meeting, field coordinators adopted the “harvester, other” stratification to sample large villages. Starting in 2009, field coordinator training focused on the need to survey both harvesters and other households, since beforehand stratification based on previous household harvest pattern naturally results in a degree of misclassification of household into these strata (Naves et al. 2008). Survey training emphasizes that both harvester and other households are to be sampled and that the sample includes a higher proportion of harvester households.

Survey Year and Survey Seasons

As stated earlier, the primary goal of the survey is to document spring–summer subsistence harvests under subsistence regulations. Although open seasons may vary on an annual basis according to subsistence harvest regulations, for purposes of this survey, the “survey year” is

April 1 through October 31 in most regions, except in Southern Coastal Alaska (Aleutian–Pribilof Islands, Kodiak Archipelago, Gulf of Alaska–Cook Inlet, and the South Alaska Peninsula of Bristol Bay), where the survey year ends on March 9. The survey year is divided into 3 “survey seasons”: spring, summer, and fall or fall–winter (Table 2). The fall migratory bird hunts (after September 1) are managed under early season frameworks in federal regulations selected and adopted as state regulations. Harvests from fall hunts should be captured by the HIP survey; however, the HIP survey is most likely ineffective in documenting fall subsistence harvests in rural Alaska because of low hunter participation in the HIP program. For this reason, the AMBCC subsistence harvest survey also covers fall or fall–winter.

The harvest report form is composed of 3 sheets, 1 for each season. In regions that have a winter survey, harvests are noted on the fall–winter page. As in the original survey protocol, surveyors make 4 visits to each participating household during a survey year (Wentworth 2006). In March–April, surveyors distribute survey forms to participating households. After the end of each survey season, surveyors visit the participating households to collect the corresponding sheet of the survey form (Table 2). The intent of using 3 seasonal recall periods is to help respondents more accurately recall the number and species of birds and eggs they harvest, given the large number of species included on the survey. In general, long recall periods may lead to increased recall bias (Westat Inc. 1989). However, difficulties with survey funding and field operations continue to prevent seasonal collection of harvest data as originally scheduled. A large proportion of surveys have been done with a single household visit at the end of the survey year (Naves et al. 2008).

Village and Household Consent

The survey is conducted only in villages and households that have agreed to participate. Village consent must be granted in writing, and is often given as a tribal or village council resolution. Individual household consent is documented with permission slips, which also allow calculation of household participation rates. During the first visit to each selected household, the surveyor explains the purpose of the survey to an adult household member, explains how the survey works, and invites the household to participate.

Household “No-Contact” and Refusals

If after 3 reasonable attempts the surveyor cannot contact a selected household, or if a selected household declines to participate, then an alternate household is selected to replace it. If stratification is used, the alternate household must be from the same harvest level stratum as the no-contact or no-consent household.

Reporting Harvests

The harvest report form is used to record the subsistence harvest of migratory birds and their eggs (Appendix B). The harvest report form has 1 sheet for each survey season (spring, summer, and fall or fall–winter). Each seasonal sheet has color illustrations of bird species in breeding plumage and fields to record the total number of birds harvested and the total number of eggs harvested. Due to variation in the availability and distribution of bird species, there are 3 versions of the harvest report form, each with a different set of species. The versions are for Interior Alaska, Southern Coastal Alaska, and the “main form” for villages in other regions (Appendix B). This helps to prevent erroneously recording bird species as harvested in areas where they do not normally occur.

Table 2.—Seasonal survey coverage and household visits.

Region	Spring			Summer			Fall		Winter		
	Apr	May	Jun	Jul	Aug	1 Jul–31 Aug	Sep	Oct	Nov	Dec	1 Nov–9 Mar
Gulf of Alaska–Cook Inlet	•	•	•	• 2nd	•		• 3rd	•	•	•	• 1st, 4th
Kodiak Archipelago	•	•	•	• 2nd	•		• 3rd	•	•	•	• 1st, 4th
Aleutian–Pribilof Islands	•	•	•	• 2nd	•		• 3rd	•	•	•	• 1st, 4th
South Alaska Peninsula (Bristol Bay)	•	•	•	• 2nd	•		• 3rd	•	•	•	• 1st, 4th
Bristol Bay (except South Alaska Peninsula)	•	•	•	• 2nd	•		• 3rd	•	4th		1st
Yukon–Kuskokwim Delta	•	•	•	• 2nd	•		• 3rd	•	4th		1st
Bering Strait–Norton Sound	•	•	•	• 2nd	•		• 3rd	•	4th		1st
Northwest Arctic	•	•	•	• 2nd	•		• 3rd	•	4th		1st
North Slope	•	•	•	• 2nd	•		3rd				1st
Interior Alaska	•	•	•	• 2nd	•		• 3rd	•	4th		1st
Upper Copper River	•	•	•	• 2nd	•		• 3rd	•	4th		1st

• Indicates a month in which a region was covered by a seasonal survey.

1st First household visit, to invite households to participate in the survey.

2nd Second household visit, to collect spring seasonal harvest data.

3rd Third household visit, to collect summer seasonal harvest data.

4th Fourth household visit, to collect fall or fall–winter seasonal harvest data.

AMBCC Subsistence Household Harvest Survey, Regions and Subregions

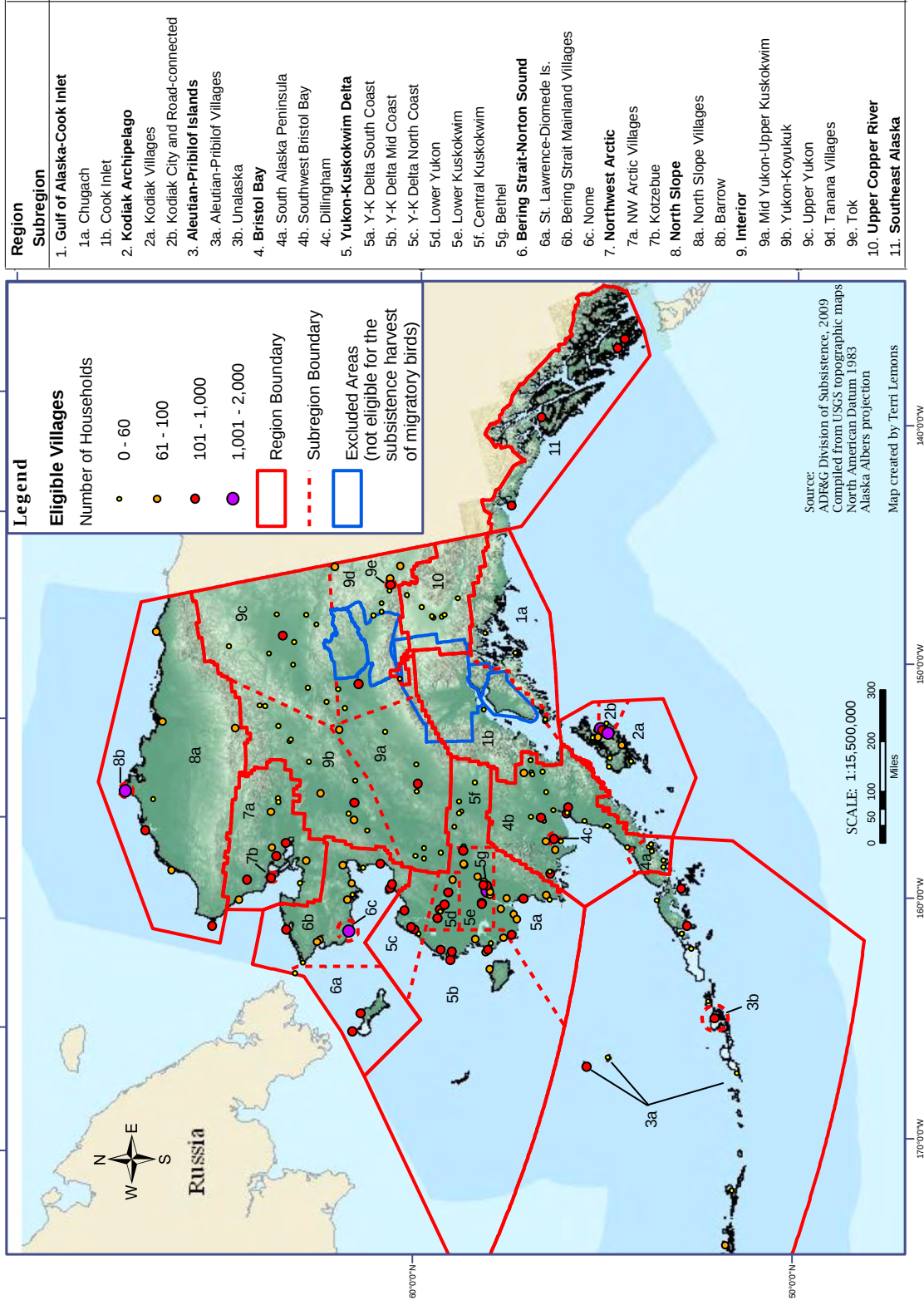


Figure 1.—Regions and subregions of the AMBCC migratory bird subsistence harvest survey.

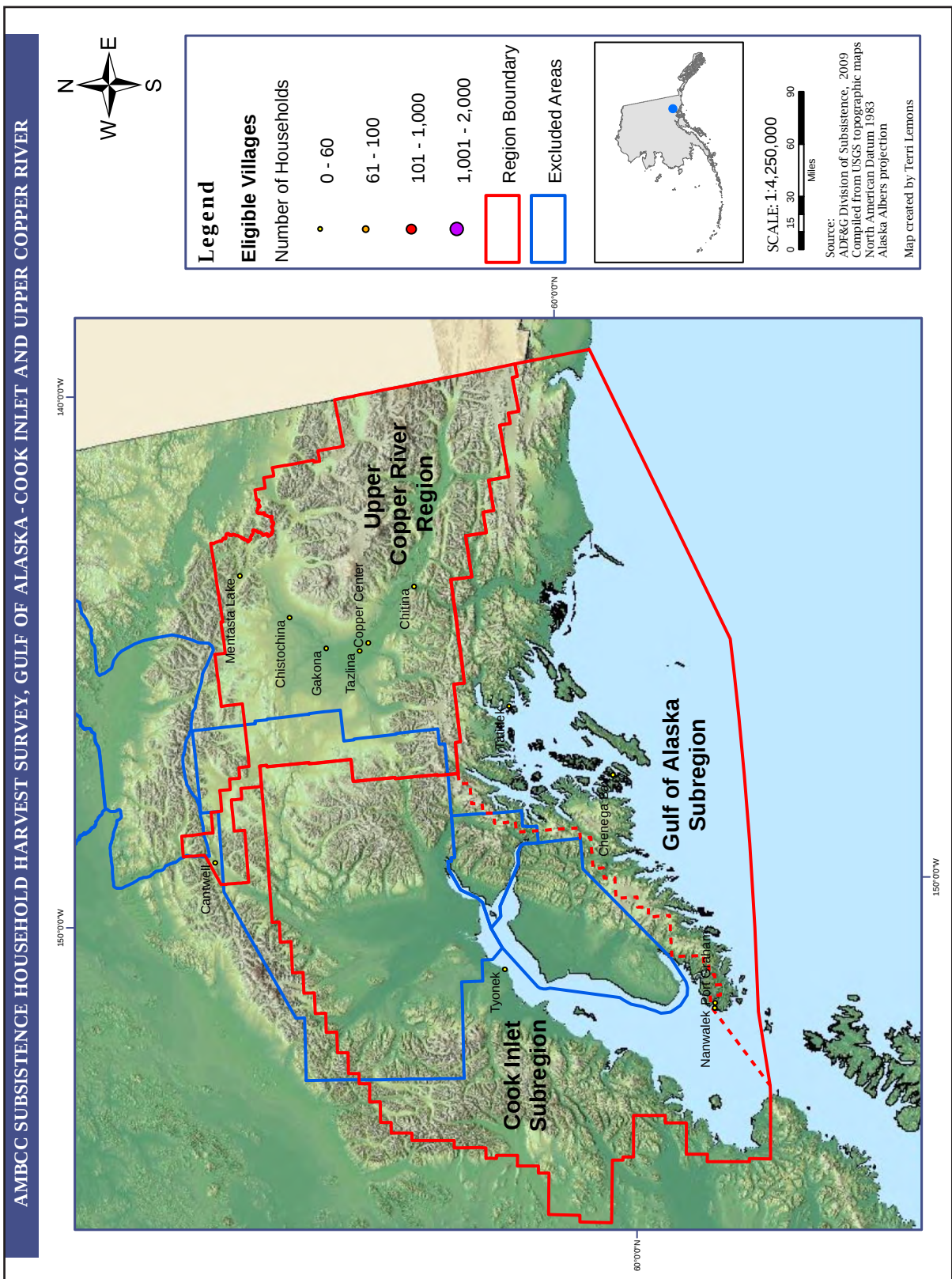


Figure 2.—Gulf of Alaska-Cook Inlet and Upper Copper River regions.

AMBCC SUBSISTENCE HOUSEHOLD HARVEST SURVEY, KODIAK ARCHIPELAGO

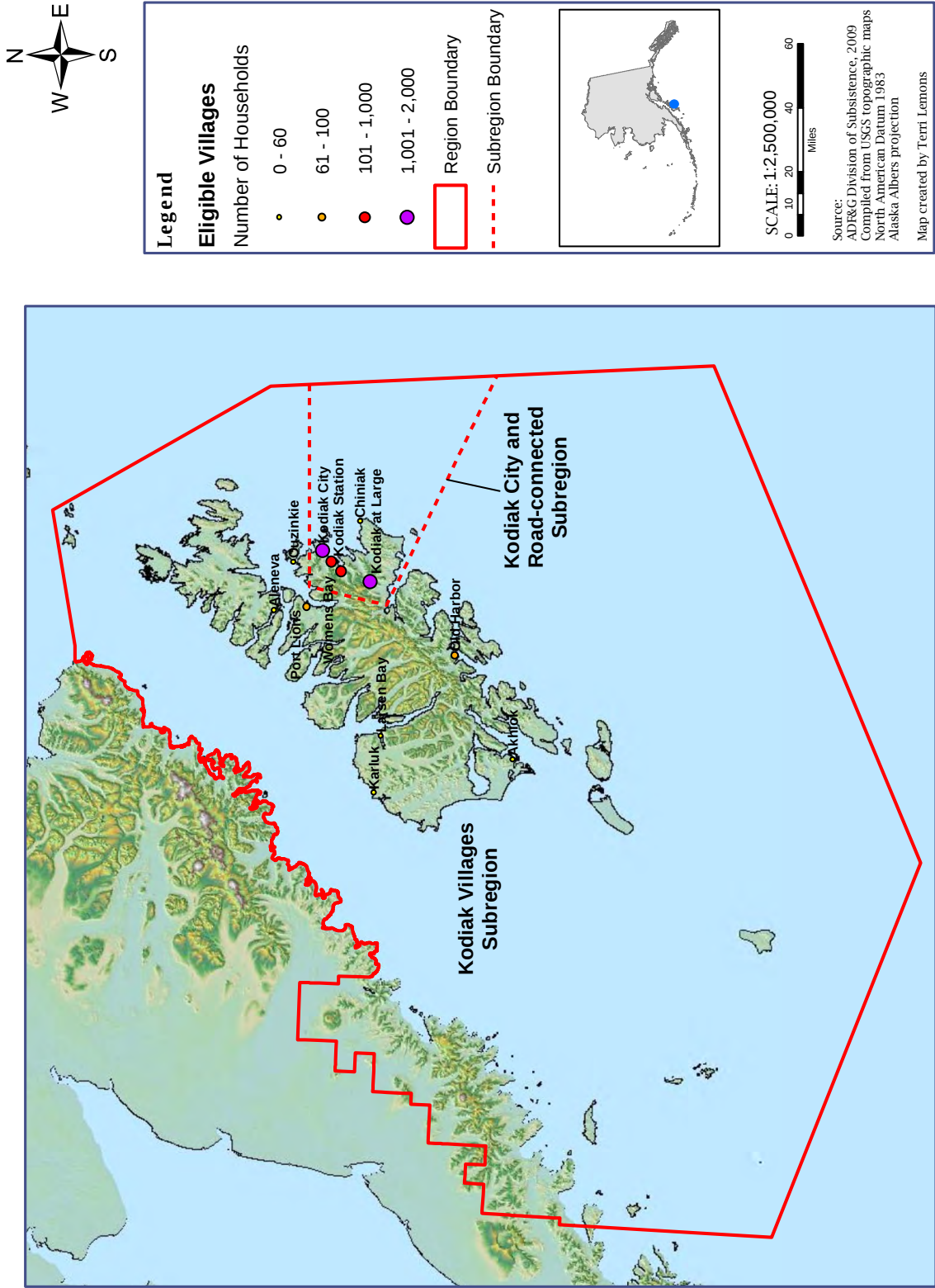


Figure 3.—Kodiak Archipelago region.

Figure 4.—Aleutian–Pribilof Islands region.

AMBCC SUBSISTENCE HOUSEHOLD HARVEST SURVEY, BRISTOL BAY

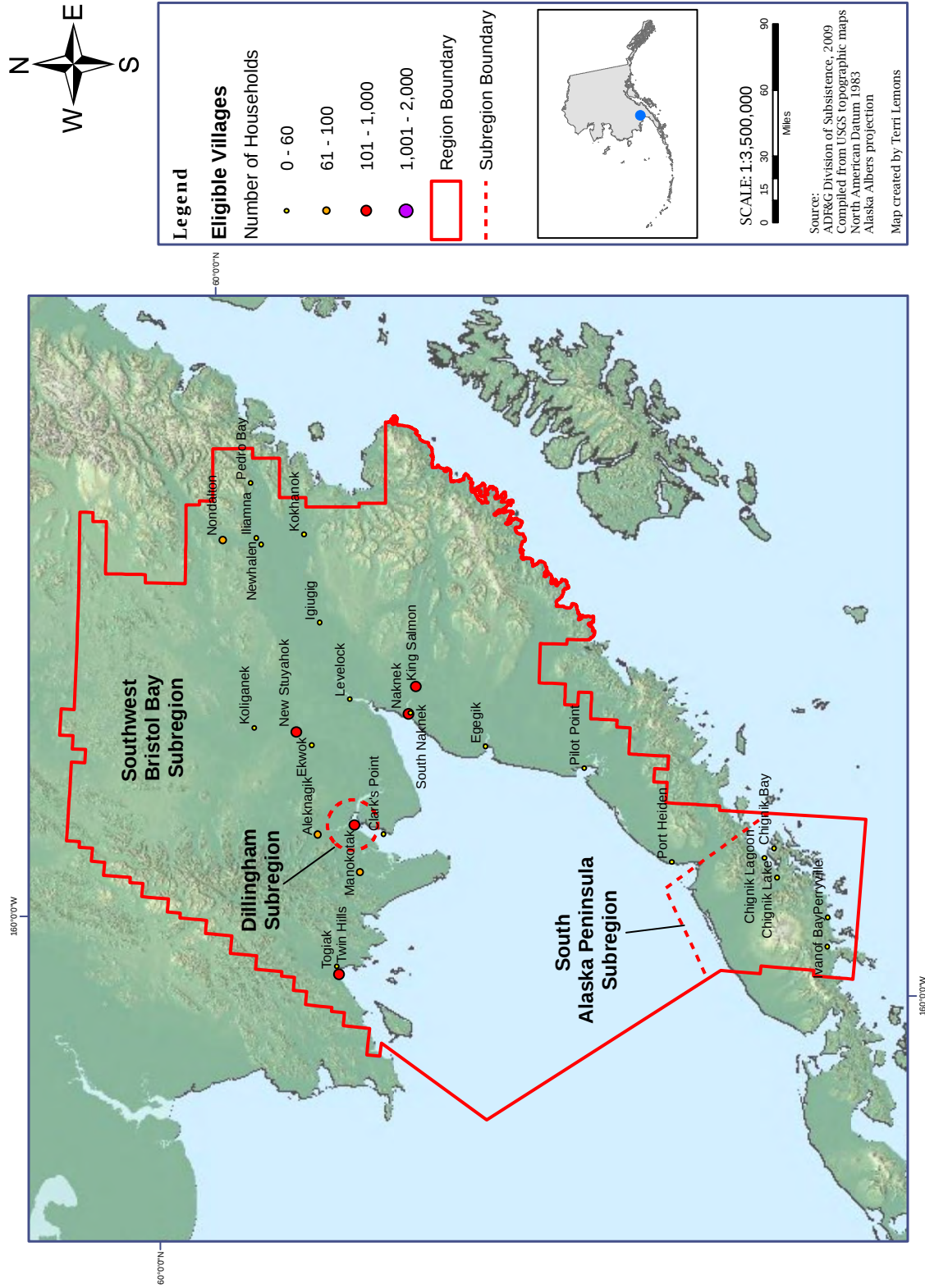


Figure 5.—Bristol Bay region.

Figure 6.—Yukon–Kuskokwim Delta region.

AMBCC SUBSISTENCE HOUSEHOLD HARVEST SURVEY, BERING STRAIT -NORTON SOUND

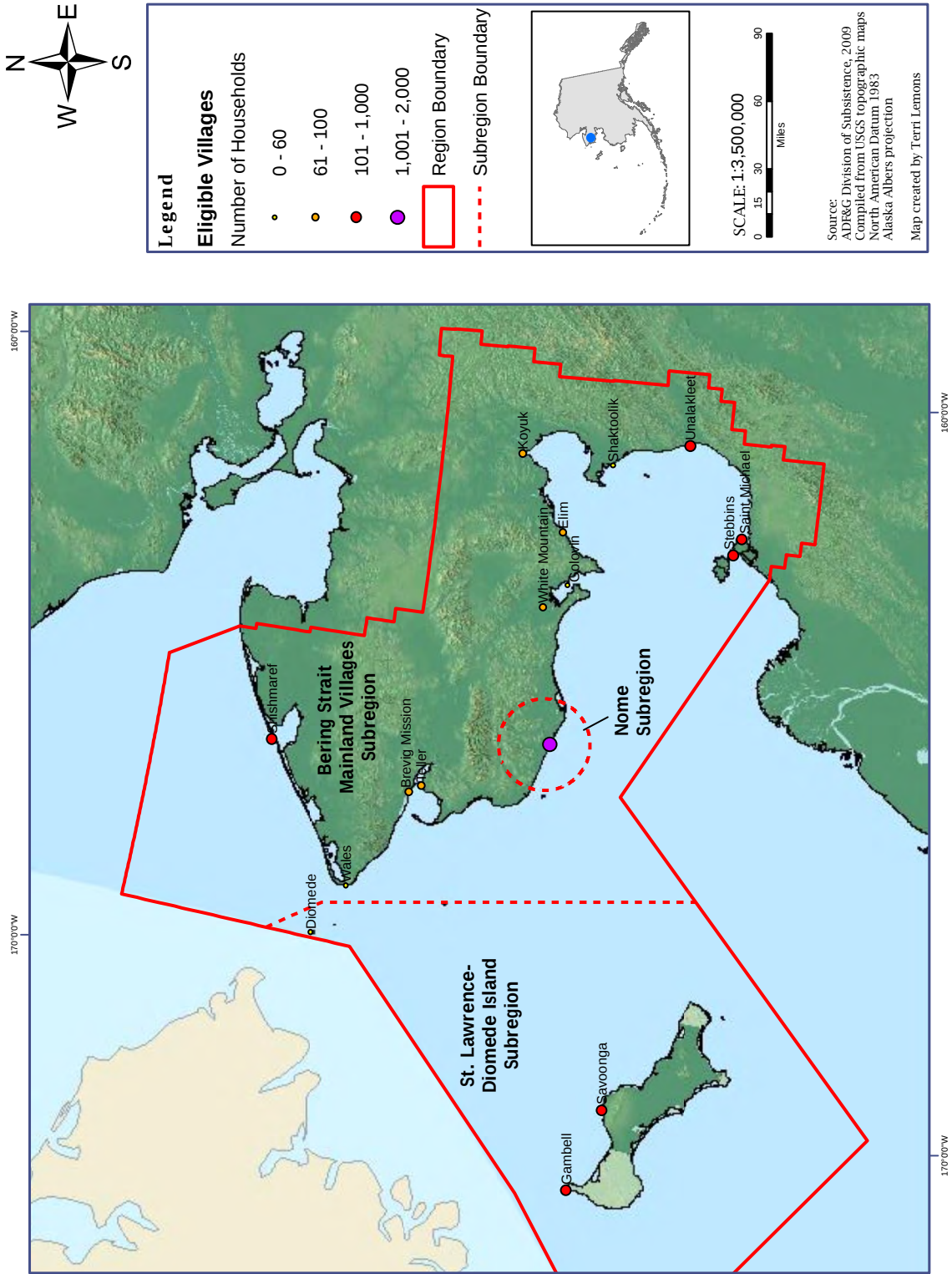


Figure 7.-Bering Strait-Norton Sound region.

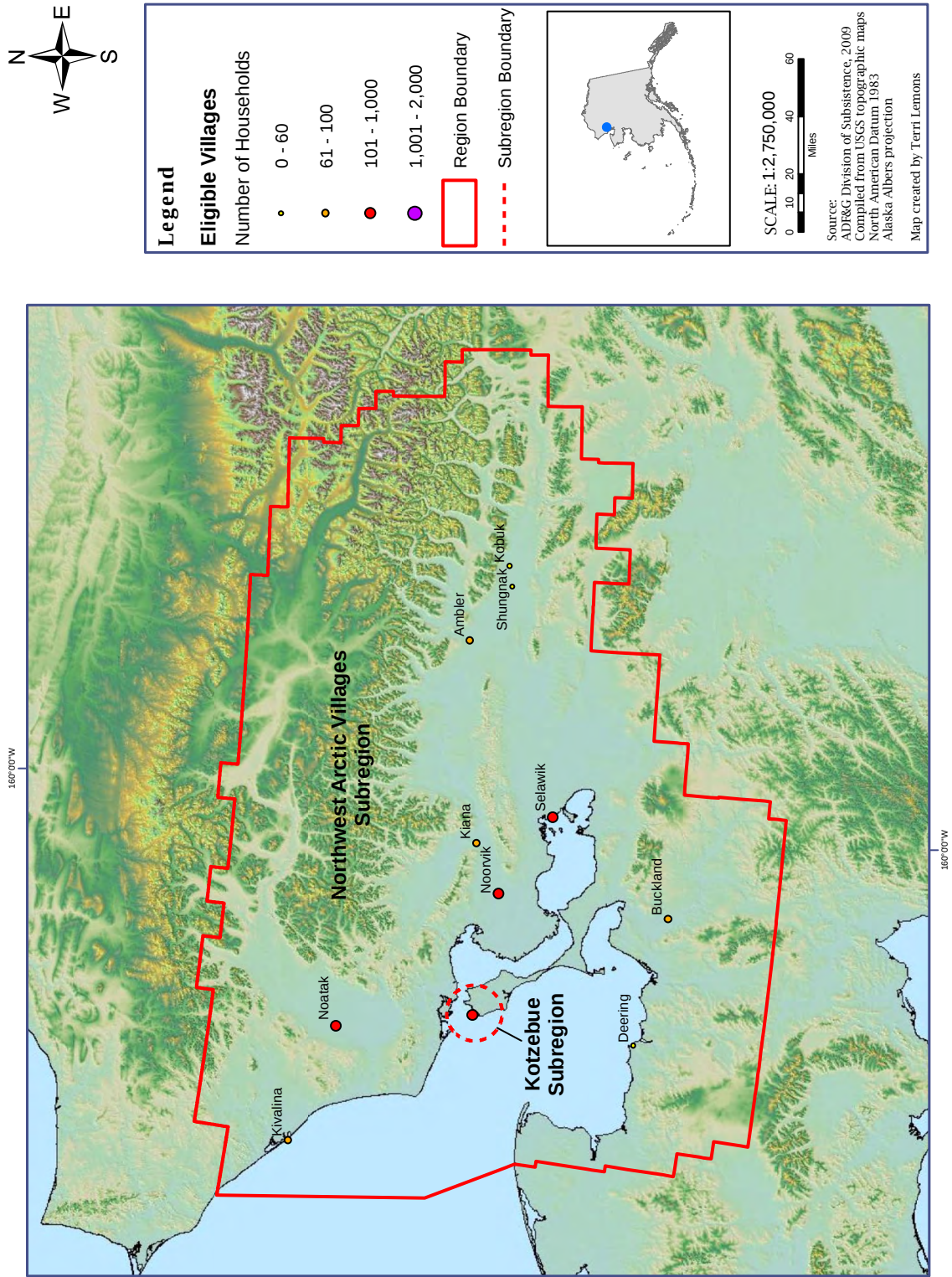


Figure 8.—Northwest Arctic region.

AMBCC SUBSISTENCE HOUSEHOLD HARVEST SURVEY, NORTH SLOPE

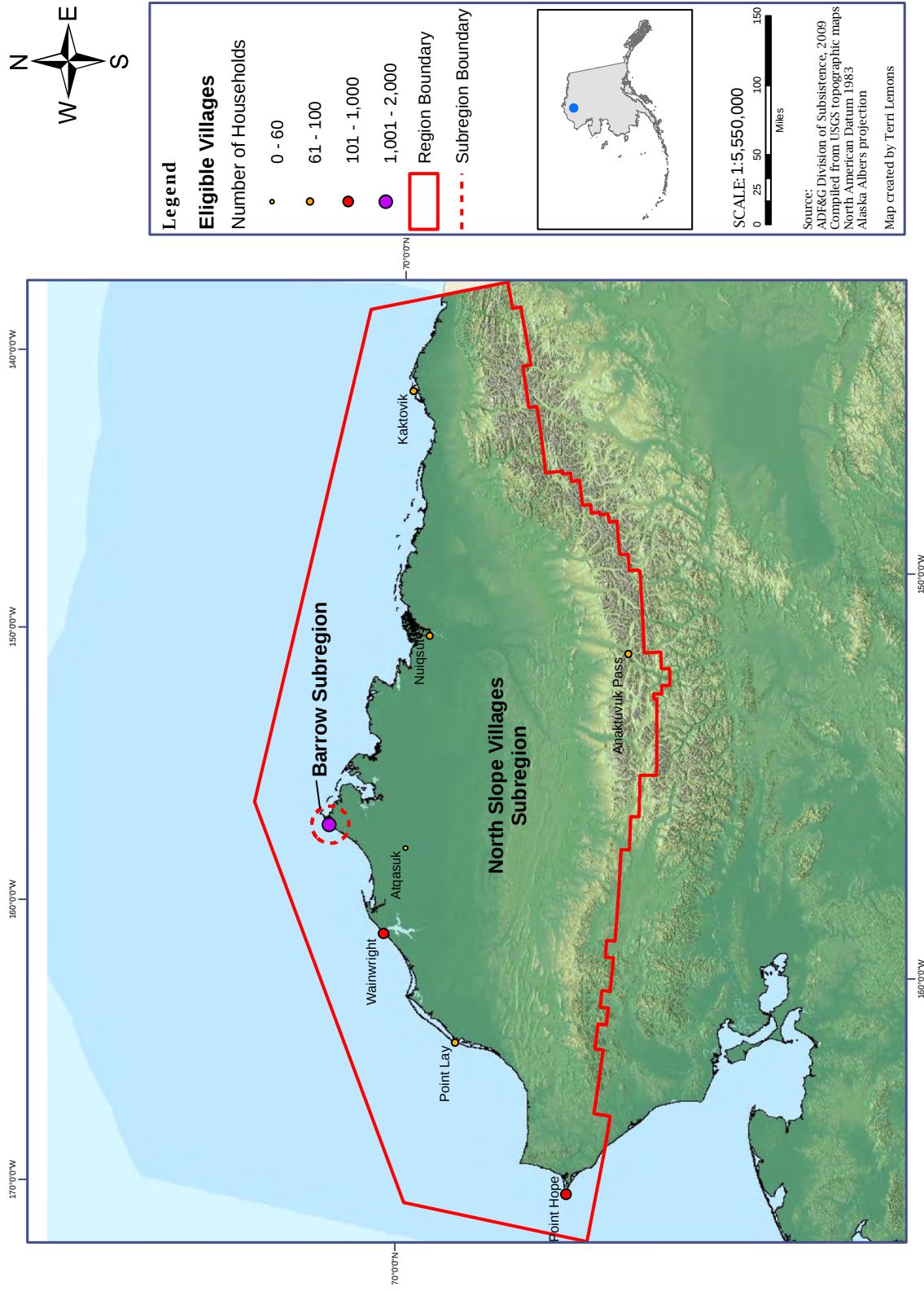


Figure 9.—North Slope region.

AMBCC SUBSISTENCE HOUSEHOLD HARVEST SURVEY, INTERIOR ALASKA

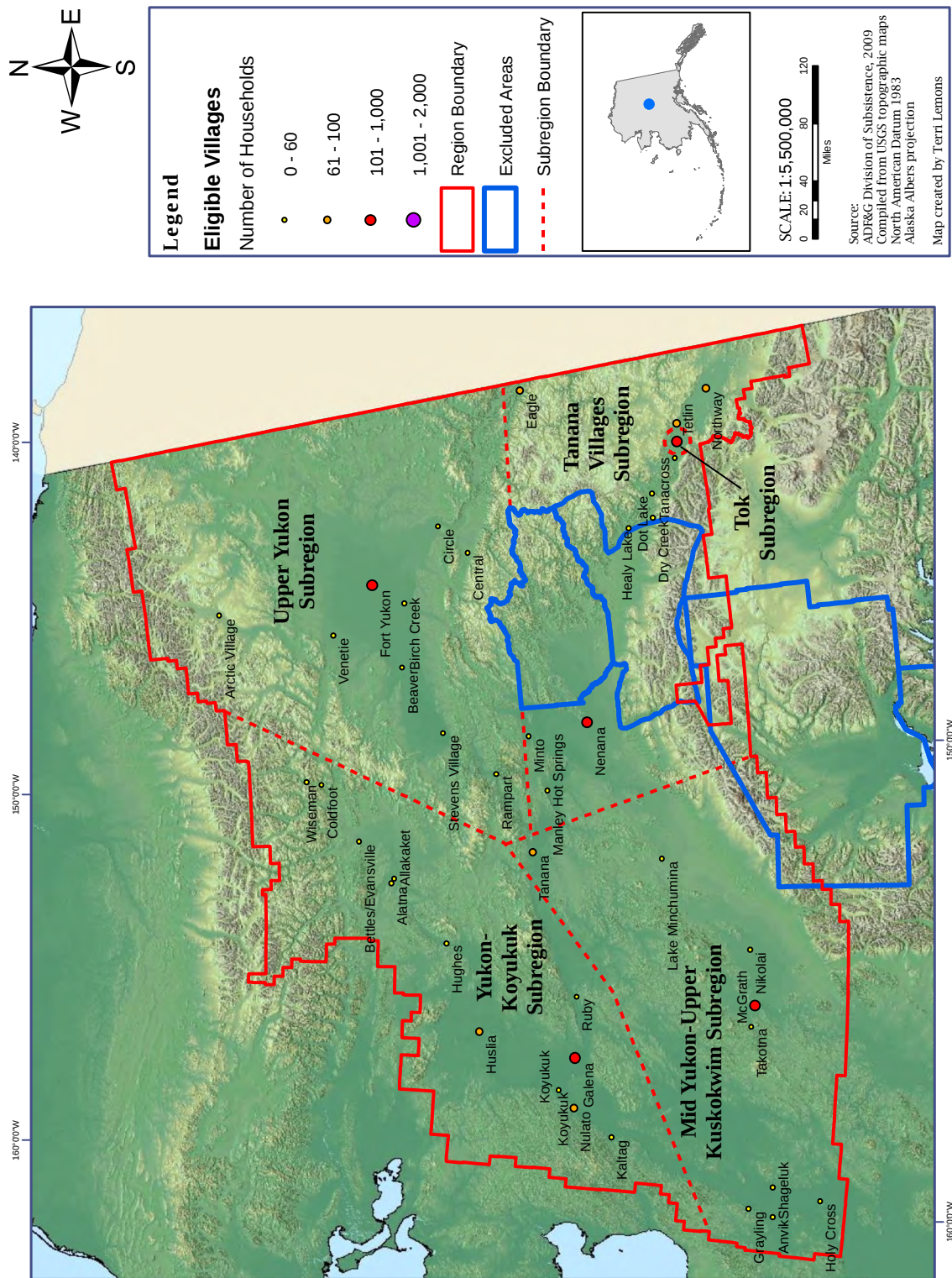


Figure 10.—Interior Alaska region.

AMBCC SUBSISTENCE HOUSEHOLD HARVEST SURVEY, SOUTHEAST ALASKA

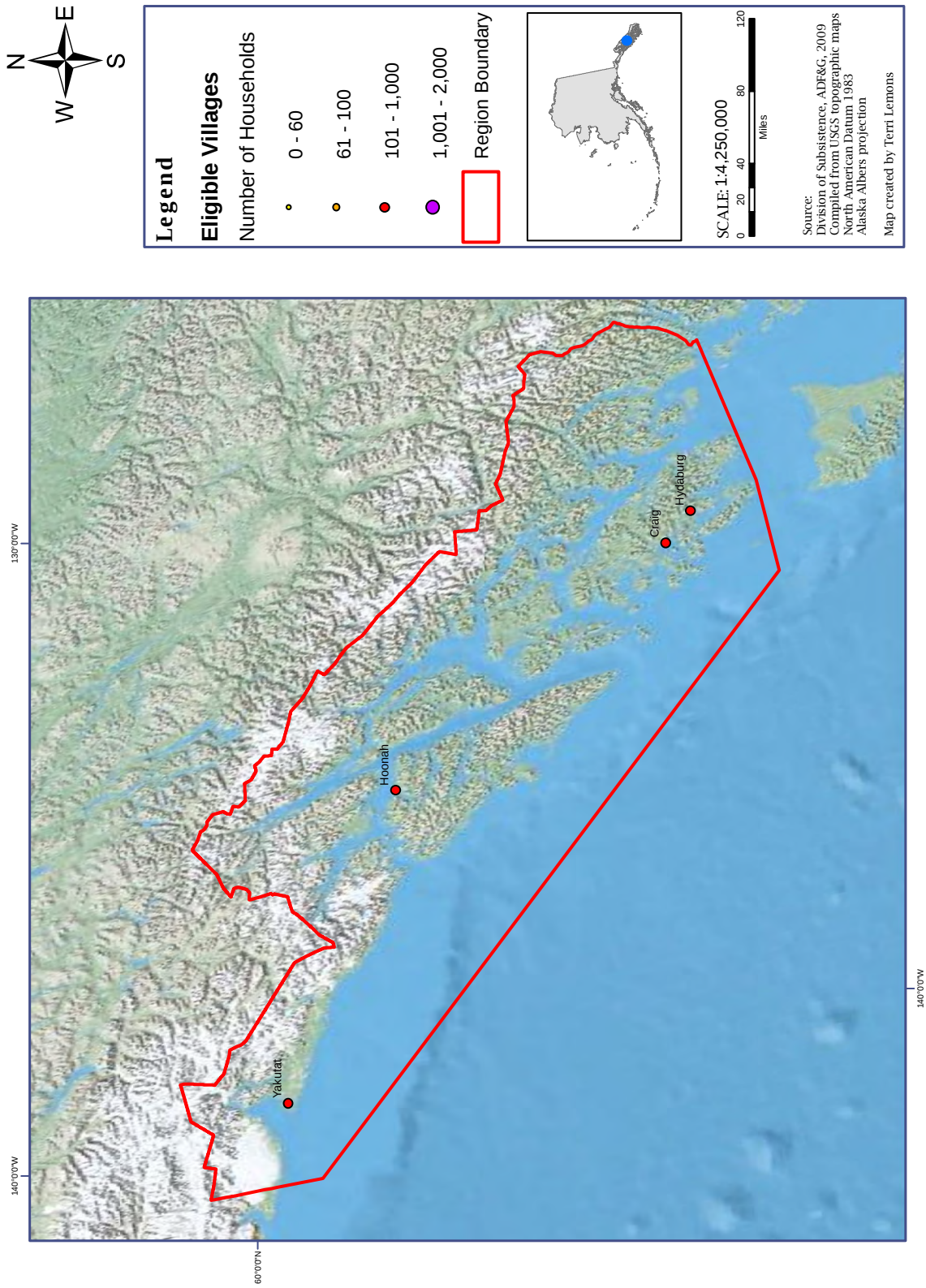


Figure 11.—Southeast Alaska region.

If a household harvests birds or eggs and gives them to another household, the harvest is to be recorded by the household that originally harvested the birds—eggs, and not by the household that received them. If a household does not harvest birds—eggs, any birds or eggs they receive are not to be recorded on their survey form.

Species Represented on the Harvest Report Form

The diverse subsistence cultures and economies across Alaska use a wide variety of migratory bird species, subject to seasonal availability, hunter access, and local traditions. The 2003 federal subsistence regulations allowed spring–summer harvest of about 90 species and subspecies of migratory birds, subject to seasons and restrictions (CFR vol. 68. No. 139, pp. 43010–43030, July 21, 2003). The harvest report form depicts about 50 species. The survey form was designed to record harvests of only those species that are significant to subsistence uses. Harvest of species not represented in the survey form can be reported in the “other bird” field. Identifying birds by subspecies can be difficult and it may be difficult to tell some species from others. The survey form does not differentiate between species and subspecies that are difficult to tell apart. To represent all species open to harvest on the survey forms would also result in an unwieldy, long survey.

Some bird species and eggs that are closed to harvest are depicted on the survey form. The list of birds and eggs closed to subsistence harvest may vary between regions according to the yearly hunting regulations. The inclusion of species closed to harvest on the survey form is not an endorsement of or consent to engage in the harvest of closed species. Rather, it is an attempt to collect accurate harvest data to aid in the sustainable management of all bird species. Management and conservation bodies, such as the AMBCC, the USFWS, and the flyway councils, need to know the numbers of birds and eggs taken to successfully plan for the sustainable management of bird populations. In order to elicit accurate answers to potentially sensitive questions, it is imperative that information from the survey is not used for punitive enforcement. To aid in this effort, identification of households is strictly confidential.

Data Transfer

The surveyor is required to check completed survey forms for completeness and correctness before sending them to the field coordinator. Upon receiving each batch of completed forms from surveyors, the field coordinator organizes and reviews all survey materials before sending them to the statewide survey coordinator. This step allows field coordinators to correct potential inconsistencies in data collection and to manage surveyor payment.

Data Management and Program Reporting

Data entry and archiving is completed by the Information Management Unit of the ADF&G Division of Subsistence. The statewide survey coordinator works closely with the unit to produce and report harvest estimates.

Data are entered in Microsoft Office Access 2003 forms that are designed to mimic survey forms.¹ The multiyear raw data are stored in a Microsoft SQL Server 2005 relational database and backups occur on a monthly basis. The structure of the database is documented in appropriate metadata. Double data entry and logical checks help ensure the accuracy of the information stored in the database and of the sampling information provided with completed survey forms (e.g., sampling method used, sample sizes, strata size). Logical checks and data analysis are done with SPSS Statistics 2008.

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

Original survey forms are scanned and archived as digital files. Archived survey materials do not include household names or other personal information in order to ensure confidentiality of household harvest reports. If household names are inadvertently revealed in the survey forms, the information is redacted prior to archiving.

DATA ANALYSIS

Geographic Scale of Harvest Estimates

Harvest estimates are presented at the subregional and regional levels. Harvest estimates at the regional level are produced when at least 75% of the households within the region are represented in the sample (see below). Because of issues related to management of species of conservation concern, the North Slope and the Bering Strait–Norton Sound regions have requested harvest estimates to be presented at the regional level only. Appropriate subregional sampling coverage has allowed calculation of regional harvest estimates in these 2 regions.

Harvest estimates at the subregional level may vary considerably between years (Table 5 and Table 6). Several factors may be involved:

- Yearly variation in the local abundance of birds;
- Hunter access to productive hunting grounds;
- Yearly variation in hunting effort associated with availability of other subsistence resources, especially salmon *Oncorhynchus* spp. and caribou *Rangifer tarandus*, or with temporary employment in the cash economy;
- Inappropriate subregional sampling coverage; and
- Heterogeneity of harvest patterns in villages within a subregion.

To calculate statewide harvest estimates, any large yearly variation in subregional harvest estimates requires analytical approaches that account for variability in harvest between years as well within subregions. Development of accurate statewide estimates may require more years of data as well as appropriate coverage of infrequently surveyed regions (Northwest Arctic, Kodiak Archipelago, Aleutian–Pribilof Islands) and nonsurveyed regions (Southeast Alaska). For a better understanding of yearly variation in subregional estimates, it is important to continue reporting harvest estimates at the subregional level.

Expansion at the Subregional Level

The subsistence harvest survey generally employs a stratified, clustered sampling approach (Cochran 1977). Harvest estimates are calculated for each season and the annual estimate is calculated as the sum of seasonal harvests, although there are a few difficulties. For example, one or more seasonal pages of the harvest report form may be missing for individual households. As a consequence, the total number of households or the sets of households surveyed in a village can vary by season within the same survey year. Furthermore, seasonal data may be missing for an entire harvest level stratum or for an entire village. For these reasons, absolute sample sizes are specific to each harvest level stratum, season, and village. Because calculation of annual harvest estimates and confidence intervals requires an annual sample size, the maximum number of households sampled among seasons is used (Table 3).

The reported harvest is first expanded in each harvest level stratum and village: harvests reported by households sampled in each stratum are expanded to all households in that stratum. Considering the sampling methods used, the number of harvest level strata in a village may be 3

Table 3.—Number of villages and households included in data analysis, 2004–2008.

Survey year	Villages included in harvest estimates	Households surveyed		
		Spring	Summer	Fall
2004	77	1,770	1,707	1,673
2005	75	2,226	2,251	1,742
2006	62	1,793	1,773	1,687
2007	74	2,076	2,051	1,491
2008	44	1,630	1,568	1,189

Source Survey results for 2004–2007 were reported in Naves (2010).

(“none, low, high”), 2 (“harvester, other”), or 1 (census or simple random sampling). Thus during the calculation of this first expansion, factors are specific to each harvest level and season in each village surveyed. The following formula is used for the first expansion:

Estimated harvest at harvest level stratum = sum of harvests reported by all households in a stratum $\times$ (number of households sampled in the stratum $\div$ total number of households in the stratum).

The mean harvest within the subregion is used as a substitute for missing data at the harvest level and the season. The harvest estimates per year, per village, per season, and per species are calculated as the sum of the estimated harvest at each harvest level stratum.

The second expansion calculation expands estimated harvests in surveyed villages to all villages within the subregion. Because the number of households varies widely between villages within a subregion, this second expansion is calculated using the number of households in surveyed and nonsurveyed villages in a subregion. The following formula is used:

Estimated harvest at subregional level = sum of the estimated harvest in surveyed villages $\times$ (number of households in surveyed villages $\div$ total number of households in the subregion).

Formulas used to estimate harvests and confidence intervals at the subregional level were based on Cochran (1977) and Bernard et al. (1998) (Appendix D). The formula used to calculate estimated harvests accounts for missing data at each harvest level stratum. However, if seasonal data are missing for all harvest level strata in a village, customized analytical approaches are necessary in order to use mean replacement.

The total number of households in the subregion is calculated as the sum of total resident households in the surveyed villages plus the estimated village size of the nonsurveyed villages. For surveyed villages, the total number of households represents the number of households resident in the village for at least 12 months and excludes unoccupied dwellings and households that recently moved to the village. The total number of resident households in surveyed villages is provided by the field coordinator as part of the sampling information in the “household list.” Village size estimates are obtained by dividing State of Alaska yearly village population estimates from the Alaska Department of Labor and Workforce Development² by the average household size as reported in the 2000 federal census (U.S. Census Bureau 2001) (village population divided by the number of households).

The total number of households provided by field coordinators and village estimated sizes are compared in order to assess whether household lists are complete. Annual village size as recorded in the Division of Subsistence Community Subsistence Information System³ (CSIS) is also used

2. <http://almis.labor.state.ak.us/?PAGEID=67&SUBID=171>, accessed June 7, 2009.

3. <http://www.subsistence.adfg.state.ak.us/CSIS>. Hereinafter cited as CSIS.

to assess the completeness of household lists. If these sources yield a discrepancy greater than 30–40% in the number of households, efforts are made to contact the field coordinator and obtain local information on village size, such as from lists held by tribal councils. If local information on village size cannot be obtained, CSIS information or estimated village sizes are used in harvest expansions.

Villages for which sampling information is missing (the household list, sampling method, or harvest level strata size are not provided) are not included in the analysis.⁴

Expansion at Regional Level

The third expansion expands the estimated harvest in surveyed subregions to all subregions within a region. Because the number of households in each subregion varies significantly, this third expansion is based on the number of households in both the surveyed and nonsurveyed subregions in a region, and is calculated as follows:

Estimated harvest at regional level = sum of the estimated harvest in surveyed subregions × (number of households in surveyed subregions ÷ total number of households in the region).

Subregional estimates are expanded to the regional level only if at least 75% of the households within the region are represented in the sample (nonsurveyed subregions must not represent more than 25% of the total households in the region). Formulas used to estimate harvest and confidence intervals at the regional level are based on Cochran (1977) and Bernard et al. (1998) (Appendix E). The formula to estimate harvests does account for missing data at the harvest level stratum. However, if seasonal data are missing for a harvest level stratum in a village, customized analytical approaches are necessary in order to use mean replacement.

For annual harvest estimates both at the subregional and regional levels, if the low end of the confidence interval is less than the reported harvest, the calculated low end is replaced by the reported harvest.

Conversion of Egg Volume to Numbers of Eggs

Egg harvest is sometimes reported on this survey by volume, such as the number of “5-gallon buckets” or the number of “1-gallon buckets.” Conversion factors for volumes of eggs to numbers of eggs were estimated by comparing the volumes of eggs of wild bird species reported in the Birds of North America Series to the volumes of “large” domestic chicken eggs (personal communication, James Magdanz, ADF&G Subsistence Resource Specialist, Kotzebue, Alaska, June 2009) (Table 4). It is known that a 1-gallon bucket can hold 48 large chicken eggs (24 oz per dozen, U.S. Department of Agriculture standard). This comparison is necessary because eggs of different size and shape arrange differently in a given volume; i.e., the amount of empty space among eggs is related to the size and shape of the eggs. In the future, actual counts of eggs per gallon should be documented on the egg gathering grounds.

Reports of Egg Harvest in Fall

Harvest reports occasionally include eggs gathered in fall (September 1 through October 31) or fall–winter (September 1 through March 9). However, the nesting period of birds in Alaska is usually only as late as July and there are no records of customary and traditional uses of eggs that have failed to hatch. For these reasons, reports of eggs harvested in fall or fall–winter are considered to be recording inconsistencies in which the surveyor or the household member records the harvest on the wrong seasonal page or in the field reserved for “birds” rather than in the field

4. In 2008, this was 5 out of 49 villages surveyed.

Table 4.–Estimated conversion factors, egg volume to number of eggs.

Species	Number of eggs in 5-gallon bucket	Number of eggs in 1-gallon bucket
Mallard ^a	261	52
Pintail ^b	327	65
Arctic tern ^c	716	143
Mew gull ^d	261	52
Glaucous gull ^e	121	24
Glaucous-winged gull ^f	147	29
Herring gull ^g	147	29
Murre ^h	126	25
<i>Sources</i>	Personal communication, James Magdanz, ADF&G Subsistence Resource Specialist, Kotzebue, Alaska;	
a.	Drilling et al. (2002)	
b.	Austin and Miller (1995)	
c.	Hatch (2002)	
d.	Moskoff and Bevier (2002)	
e.	Gilchrist (2001)	
f.	Hayward and Verbeek (2008)	
g.	Pierotti and Good (1994)	
h.	Ainley et al. (2002)	

reserved for “eggs.” Each of these cases are individually assessed and assumed to be harvest of birds in fall or harvest of eggs in spring, based on the harvest patterns of the household and of the village.

Household Participation Rates

Household participation in the survey is voluntary. The original survey method used permission slips to document household participation in the survey. During the first visit, when the surveyor invited each selected household to participate, he or she completed a permission slip for every visited household and noted whether the household agreed to participate (“yes”) or not (“no”). The following issues in the use of these permission slips were identified:

- Permission slips were not completed for a surveyed village;
- Permission slips were not completed for some households in a surveyed village;
- Permission slips were completed incorrectly (“no” represented “no harvest” or “no contact” rather than “no consent to conduct the survey”); and
- Completed permission slips were not submitted for data management and analysis at ADF&G.

Household participation rates at the regional and subregional levels are calculated based on the permission slips available for analysis (see the Results section). Identified instances where “no” could represent “no contact” or “no harvest” rather than “no consent” are not included in the analysis of household participation rate. Household participation rates are calculated as the number of households that agreed to participate in the survey (“yes”) divided by the total number of permission slips available.

RESULTS

Harvest estimate tables presented in this report include only the bird species represented in the version of the harvest report form used at each region or subregion (Appendix C). The species categories of “Duck (unidentified)” and “Other/unknown bird” are included in tables only if harvest in these categories is reported.

Information on sampling effort is presented in a footnote to each harvest estimate table. For subregional tables, “sampling effort” refers to the number of villages surveyed and the proportion of subregion households represented in the sample (the number of households in surveyed villages in relation to the total number of households in the subregion). For regional tables, sampling effort refers to the number of villages and of subregions surveyed. Major deviations from survey protocols, such as significantly incomplete geographic coverage or nonstandard village sampling approaches, are also documented in table footnotes.

If not all subregions were surveyed, regional harvest estimates may be larger than the sum of the surveyed subregions because expanded estimates account for nonsurveyed subregions. Regional estimates are not presented if nonsurveyed subregions represent more than 25% of the regional households.

Annual estimates for the total harvests of birds and eggs at the regional and subregional levels are summarized in Table 5 (birds) and Table 6 (eggs). Regional and subregional estimates in these tables indicate that estimates detailed by species are available in the regional and subregional tables that follow (tables 7–38). A regional table precedes the tables for its subregions unless survey coverage was not enough to allow calculation of regional estimates (e.g., Interior Alaska region, 2008). Household participation rates for 2004–2008 are presented in Table 39.

Table 5.—Annual harvest estimates total birds at the subregional and regional levels, 2004–2008.

Region	2004				2005				2006				2007				2008			
	Number	95% CI	Low	High	Number	95% CI	Low	High	Number	95% CI	Low	High	Number	95% CI	Low	High	Number	95% CI	Low	High
Gulf of Alaska-Cook Inlet	2,995	32%	2,039	3,951	**				**											
Gulf of Alaska	2,756	17%	2,278	3,234					596	42%	343	849								
Cook Inlet	239	30%	168	310	13	57%	5	20												
Kodiak Archipelago																				
Kodiak Villages	-	-	-	-	-	-	-	-	5,552	28%	3,972	7,133	-	-	-	-	-	-	-	-
Kodiak City & Road Connected	-	-	-	-	-	-	-	-	a				-	-	-	-	-	-	-	-
Alutian-Pribilof Islands																				
Alutian-Pribilof Villages	-	-	-	-	**				-	-	-	-	**				8,401	30%	5,909	10,894
Unalaska	-	-	-	-	16,876	35%	11,050	22,702	-	-	-	-	(7,371)	(77%)	(1,708	13,035)	7,642	21%	6,030	9,254
Bristol Bay																				
South Alaska Peninsula	801	24%	609	992					-	-	-	-	28,285	20%	22,538	34,031	32,995	14%	28,326	37,663
Southwest Bristol Bay	14,955	10%	13,494	16,416	32,769	18%	26,937	38,600	(26,715)	(22%)	(20,959	32,471)	968	50%	488	1,449	(115)	(111%)	(20	242)
Dillingham	-	-	-	-	11,769	30%	8,188	15,350	-	-	-	-	7,148	25%	5,395	8,901	(29,352)	(14%)	(25,173	33,532)
Yukon-Kuskokwim Delta	130,343	6%	122,107	138,578	114,514	8%	105,504	123,523	171,856	7%	159,552	184,160	b				79,088	9%	71,986	86,190
Y-K Delta South Coast	25,764	11%	22,849	28,680	35,508	7%	33,144	37,873	31,918	8%	29,310	34,526	33,927	11%	30,229	37,625	19,999	12%	17,663	22,334
Y-K Delta Mid Coast	34,480	8%	31,870	37,090	17,546	11%	15,664	19,429	(61,998)	(12%)	(54,306	69,689)	43,737	13%	37,837	49,638	17,160	15%	14,512	19,809
Y-K Delta North Coast	8,806	17%	7,320	10,292	11,206	14%	9,663	12,748	4,493	21%	3,545	5,440	1,206	31%	829	1,584	4,867	22%	3,797	5,936
Lower Yukon	(6,201)	(19%)	(5,012	7,390)	6,815	9%	6,206	7,424	10,269	12%	9,025	11,513	3,988	15%	3,404	4,572	4,727	16%	3,994	5,460
Lower Kuskokwim	46,033	15%	39,095	52,971	16,557	11%	14,771	18,344	48,849	8%	45,095	52,604	58,983	7%	54,575	63,392	22,813	14%	19,721	25,906
Central Kuskokwim	440	32%	300	581					1,167	35%	754	1,580	219	79%	46	391				
Bethel ^c	8,618	17%	7,184	10,053	23,954	24%	18,246	29,662	13,163	24%	9,969	16,357	123,257	10%	110,419	136,094	7,789	16%	6,556	9,021
Bering Strait-Norton Sound	53,576	8%	49,194	57,959	74,115	17%	61,682	86,548												
St. Lawrence-Dionede Is.	33,600	7%	31,326	35,874	30,481	9%	27,876	33,087	-	-	-	-	88,362	8%	81,114	95,609	-	-	-	-
Bering Strait Mainland Villages	17,195	9%	15,567	18,822	37,482	18%	30,829	44,136	-	-	-	-	31,169	10%	28,193	34,145	-	-	-	-
Nome	2,782	21%	2,210	3,353	6,152	31%	4,234	8,069	-	-	-	-	3,726	37%	2,359	5,094	-	-	-	-
Northwest Arctic																				
Northwest Arctic Villages	-	-	-	-	-	-	-	-	**				-	-	-	-	-	-	-	-
Kotzebue	-	-	-	-	-	-	-	-	9,676	21%	7,631	11,722	-	-	-	-	-	-	-	-
North Slope																				
North Slope Villages	-	-	-	-	15,615	11%	13,820	17,410	-	-	-	-	44,270	23%	34,218	54,322	45,123	22%	35,404	54,842
Barrow	-	-	-	-	4,672	12%	4,115	5,228	-	-	-	-	6,118	24%	4,630	7,607	9,873	38%	6,080	13,665
Interior Alaska																				
Mid Yukon-Upper Kuskokwim	50,995	13%	44,216	57,774	**				37,068	17%	30,792	43,343	38,152 ^d	15%	32,374	43,930	35,250	17%	29,427	41,073
Yukon-Koyukuk	(3,086)	(43%)	(1,755	4,418)	2,744	29%	1,956	3,532	697	36%	447	948	**							
Upper Yukon	3,108	18%	2,558	3,658	(930)	(44%)	(525	1,335)	(1,764)	(60%)	(712	2,816)	(3,031)	(72%)	(856	5,206)	(6,908)	(89%)	(731	13,084)
Tanana Villages	(14,418)	(16%)	(12,095	16,742)	-	-	-	-	10,927	12%	9,576	12,277	18,402	14%	15,800	21,004	-	-	-	-
Tok	20,388	16%	17,197	23,579	-	-	-	-	17,358	14%	14,940	19,776	-	-	-	-	-	-	-	-
Upper Copper River^e	1,120	30%	782	1,458	-	-	-	-	6,321 ^d	31%	4,385	8,258	-	-	-	-	-	-	-	-

-: Region/subregion not surveyed. *: 95% CI ≥ 100% (Starting in 2008; if "Low" was smaller than reported harvest, "Low" was replaced by reported harvest). **: Less than 75% of region households represented in sample, harvest estimates not produced at the regional level. (In parenthesis): Less than 30% of subregion households represented in the sample and/or only 1 out of several subregion villages surveyed.

^a Fall bird harvest data not available for Kodiak City & Road Connected subregion; annual harvest estimates not available.

^b Fall bird harvest data not available for Bethel subregion; annual harvest estimates not available.

^c Bethel harvest expansions assume that harvester households account for 30% of the total village households (village size estimates).

^d Subregional harvest estimates assumed simple random sampling.

^e Sampling and harvest expansions represent Alaska Native households only.

2004–2007 Harvest estimates from Naves (2010).

Table 6.—Annual harvest estimates total bird eggs at the subregional and regional levels, 2004–2008.

Region	2004				2005				2006				2007				2008			
	Number	Confidence Interval		Number	Confidence Interval		Number	Confidence Interval		Number	Confidence Interval		Number	Confidence Interval		Number	Confidence Interval			
		95% CI	Low – High		95% CI	Low – High		95% CI	Low – High		95% CI	Low – High		95% CI	Low – High		95% CI	Low – High	95% CI	Low – High
Gulf of Alaska-Cook Inlet	2,178	17%	1,801 – 2,556	**	-	-	**	102	11.5%	* – 220	-	-	-	-	-	-	-	-		
	2,173	24%	1,652 – 2,694	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	5	75%	1 – 9	0	***	-	5,222	73%	1,403 – 9,041	-	-	-	-	-	-	-	-	-		
		-	-	-	-	-	4,545	56%	2,010 – 7,079	-	-	-	-	-	-	-	-	-		
Kodiak Archipelago	-	-	-	-	-	-	(677 ^c)	(41%)	(401) – (953)	-	-	-	-	-	-	-	-	-		
Kodiak Villages	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Kodiak City & Road Connected	-	-	-	**	11,733	38%	7,251 – 16,215	-	-	-	-	-	**	-	-	4,778	43%	2,704 – 6,852		
Aleutian-Pribilof Islands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,018	30%	2,829 – 5,208		
Aleutian-Pribilof Villages	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	760	80%	154 – 1,365		
Unalaska	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47,653	30%	33,492 – 61,813		
Bristol Bay	**	-	-	47,799	35%	31,274 – 64,324	**	-	-	-	-	-	30,801	27%	22,354 – 39,249	30,801	27%	22,354 – 39,249		
South Alaska Peninsula	409	49%	209 – 609	-	-	-	-	-	-	-	-	-	651	81%	122 – 1,181	651	81%	122 – 1,181		
Southwest Bristol Bay	54,437	20%	43,363 – 65,511	39,206	24%	29,809 – 48,603	(31,292)	(26%)	(23,194 – 39,391)	-	-	-	25,118	21%	19,757 – 30,479	25,118	21%	19,757 – 30,479		
Dillingham	-	-	-	5,768	74%	1,478 – 10,058	-	-	-	-	-	-	5,032	56%	2,215 – 7,850	5,032	56%	2,215 – 7,850		
Yukon-Kuskokwim Delta	27,288	14%	23,433 – 31,143	22,268	11%	19,771 – 24,765	30,723	20%	24,444 – 37,003	-	-	-	19,153	16%	16,033 – 22,274	19,153	16%	16,033 – 22,274		
Y-K Delta South Coast	7,768	20%	6,216 – 9,321	13,424	13%	11,654 – 15,195	7,406	23%	5,717 – 9,095	-	-	-	1,746	28%	1,262 – 2,230	1,746	28%	1,262 – 2,230		
Y-K Delta Mid Coast	14,598	17%	12,136 – 17,060	2,140	25%	1,595 – 2,684	(21,354)	(27%)	(15,598 – 27,111)	-	-	-	11,930	19%	9,656 – 14,204	11,930	19%	9,656 – 14,204		
Y-K Delta North Coast	2,466	40%	1,474 – 3,459	3,921	43%	2,251 – 5,592	188	50%	95 – 282	-	-	-	22	118%	* – 47	554	66%	187 – 920		
Lower Yukon	(191)	(69%)	(58 – 323)	652	71%	191 – 1,112	232	42%	133 – 330	-	-	-	565	54%	263 – 868	0	***	-		
Lower Kuskokwim	2,265	32%	1,537 – 2,993	1,302	31%	900 – 1,703	1,498	27%	1,087 – 1,909	-	-	-	4,891	19%	3,947 – 5,835	5,298	23%	4,093 – 6,502		
Central Kuskokwim	0	***	-	-	-	-	15	93%	1 – 30	-	-	-	0	***	-	-	-	-		
Bethel ^b	0	***	-	261	60%	106 – 416	29	96%	1% – 58%	-	-	-	0	***	-	23	91%	8 – 44		
Bering Strait-Norton Sound	99,494	15%	84,180 – 114,808	113,082	19%	91,685 – 134,480	-	-	-	-	-	-	146,557	13%	128,014 – 165,100	146,557	13%	128,014 – 165,100		
St. Lawrence-Dionede Is.	81,675	17%	68,193 – 95,157	75,373	17%	62,590 – 88,157	-	-	-	-	-	-	129,656	13%	112,327 – 146,985	129,656	13%	112,327 – 146,985		
Bering Strait Mainland Villages	16,467	17%	13,682 – 19,253	29,321	31%	20,363 – 38,280	-	-	-	-	-	-	12,240	16%	10,262 – 14,219	12,240	16%	10,262 – 14,219		
Nome	1,351	26%	996 – 1,706	8,387	28%	6,038 – 10,737	-	-	-	-	-	-	4,661	33%	3,106 – 6,216	4,661	33%	3,106 – 6,216		
Northwest Arctic	-	-	-	-	-	-	**	-	-	-	-	-	-	-	-	-	-	-		
Northwest Arctic Villages	-	-	-	-	-	-	10,081	51%	4,921 – 15,241	-	-	-	-	-	-	-	-	-		
Kotzebue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
North Slope	-	-	-	4,705	35%	3,074 – 6,336	-	-	-	-	-	-	2,388	117%	* – 5,189	2,388	117%	* – 5,189		
North Slope Villages	-	-	-	4,672	30%	3,272 – 6,073	-	-	-	-	-	-	606	64%	219 – 993	606	64%	219 – 993		
Barrow	-	-	-	32	78%	7 – 58	-	-	-	-	-	-	1,783 ^c	109%	* – 3,733	1,783 ^c	109%	* – 3,733		
Interior Alaska	1,009	104%	* – 2,057	-	-	-	911	58%	381 – 1,442	-	-	-	**	-	-	**	-	-		
Mid Yukon-Upper Kuskokwim	(0)	***	-	2	149%	* – 6	0	***	-	-	-	-	0	***	-	-	-	-		
Yukon-Koyukuk	11	78%	3 – 20	(0)	***	-	(0)	***	-	-	-	-	(0)	***	-	(0)	***	-		
Upper Yukon	(40)	(121%)	(* – 89)	-	-	-	0	***	-	-	-	-	0	***	-	-	-	-		
Tanana Villages	760	73%	205 – 1,315	-	-	-	875	44%	490 – 1,260	-	-	-	-	-	-	-	-	-		
Tok	-	-	-	-	-	-	36 ^c	93%	3 – 70	-	-	-	-	-	-	-	-	-		
Lower Copper River ^d	82	101%	* – 164	-	-	-	-	-	-	-	-	-	0	***	-	-	-	-		

-. Region/subregion not surveyed. *: 95% CI ≥ 100% (Starting in 2008: if "Low" was smaller than reported harvest, "Low" was replaced by reported harvest). **: Less than 75% of region households represented in sample, harvest estimates not produced at the regional level. ***: No reported harvest. (In parenthesis): Less than 30% of subregion households represented in the sample and/or only 1 out of several subregion villages surveyed.

^a Harvest estimates based on a sample of only known harvester households.

^b Bethel harvest expansions assume that harvester households account for 30% of the total village households (village size estimates).

^c Subregional harvest estimates assumed simple random sampling.

^d Sampling and harvest expansions represent Alaska Native households only.

2004–2007 Harvest estimates from Naves (2010).

2008 HARVEST ESTIMATES

Table 7.—Estimated harvest of birds, Aleutian–Pribilof Islands Region, 2008.

Species	Annual estimated bird harvest			Estimated bird harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall-Winter	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	0	-
Green-winged teal	1,647	58%	697 – 2,596	594	87%	24	126%	1,029	83%
Mallard	2,108	45%	1,154 – 3,061	475	93%	39	112%	1,593	57%
Pintail	39	109%	11 – 81	0	-	0	-	39	110%
Shoveler	0	-	-	0	-	0	-	0	-
Black scoter	77	71%	34 – 132	0	-	18	126%	59	85%
Surf scoter	0	-	-	0	-	0	-	0	-
White-winged scoter	58	98%	27 – 115	0	-	0	-	58	98%
Bufflehead	29	84%	12 – 53	0	-	12	126%	17	112%
Goldeneye	30	110%	6 – 63	0	-	3	126%	27	127%
Canvasback	0	-	-	0	-	0	-	0	-
Scaup	9	82%	4 – 17	0	-	3	126%	6	106%
Common eider	0	-	-	0	-	0	-	0	-
King eider	0	-	-	0	-	0	-	0	-
Spectacled eider	0	-	-	0	-	0	-	0	-
Steller's eider	12	126%	4 – 27	0	-	0	-	12	126%
Harlequin duck	210	68%	75 – 353	0	-	11	177%	199	70%
Long-tailed duck	0	-	-	0	-	0	-	0	-
Common merganser	17	95%	7 – 34	0	-	9	126%	8	142%
Red-breasted merganser	38	169%	7 – 102	27	177%	11	177%	0	-
Duck (unidentified)	86	149%	16 – 215	32	177%	16	177%	38	136%
Total ducks	4,359	44%	2,427 – 6,291	1,128	80%	145	104%	3,086	56%
Geese									
Black brant	555	39%	341 – 770	0	-	6	126%	549	39%
Cackling Canada goose	996	47%	523 – 1,469	259	129%	0	-	737	49%
Lesser Canada goose	0	-	-	0	-	0	-	0	-
White-fronted goose	0	-	-	0	-	0	-	0	-
Emperor goose	109	75%	28 – 191	32	177%	12	126%	65	95%
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	1,660	34%	1,092 – 2,229	291	116%	18	126%	1,351	36%
Swans									
Tundra swan	0	-	-	0	-	0	-	0	-
Cranes									
Sandhill crane	0	-	-	0	-	0	-	0	-
Grouse									
Ptarmigan	2,055	45%	1,126 – 2,985	567	104%	29	101%	1,460	52%
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Black-legged kittiwake	0	-	-	0	-	0	-	0	-
Red-legged kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Glaucous-winged gull	0	-	-	0	-	0	-	0	-
Herring gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	11	169%	2 – 29	0	-	11	177%	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	252	56%	111 – 394	166	66%	86	80%	0	-
Total seabirds	263	54%	121 – 406	166	66%	97	73%	0	-
Shorebirds									
Black oystercatcher	64	142%	30 – 154	0	-	64	142%	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	64	142%	30 – 154	0	-	64	142%	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total birds	8,401	30%	5,909 – 10,894	2,152	70%	352	69%	5,896	34%

Sampling effort (Aleutian/Pribilof Islands, 2008): 4 out of 12 villages in this region were surveyed; 2 out of 2 subregions were surveyed. -: No reported harvest.

Table 8.—Estimated harvest of eggs, Aleutian–Pribilof Islands Region, 2008.

Species	Annual estimated egg harvest			Estimated egg harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall-Winter	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	0	-
Green-winged teal	0	-	-	0	-	0	-	0	-
Mallard	0	-	-	0	-	0	-	0	-
Pintail	0	-	-	0	-	0	-	0	-
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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	32	169%	6 – 87	32	177%	0	-	0	-
Duck (unidentified)	194	169%	36 – 522	129	177%	65	177%	0	-
Total ducks	226	169%	42 – 609	162	177%	65	177%	0	-
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Cackling Canada goose	0	-	-	0	-	0	-	0	-
Lesser Canada goose	0	-	-	0	-	0	-	0	-
White-fronted goose	0	-	-	0	-	0	-	0	-
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	0	-	-	0	-	0	-	0	-
Swans									
Tundra swan	0	-	-	0	-	0	-	0	-
Cranes									
Sandhill crane	0	-	-	0	-	0	-	0	-
Grouse									
Ptarmigan	11	169%	2 – 29	11	177%	0	-	0	-
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Black-legged kittiwake	0	-	-	0	-	0	-	0	-
Red-legged kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Glaucous-winged gull	3,779	42%	2,198 – 5,359	2,783	44%	996	66%	0	-
Herring gull	498	102%	136 – 1,008	215	177%	283	126%	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	65	169%	12 – 174	0	-	65	177%	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	4,342	40%	2,585 – 6,098	2,998	43%	1,344	56%	0	-
Shorebirds									
Black oystercatcher	172	159%	35 – 446	168	170%	4	142%	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	172	159%	35 – 446	168	170%	4	142%	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Other/unknown bird	27	169%	5 – 73	27	177%	0	-	0	-
Total eggs	4,778	43%	2,704 – 6,852	3,365	48%	1,413	55%	0	-

Sampling effort (Aleutian/Pribilof Islands, 2008): 4 out of 12 villages in this region were surveyed; 2 out of 2 subregions were surveyed. -: No reported harvest.

Table 9.—Estimated harvest of birds, Aleutian–Pribilof Islands
Region, Aleutian–Pribilof Villages Subregion, 2008.

Species	Annual estimated bird harvest			Estimated bird harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall-Winter	
		95% CI	Low - High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	0	-
Green-winged teal	1,566	38%	972 – 2,159	583	89%	24	126%	959	88%
Mallard	2,000	31%	1,373 – 2,627	454	97%	18	126%	1,529	59%
Pintail	33	105%	10 – 68	0	-	0	-	33	124%
Shoveler	0	-	-	0	-	0	-	0	-
Black scoter	77	70%	34 – 131	0	-	18	126%	59	85%
Surf scoter	0	-	-	0	-	0	-	0	-
White-winged scoter	58	98%	27 – 115	0	-	0	-	58	98%
Bufflehead	29	80%	12 – 52	0	-	12	126%	17	112%
Goldeneye	3	111%	1 – 6	0	-	3	126%	0	-
Canvasback	0	-	-	0	-	0	-	0	-
Scaup	9	81%	4 – 17	0	-	3	126%	6	106%
Common eider	0	-	-	0	-	0	-	0	-
King eider	0	-	-	0	-	0	-	0	-
Spectacled eider	0	-	-	0	-	0	-	0	-
Steller's eider	12	111%	4 – 25	0	-	0	-	12	126%
Harlequin duck	129	82%	60 – 235	0	-	0	-	129	82%
Long-tailed duck	0	-	-	0	-	0	-	0	-
Common merganser	17	90%	7 – 33	0	-	9	126%	8	142%
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	3,933	31%	2,732 – 5,135	1,037	85%	85	126%	2,811	61%
Geese									
Black brant	523	30%	365 – 681	0	-	6	126%	517	40%
Cackling Canada goose	996	30%	700 – 1,292	259	129%	0	-	737	49%
Lesser Canada goose	0	-	-	0	-	0	-	0	-
White-fronted goose	0	-	-	0	-	0	-	0	-
Emperor goose	45	58%	19 – 70	0	-	12	126%	33	73%
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	1,563	24%	1,194 – 1,932	259	129%	18	126%	1,286	36%
Swans									
Tundra swan	0	-	-	0	-	0	-	0	-
Cranes									
Sandhill crane	0	-	-	0	-	0	-	0	-
Grouse									
Ptarmigan	1,829	32%	1,238 – 2,421	432	129%	18	123%	1,379	55%
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Black-legged kittiwake	0	-	-	0	-	0	-	0	-
Red-legged kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Glaucous-winged gull	0	-	-	0	-	0	-	0	-
Herring gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	252	50%	127 – 378	166	66%	86	80%	0	-
Total seabirds	252	50%	127 – 378	166	66%	86	80%	0	-
Shorebirds									
Black oystercatcher	64	142%	30 – 154	0	-	64	142%	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	64	142%	30 – 154	0	-	64	142%	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total birds	7,642	21%	6,030 – 9,254	1,894	77%	272	73%	5,476	36%

Sampling effort (Aleutian/Pribilof Villages, 2008): 4 out of 11 villages in this subregion were surveyed; 47% of subregion households were represented in the sample.

—: No reported harvest.

Table 10.–Estimated harvest of eggs, Aleutian–Pribilof Islands
Region, Aleutian–Pribilof Villages Subregion, 2008.

Species	Annual estimated egg harvest			Estimated egg harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall-Winter	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	0	-
Green-winged teal	0	-	-	0	-	0	-	0	-
Mallard	0	-	-	0	-	0	-	0	-
Pintail	0	-	-	0	-	0	-	0	-
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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	0	-	-	0	-	0	-	0	-
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Cackling Canada goose	0	-	-	0	-	0	-	0	-
Lesser Canada goose	0	-	-	0	-	0	-	0	-
White-fronted goose	0	-	-	0	-	0	-	0	-
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	0	-	-	0	-	0	-	0	-
Swans									
Tundra swan	0	-	-	0	-	0	-	0	-
Cranes									
Sandhill crane	0	-	-	0	-	0	-	0	-
Grouse									
Ptarmigan	0	-	-	0	-	0	-	0	-
Seabirds									
Comorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Black-legged kittiwake	0	-	-	0	-	0	-	0	-
Red-legged kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Glaucous-winged gull	3,725	31%	2,586 – 4,864	2,729	45%	996	66%	0	-
Herring gull	283	111%	96 – 598	0	-	283	126%	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	4,008	30%	2,823 – 5,193	2,729	45%	1,279	58%	0	-
Shorebirds									
Black oystercatcher	11	103%	5 – 22	6	142%	4	142%	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	11	103%	5 – 22	6	142%	4	142%	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total eggs	4,018	30%	2,829 – 5,208	2,735	45%	1,283	58%	0	-

Sampling effort (Aleutian/Pribilof Villages, 2008): 4 out of 11 villages in this subregion were surveyed; 47% of subregion households were represented in the sample.
-: No reported harvest.

Table 11.—Estimated harvest of birds, Aleutian–Pribilof Islands Region, Unalaska Subregion, 2008.

Species	Annual estimated bird harvest			Estimated bird harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall-Winter	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	0	-
Green-winged teal	81	64%	29 – 133	11	177%	0	-	70	125%
Mallard	108	52%	52 – 164	22	177%	22	177%	65	125%
Pintail	5	102%	1 – 11	0	-	0	-	5	177%
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	27	74%	7 – 47	0	-	0	-	27	127%
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	81	66%	28 – 134	0	-	11	177%	70	128%
Long-tailed duck	0	-	-	0	-	0	-	0	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	38	78%	8 – 67	27	177%	11	177%	0	-
Duck (unidentified)	86	55%	39 – 133	32	177%	16	177%	38	136%
Total ducks	426	46%	230 – 621	92	177%	59	177%	275	101%
Geese									
Black brant	32	102%	6 – 65	0	-	0	-	32	177%
Cackling Canada goose	0	-	-	0	-	0	-	0	-
Lesser Canada goose	0	-	-	0	-	0	-	0	-
White-fronted goose	0	-	-	0	-	0	-	0	-
Emperor goose	65	72%	18 – 111	32	177%	0	-	32	177%
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	97	76%	23 – 171	32	177%	0	-	65	177%
Swans									
Tundra swan	0	-	-	0	-	0	-	0	-
Cranes									
Sandhill crane	0	-	-	0	-	0	-	0	-
Grouse									
Ptarmigan	226	62%	86 – 367	135	146%	11	177%	81	177%
Seabirds									
Comorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Black-legged kittiwake	0	-	-	0	-	0	-	0	-
Red-legged kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Glaucous-winged gull	0	-	-	0	-	0	-	0	-
Herring gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	11	102%	2 – 22	0	-	11	177%	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	11	102%	2 – 22	0	-	11	177%	0	-
Shorebirds									
Black oystercatcher	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	0	-	-	0	-	0	-	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total birds	760	41%	445 – 1,074	259	139%	81	177%	420	92%

Sampling effort (Unalaska, 2008): 1 out of 1 village in this subregion was surveyed. -: No reported harvest.

Table 12.—Estimated harvest of eggs, Aleutian–Pribilof Islands Region, Unalaska Subregion, 2008.

Species	Annual estimated egg harvest			Estimated egg harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall-Winter	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	0	-
Green-winged teal	0	-	-	0	-	0	-	0	-
Mallard	0	-	-	0	-	0	-	0	-
Pintail	0	-	-	0	-	0	-	0	-
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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	32	102%	6 – 65	32	177%	0	-	0	-
Duck (unidentified)	194	76%	46 – 341	129	177%	65	177%	0	-
Total ducks	226	78%	49 – 404	162	177%	65	177%	0	-
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Cackling Canada goose	0	-	-	0	-	0	-	0	-
Lesser Canada goose	0	-	-	0	-	0	-	0	-
White-fronted goose	0	-	-	0	-	0	-	0	-
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	0	-	-	0	-	0	-	0	-
Swans									
Tundra swan	0	-	-	0	-	0	-	0	-
Cranes									
Sandhill crane	0	-	-	0	-	0	-	0	-
Grouse									
Ptarmigan	11	102%	2 – 22	11	177%	0	-	0	-
Seabirds									
Comorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Black-legged kittiwake	0	-	-	0	-	0	-	0	-
Red-legged kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Glaucous-winged gull	54	102%	10 – 109	54	177%	0	-	0	-
Herring gull	215	102%	40 – 435	215	177%	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	65	102%	12 – 131	0	-	65	177%	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	334	71%	98 – 570	269	146%	65	177%	0	-
Shorebirds									
Black oystercatcher	162	102%	30 – 327	162	177%	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	162	102%	30 – 327	162	177%	0	-	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Other/unknown bird	27	-	-	27	-	0	-	0	-
Total eggs	760	80%	154 – 1,365	630	162%	129	177%	0	-

Sampling effort (Unalaska, 2008): 1 out of 1 village in this subregion was surveyed. -: No reported harvest.

Table 13.—Estimated harvest of birds, Bristol Bay Region, 2008.

Species	Annual estimated bird harvest			Estimated bird harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall/Fall-Winter	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	406	44%	227 – 586	217	50%	77	71%	112	49%
Green-winged teal	919	39%	562 – 1,276	443	34%	145	74%	330	51%
Mallard	3,520	18%	2,897 – 4,142	2,435	17%	543	36%	541	33%
Pintail	3,276	22%	2,563 – 3,989	2,332	22%	449	51%	494	36%
Shoveler	443	42%	255 – 630	246	53%	76	65%	121	92%
Black scoter	125	56%	55 – 195	59	88%	37	102%	29	102%
Surf scoter	102	146%	21 – 251	10	88%	0	-	92	161%
White-winged scoter	0	-	-	0	-	0	-	0	-
Bufflehead	0	-	-	0	-	0	-	0	-
Goldeneye	280	57%	120 – 440	249	64%	26	79%	4	144%
Canvasback	0	-	-	0	-	0	-	0	-
Scaup	2	144%	1 – 5	2	144%	0	-	0	-
Common eider	22	144%	10 – 53	22	144%	0	-	0	-
King eider	64	85%	9 – 119	64	85%	0	-	0	-
Spectacled eider	0	-	-	0	-	0	-	0	-
Steller's eider	37	98%	4 – 73	37	98%	0	-	0	-
Harlequin duck	149	81%	29 – 269	103	107%	0	-	46	105%
Long-tailed duck	20	89%	2 – 37	20	88%	0	-	0	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	28	170%	6 – 76	0	-	0	-	28	170%
Total ducks	9,392	17%	7,752 – 11,032	6,239	17%	1,354	37%	1,798	30%
Geese									
Black brant	219	62%	84 – 354	150	51%	0	-	69	161%
Cackling Canada goose	4,499	23%	3,456 – 5,541	3,451	21%	555	52%	492	52%
Lesser Canada goose	1,587	24%	1,199 – 1,975	1,121	21%	228	65%	237	51%
White-fronted goose	2,237	23%	1,719 – 2,755	1,548	23%	262	61%	427	45%
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	8,541	20%	6,873 – 10,210	6,270	16%	1,045	54%	1,226	37%
Swans									
Tundra swan	92	36%	59 – 126	60	41%	32	72%	0	-
Cranes									
Sandhill crane	325	34%	214 – 437	201	33%	71	51%	53	56%
Grouse									
Spruce grouse	5,579	21%	4,423 – 6,734	595	40%	170	53%	4,814	23%
Ptarmigan	7,893	21%	6,251 – 9,534	6,783	23%	226	56%	883	53%
Total grouse	13,471	17%	11,167 – 15,776	7,378	22%	397	40%	5,697	21%
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Black-legged kittiwake	0	-	-	0	-	0	-	0	-
Red-legged kittiwake	0	-	-	0	-	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	203	68%	65 – 342	203	68%	0	-	0	-
Glaucous-winged gull	0	-	-	0	-	0	-	0	-
Glaucous gull	805	66%	271 – 1,339	805	66%	0	-	0	-
Herring gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	1,008	55%	458 – 1,558	1,008	54%	0	-	0	-
Shorebirds									
Black oystercatcher	0	-	-	0	-	0	-	0	-
Whimbrel	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	165	98%	18 – 326	165	98%	0	-	0	-
Total shorebirds	165	98%	18 – 326	165	98%	0	-	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total birds	32,995	14%	28,326 – 37,663	21,321	14%	2,900	35%	8,774	19%

Sampling effort (Bristol Bay, 2008): 9 out of 27 villages in this region were surveyed; 3 out of 3 subregions were surveyed. -: No reported harvest.

Table 14.—Estimated harvest of eggs, Bristol Bay Region, 2008.

Species	Annual estimated egg harvest			Estimated egg harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall/Fall-Winter	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-		0	-	0	-	0	-
Green-winged teal	78	89%	9 – 147	78	88%	0	-	0	-
Mallard	158	82%	28 – 287	158	82%	0	-	0	-
Pintail	654	48%	338 – 969	654	48%	0	-	0	-
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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	156	89%	18 – 294	156	88%	0	-	0	-
Total ducks	1,045	45%	573 – 1,518	1,045	45%	0	-	0	-
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Cackling Canada goose	98	89%	11 – 184	98	88%	0	-	0	-
Lesser Canada goose	78	89%	9 – 147	78	88%	0	-	0	-
White-fronted goose	0	-	-	0	-	0	-	0	-
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	176	89%	20 – 331	176	88%	0	-	0	-
Swans									
Tundra swan	0	-	-	0	-	0	-	0	-
Cranes									
Sandhill crane	0	-	-	0	-	0	-	0	-
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	0	-	-	0	-	0	-	0	-
Total grouse	0	-	-	0	-	0	-	0	-
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	2,990	31%	2,074 – 3,906	2,990	30%	0	-	0	-
Black-legged kittiwake	0	-	-	0	-	0	-	0	-
Red-legged kittiwake	0	-	-	0	-	0	-	0	-
Kittiwake	215	69%	66 – 364	215	69%	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	18,485	70%	5,680 – 31,436	18,485	70%	0	-	0	-
Glaucous-winged gull	0	-	-	0	-	0	-	0	-
Glaucous gull	21,147	21%	16,662 – 25,631	21,147	21%	0	-	0	-
Herring gull	1,035	108%	162 – 2,157	1,035	108%	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	43,872	32%	29,948 – 57,796	43,872	32%	0	-	0	-
Shorebirds									
Black oystercatcher	0	-	-	0	-	0	-	0	-
Whimbrel	195	89%	22 – 368	195	88%	0	-	0	-
Bristle-thighed curlew	224	62%	85 – 364	224	62%	0	-	0	-
Godwit	2,023	62%	760 – 3,286	2,023	62%	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	117	89%	13 – 221	117	88%	0	-	0	-
Total shorebirds	2,560	50%	1,276 – 3,843	2,560	50%	0	-	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total eggs	47,653	30%	33,492 – 61,813	47,653	30%	0	-	0	-

Sampling effort (Bristol Bay, 2008): 9 out of 27 villages in this region were surveyed; 3 out of 3 subregions were surveyed. -: No reported harvest.

Table 15.—Estimated harvest of birds, Bristol Bay Region,
South Alaska Peninsula Subregion, 2008.

Species	Annual estimated bird harvest			Estimated bird harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall-Winter	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	0	-
Green-winged teal	0	-	-	0	-	0	-	0	-
Mallard	46	114%	8 – 98	18	110%	0	-	28	170%
Pintail	0	-	-	0	-	0	-	0	-
Shoveler	0	-	-	0	-	0	-	0	-
Black scoter	14	174%	3 – 39	0	-	0	-	14	170%
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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	28	174%	6 – 77	0	-	0	-	28	170%
Total ducks	88	141%	17 – 213	18	110%	0	-	71	170%
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Cackling Canada goose	0	-	-	0	-	0	-	0	-
Lesser Canada goose	0	-	-	0	-	0	-	0	-
White-fronted goose	0	-	-	0	-	0	-	0	-
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	0	-	-	0	-	0	-	0	-
Swans									
Tundra swan	0	-	-	0	-	0	-	0	-
Cranes									
Sandhill crane	0	-	-	0	-	0	-	0	-
Grouse									
Ptarmigan	27	104%	3 – 54	27	110%	0	-	0	-
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Black-legged kittiwake	0	-	-	0	-	0	-	0	-
Red-legged kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Glaucous-winged gull	0	-	-	0	-	0	-	0	-
Herring gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	0	-	-	0	-	0	-	0	-
Shorebirds									
Black oystercatcher	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	0	-	-	0	-	0	-	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total birds	115	111%	20 – 242	44	76%	0	-	71	170%

Sampling effort (South Alaska Peninsula, 2008): 1 out of 5 villages in this subregion were surveyed; 21% of subregion households were represented in the sample.
-: No reported harvest.

Table 16.—Estimated harvest of eggs, Bristol Bay Region, South Alaska Peninsula Subregion, 2008.

Species	Annual estimated egg harvest			Estimated egg harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall-Winter	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	0	-
Green-winged teal	0	-	-	0	-	0	-	0	-
Mallard	0	-	-	0	-	0	-	0	-
Pintail	0	-	-	0	-	0	-	0	-
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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	0	-	-	0	-	0	-	0	-
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Cackling Canada goose	0	-	-	0	-	0	-	0	-
Lesser Canada goose	0	-	-	0	-	0	-	0	-
White-fronted goose	0	-	-	0	-	0	-	0	-
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	0	-	-	0	-	0	-	0	-
Swans									
Tundra swan	0	-	-	0	-	0	-	0	-
Cranes									
Sandhill crane	0	-	-	0	-	0	-	0	-
Grouse									
Ptarmigan	0	-	-	0	-	0	-	0	-
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Black-legged kittiwake	0	-	-	0	-	0	-	0	-
Red-legged kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Glaucous-winged gull	0	-	-	0	-	0	-	0	-
Herring gull	106	104%	12 – 216	106	110%	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	106	104%	12 – 216	106	110%	0	-	0	-
Shorebirds									
Black oystercatcher	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	0	-	-	0	-	0	-	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total eggs	106	104%	12 – 216	106	110%	0	-	0	-

Sampling effort (South Alaska Peninsula, 2008): 1 out of 5 villages in this subregion were surveyed; 21% of subregion households were represented in the sample.
 -: No reported harvest.

Table 17.—Estimated harvest of birds, Bristol Bay Region, Southwest Bristol Bay Subregion, 2008.

Species	Annual estimated bird harvest			Estimated bird harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	365	35%	238 – 491	207	52%	77	71%	81	54%
Green-winged teal	816	30%	575 – 1,058	402	36%	145	74%	269	60%
Mallard	3,236	17%	2,692 – 3,781	2,233	18%	543	36%	460	37%
Pintail	3,068	21%	2,428 – 3,709	2,188	23%	449	51%	430	40%
Shoveler	395	43%	224 – 566	207	59%	76	65%	112	99%
Black scoter	111	57%	48 – 174	59	88%	37	102%	15	-
Surf scoter	102	145%	21 – 251	10	88%	0	-	92	161%
White-winged scoter	0	-	-	0	-	0	-	0	-
Bufflehead	0	-	-	0	-	0	-	0	-
Goldeneye	275	58%	115 – 436	249	64%	26	79%	0	-
Canvasback	0	-	-	0	-	0	-	0	-
Scaup	0	-	-	0	-	0	-	0	-
Common eider	0	-	-	0	-	0	-	0	-
King eider	64	78%	14 – 114	64	85%	0	-	0	-
Spectacled eider	0	-	-	0	-	0	-	0	-
Steller's eider	37	89%	4 – 69	37	98%	0	-	0	-
Harlequin duck	149	81%	29 – 270	103	107%	0	-	46	105%
Long-tailed duck	20	81%	4 – 35	20	88%	0	-	0	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	8,638	17%	7,199 – 10,077	5,777	18%	1,354	37%	1,506	34%
Geese									
Black brant	219	60%	87 – 351	150	51%	0	-	69	161%
Cackling Canada goose	4,345	20%	3,460 – 5,231	3,359	21%	551	52%	435	58%
Lesser Canada goose	1,374	22%	1,069 – 1,679	976	22%	228	65%	169	64%
White-fronted goose	2,123	21%	1,671 – 2,574	1,438	25%	262	61%	423	45%
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	8,061	17%	6,668 – 9,455	5,923	17%	1,041	54%	1,097	41%
Swans									
Tundra swan	88	36%	56 – 120	56	43%	32	72%	0	-
Cranes									
Sandhill crane	306	27%	224 – 389	195	34%	61	56%	51	58%
Grouse									
Spruce grouse	4,029	25%	3,032 – 5,026	595	40%	170	53%	3,264	28%
Ptarmigan	7,057	23%	5,420 – 8,695	5,959	25%	226	56%	872	53%
Total grouse	11,086	18%	9,094 – 13,079	6,554	24%	397	40%	4,136	24%
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	203	63%	76 – 331	203	68%	0	-	0	-
Glaucous gull	805	57%	342 – 1,267	805	66%	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	1,008	48%	528 – 1,488	1,008	54%	0	-	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	165	89%	18 – 312	165	98%	0	-	0	-
Total shorebirds	165	89%	18 – 312	165	98%	0	-	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total birds	29,352	14%	25,173 – 33,532	19,677	15%	2,885	35%	6,790	23%

Sampling effort (Southwest Bristol Bay, 2008): 7 out of 21 villages in this subregion were surveyed; 23% of subregion households were represented in the sample.

-: No reported harvest.

Table 18.—Estimated harvest of eggs, Bristol Bay Region, Southwest Bristol Bay Subregion, 2008.

Species	Annual estimated egg harvest			Estimated egg harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	0	-
Green-winged teal	78	81%	15 – 142	78	88%	0	-	0	-
Mallard	158	81%	30 – 285	158	82%	0	-	0	-
Pintail	654	46%	354 – 953	654	48%	0	-	0	-
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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	156	81%	29 – 283	156	88%	0	-	0	-
Total ducks	1,045	43%	595 – 1,496	1,045	45%	0	-	0	-
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Cackling Canada goose	98	81%	18 – 177	98	88%	0	-	0	-
Lesser Canada goose	78	81%	15 – 142	78	88%	0	-	0	-
White-fronted goose	0	-	-	0	-	0	-	0	-
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	176	81%	33 – 318	176	88%	0	-	0	-
Swans									
Tundra swan	0	-	-	0	-	0	-	0	-
Cranes									
Sandhill crane	0	-	-	0	-	0	-	0	-
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	0	-	-	0	-	0	-	0	-
Total grouse	0	-	-	0	-	0	-	0	-
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	2,990	30%	2,091 – 3,889	2,990	30%	0	-	0	-
Kittiwake	215	65%	75 – 356	215	69%	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	8,568	33%	5,736 – 11,401	8,568	32%	0	-	0	-
Glaucous gull	21,147	22%	16,590 – 25,703	21,147	21%	0	-	0	-
Herring gull	929	120%	150 – 2,040	929	120%	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	33,849	18%	27,660 – 40,038	33,849	17%	0	-	0	-
Shorebirds									
Whimbrel	195	81%	36 – 354	195	88%	0	-	0	-
Bristle-thighed curlew	224	58%	95 – 354	224	62%	0	-	0	-
Godwit	2,023	57%	875 – 3,171	2,023	62%	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	117	81%	22 – 212	117	88%	0	-	0	-
Total shorebirds	2,560	46%	1,387 – 3,732	2,560	50%	0	-	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total eggs	37,630	18%	30,831 – 44,428	37,630	16%	0	-	0	-

Sampling effort (Southwest Bristol Bay, 2008): 7 out of 21 villages in this subregion were surveyed; 23% of subregion households were represented in the sample.
 -: No reported harvest.

Table 19.—Estimated harvest of birds, Bristol Bay Region, Dillingham Subregion, 2008.

Species	Annual estimated bird harvest			Estimated bird harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	42	50%	21 – 62	11	144%	0	-	31	107%
Green-winged teal	103	37%	64 – 141	41	99%	0	-	61	86%
Mallard	237	23%	184 – 291	185	47%	0	-	52	57%
Pintail	207	29%	147 – 268	144	66%	0	-	63	71%
Shoveler	48	60%	22 – 77	39	122%	0	-	9	144%
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	4	83%	2 – 8	0	-	0	-	4	144%
Canvasback	0	-	-	0	-	0	-	0	-
Scaup	2	83%	1 – 4	2	144%	0	-	0	-
Common eider	22	83%	10 – 40	22	144%	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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	665	22%	522 – 809	445	48%	0	-	221	56%
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Cackling Canada goose	153	38%	95 – 211	92	99%	4	144%	57	77%
Lesser Canada goose	213	29%	151 – 275	145	64%	0	-	68	78%
White-fronted goose	114	33%	77 – 152	110	58%	0	-	4	144%
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	480	22%	373 – 587	347	49%	4	144%	129	52%
Swans									
Tundra swan	4	59%	2 – 7	4	102%	0	-	0	-
Cranes									
Sandhill crane	19	44%	11 – 27	7	107%	10	119%	2	144%
Grouse									
Spruce grouse	1,550	25%	1,162 – 1,938	0	-	0	-	1,550	43%
Ptarmigan	809	24%	617 – 1,000	798	40%	0	-	11	144%
Total grouse	2,358	18%	1,929 – 2,788	798	40%	0	-	1,561	43%
Seabirds									
Comorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	0	-	-	0	-	0	-	0	-
Glaucous gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	0	-	-	0	-	0	-	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	0	-	-	0	-	0	-	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total birds	3,527	15%	3,011 – 4,043	1,600	33%	15	112%	1,913	37%

Sampling effort (Dillingham, 2008): 1 out of 1 village in this subregion was surveyed. -: No reported harvest.

Table 20.—Estimated harvest of eggs, Bristol Bay Region, Dillingham Subregion, 2008.

Species	Annual estimated egg harvest			Estimated egg harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	0	-
Green-winged teal	0	-	-	0	-	0	-	0	-
Mallard	0	-	-	0	-	0	-	0	-
Pintail	0	-	-	0	-	0	-	0	-
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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	0	-	-	0	-	0	-	0	-
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Cackling Canada goose	0	-	-	0	-	0	-	0	-
Lesser Canada goose	0	-	-	0	-	0	-	0	-
White-fronted goose	0	-	-	0	-	0	-	0	-
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	0	-	-	0	-	0	-	0	-
Swans									
Tundra swan	0	-	-	0	-	0	-	0	-
Cranes									
Sandhill crane	0	-	-	0	-	0	-	0	-
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	0	-	-	0	-	0	-	0	-
Total grouse	0	-	-	0	-	0	-	0	-
Seabirds									
Comorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	9,917	74%	4,536 – 17,225	9,917	128%	0	-	0	-
Glaucous gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	9,917	74%	4,536 – 17,225	9,917	128%	0	-	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	0	-	-	0	-	0	-	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total eggs	9,917	74%	4,536 – 17,225	9,917	128%	0	-	0	-

Sampling effort (Dillingham, 2008): 1 out of 1 village in this subregion was surveyed. -: No reported harvest.

Table 21.—Estimated harvest of birds, Yukon–Kuskokwim Delta Region, 2008.

Species	Annual estimated bird harvest			Estimated bird harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	2,776	23%	2,127 – 3,424	998	30%	336	70%	1,442	26%
Green-winged teal	912	32%	623 – 1,202	484	47%	15	130%	414	45%
Mallard	6,476	16%	5,437 – 7,515	2,671	31%	1,449	20%	2,356	20%
Pintail	4,262	29%	3,027 – 5,497	2,047	33%	1,122	64%	1,093	44%
Shoveler	1,120	29%	796 – 1,444	443	33%	32	66%	646	45%
Black scoter	4,523	23%	3,465 – 5,582	3,711	24%	82	121%	730	63%
Surf scoter	714	50%	358 – 1,070	645	66%	0	-	68	60%
White-winged scoter	2,720	33%	1,823 – 3,617	2,701	35%	0	-	19	94%
Bufflehead	201	82%	36 – 366	80	91%	11	147%	110	134%
Goldeneye	344	74%	89 – 599	106	69%	90	112%	148	101%
Canvasback	230	51%	113 – 347	88	121%	87	91%	56	90%
Scaup	3,640	32%	2,476 – 4,803	2,008	37%	613	86%	1,019	48%
Common eider	11	121%	2 – 25	11	121%	0	-	0	-
King eider	427	57%	183 – 671	380	64%	0	-	47	80%
Spectacled eider	11	121%	2 – 25	11	121%	0	-	0	-
Steller's eider	0	-	-	0	-	0	-	0	-
Harlequin duck	75	62%	28 – 122	50	94%	0	-	25	108%
Long-tailed duck	378	38%	234 – 521	335	51%	39	81%	4	109%
Common merganser	104	67%	35 – 174	50	121%	0	-	54	76%
Red-breasted merganser	120	76%	29 – 210	20	69%	0	-	100	90%
Total ducks	29,044	12%	25,465 – 32,622	16,838	17%	3,876	30%	8,329	19%
Geese									
Black brant	3,980	20%	3,196 – 4,765	3,525	20%	61	63%	394	92%
Cackling Canada goose	9,196	15%	7,817 – 10,575	7,242	18%	1,235	23%	719	28%
Lesser Canada goose	8,520	15%	7,282 – 9,759	5,404	19%	1,078	31%	2,038	21%
White-fronted goose	15,118	13%	13,192 – 17,044	11,631	15%	1,275	31%	2,212	21%
Emperor goose	1,490	17%	1,232 – 1,748	1,375	19%	114	43%	0	-
Lesser snow goose	282	39%	173 – 390	252	42%	0	-	30	93%
Total geese	38,586	9%	35,095 – 42,077	29,429	11%	3,764	18%	5,393	16%
Swans									
Tundra swan	3,851	12%	3,401 – 4,301	2,754	13%	227	63%	870	25%
Cranes									
Sandhill crane	2,199	20%	1,755 – 2,644	2,031	21%	27	57%	142	45%
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	4,667	36%	3,006 – 6,327	4,355	38%	120	143%	192	92%
Total grouse	4,667	36%	3,006 – 6,327	4,355	38%	120	143%	192	92%
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	112	121%	20 – 248	112	121%	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	38	-	-	38	-	0	-	0	-
Glaucous gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	150	96%	32 – 294	150	96%	0	-	0	-
Shorebirds									
Whimbrel	126	61%	49 – 203	0	-	87	75%	39	116%
Bristle-thighed curlew	115	62%	44 – 185	0	-	8	93%	107	67%
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	240	46%	129 – 352	0	-	94	69%	146	58%
Grebes and loons									
Common loon	45	68%	14 – 75	14	97%	21	85%	10	120%
Pacific loon	288	18%	236 – 340	288	18%	0	-	0	-
Red-throated loon	18	69%	5 – 30	18	69%	0	-	0	-
Yellow-billed loon	0	-	-	0	-	0	-	0	-
Total grebes and loons	350	17%	289 – 411	319	17%	21	85%	10	120%
Total birds	79,088	9%	71,986 – 86,190	55,878	11%	8,128	20%	15,081	15%

Sampling effort (Yukon-Kuskokwim Delta, 2008): 23 out of 47 villages in this region were surveyed; 6 out of 7 subregions were surveyed; 98% of the region households were represented in the sample. -: No reported harvest.

Table 22.—Estimated harvest of eggs, Yukon–Kuskokwim Delta Region, 2008.

Species	Annual estimated egg harvest			Estimated egg harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	17	112%	6 – 37	17	124%	0	-	0	-
Green-winged teal	660	40%	394 – 927	637	83%	23	93%	0	-
Mallard	1,822	39%	1,107 – 2,537	302	68%	1,519	46%	0	-
Pintail	2,686	28%	1,934 – 3,437	1,896	47%	789	24%	0	-
Shoveler	462	128%	40 – 1,054	462	129%	0	-	0	-
Black scoter	14	128%	4 – 33	14	128%	0	-	0	-
Surf scoter	0	-	-	0	-	0	-	0	-
White-winged scoter	37	112%	13 – 79	37	124%	0	-	0	-
Bufflehead	398	118%	7 – 867	0	-	398	118%	0	-
Goldeneye	0	-	-	0	-	0	-	0	-
Canvasback	0	-	-	0	-	0	-	0	-
Scaup	186	107%	67 – 385	186	404%	0	-	0	-
Common eider	53	99%	10 – 105	53	98%	0	-	0	-
King eider	0	-	-	0	-	0	-	0	-
Spectacled eider	112	115%	23 – 240	112	115%	0	-	0	-
Steller's eider	0	-	-	0	-	0	-	0	-
Harlequin duck	0	-	-	0	-	0	-	0	-
Long-tailed duck	0	-	-	0	-	0	-	0	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	6,448	22%	5,025 – 7,870	3,718	56%	2,729	32%	0	-
Geese									
Black brant	2,383	27%	1,743 – 3,022	2,383	27%	0	-	0	-
Cackling Canada goose	4,114	19%	3,338 – 4,891	3,076	22%	1,039	41%	0	-
Lesser Canada goose	2,572	32%	1,739 – 3,405	2,216	36%	356	71%	0	-
White-fronted goose	4,430	21%	3,494 – 5,366	4,430	22%	0	-	0	-
Emperor goose	1,505	30%	1,057 – 1,953	1,505	30%	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	15,004	16%	12,576 – 17,432	13,610	18%	1,395	37%	0	-
Swans									
Tundra swan	1,421	36%	914 – 1,929	1,037	30%	384	104%	0	-
Cranes									
Sandhill crane	1,228	23%	949 – 1,506	888	32%	340	34%	0	-
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	455	56%	199 – 712	455	66%	0	-	0	-
Total grouse	455	56%	199 – 712	455	66%	0	-	0	-
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	890	81%	170 – 1,610	890	92%	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	57	68%	18 – 95	57	71%	0	-	0	-
Mew gull	1,412	42%	824 – 2,001	1,297	47%	115	93%	0	-
Glaucous gull	986	69%	309 – 1,663	969	71%	17	143%	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	3,345	39%	2,035 – 4,655	3,213	45%	132	83%	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	177	70%	53 – 301	177	70%	0	-	0	-
Golden plover	390	80%	79 – 701	390	80%	0	-	0	-
Small shorebird	2,554	57%	1,106 – 4,002	1,418	42%	1,136	118%	0	-
Total shorebirds	3,121	48%	1,627 – 4,615	1,985	35%	1,136	118%	0	-
Grebes and loons									
Common loon	87	76%	21 – 153	87	77%	0	-	0	-
Pacific loon	12	88%	3 – 22	12	88%	0	-	0	-
Red-throated loon	13	117%	2 – 27	13	117%	0	-	0	-
Yellow-billed loon	61	89%	8 – 116	0	-	61	93%	0	-
Total grebes and loons	173	50%	86 – 260	112	62%	61	93%	0	-
Total eggs	31,195	15%	26,621 – 35,769	25,017	20%	6,178	38%	0	-

Sampling effort (Yukon-Kuskokwim Delta, 2008): 23 out of 47 villages in this region were surveyed; 6 out of 7 subregions were surveyed; 98% of the region households were represented in the sample. -: No reported harvest.

Table 23.—Estimated harvest of birds, Yukon–Kuskokwim
Delta Region, South Coast Subregion, 2008.

Species	Annual estimated bird harvest			Estimated bird harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	560	21%	444 – 675	0	-	77	61%	483	28%
Green-winged teal	273	33%	184 – 363	19	74%	0	-	254	56%
Mallard	1,263	22%	991 – 1,534	287	52%	0	-	976	38%
Pintail	1,409	29%	996 – 1,821	847	63%	0	-	562	83%
Shoveler	396	43%	226 – 566	46	-	3	105%	347	79%
Black scoter	1,071	29%	764 – 1,378	452	53%	67	145%	551	83%
Surf scoter	30	72%	8 – 51	0	-	0	-	30	117%
White-winged scoter	34	43%	19 – 48	34	64%	0	-	0	-
Bufflehead	107	80%	21 – 193	0	-	0	-	107	136%
Goldeneye	197	51%	96 – 298	15	103%	67	145%	114	128%
Canvasback	33	86%	5 – 62	0	-	0	-	33	145%
Scaup	998	39%	604 – 1,392	32	97%	335	145%	632	70%
Common eider	0	-	-	0	-	0	-	0	-
King eider	108	56%	47 – 168	62	127%	0	-	46	81%
Spectacled eider	0	-	-	0	-	0	-	0	-
Steller's eider	0	-	-	0	-	0	-	0	-
Harlequin duck	17	86%	2 – 31	0	-	0	-	17	145%
Long-tailed duck	17	69%	5 – 29	13	134%	0	-	4	110%
Common merganser	32	58%	14 – 50	0	-	0	-	32	81%
Red-breasted merganser	98	55%	44 – 152	0	-	0	-	98	91%
Total ducks	6,641	17%	5,514 – 7,769	1,807	36%	548	124%	4,286	32%
Geese									
Black brant	902	33%	601 – 1,203	517	66%	0	-	385	93%
Cackling Canada goose	1,113	21%	878 – 1,348	849	38%	0	-	264	36%
Lesser Canada goose	3,210	14%	2,756 – 3,664	1,389	23%	514	59%	1,307	25%
White-fronted goose	4,871	13%	4,252 – 5,490	3,061	24%	386	70%	1,424	28%
Emperor goose	26	62%	10 – 43	26	101%	0	-	0	-
Lesser snow goose	8	56%	3 – 12	4	129%	0	-	4	117%
Total geese	10,130	10%	9,074 – 11,186	5,845	19%	900	49%	3,385	20%
Swans									
Tundra swan	919	20%	740 – 1,099	421	46%	17	145%	482	40%
Cranes									
Sandhill crane	558	18%	456 – 660	437	31%	3	105%	117	52%
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	1,463	47%	777 – 2,148	1,158	96%	117	145%	187	93%
Total grouse	1,463	47%	777 – 2,148	1,158	96%	117	145%	187	93%
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	37	88%	12 – 70	37	127%	0	-	0	-
Glaucous gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	37	88%	12 – 70	37	127%	0	-	0	-
Shorebirds									
Whimbrel	123	46%	66 – 180	0	-	85	76%	38	117%
Bristle-thighed curlew	105	44%	58 – 151	0	-	0	-	105	68%
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	228	32%	154 – 301	0	-	85	76%	143	59%
Grebes and loons									
Common loon	23	49%	12 – 35	13	98%	0	-	10	122%
Pacific loon	0	-	-	0	-	0	-	0	-
Red-throated loon	0	-	-	0	-	0	-	0	-
Yellow-billed loon	0	-	-	0	-	0	-	0	-
Total grebes and loons	23	49%	12 – 35	13	98%	0	-	10	122%
Total birds	19,999	12%	17,663 – 22,334	9,719	25%	1,669	71%	8,611	23%

Sampling effort (Yukon-Kuskokwim Delta South Coast, 2008): 5 out of 8 villages in this subregion were surveyed; 65% of subregion households were represented in the sample. -: No reported harvest.

Table 24.—Estimated harvest of eggs, Yukon–Kuskokwim
Delta Region, South Coast Subregion, 2008.

Species	Annual estimated egg harvest			Estimated egg harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	17	85%	6 – 31	17	125%	0	-	0	-
Green-winged teal	234	50%	117 – 352	234	72%	0	-	0	-
Mallard	512	68%	162 – 862	110	89%	402	145%	0	-
Pintail	1,293	33%	863 – 1,723	1,293	51%	0	-	0	-
Shoveler	384	89%	41 – 727	384	151%	0	-	0	-
Black scoter	14	87%	4 – 26	14	129%	0	-	0	-
Surf scoter	0	-	-	0	-	0	-	0	-
White-winged scoter	37	85%	13 – 68	37	125%	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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	2,490	33%	1,677 – 3,303	2,089	59%	402	145%	0	-
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Cackling Canada goose	269	41%	157 – 380	168	59%	100	145%	0	-
Lesser Canada goose	829	40%	499 – 1,159	829	65%	0	-	0	-
White-fronted goose	1,372	30%	957 – 1,787	1,372	49%	0	-	0	-
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	2,470	29%	1,759 – 3,181	2,369	48%	100	145%	0	-
Swans									
Tundra swan	493	46%	266 – 719	242	43%	251	145%	0	-
Cranes									
Sandhill crane	144	39%	88 – 201	111	76%	33	145%	0	-
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	88	78%	28 – 157	88	112%	0	-	0	-
Total grouse	88	78%	28 – 157	88	112%	0	-	0	-
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	548	74%	143 – 954	548	126%	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	23	85%	8 – 42	23	125%	0	-	0	-
Mew gull	468	40%	281 – 655	468	66%	0	-	0	-
Glaucous gull	768	51%	376 – 1,161	751	87%	17	145%	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	1,807	38%	1,123 – 2,491	1,790	64%	17	145%	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	72	75%	18 – 127	72	128%	0	-	0	-
Golden plover	215	80%	43 – 387	215	136%	0	-	0	-
Small shorebird	621	45%	343 – 900	621	68%	0	-	0	-
Total shorebirds	908	37%	576 – 1,240	908	56%	0	-	0	-
Grebes and loons									
Common loon	36	53%	17 – 55	36	77%	0	-	0	-
Pacific loon	6	88%	2 - 12	6	127%	0	-	0	-
Red-throated loon	0	-	-	0	-	0	-	0	-
Yellow-billed loon	0	-	-	0	-	0	-	0	-
Total grebes and loons	42	47%	22 – 62	42	68%	0	-	0	-
Total eggs	8,442	23%	6,519 – 10,365	7,639	38%	803	145%	0	-

Sampling effort (Yukon-Kuskokwim Delta South Coast, 2008): 5 out of 8 villages in this subregion were surveyed; 65% of subregion households were represented in the sample. -: No reported harvest.

Table 25.–Estimated harvest of birds, Yukon–Kuskokwim
Delta Region, Mid Coast Subregion, 2008.

Species	Annual estimated bird harvest			Estimated bird harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	204	77%	47 – 361	33	171%	171	119%	0	-
Green-winged teal	93	72%	26 – 160	93	96%	0	-	0	-
Mallard	487	33%	325 – 650	472	35%	15	66%	0	-
Pintail	1,074	50%	537 – 1,611	288	55%	786	87%	0	-
Shoveler	259	40%	156 – 362	251	42%	8	94%	0	-
Black scoter	20	30%	14 – 25	20	70%	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	11	87%	2 – 21	11	122%	0	-	0	-
King eider	176	57%	75 – 277	176	74%	0	-	0	-
Spectacled eider	11	87%	2 – 21	11	122%	0	-	0	-
Steller's eider	0	-	-	0	-	0	-	0	-
Harlequin duck	0	-	-	0	-	0	-	0	-
Long-tailed duck	39	52%	19 – 59	16	122%	23	94%	0	-
Common merganser	49	87%	9 – 92	49	122%	0	-	0	-
Red-breasted merganser	20	30%	14 – 25	20	70%	0	-	0	-
Total ducks	2,442	29%	1,735 – 3,148	1,440	28%	1,001	77%	0	-
Geese									
Black brant	2,882	19%	2,337 – 3,427	2,822	21%	60	64%	0	-
Cackling Canada goose	2,674	15%	2,266 – 3,081	2,333	20%	341	48%	0	-
Lesser Canada goose	1,353	28%	974 – 1,733	1,271	32%	83	51%	0	-
White-fronted goose	3,209	19%	2,612 – 3,806	2,900	21%	309	68%	0	-
Emperor goose	1,396	18%	1,150 – 1,642	1,313	19%	83	51%	0	-
Lesser snow goose	5	126%	1 – 11	5	171%	0	-	0	-
Total geese	11,518	15%	9,766 – 13,271	10,643	16%	875	38%	0	-
Swans									
Tundra swan	783	27%	572 – 994	658	28%	125	106%	0	-
Cranes									
Sandhill crane	1,170	27%	852 – 1,487	1,162	32%	8	94%	0	-
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	1,099	36%	700 – 1,498	1,099	49%	0	-	0	-
Total grouse	1,099	36%	700 – 1,498	1,099	49%	0	-	0	-
Seabirds									
Comorant	0	-	-	0	-	0	-	0	-
Arctic tern	110	87%	20 – 205	110	122%	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	0	-	-	0	-	0	-	0	-
Glaucous gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	110	87%	20 – 205	110	122%	0	-	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	8	63%	3 – 12	0	-	8	94%	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	8	63%	3 – 12	0	-	8	94%	0	-
Grebes and loons									
Common loon	21	63%	8 – 33	0	-	21	86%	0	-
Pacific loon	0	-	-	0	-	0	-	0	-
Red-throated loon	11	61%	4 – 18	11	86%	0	-	0	-
Yellow-billed loon	0	-	-	0	-	0	-	0	-
Total grebes and loons	32	46%	17 – 46	11	86%	21	86%	0	-
Total birds	17,160	15%	14,512 – 19,809	15,123	16%	2,038	44%	0	-

Sampling effort (Yukon-Kuskokwim Delta Mid-Coast, 2008): 5 out of 9 villages in this subregion were surveyed; 51% of subregion households were represented in the sample. -: No reported harvest.

Table 26.—Estimated harvest of eggs, Yukon–Kuskokwim
Delta Region, Mid Coast Subregion, 2008.

Species	Annual estimated egg harvest			Estimated egg harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	0	-
Green-winged teal	220	48%	115 – 325	198	73%	23	94%	0	-
Mallard	168	82%	31 – 305	168	86%	0	-	0	-
Pintail	214	48%	111 – 317	214	66%	0	-	0	-
Shoveler	55	87%	10 – 103	55	122%	0	-	0	-
Black scoter	0	-	-	0	-	0	-	0	-
Surf scoter	0	-	-	0	-	0	-	0	-
White-winged scoter	0	-	-	0	-	0	-	0	-
Bufflehead	389	91%	36 – 741	0	-	389	119%	0	-
Goldeneye	0	-	-	0	-	0	-	0	-
Canvasback	0	-	-	0	-	0	-	0	-
Scaup	55	87%	10 – 103	55	122%	0	-	0	-
Common eider	52	72%	15 – 89	52	100%	0	-	0	-
King eider	0	-	-	0	-	0	-	0	-
Spectacled eider	109	89%	23 – 207	109	116%	0	-	0	-
Steller's eider	0	-	-	0	-	0	-	0	-
Harlequin duck	0	-	-	0	-	0	-	0	-
Long-tailed duck	0	-	-	0	-	0	-	0	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	1,262	35%	814 – 1,709	850	42%	411	113%	0	-
Geese									
Black brant	2,330	23%	1,797 – 2,864	2,330	28%	0	-	0	-
Cackling Canada goose	3,085	19%	2,499 – 3,671	2,710	24%	375	94%	0	-
Lesser Canada goose	930	38%	578 – 1,282	930	45%	0	-	0	-
White-fronted goose	2,823	20%	2,265 – 3,381	2,823	23%	0	-	0	-
Emperor goose	1,472	29%	1,046 – 1,898	1,472	30%	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	10,640	17%	8,780 – 12,500	10,265	20%	375	94%	0	-
Swans									
Tundra swan	605	43%	345 – 865	605	44%	0	-	0	-
Cranes									
Sandhill crane	672	33%	452 – 893	672	35%	0	-	0	-
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	99	87%	18 – 185	99	122%	0	-	0	-
Total grouse	99	87%	18 – 185	99	122%	0	-	0	-
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	156	55%	71 – 241	156	74%	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	33	61%	13 – 53	33	86%	0	-	0	-
Mew gull	581	53%	276 – 886	469	82%	113	94%	0	-
Glaucous gull	143	70%	43 – 242	143	98%	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	913	40%	549 – 1,276	800	58%	113	94%	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	101	60%	41 – 161	101	80%	0	-	0	-
Golden plover	118	49%	60 – 176	118	68%	0	-	0	-
Small shorebird	1,671	62%	638 – 2,703	560	58%	1,111	119%	0	-
Total shorebirds	1,889	55%	845 – 2,933	778	49%	1,111	119%	0	-
Grebes and loons									
Common loon	49	87%	9 – 92	49	122%	0	-	0	-
Pacific loon	5	87%	1 – 10	5	122%	0	-	0	-
Red-throated loon	0	-	-	0	-	0	-	0	-
Yellow-billed loon	60	63%	22 – 98	0	-	60	94%	0	-
Total grebes and loons	115	50%	57 – 173	55	111%	60	94%	0	-
Total eggs	16,195	18%	13,311 – 19,079	14,124	20%	2,070	90%	0	-

Sampling effort (Yukon-Kuskokwim Delta Mid Coast, 2008): 5 out of 9 villages in this subregion were surveyed; 51% of subregion households were represented in the sample. -: No reported harvest.

Table 27.—Estimated harvest of birds, Yukon–Kuskokwim
Delta Region, North Coast Subregion, 2008.

Species	Annual estimated bird harvest			Estimated bird harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	846	28%	608 – 1,085	219	109%	0	-	627	51%
Green-winged teal	183	64%	65 – 300	183	109%	0	-	0	-
Mallard	638	27%	463 – 813	0	-	0	-	638	42%
Pintail	246	79%	52 – 439	246	123%	0	-	0	-
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	180	44%	101 – 260	4	150%	0	-	177	66%
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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	2,093	24%	1,593 – 2,594	651	81%	0	-	1,442	43%
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Cackling Canada goose	46	112%	13 - 98	46	112%	0	-	0	-
Lesser Canada goose	1,439	33%	969 – 1,910	1,161	54%	0	-	279	92%
White-fronted goose	943	34%	620 – 1,266	841	61%	0	-	102	92%
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	7	79%	2 – 13	7	119%	0	-	0	-
Total geese	2,436	27%	1,776 – 3,096	2,055	45%	0	-	381	92%
Swans									
Tundra swan	215	27%	157 – 272	29	74%	0	-	186	40%
Cranes									
Sandhill crane	123	79%	26 – 220	123	123%	0	-	0	-
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	0	-	-	0	-	0	-	0	-
Total grouse	0	-	-	0	-	0	-	0	-
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	0	-	-	0	-	0	-	0	-
Glaucous gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	0	-	-	0	-	0	-	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	0	-	-	0	-	0	-	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total birds	4,867	22%	3,797 – 5,936	2,857	51%	0	-	2,009	40%

Sampling effort (Yukon-Kuskokwim Delta North Coast, 2008): 2 out of 4 villages in this subregion were surveyed; 45% of subregion households were represented in the sample. -: No reported harvest.

Table 28.–Estimated harvest of eggs, Yukon–Kuskokwim
Delta Region, North Coast Subregion, 2008.

Species	Annual estimated egg harvest			Estimated egg harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	0	-
Green-winged teal	0	-	-	0	-	0	-	0	-
Mallard	0	-	-	0	-	0	-	0	-
Pintail	0	-	-	0	-	0	-	0	-
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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	0	-	-	0	-	0	-	0	-
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Cackling Canada goose	57	150%	16 – 143	57	150%	0	-	0	-
Lesser Canada goose	365	64%	131 – 599	365	109%	0	-	0	-
White-fronted goose	85	150%	24 – 214	85	150%	0	-	0	-
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	508	62%	191 – 824	508	89%	0	-	0	-
Swans									
Tundra swan	46	150%	13 – 116	46	150%	0	-	0	-
Cranes									
Sandhill crane	0	-	-	0	-	0	-	0	-
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	0	-	-	0	-	0	-	0	-
Total grouse	0	-	-	0	-	0	-	0	-
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	0	-	-	0	-	0	-	0	-
Glaucous gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	0	-	-	0	-	0	-	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	0	-	-	0	-	0	-	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total eggs	554	66%	187 – 920	554	88%	0	-	0	-

Sampling effort (Yukon-Kuskokwim Delta North Coast, 2008): 2 out of 4 villages in this subregion were surveyed; 45% of subregion households were represented in the sample. -: No reported harvest.

Table 29.—Estimated harvest of birds, Yukon–Kuskokwim
Delta Region, Lower Yukon Subregion, 2008.

Species	Annual estimated bird harvest			Estimated bird harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	200	24%	152 – 248	81	66%	0	-	119	45%
Green-winged teal	0	-	-	0	-	0	-	0	-
Mallard	670	18%	548 – 793	247	45%	42	105%	381	25%
Pintail	306	23%	237 – 375	182	47%	5	124%	119	39%
Shoveler	110	31%	76 – 145	27	79%	10	133%	74	64%
Black scoter	565	67%	187 – 943	554	111%	0	-	11	138%
Surf scoter	28	61%	11 – 44	16	133%	0	-	11	138%
White-winged scoter	19	58%	8 – 29	0	-	0	-	19	95%
Bufflehead	0	-	-	0	-	0	-	0	-
Goldeneye	48	45%	26 – 70	33	83%	0	-	15	138%
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	52	50%	26 – 78	45	86%	0	-	7	138%
Long-tailed duck	43	72%	12 – 74	43	109%	0	-	0	-
Common merganser	20	68%	7 – 34	0	-	0	-	20	150%
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	2,062	23%	1,587 – 2,537	1,228	56%	57	82%	777	24%
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Cackling Canada goose	492	18%	404 – 581	288	34%	43	150%	161	38%
Lesser Canada goose	454	20%	364 – 544	129	63%	78	51%	248	27%
White-fronted goose	1,170	15%	999 – 1,341	757	27%	133	62%	280	27%
Emperor goose	29	57%	13 – 46	0	-	29	86%	0	-
Lesser snow goose	219	36%	141 – 296	208	49%	0	-	11	136%
Total geese	2,365	14%	2,032 – 2,697	1,382	27%	283	50%	700	23%
Swans									
Tundra swan	272	20%	216 – 327	218	37%	22	90%	32	61%
Cranes									
Sandhill crane	29	36%	18 – 39	10	84%	0	-	18	80%
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	0	-	-	0	-	0	-	0	-
Total grouse	0	-	-	0	-	0	-	0	-
Seabirds									
Comorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	0	-	-	0	-	0	-	0	-
Glaucous gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	0	-	-	0	-	0	-	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	0	-	-	0	-	0	-	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total birds	4,727	16%	3,994 – 5,460	2,839	33%	361	53%	1,527	22%

Sampling effort (Lower Yukon, 2008): 4 out of 6 villages in this subregion were surveyed; 72% of subregion households were represented in the sample.

:- No reported harvest.

Table 30.—Estimated harvest of eggs, Yukon–Kuskokwim Delta
Region, Lower Yukon Subregion, 2008.

Species	Annual estimated egg harvest			Estimated egg harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	0	-
Green-winged teal	0	-	-	0	-	0	-	0	-
Mallard	0	-	-	0	-	0	-	0	-
Pintail	0	-	-	0	-	0	-	0	-
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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	0	-	-	0	-	0	-	0	-
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Cackling Canada goose	0	-	-	0	-	0	-	0	-
Lesser Canada goose	0	-	-	0	-	0	-	0	-
White-fronted goose	0	-	-	0	-	0	-	0	-
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	0	-	-	0	-	0	-	0	-
Swans									
Tundra swan	0	-	-	0	-	0	-	0	-
Cranes									
Sandhill crane	0	-	-	0	-	0	-	0	-
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	0	-	-	0	-	0	-	0	-
Total grouse	0	-	-	0	-	0	-	0	-
Seabirds									
Comorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	0	-	-	0	-	0	-	0	-
Glaucous gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	0	-	-	0	-	0	-	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	0	-	-	0	-	0	-	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total eggs	0	-	-	0	-	0	-	0	-

Sampling effort (Lower Yukon, 2008): 4 out of 6 villages in this subregion were surveyed; 72% of subregion households were represented in the sample.

-: No reported harvest.

Table 31.–Estimated harvest of birds, Yukon–Kuskokwim Delta Region, Lower Kuskokwim Subregion, 2008.

Species	Annual estimated bird harvest			Estimated bird harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	682	25%	510 – 853	599	23%	67	148%	16	67%
Green-winged teal	202	21%	160 – 243	176	25%	0	-	26	37%
Mallard	2,985	21%	2,364 – 3,606	1,505	52%	1,278	21%	202	23%
Pintail	899	22%	698 – 1,100	322	38%	301	58%	276	19%
Shoveler	250	17%	207 – 292	63	67%	2	148%	184	27%
Black scoter	2,074	17%	1,714 – 2,434	1,915	27%	13	126%	145	25%
Surf scoter	434	45%	241 – 628	409	89%	0	-	26	53%
White-winged scoter	2,288	28%	1,649 – 2,927	2,288	40%	0	-	0	-
Bufflehead	89	58%	37 – 141	78	92%	11	148%	0	-
Goldeneye	71	42%	41 – 101	37	157%	18	117%	16	67%
Canvasback	186	46%	101 – 272	86	122%	85	91%	16	67%
Scaup	2,031	25%	1,520 – 2,542	1,765	42%	265	72%	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	4	148%	2 – 11	4	594%	0	-	0	-
Long-tailed duck	270	37%	170 – 370	254	63%	16	148%	0	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	12,465	14%	10,698 – 14,232	9,502	25%	2,056	24%	907	-
Geese									
Black brant	22	81%	4 – 40	22	121%	0	-	0	-
Cackling Canada goose	3,836	22%	3,002 – 4,670	3,096	37%	740	27%	0	-
Lesser Canada goose	1,344	19%	1,087 – 1,601	960	42%	328	35%	55	33%
White-fronted goose	2,154	18%	1,762 – 2,546	1,833	30%	308	34%	13	53%
Emperor goose	6	84%	1 – 11	6	120%	0	-	0	-
Lesser snow goose	23	81%	7 – 41	23	92%	0	-	0	-
Total geese	7,384	15%	6,281 – 8,488	5,940	25%	1,376	21%	68	29%
Swans									
Tundra swan	1,474	17%	1,219 – 1,728	1,308	16%	47	65%	119	21%
Cranes									
Sandhill crane	205	26%	153 – 258	199	41%	7	110%	0	-
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	997	64%	363 – 1,631	997	94%	0	-	0	-
Total grouse	997	64%	363 – 1,631	997	94%	0	-	0	-
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	0	-	-	0	-	0	-	0	-
Glaucous gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	0	-	-	0	-	0	-	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	0	-	-	0	-	0	-	0	-
Grebes and loons									
Common loon	0	-	-	0	-	0	-	0	-
Pacific loon	282	27%	205 – 359	282	18%	0	-	0	-
Red-throated loon	6	92%	1 – 12	6	118%	0	-	0	-
Yellow-billed loon	0	-	-	0	-	0	-	0	-
Total grebes and loons	288	27%	211 – 365	288	18%	0	-	0	-
Total birds	22,813	14%	19,721 – 25,906	18,233	23%	3,486	17%	1,094	15%

Sampling effort (Lower Kuskokwim, 2008): 6 out of 13 villages in this subregion were surveyed; 46% of subregion households were represented in the sample.

:- No reported harvest.

Table 32.–Estimated harvest of eggs, Yukon–Kuskokwim Delta
Region, Lower Kuskokwim Subregion, 2008.

Species	Annual estimated egg harvest			Estimated egg harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	0	-
Green-winged teal	192	73%	65 – 332	192	248%	0	-	0	-
Mallard	1,102	33%	736 – 1,469	18	594%	1,085	33%	0	-
Pintail	1,097	24%	833 – 1,361	325	169%	772	24%	0	-
Shoveler	13	148%	6 – 33	13	594%	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	127	146%	57 – 312	127	582%	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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	2,531	25%	1,897 – 3,166	674	235%	1,857	25%	0	-
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Cackling Canada goose	614	32%	420 – 808	74	118%	540	33%	0	-
Lesser Canada goose	392	64%	141 – 643	44	135%	348	71%	0	-
White-fronted goose	52	78%	13 – 93	52	195%	0	-	0	-
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	1,058	34%	694 – 1,421	170	118%	888	38%	0	-
Swans									
Tundra swan	246	70%	73 – 420	121	72%	125	128%	0	-
Sandhill crane	384	29%	274 – 494	85	134%	299	34%	0	-
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	258	62%	99 – 418	258	98%	0	-	0	-
Total grouse	258	62%	99 – 418	258	98%	0	-	0	-
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	167	66%	57 – 276	167	242%	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	332	58%	141 – 524	332	101%	0	-	0	-
Glaucous gull	54	71%	17 – 91	54	224%	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	552	50%	275 – 830	552	131%	0	-	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	49	92%	8 – 94	49	118%	0	-	0	-
Small shorebird	206	45%	113 – 300	206	127%	0	-	0	-
Total shorebirds	255	41%	152 – 359	255	105%	0	-	0	-
Grebes and loons									
Common loon	0	-	-	0	-	0	-	0	-
Pacific loon	0	-	-	0	-	0	-	0	-
Red-throated loon	12	92%	2 – 24	12	118%	0	-	0	-
Yellow-billed loon	0	-	-	0	-	0	-	0	-
Total grebes and loons	12	92%	2 – 24	12	118%	0	-	0	-
Total eggs	5,298	23%	4,093 – 6,502	2,129	127%	3,169	24%	0	-

Sampling effort (Lower Kuskokwim, 2008): 6 out of 13 villages in this subregion were surveyed; 46% of subregion households were represented in the sample.

–: No reported harvest.

Table 33.—Estimated harvest of birds, Yukon–Kuskokwim Delta Region, Bethel Subregion, 2008.

Species	Annual estimated bird harvest			Estimated bird harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	223	37%	140 – 307	44	149%	15	105%	165	78%
Green-winged teal	142	47%	75 – 209	3	159%	15	131%	124	92%
Mallard	290	21%	230 – 351	102	41%	81	96%	107	53%
Pintail	235	30%	165 – 305	116	84%	6	112%	113	64%
Shoveler	81	44%	45 – 117	47	104%	9	159%	26	142%
Black scoter	695	25%	521 – 869	689	43%	0	-	6	159%
Surf scoter	207	59%	86 – 327	207	102%	0	-	0	-
White-winged scoter	320	38%	198 – 442	320	66%	0	-	0	-
Bufflehead	0	-	-	0	-	0	-	0	-
Goldeneye	20	79%	7 – 36	17	159%	3	159%	0	-
Canvasback	6	65%	2 – 10	0	-	0	-	6	112%
Scaup	351	31%	243 – 459	163	73%	0	-	188	77%
Common eider	0	-	-	0	-	0	-	0	-
King eider	134	80%	46 – 241	134	139%	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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	2,704	16%	2,259 – 3,149	1,841	36%	128	69%	735	51%
Geese									
Black brant	87	91%	30 – 167	87	159%	0	-	0	-
Cackling Canada goose	833	17%	695 – 971	471	33%	84	98%	278	58%
Lesser Canada goose	533	48%	275 – 791	376	111%	52	117%	104	67%
White-fronted goose	2,439	31%	1,671 – 3,207	1,984	62%	111	106%	344	52%
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	14	92%	5 – 28	0	-	0	-	14	159%
Total geese	3,907	26%	2,895 – 4,919	2,919	56%	247	64%	741	39%
Swans									
Tundra swan	105	19%	85 – 124	61	38%	12	112%	32	65%
Sandhill crane	67	26%	50 – 84	55	50%	9	118%	3	159%
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	1,006	31%	692 – 1,320	1,006	54%	0	-	0	-
Total grouse	1,006	31%	692 – 1,320	1,006	54%	0	-	0	-
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	0	-	-	0	-	0	-	0	-
Glaucous gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	0	-	-	0	-	0	-	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	0	-	-	0	-	0	-	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total birds	7,789	16%	6,556 – 9,021	5,883	33%	396	50%	1,510	37%

Sampling effort (Bethel, 2008): 1 out of 1 village in this subregion was surveyed. Harvest expansion assumed that harvesters account for 30% of the total village households (village size estimate). -: No reported harvest.

Table 34.—Estimated harvest of eggs, Yukon–Kuskokwim Delta Region, Bethel Subregion, 2008.

Species	Annual estimated egg harvest			Estimated egg harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	0	-
Green-winged teal	0	-	-	0	-	0	-	0	-
Mallard	0	-	-	0	-	0	-	0	-
Pintail	23	91%	8 – 44	23	159%	0	-	0	-
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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	23	91%	8 – 44	23	159%	0	-	0	-
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Cackling Canada goose	0	-	-	0	-	0	-	0	-
Lesser Canada goose	0	-	-	0	-	0	-	0	-
White-fronted goose	0	-	-	0	-	0	-	0	-
Emperor goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	0	-	-	0	-	0	-	0	-
Swans									
Tundra swan	0	-	-	0	-	0	-	0	-
Cranes									
Sandhill crane	0	-	-	0	-	0	-	0	-
Grouse									
Spruce grouse	0	-	-	0	-	0	-	0	-
Ptarmigan	0	-	-	0	-	0	-	0	-
Total grouse	0	-	-	0	-	0	-	0	-
Seabirds									
Cormorant	0	-	-	0	-	0	-	0	-
Arctic tern	0	-	-	0	-	0	-	0	-
Kittiwake	0	-	-	0	-	0	-	0	-
Sabine's gull	0	-	-	0	-	0	-	0	-
Mew gull	0	-	-	0	-	0	-	0	-
Glaucous gull	0	-	-	0	-	0	-	0	-
Auklet	0	-	-	0	-	0	-	0	-
Murre	0	-	-	0	-	0	-	0	-
Guillemot	0	-	-	0	-	0	-	0	-
Puffin	0	-	-	0	-	0	-	0	-
Total seabirds	0	-	-	0	-	0	-	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Bristle-thighed curlew	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	0	-	-	0	-	0	-	0	-
Grebes and loons									
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	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total eggs	23	91%	8 – 44	23	159%	0	-	0	-

Sampling effort (Bethel, 2008): 1 out of 1 village in this subregion was surveyed. Harvest expansion assumed that harvesters account for 30% of the total village households (village size estimate). -: No reported harvest.

Table 35.—Estimated harvest of birds, North Slope Region, 2008.

Species	Annual estimated bird harvest			Estimated bird harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	a	
Green-winged teal	0	-	-	0	-	0	-	a	
Mallard	10	135%	3 – 25	10	135%	0	-	a	
Pintail	26	184%	3 – 74	26	184%	0	-	a	
Shoveler	0	-	-	0	-	0	-	a	
Black scoter	0	-	-	0	-	0	-	a	
Surf scoter	0	-	-	0	-	0	-	a	
White-winged scoter	0	-	-	0	-	0	-	a	
Bufflehead	0	-	-	0	-	0	-	a	
Goldeneye	0	-	-	0	-	0	-	a	
Canvasback	0	-	-	0	-	0	-	a	
Scaup	0	-	-	0	-	0	-	a	
Common eider	3,166	26%	2,338 – 3,994	1,881	22%	1,285	44%	a	
King eider	14,157	40%	8,534 – 19,781	5,867	41%	8,290	46%	a	
Spectacled eider	9	184%	1 – 25	0	-	9	184%	a	
Steller's eider	0	-	-	0	-	0	-	a	
Harlequin duck	0	-	-	0	-	0	-	a	
Long-tailed duck	112	80%	37 – 202	84	105%	28	88%	a	
Common merganser	0	-	-	0	-	0	-	a	
Red-breasted merganser	0	-	-	0	-	0	-	a	
Duck (unidentified)	2	145%	1 – 5	0	-	2	145%	a	
Total ducks	17,482	33%	11,713 – 23,252	7,869	32%	9,614	41%	a	
Geese									
Black brant	3,851	18%	3,172 – 4,530	3,344	17%	507	58%	a	
Cackling Canada goose	274	76%	105 – 481	255	81%	19	132%	a	
Lesser Canada goose	716	41%	423 – 1,008	694	42%	22	100%	a	
White-fronted goose	20,187	27%	14,714 – 25,659	19,369	27%	817	61%	a	
Emperor goose	0	-	-	0	-	0	-	a	
Lesser snow goose	688	40%	412 – 963	679	40%	8	140%	a	
Total geese	25,714	22%	19,991 – 31,437	24,341	22%	1,373	44%	a	
Swans									
Tundra swan	47	64%	17 – 77	47	64%	0	-	a	
Cranes									
Sandhill crane	35	139%	7 – 83	17	102%	17	184%	a	
Grouse									
Spruce grouse	0	-	-	0	-	0	-	a	
Ptarmigan	1,556	35%	1,006 – 2,106	1,323	39%	233	74%	a	
Total grouse	1,556	35%	1,006 – 2,106	1,323	39%	233	74%	a	
Seabirds									
Cormorant	0	-	-	0	-	0	-	a	
Arctic tern	0	-	-	0	-	0	-	a	
Kittiwake	0	-	-	0	-	0	-	a	
Sabine's gull	0	-	-	0	-	0	-	a	
Mew gull	0	-	-	0	-	0	-	a	
Glaucous gull	120	98%	34 – 238	24	97%	96	120%	a	
Auklet	0	-	-	0	-	0	-	a	
Murre	0	-	-	0	-	0	-	a	
Guillemot	0	-	-	0	-	0	-	a	
Puffin	9	184%	1 – 25	0	-	9	184%	a	
Total seabirds	129	92%	35 – 247	24	97%	105	111%	a	
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	a	
Bristle-thighed curlew	0	-	-	0	-	0	-	a	
Godwit	0	-	-	0	-	0	-	a	
Golden plover	0	-	-	0	-	0	-	a	
Small shorebird	0	-	-	0	-	0	-	a	
Total shorebirds	0	-	-	0	-	0	-	a	
Grebes and loons									
Common loon	32	104%	14 – 65	3	132%	29	114%	a	
Pacific loon	24	137%	4 – 58	7	135%	17	184%	a	
Red-throated loon	0	-	-	0	-	0	-	a	
Yellow-billed loon ^b	102	79%	28 – 182	0	-	102	79%	a	
Total grebes and loons	158	62%	59 – 256	10	-	148	67%	a	
Other/unknown bird	2	145%	1 – 5	2	-	0	-	a	
Total birds	45,123	22%	35,404 – 54,842	33,633	-	11,490	36%	a	

Sampling effort (North Slope, 2008): a. There is no fall survey in the North Slope Region; 5 out of 8 villages in this region were surveyed and both subregions were represented in the sample. Harvest estimates presented only at the regional level by request of regional partners. A dash ("-") indicates no reported harvest.

b. In the North Slope Region, loons are occasionally entangled in subsistence fishing nets. Entangled yellow-billed loons salvaged from fishing nets are used for ceremonial purposes and were reported as "harvested" in this survey. Reported numbers of yellow-billed loons for the region were 28 birds in 2008.

Table 36.—Estimated harvest of eggs, North Slope Region, 2008.

Species	Annual estimated egg harvest			Estimated egg harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	25	140%	6 – 61	25	140%	0	-	a	
Green-winged teal	0	-	-	0	-	0	-	a	
Mallard	0	-	-	0	-	0	-	a	
Pintail	0	-	-	0	-	0	-	a	
Shoveler	0	-	-	0	-	0	-	a	
Black scoter	0	-	-	0	-	0	-	a	
Surf scoter	0	-	-	0	-	0	-	a	
White-winged scoter	31	132%	10 – 72	31	132%	0	-	a	
Bufflehead	0	-	-	0	-	0	-	a	
Goldeneye	0	-	-	0	-	0	-	a	
Canvasback	0	-	-	0	-	0	-	a	
Scaup	0	-	-	0	-	0	-	a	
Common eider	259	132%	84 – 602	259	132%	0	-	a	
King eider	0	-	-	0	-	0	-	a	
Spectacled eider	0	-	-	0	-	0	-	a	
Steller's eider	0	-	-	0	-	0	-	a	
Harlequin duck	0	-	-	0	-	0	-	a	
Long-tailed duck	65	132%	21 – 151	65	132%	0	-	a	
Common merganser	0	-	-	0	-	0	-	a	
Red-breasted merganser	4	145%	2 – 11	4	145%	0	-	a	
Total ducks	385	122%	123 – 855	385	122%	0	-	a	
Geese									
Black brant	0	-	-	0	-	0	-	a	
Cackling Canada goose	0	-	-	0	-	0	-	a	
Lesser Canada goose	0	-	-	0	-	0	-	a	
White-fronted goose	388	82%	107 – 706	239	72%	149	113%	a	
Emperor goose	0	-	-	0	-	0	-	a	
Lesser snow goose	25	140%	6 – 61	25	140%	0	-	a	
Total geese	413	77%	113 – 731	265	65%	149	113%	a	
Swans									
Tundra swan	38	104%	10 – 77	25	96%	13	140%	a	
Cranes									
Sandhill crane	0	-	-	0	-	0	-	a	
Grouse									
Spruce grouse	0	-	-	0	-	0	-	a	
Ptarmigan	0	-	-	0	-	0	-	a	
Total grouse	0	-	-	0	-	0	-	a	
Seabirds									
Cormorant	0	-	-	0	-	0	-	a	
Arctic tern	0	-	-	0	-	0	-	a	
Kittiwake	0	-	-	0	-	0	-	a	
Sabine's gull	0	-	-	0	-	0	-	a	
Mew gull	0	-	-	0	-	0	-	a	
Glaucous gull	22	145%	10 – 54	22	145%	0	-	a	
Auklet	0	-	-	0	-	0	-	a	
Murre	0	-	-	0	-	0	-	a	
Guillemot	0	-	-	0	-	0	-	a	
Puffin	0	-	-	0	-	0	-	a	
Total seabirds	22	145%	10 – 54	22	145%	0	-	a	
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	a	
Bristle-thighed curlew	0	-	-	0	-	0	-	a	
Godwit	0	-	-	0	-	0	-	a	
Golden plover	0	-	-	0	-	0	-	a	
Small shorebird	0	-	-	0	-	0	-	a	
Total shorebirds	0	-	-	0	-	0	-	a	
Grebes and loons									
Common loon	0	-	-	0	-	0	-	a	
Pacific loon	0	-	-	0	-	0	-	a	
Red-throated loon	0	-	-	0	-	0	-	a	
Yellow-billed loon	0	-	-	0	-	0	-	a	
Total grebes and loons	0	-	-	0	-	0	-	a	
Total eggs	858	70%	256 – 1,461	696	76%	161	114%	a	

Sampling effort (North Slope, 2008): a. There is no fall survey in the North Slope Region; 5 out of 8 villages in this region were surveyed and both subregions were represented in the sample. Harvest estimates presented only at the regional level by request of regional partners. A dash ("-") indicates no reported harvest.

Table 37.–Estimated harvest of birds, Interior Alaska Region, Yukon–Koyukuk Subregion, 2008.

Species	Annual estimated bird harvest			Estimated bird harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low – High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	739	97%	62 – 1,452	739	93%	0	-	0	-
Green-winged teal	60	152%	5 – 150	60	151%	0	-	0	-
Mallard	881	64%	317 – 1,445	881	57%	0	-	0	-
Pintail	738	84%	116 – 1,359	738	80%	0	-	0	-
Shoveler	441	97%	37 – 868	441	93%	0	-	0	-
Black scoter	12	152%	1 – 30	12	151%	0	-	0	-
Surf scoter	381	143%	32 – 927	381	142%	0	-	0	-
White-winged scoter	381	143%	32 – 927	381	142%	0	-	0	-
Bufflehead	0	-	-	0	-	0	-	0	-
Goldeneye	0	-	-	0	-	0	-	0	-
Canvasback	357	130%	30 – 822	357	128%	0	-	0	-
Scaup	357	152%	30 – 902	357	151%	0	-	0	-
Harlequin duck	0	-	-	0	-	0	-	0	-
Long-tailed duck	667	115%	56 – 1,437	667	113%	0	-	0	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	5,014	101%	421 – 10,070	5,014	97%	0	-	0	-
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Lesser Canada goose	906	73%	248 – 1,563	906	67%	0	-	0	-
White-fronted goose	881	53%	415 – 1,346	881	44%	0	-	0	-
Lesser snow goose	24	152%	2 – 60	24	151%	0	-	0	-
Total geese	1,810	61%	699 – 2,922	1,810	54%	0	-	0	-
Swans									
Tundra swan	0	-	-	0	-	0	-	0	-
Cranes									
Sandhill crane	83	133%	7 – 194	83	131%	0	-	0	-
Grouse									
Grouse (unidentified)	0	-	-	0	-	0	-	0	-
Ptarmigan	0	-	-	0	-	0	-	0	-
Total grouse	0	-	-	0	-	0	-	0	-
Seabirds									
Arctic tern	0	-	-	0	-	0	-	0	-
Mew gull	0	-	-	0	-	0	-	0	-
Glaucous gull	0	-	-	0	-	0	-	0	-
Herring gull	0	-	-	0	-	0	-	0	-
Total seabirds	0	-	-	0	-	0	-	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	0	-	-	0	-	0	-	0	-
Grebes and loons									
Common loon	0	-	-	0	-	0	-	0	-
Pacific loon	0	-	-	0	-	0	-	0	-
Red-throated loon	0	-	-	0	-	0	-	0	-
Red-necked grebe	0	-	-	0	-	0	-	0	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total birds	6,908	89%	731 – 13,084	6,908	85%	0	-	0	-

Sampling effort (Yukon/Koyukuk, 2008): 2 out of 12 villages in this subregion were surveyed; 10% of the subregion households were represented in the sample.
 -: No reported harvest.

Table 38.—Estimated harvest of eggs, Interior Alaska Region, Yukon–Koyukuk Subregion, 2008.

Species	Annual estimated egg harvest			Estimated egg harvest by season					
	Number	Confidence Interval		Spring		Summer		Fall	
		95% CI	Low - High	Number	95% CI	Number	95% CI	Number	95% CI
Ducks									
Wigeon	0	-	-	0	-	0	-	0	-
Green-winged teal	0	-	-	0	-	0	-	0	-
Mallard	0	-	-	0	-	0	-	0	-
Pintail	0	-	-	0	-	0	-	0	-
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	-
Common merganser	0	-	-	0	-	0	-	0	-
Red-breasted merganser	0	-	-	0	-	0	-	0	-
Total ducks	0	-	-	0	-	0	-	0	-
Geese									
Black brant	0	-	-	0	-	0	-	0	-
Lesser Canada goose	0	-	-	0	-	0	-	0	-
White-fronted goose	0	-	-	0	-	0	-	0	-
Lesser snow goose	0	-	-	0	-	0	-	0	-
Total geese	0	-	-	0	-	0	-	0	-
Swans									
Tundra swan	0	-	-	0	-	0	-	0	-
Cranes									
Sandhill crane	0	-	-	0	-	0	-	0	-
Grouse									
Grouse (unidentified)	0	-	-	0	-	0	-	0	-
Ptarmigan	0	-	-	0	-	0	-	0	-
Total grouse	0	-	-	0	-	0	-	0	-
Seabirds									
Arctic tern	0	-	-	0	-	0	-	0	-
Mew gull	0	-	-	0	-	0	-	0	-
Glaucous gull	0	-	-	0	-	0	-	0	-
Herring gull	0	-	-	0	-	0	-	0	-
Total seabirds	0	-	-	0	-	0	-	0	-
Shorebirds									
Whimbrel	0	-	-	0	-	0	-	0	-
Godwit	0	-	-	0	-	0	-	0	-
Golden plover	0	-	-	0	-	0	-	0	-
Small shorebird	0	-	-	0	-	0	-	0	-
Total shorebirds	0	-	-	0	-	0	-	0	-
Grebes and loons									
Common loon	0	-	-	0	-	0	-	0	-
Pacific loon	0	-	-	0	-	0	-	0	-
Red-throated loon	0	-	-	0	-	0	-	0	-
Red-necked grebe	0	-	-	0	-	0	-	0	-
Total grebes and loons	0	-	-	0	-	0	-	0	-
Total eggs	0	-	-	0	-	0	-	0	-

Sampling effort (Yukon/Koyukuk, 2008): 2 out of 12 villages in this subregion were surveyed; 10% of the subregion households were represented in the sample.

-: No reported harvest.

HOUSEHOLD PARTICIPATION RATES 2004–2008

Table 39.—Household participation rates, 2004–2008.

Region Subregion	2004		2005		2006		2007		2008	
	Household Participation Rate	Number of Households ^a	Household Participation Rate	Number of Households ^a	Household Participation Rate	Number of Households ^a	Household Participation Rate	Number of Households ^a	Household Participation Rate	Number of Households ^a
Gulf of Alaska-Cook Inlet	97%	32	-	-	-	-	-	-	-	-
Gulf of Alaska	100%	18	-	-	79%	24	-	-	-	-
Cook Inlet	93%	14	71%	17	-	-	-	-	-	-
Kodiak Archipelago	-	-	-	-	72%	233	-	-	-	-
Kodiak Villages	100%	65	-	-	75%	169	-	-	-	-
Kodiak City & Road Connected	-	-	-	-	64%	64	-	-	-	-
Aleutian-Pribilof Islands	-	-	-	-	-	-	-	-	-	-
Aleutian-Pribilof Villages	-	-	97%	38	-	-	100%	25	97%	189
Unalaska	-	-	-	-	-	-	-	-	95%	73
Bristol Bay	-	-	-	-	-	-	89%	354	99%	116
South Alaska Peninsula	-	-	-	-	-	-	-	-	98%	357
Southwest Bristol Bay	-	-	-	-	-	-	93%	29	-	-
Dillingham	-	-	-	-	-	-	85%	214	96%	155
Yukon-Kuskokwim Delta	-	-	-	-	-	-	97%	111	100%	202
Y-K Delta South Coast	-	-	-	-	-	-	-	-	62%	1,300
Y-K Delta Mid Coast	-	-	-	-	78%	90	86%	283	73%	173
Y-K Delta North Coast	-	-	-	-	81%	156	54%	257	50%	400
Lower Yukon	-	-	-	-	56%	107	44%	255	63%	300
Lower Kuskokwim	-	-	-	-	84%	56	60%	211	98%	94
Central Kuskokwim	-	-	-	-	63%	294	60%	602	61%	333
Bethel	-	-	-	-	74%	73	-	-	-	-
Bering Strait-Norton Sound	71%	525	80%	354	-	-	-	-	-	-
St. Lawrence-Dionede Is.	75%	109	87%	75	-	-	90%	436	-	-
Bering Strait Mainland Villages	85%	206	78%	143	-	-	95%	86	-	-
Nome	57%	210	77%	136	-	-	93%	159	-	-
Northwest Arctic	-	-	-	-	-	-	86%	191	-	-
Northwest Arctic Villages	-	-	-	-	-	-	-	-	-	-
Kotzebue	-	-	-	-	86%	242	-	-	-	-
North Slope	-	-	91%	600	-	-	-	-	-	-
North Slope Villages	-	-	87%	394	-	-	-	-	-	-
Barrow	-	-	98%	206	-	-	-	-	-	-
Interior	-	-	-	-	-	-	-	-	-	-
Mid Yukon-Upper Kuskokwim	-	-	-	-	-	-	-	-	-	-
Yukon-Koyukuk	100%	18	-	-	90%	83	100%	50	100%	51
Upper Yukon	-	-	-	-	95%	246	100%	147	-	-
Tanana Villages	99%	100	-	-	99%	123	-	-	-	-
Tok	-	-	-	-	100%	60	-	-	-	-
Upper Copper River	96%	57	-	-	-	-	84%	38	-	-

Household Participation Rate = Number of households that agreed to participate / Total number of households for which permission slips are available.

a. Number of households for which permission slips are available (may not represent the total number of households surveyed).

—: Information not available (region/subregion not surveyed or permission slips not available for data management and analysis). 2004–2007 Participation rates from Naves (2010).

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APPENDICES

Appendix A.—Regions, subregions, and villages included in the 2004–2008 harvest estimates.

Region					
<u>Subregion</u>					
Village	2004	2005	2006	2007	2008
Gulf of Alaska–Cook Inlet					
<u>Gulf of Alaska</u>					
Chenega Bay	-	-	X	-	-
Nanwalek	X	-	-	-	-
Port Graham	X	-	X	-	-
Tatitlek	X	-	-	-	-
<u>Cook Inlet</u>					
Tyonek	X	X	-	-	-
Kodiak Archipelago					
<u>Kodiak Villages</u>					
Akhiok	-	-	X	-	-
Karluk	-	-	X	-	-
Larsen Bay	-	-	X	-	-
Old Harbor	-	-	X	-	-
Ouzinkie	-	-	X	-	-
Port Lions	-	-	-	-	-
<u>Kodiak City and Road-connected</u>					
Kodiak City	-	-	X	-	-
Kodiak Station	-	-	-	-	-
Chiniak	-	-	-	-	-
Women's Bay	-	-	-	-	-
Kodiak at large	-	-	-	-	-
Aleneva	-	-	-	-	-
Aleutian–Pribilof Islands					
<u>Aleutian–Pribilof Villages</u>					
Adak Station	-	-	-	-	-
Akutan	-	X	-	X	X
Atka	-	X	-	-	-
Cold Bay	-	X	-	-	-
False Pass	-	-	-	-	X
King Cove	-	X	-	-	X
Nelson Lagoon	-	-	-	-	-

-continued-

Region					
<u>Subregion</u>					
Village	2004	2005	2006	2007	2008
Nikolski	-	-	-	-	-
Sand Point	-	-	-	-	X
Saint George Island	-	-	-	-	-
Saint Paul Island	-	-	-	-	-
<u>Unalaska</u>					
Unalaska	-	-	-	-	X
Bristol Bay					
<u>South Alaska Peninsula</u>					
Chignik Bay	X	-	-	X	-
Chignik Lagoon	X	-	-	-	-
Chignik Lake	X	-	-	-	X
Ivanof Bay	-	-	-	-	-
Perryville	X	-	-	X	-
<u>Southwest Bristol Bay</u>					
Aleknagik	X	-	-	X	X
Clark's Point	X	X	-	X	X
Egegik	-	X	-	X	-
Ekwok	X	-	-	X	X
Igiugig	-	-	-	-	-
Iliamna	-	X	-	X	-
King Salmon	-	X	-	-	-
Kokhanok	X	X	-	X	X
Koliganek	-	X	-	X	-
Levelock	X	X	-	-	X
Manokotak	-	X	-	X	X
Naknek	X	-	-	X	-
New Stuyahok	-	X	-	X	-
Newhalen	X	X	-	-	X
Nondalton	X	X	-	-	-
Pedro Bay	-	X	-	-	-
Pilot Point	-	X	-	-	-
Port Heiden	-	X	-	-	-
South Naknek	-	X	-	X	-
Togiak	X	-	X	X	-
Twin Hills	X	X	-	X	-

-continued-

Region					
<u>Subregion</u>					
Village	2004	2005	2006	2007	2008
<u>Dillingham</u>					
Dillingham	-	X	-	X	X
Yukon-Kuskokwim Delta					
<u>Y–K Delta South Coast</u>					
Eek	X	X	-	X	X
Goodnews Bay	-	-	X	-	X
Kipnuk	-	X	X	X	-
Kongiganak	-	X	X	X	X
Kwigillingok	-	-	-	-	-
Platinum	-	X	X	-	-
Quinhagak	X	X	X	X	X
Tuntutuliak	X	-	X	-	X
<u>Y–K Delta Mid Coast</u>					
Chefornak	X	-	X	X	-
Chevak	X	-	-	-	-
Hooper Bay	X	X	-	-	X
Mekoryuk	-	X	-	X	X
Newtok	-	X	X	-	X
Nightmute	X	-	X	X	-
Scammon Bay	-	-	X	-	X
Toksook Bay	X	X	-	X	-
Tununak	X	X	-	X	X
<u>Y–K Delta North Coast</u>					
Alakanuk	X	-	X	-	-
Emmonak	-	X	X	X	X
Kotlik	X	X	-	-	-
Nunam Iqua	-	X	X	-	X
<u>Lower Yukon</u>					
Marshall	X	X	-	X	X
Mountain Village	-	X	-	X	X
Pilot Station	-	X	X	-	X
Pitkas Point	X	-	X	X	-
Russian Mission	-	X	X	-	X
Saint Mary's	-	X	-	X	-
<u>Lower Kuskokwim</u>					

-continued-

Region					
<u>Subregion</u>					
Village	2004	2005	2006	2007	2008
Akiachak	-	-	X	-	-
Akiak	-	X	X	X	-
Aniak	X	X	-	-	X
Atmautluak	X	-	-	X	X
Kasigluk	X	-	X	X	-
Kwethluk	X	X	X	X	-
Lower Kalskag	X	-	X	X	X
Napakiak	-	-	-	X	-
Napaskiak	-	X	X	X	X
Nunapitchuk	X	X	-	X	X
Oscarville	-	-	X	X	-
Tuluksak	-	X	X	-	X
Upper Kalskag	-	X	X	-	-
<u>Central Kuskokwim</u>					
Chuathbaluk	X	-	-	-	-
Crooked Creek	X	-	X	-	-
Lime Village	-	-	X	-	-
Red Devil	-	-	-	X	-
Sleetmute	-	-	X	X	-
Stony River	X	-	X	-	-
<u>Bethel</u>					
Bethel	X	X	X	X	X
Bering Strait–Norton Sound					
<u>St. Lawrence–Diomedes Is.</u>					
Diomedes	-	X	-	X	-
Gambell	X	X	-	X	-
Savoonga	X	X	-	X	-
<u>Bering Strait Mainland Villages</u>					
Brevig Mission	X	-	-	X	-
Elim	X	X	-	-	-
Golovin	-	X	-	X	-
Koyuk	-	X	-	X	-
Shaktoolik	-	-	-	X	-
Shishmaref	X	X	-	-	-
Saint Michael	X	-	-	X	-

-continued-

Region					
<u>Subregion</u>					
Village	2004	2005	2006	2007	2008
Stebbins	-	X	-	X	-
Teller	X	X	-	-	-
Unalakleet	X	-	-	X	-
Wales	X	X	-	-	-
White Mountain	X	-	-	X	-
<u>Nome</u>					
Nome	X	X	-	X	-
Northwest Arctic					
<u>Northwest Arctic Villages</u>					
Ambler	-	-	-	-	-
Buckland	-	-	X	-	-
Deering	-	-	-	-	-
Kiana	-	-	-	-	-
Kivalina	-	-	-	-	-
Kobuk	-	-	X	-	-
Noatak	-	-	-	-	-
Noorvik	-	-	-	-	-
Selawik	-	-	X	-	-
Shungnak	-	-	X	-	-
<u>Kotzebue</u>					
Kotzebue	-	-	-	-	-
North Slope					
<u>North Slope Villages</u>					
Anaktuvuk Pass	-	X	-	X	-
Atkasuk	-	X	-	X	-
Kaktovik	-	X	-	X	X
Nuiqsut	-	-	-	-	X
Point Hope	-	X	-	-	X
Point Lay	-	X	-	-	-
Wainwright	-	X	-	X	X
<u>Barrow</u>					
Barrow	-	X	-	X	X
Interior Alaska					
<u>Mid Yukon–Upper Kuskokwim</u>					
Anvik	X	X	X	-	-

-continued-

Region					
<u>Subregion</u>					
Village	2004	2005	2006	2007	2008
Grayling	-	X	X	-	-
Holy Cross	X	X	X	-	-
Lake Minchumina	X	-	X	-	-
McGrath	-	-	-	-	-
Nikolai	X	X	X	-	-
Shageluk	-	X	-	-	-
Takotna	-	X	-	-	-
Tanana	-	-	-	-	-
<u>Yukon–Koyukuk</u>					
Alatna	X	-	X	X	X
Bettles–Evansville	-	-	X	-	-
Coldfoot	-	-	-	-	-
Galena	X	-	-	-	-
Hughes	X	-	-	-	-
Huslia	X	-	-	-	-
Kaltag	X	-	-	-	-
Koyukuk	X	X	-	-	-
Nulato	X	X	-	-	-
Ruby	X	X	-	-	-
Wiseman	-	-	-	-	-
Allakaket	X	-	X	X	X
<u>Upper Yukon</u>					
Arctic Village	-	-	X	-	-
Beaver	-	-	X	X	-
Birch Creek	-	-	-	X	-
Central	-	-	X	-	-
Chalkyitsik	-	-	X	X	-
Circle	-	-	X	X	-
Fort Yukon	X	-	X	X	-
Rampart	-	-	-	-	-
Stevens Village	-	-	-	-	-
Venetie	-	-	X	X	-
<u>Tanana Villages</u>					
Dot Lake	X	-	-	-	-
Eagle Village	X	-	-	-	-

-continued-

Region					
<u>Subregion</u>					
Village	2004	2005	2006	2007	2008
Eagle City	-	-	-	-	-
Healy Lake	-	-	-	-	-
Manley Hot Springs	X	-	-	-	-
Minto	-	-	X	-	-
Nenana	X	-	X	-	-
Northway	X	-	-	-	-
Tanacross	-	-	X	-	-
Tetlin	-	-	-	-	-
Dry Creek	-	-	-	-	-
<u>Tok</u>					
Tok	-	-	X	-	-
Upper Copper River					
<u>Upper Copper River</u>					
Cantwell	-	-	-	X	-
Cheesh'na (Chistochina)	X	-	-	X	-
Chitina	X	-	-	-	-
Copper Center	X	-	-	X	-
Gakona	X	-	-	X	-
Gulkana	X	-	-	X	-
Mentasta Lake	X	-	-	X	-
Tazlina	-	-	-	-	-
Southeast Alaska					
<u>Southeast Alaska</u>					
Craig ^a	-	-	-	-	-
Hoonah ^a	-	-	-	-	-
Hydaburg ^a	-	-	-	-	-
Yakutat ^b	-	-	-	-	-

Source Survey results for 2004–2007 were reported in Naves (2010).

- a. Villages eligible to harvest only the eggs of glaucous-winged gulls.
- b. Village eligible to harvest only the eggs of glaucous-winged gulls, Aleutian terns, and Arctic terns.

SUBSISTENCE HOUSEHOLD SURVEY SPRING (APRIL 1 - JUNE 30)

PLEASE WRITE TOTAL NUMBER OF BIRDS CAUGHT AND EGGS GATHERED.

Tundra Swan birds _____ eggs _____	White-fronted Goose birds _____ eggs _____	Lesser Canada Goose birds _____ eggs _____
Cackling Canada Goose birds _____ eggs _____	Emperor Goose birds _____ eggs _____	Black Brant birds _____ eggs _____
Pintail birds _____ eggs _____	Mallard birds _____ eggs _____	Shoveler birds _____ eggs _____
Green-winged Teal birds _____ eggs _____	Scaup birds _____ eggs _____	Bufflehead birds _____ eggs _____
Harlequin birds _____ eggs _____	Goldeneye birds _____ eggs _____	White-winged Scoter birds _____ eggs _____
Black Scoter birds _____ eggs _____	Surf Scoter birds _____ eggs _____	Red-breasted Merganser birds _____ eggs _____
Common Eider birds _____ eggs _____	King Eider birds _____ eggs _____	Steller's Eider birds _____ eggs _____
	Spectacled Eider birds _____ eggs _____	
	Common Merganser birds _____ eggs _____	
	Long-tailed duck birds _____ eggs _____	
	Canvasback birds _____ eggs _____	
	Wiggon birds _____ eggs _____	
	Lesser Snow Goose birds _____ eggs _____	
	Sandhill Crane birds _____ eggs _____	

VH Code: _____

SUBSISTENCE HOUSEHOLD SURVEY SPRING (APRIL 1 - JUNE 30)

PLEASE WRITE TOTAL NUMBER OF BIRDS CAUGHT AND EGGS GATHERED.

Yellow-billed Loon birds _____ eggs _____	Red-throated Loon birds _____ eggs _____	Common Loon birds _____ eggs _____	Pacific Loon birds _____ eggs _____
Auklet birds _____ eggs _____	Murre birds _____ eggs _____	Common Murre birds _____ eggs _____	Kittiwake birds _____ eggs _____
Guillemot birds _____ eggs _____	Mew Gull birds _____ eggs _____	Sabine's Gull birds _____ eggs _____	Glaucous Gull birds _____ eggs _____
Arctic Tern birds _____ eggs _____	Puffin birds _____ eggs _____	Bristle-thighed Curlew birds _____ eggs _____	Gadwall birds _____ eggs _____
Whimbrel birds _____ eggs _____	Golden Plover birds _____ eggs _____	Small Shorebird birds _____ eggs _____	Unidentified Duck birds _____ eggs _____
Purmanian (non-migratory) birds _____ eggs _____	Spruce Grouse (non-migratory) birds _____ eggs _____	Other Bird birds _____ eggs _____	

Comments: _____

Surveyor Notes
Date of Pick-up: _____

VH Code: _____

FORM 7-PW-103
BIRDS AND EGGS
APPROVAL EXPIRES 01/31/10

SUBSISTENCE HOUSEHOLD SURVEY

SUMMER (JULY 1 - AUG. 31)

PLEASE WRITE TOTAL NUMBER OF BIRDS CAUGHT AND EGGS GATHERED.

Tundra Swan birds _____ eggs _____	Lesser Canada Goose birds _____ eggs _____	White-fronted Goose birds _____ eggs _____	Lesser Canada Goose birds _____ eggs _____
Cackling Canada Goose birds _____ eggs _____	Sandhill Crane birds _____ eggs _____	Emperor Goose birds _____ eggs _____	Black Brant birds _____ eggs _____
Pintail birds _____ eggs _____	Lesser Snow Goose birds _____ eggs _____	Wigeon birds _____ eggs _____	Shoveler birds _____ eggs _____
Green-winged Teal birds _____ eggs _____	Mallard birds _____ eggs _____	Canvasback birds _____ eggs _____	Bufflehead birds _____ eggs _____
Harlequin birds _____ eggs _____	Scaup birds _____ eggs _____	Long-tailed duck birds _____ eggs _____	White-winged Scoter birds _____ eggs _____
Black Scoter birds _____ eggs _____	Goldeneye birds _____ eggs _____	Common Merganser birds _____ eggs _____	Red-breasted Merganser birds _____ eggs _____
Common Eider birds _____ eggs _____	Surf Scoter birds _____ eggs _____	Spectacled Eider birds _____ eggs _____	Steller's Eider birds _____ eggs _____

VII Code: _____

SUBSISTENCE HOUSEHOLD SURVEY

SUMMER (JULY 1 - AUG. 31)

PLEASE WRITE TOTAL NUMBER OF BIRDS CAUGHT AND EGGS GATHERED.

Yellow-billed Loon birds _____ eggs _____	Red-throated Loon birds _____ eggs _____	Common Loon birds _____ eggs _____	Pacific Loon birds _____ eggs _____
Auklet birds _____ eggs _____	Murre birds _____ eggs _____	Cormorant birds _____ eggs _____	Kittiwake birds _____ eggs _____
Gullmott birds _____ eggs _____	Mew Gull birds _____ eggs _____	Sabine's Gull birds _____ eggs _____	Glaucous Gull birds _____ eggs _____
Arctic Tern birds _____ eggs _____	Puffin birds _____ eggs _____	Bristle-thighed Curlew birds _____ eggs _____	Godwit birds _____ eggs _____
Whimbrel birds _____ eggs _____	Golden Plover birds _____ eggs _____	Small Shorebird birds _____ eggs _____	Unidentified Duck birds _____ eggs _____
Pinnipin (non-migratory) birds _____ eggs _____	Spruce Grouse (non-migratory) birds _____ eggs _____	Other Bird birds _____ eggs _____	

Surveyor Notes: _____

Date of Pick-up: _____

VII Code: _____

Comments: _____

FORM 7 FW-103
OMB NO. 1018-0124
APPROVAL EXPIRES 01/31/10

SUBSISTENCE HOUSEHOLD SURVEY

FALL (SEPT. 1 - OCT. 31)

PLEASE WRITE TOTAL NUMBER OF BIRDS CAUGHT AND EGGS GATHERED.

Tundra Swan birds _____ eggs _____	White-fronted Goose birds _____ eggs _____	Lesser Canada Goose birds _____ eggs _____
Cackling Canada Goose birds _____ eggs _____	Emperor Goose birds _____ eggs _____	Black Brant birds _____ eggs _____
Pintail birds _____ eggs _____	Lesser Snow Goose birds _____ eggs _____	Snowy Owl birds _____ eggs _____
Mallard birds _____ eggs _____	Wigeon birds _____ eggs _____	Shoveler birds _____ eggs _____
Green-winged Teal birds _____ eggs _____	Canvasback birds _____ eggs _____	Bufflehead birds _____ eggs _____
Harlequin birds _____ eggs _____	Long-tailed duck birds _____ eggs _____	White-winged Scoter birds _____ eggs _____
Black Scoter birds _____ eggs _____	Common Merganser birds _____ eggs _____	Red-breasted Merganser birds _____ eggs _____
Common Eider birds _____ eggs _____	King Eider birds _____ eggs _____	Steller's Eider birds _____ eggs _____
Surf Scoter birds _____ eggs _____	Spectacled Eider birds _____ eggs _____	

VH Code: _____

SUBSISTENCE HOUSEHOLD SURVEY

FALL (SEPT. 1 - OCT. 31)

PLEASE WRITE TOTAL NUMBER OF BIRDS CAUGHT AND EGGS GATHERED.

Yellow-billed Loon birds _____ eggs _____	Red-throated Loon birds _____ eggs _____	Common Loon birds _____ eggs _____	Pacific Loon birds _____ eggs _____
Auklet birds _____ eggs _____	Murre birds _____ eggs _____	Cormorant birds _____ eggs _____	Kittiwake birds _____ eggs _____
Guillemot birds _____ eggs _____	Mew Gull birds _____ eggs _____	Sabine's Gull birds _____ eggs _____	Glaucous Gull birds _____ eggs _____
Arctic Tern birds _____ eggs _____	Puffin birds _____ eggs _____	Bristle-thighed Curlew birds _____ eggs _____	Gadwall birds _____ eggs _____
Whimbrel birds _____ eggs _____	Golden Plover birds _____ eggs _____	Small Shorebird birds _____ eggs _____	Unidentified Duck birds _____ eggs _____
Puarmigan (non-migratory) birds _____ eggs _____	Spruce Grouse (non-migratory) birds _____ eggs _____	Other Bird birds _____ eggs _____	

Surveyor Notes
Date of Pick-up: _____

Comments: _____

VH Code: _____

FORM 3-FW-03
OMB NO. 1018-0124
APPROVAL EXPIRES 01/01/10

Appendix C.—Species represented in the 3 versions of the harvest report form and their distribution range in Alaska.

Species category Species ^a	Southern Coastal Alaska form				Main form				Interior Alaska form			
	Gulf of Alaska—Cook Inlet	Kodiak Archipelago	Aleutian—Pribilof Islands	South Alaska Peninsula ^b	Bristol Bay	Yukon—Kuskokwim Delta	Bering Strait—Norton Sound		North-west Arctic	North Slope	Interior	Upper Copper River
Ducks												
American wigeon <i>Anas americana</i>	x	x	x	x	x	x	x	x	x	x	x	x
Green-winged teal <i>A. crecca</i> (1), Blue-winged teal <i>A. discors</i> (2)	x (1, 2)	x (1, 2)	x (1)	x (1)	x (1)	x (1)	x (1)	x (1)	x (1)	x (1)	x (1, 2)	x (1, 2)
Mallard <i>A. platyrhynchos</i>	x	x	x	x	x	x	x	x	x	x	x	x
Northern pintail <i>A. acuta</i>	x	x	x	x	x	x	x	x	x	x	x	x
Northern shoveler <i>A. clypeata</i>	x	x	x	x	x	x	x	x	x	x	x	x
Black scoter <i>Melanitta nigra</i>	x	x	x	x	x	x	x	x	x	x	x	x
Surf scoter <i>M. perspicillata</i>	x	x	x	x	x	x	x	x	x	x	x	x
White-winged scoter <i>M. fusca</i>	x	x	x	x	x	x	x	x	x	x	x	x
Bufflehead <i>Bucephala albeola</i>	x	x	x	x	x	x	x	x	x	x (-)	x	x
Goldeneye	x	x	x	x	x	x	x	x	x	x (-)	x	x
Common goldeneye <i>B. clangula</i> (1), Barrow's goldeneye <i>B. islandica</i> (2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1)	(1)	(1)	(1, 2)	(1, 2)
Canvasback <i>Aythya valisineria</i>	x	x	x	x	x	x	x	x	x	x (-)	x	x
Scaup	x	x	x	x	x	x	x	x	x	x	x	x
Greater scaup <i>A. marila</i> (1), Lesser scaup <i>A. affinis</i> (2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1)	(1, 2)	(1, 2)
Common eider <i>Somateria mollissima</i>	x	x	x	x	x	x	x	x	x	x	-	-
King eider <i>S. spectabilis</i>	x	x	x	x	x	x	x	x	x	x	-	-
Spectacled eider <i>S. fischeri</i> [*]	x (-)	x (-)	x (-)	x (-)	x	x	x	x	x	x	-	-
Steller's eider <i>Polysticta stelleri</i> [*]	x	x	x	x	x	x	x	x	x	x	-	-
Harlequin duck <i>Histrionicus histrionicus</i>	x	x	x	x	x	x	x	x	x	x (-)	x	x
Long-tailed duck <i>Clangula hyemalis</i>	x	x	x	x	x	x	x	x	x	x	x	x
Common merganser <i>Mergus merganser</i>	x	x	x	x	x	x	x	x	x	x (-)	x	x
Red-breasted merganser <i>M. serrator</i>	x	x	x	x	x	x	x	x	x	x	x	x
Duck (unidentified)	x	x	x	x	x	x	x	x	x	x	x	x
Geese												
Black brant <i>Branta bernicla</i>	x	x	x	x	x	x	x	x	x	x	x (-)	x (-)
Cackling Canada goose	x	x	x	x	x	x	x	x	x	x	-	-
Aleutian cackling goose <i>Branta hutchinsii minima</i> (1), Taverner's cackling goose <i>B. h. leucopareia</i> (2), Tavmer's cackling goose <i>B. h. taverneri</i> (3)	(1, 2, 3)	(2)	(2)	(1?, 3)	(1, 2)	(1, 3)	(3)	(3)	(3)	(3)	-	-

-continued-

Appendix C.–Page 2 of 5.

Species category Species ^a	Southern Coastal Alaska form					Main form					Interior Alaska form	
	Gulf of Alaska–Cook Inlet	Kodiak Archipelago	Aleutian–Pribilof Islands	South Alaska Peninsula ^b	Bristol Bay	Yukon–Kuskokwim Delta	Bering Strait–Norton Sound	North-west Arctic	North Slope	Interior	Upper Copper River	
Lesser Canada goose <i>Branta canadensis parvipes</i> (1), Dusky Canada goose <i>B. c. occidentalis</i> (2)	x (1, 2)	x (-)	x (-)	x (1?)	x (-)	x (1)	x (-)	x (-)	x (-)	x (1)	x	x (1)
White-fronted goose <i>Anser albifrons</i>	x	x	x	x	x	x	x	x	x	x	x	x
Emperor goose <i>Chen canagica</i> *	x	x	x	x	x	x	x	x	x (-)	-	-	-
Lesser snow goose <i>C. caerulescens</i>	x	x	x	x	x	x	x	x	x	x	x	x
Swans												
Tundra swan <i>Cygnus columbianus</i> (1), Trumpeter swan <i>C. buccinator</i> *(2)	x (1, 2)	x (1)	x (1)	x (1)	x (1)	x (1)	x (1)	x (1)	x (1)	x (1, 2)	x	x (1, 2)
Cranes												
Sandhill crane <i>Grus canadensis</i>	x	x	x	x	x	x	x	x	x	x	x	x
Grouse												
Spruce grouse <i>Falcipectus canadensis</i>	-	-	-	-	x	x	x	x	x	-	-	-
Grouse (unidentified)	-	-	-	-	-	-	-	-	-	x (1, 2, 3)	x	x (1, 2, 3)
Spruce grouse <i>F. canadensis</i> (1), Ruffed grouse <i>Bonasa umbellus</i> (2), Sharp-tailed grouse <i>Tympanuchus phasianellus</i> (3)	(1, 2)											
Ptarmigan	x (1, 2, 3)	x (1, 2)	x (1, 2)	x (1, 2)	x (1, 2)	x (1, 2)	x (1, 2)	x (1, 2)	x (1, 2)	x (1, 2, 3)	x	x (1, 2, 3)
Willow ptarmigan <i>Lagopus lagopus</i> (1), Rock ptarmigan <i>L. muta</i> (2), White-tailed ptarmigan <i>L. leucura</i> (3)												
Seabirds												
Cormorant	x (1, 2, 3)	x (1, 2, 3)	x (1, 2, 3)	x (1, 2, 3)	x (1, 2, 3)	x (1, 3)	x (1)	x (1)	x (-)	-	-	-
Pelagic cormorant <i>Phalacrocorax pelagicus</i> (1), Double-crested cormorant <i>P. auritus</i> (2), Red-faced cormorant <i>P. urile</i> *(3)												
Arctic tern <i>Sterna paradisaea</i> (1), Aleutian tern <i>S. aleutica</i> (2)	x (1)	x (1, 2)	x (1, 2)	x (1, 2)	x (1, 2)	x (1, 2)	x (1, 2)	x (1, 2)	x (1)	x (1)	x	x (1)
Black-legged kittiwake <i>Rissa tridactyla</i>	x	x	x	x	-	-	-	-	-	-	-	-
Red-legged kittiwake <i>R. brevirostris</i>	x	x	x	x	-	-	-	-	-	-	-	-
Kittiwake <i>R. tridactyla</i>	-	-	-	-	x	x	x	x	x (-)	-	-	-
Sabine's gull <i>Xema sabini</i> (1), Bonaparte's gull <i>Larus philadelphia</i> (2)	x (1, 2)	x (1, 2)	x (1, 2)	x (1, 2)	x (1, 2)	x (1, 2)	x (1)	x (1)	x	- (2)	- (2)	- (2)

-continued-

Species category Species ^a	Southern Coastal Alaska form					Main form				Interior Alaska form	
	Gulf of Alaska—Cook Inlet	Kodiak Archipelago	Aleutian—Pribilof Islands	South Alaska Peninsula ^b	Bristol Bay	Yukon—Kuskokwim Delta	Bering Strait—Norton Sound	North-west Arctic	North Slope	Interior	Upper Copper River
Mew gull <i>Larus canus</i>	- (x)	- (x)	-	-	x	x	x	x	x (-)	x	x
Glaucous-winged gull <i>L. glaucescens</i>	x	x	x	x	- (x)	-	-	-	-	-	-
Glaucous gull <i>L. hyperboreus</i>	-	-	-	-	x	x	x	x	x	x (-)	x (-)
Herring gull <i>L. argentatus</i>	x	x	x	x	-	-	- (x)	-	-	x	x
Auklet	x	x	x	x	x	x	x	x	x (-)	-	-
Cassin's auklet <i>Ptychoramphus aleuticus</i> (1),	(1, 2, 3, 4, 6)	(1, 2, 3, 4, 6)	(1, 2, 3, 4, 5, 6)	(1, 2, 3, 4, 5, 6)	(1, 2, 3, 4, 6)	(2, 3, 4, 6)	(2, 3, 4, 6)	(2, 3, 4, 6)	(1, 2)	-	-
Crested auklet <i>Aethia cristatella</i> (2),											
Least auklet <i>A. pusilla</i> (3),											
Parakeet auklet <i>A. psittacula</i> (4),											
Whiskered auklet <i>A. pygmaea</i> (5),											
Rhinoceros auklet <i>Cerorhinca monocerata</i> (6)											
Murre	x	x	x	x	x	x	x	x	x	-	-
Common murre <i>Uria aalge</i> (1),	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	-	-
Thick-billed murre <i>U. lomvia</i> (2)											
Guillemot	x	x	x	x	x	x	x	x	x	-	-
Pigeon guillemot <i>Cephus Columba</i> (1),	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1, 2)	(2)		
Black guillemot <i>C. grille</i> (2)											
Puffin	x	x	x	x	x	x	x	x	x (-)	-	-
Tufted puffin <i>F. cirrhata</i> (1),	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)		
Horned puffin <i>Fratercula corniculata</i> (2)											
Shorebirds											
Black oystercatcher <i>Haematopus bachmani</i>	x	x	x	x	-	-	-	-	-	-	-
Whimbrel <i>Numenius phaeopus</i> *	- (x)	-	-	- (x)	x	x	x	x	x	x	x
Bristle-thighed curlew <i>N. tahitiensis</i> *	x (-)	x	x (-)	x (-)	x (-)	x	x	x (-)	x (-)	-	-
Godwit	x	x (-)	x (-)	x	x	x	x	x	x	x	x
Bar-tailed godwit <i>Limosa lapponica</i> (1),	(2)			(1)	(1, 2, 3)	(1, 2)	(1, 2)	(1, 2)	(1)	(2)	(-)
Hudsonian godwit <i>L. haemastica</i> * (2),											
Marbled godwit <i>L. fedoa</i> * (3)											
Golden plover	x	x	x	x	x	x	x	x	x	x	x
American golden plover <i>Pluvialis dominica</i> * (1),	(1, 2, 3)	(1, 2, 3)	(1, 2, 3)	(1, 2, 3)	(1, 2, 3)	(1, 2, 3)	(1, 2, 3)	(1, 2, 3)	(1, 3)	(1, 2, 3)	(1, 2, 3)
Pacific golden plover <i>P. squatarola</i> * (2),											
Black-bellied plover <i>P. fulva</i> (3)											

-continued-

Appendix C.–Page 4 of 5.

Species category Species ^a	Southern Coastal Alaska form					Main form				Interior Alaska form	
	Gulf of Alaska–Cook Inlet	Kodiak Archipelago	Aleutian–Pribilof Islands	South Alaska Peninsula ^b	Bristol Bay	Yukon–Kuskokwim Delta	Bering Strait–Norton Sound	North-west Arctic	North Slope	Interior	Upper Copper River
Small shorebird	X	X	X	X	X	X	X	X	X	X	X
Dunlin <i>Calidris alpina</i> (1),	(1, 2, 3, 4, 5, 6, 7, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 27, 28)	(1, 2, 3, 4, 5, 6, 7, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 27, 28)	(1, 3, 4, 6, 7, 12, 14, 18, 19, 22, 26, 27, 28, 29)	(1, 2, 3, 4, 5, 6, 7, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 27, 28, 29)	(1, 2, 3, 4, 5, 6, 7, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 27, 28, 29)	(1, 2, 3, 4, 5, 6, 7, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 27, 28, 29)	(1, 2, 3, 4, 5, 6, 7, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 27, 28, 29)	(1, 2, 3, 4, 5, 6, 7, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 27, 28, 29)	(1, 2, 3, 4, 5, 6, 7, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 27, 28, 29)	(1, 2, 3, 4, 5, 6, 7, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 27, 28, 29)	(1, 2, 3, 4, 5, 6, 7, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 27, 28, 29)
Pectoral Sandpiper <i>C. melanotos</i> * (2),											
Rock Sandpiper <i>C. pilocnemis</i> * (3),											
Western Sandpiper <i>C. mauri</i> (4),											
Semipalmated Sandpiper <i>C. pusilla</i> (5),											
Least Sandpiper <i>C. minutilla</i> (6),											
Baird's Sandpiper <i>C. bairdii</i> (7),											
White-rumped Sandpiper <i>C. fuscicollis</i> * (8),											
Stilt Sandpiper <i>C. himantopus</i> * (9),											
Red-necked Stint <i>C. ruficollis</i> * (10),											
Sanderling <i>C. alba</i> * (12),											
Sharp-tailed Sandpiper <i>C. acuminata</i> (13),											
Semipalmated Plover <i>Charadrius semipalmatus</i> * (14),											
Lesser Yellowlegs <i>Tringa flavipes</i> (15),											
Greater Yellowlegs <i>T. melanoleuca</i> (16),											
Solitary Sandpiper <i>T. solitaria</i> * (17),											
Spotted Sandpiper <i>Actitis macularia</i> (18),											
Ruddy Turnstone <i>Arenaria interpres</i> (19),											
Black Turnstone <i>A. melanoccephala</i> * (20),											
Surfbird <i>Aphirza virgata</i> * (21),											
Wandering Tattler <i>Heteroscelus incanus</i> * (22),											
Upland Sandpiper <i>Bartramia longicauda</i> * (23),											
Buff-breasted Sandpiper <i>Tryngites subruficollis</i> * (24),											
Short-billed Dowitcher <i>Limnodromus driseus</i> * (25),											
Long-billed Dowitcher <i>L. scolopaceus</i> (26),											
Wilson's Snipe <i>Gallinago delicata</i> (27),											
Red-necked Phalarope <i>Phalaropus lobatus</i> (28),											
Red Phalarope <i>P. fulicaria</i> (29)											
Grebes and Loons											
Common loon <i>Gavia immer</i>	X	X	X	X	X	X	X	X	X (-)	X	X
Pacific loon <i>G. pacifica</i> (1),	X	X	X	X	X	X	X	X	X	X	X
Arctic loon <i>G. arctica</i> (2)	(1)	(1)	(1)	(1)	(1)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1)	(1)
Red-throated loon <i>G. stellata</i>	X	X	X	X	X	X	X	X	X	X	X
Yellow-billed loon <i>G. adamsii</i> *	X	X	X	X	X	X	X	X	X	-	-

-continued-

Appendix C.–Page 5 of 5.

Species category	Southern Coastal Alaska form					Main form				Interior Alaska form	
	Gulf of Alaska–Cook Inlet	Aleutian–Pribilof Islands	South Alaska Peninsula ^b	Bristol Bay	Yukon–Kuskokwim Delta	Bering Strait–Norton Sound	North-west Arctic	North Slope	Interior	Upper Copper River	
Species ^a											
Red-necked grebe <i>Podiceps grisescens</i> (1), Horned grebe <i>P. auritus</i> (2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)	(1, 2)
Other–Unknown Bird	x	x	x	x	x	x	x	x	x	x	x

Sources For information on distribution range of species: Banks et al. (2004), Johnson and Herter (1989), National Geographic Society (1999), The Birds of North America Series, Sea Duck Joint Venture (2003–2005), Denlinger (2006), Johnson et al. (2007), Alaska Shorebird Group (2008), Bowman (2008), Pearce et al. (2000), Sibley Guides (2004), Timm et al. (1994), Warren (2006), Pacific Flyway Council (2010 *unpublished*), Richard Lantot (USFWS, Pers. Communication), Eric Taylor (USFWS, Pers. Communication), Donna Dewhurst (USFWS, Pers. Communication), Davis Irons (USFWS, Pers. Communication), Chris Dau (USFWS, Pers. Communication), Daniel Rosenberg (ADF&G, Pers. Communication).

- a. If more than one species is listed, the first species is the one named on the harvest survey form.
- b. South Alaska Peninsula is a subregion of the Bristol Bay region; most of the Bristol Bay region is surveyed with the Main Form, but the South Alaska Peninsula is surveyed with the Southern Coastal Alaska form.
- x The species is represented in the harvest report form used in the region. Numbers in parenthesis indicate the species or the composition of species likely to occur in each region.
- The species is not represented in the harvest report form used in the region.
- x (-) The species is represented in the harvest report form but it is unlikely to occur in the region.
- (x) The species is not represented in the harvest report form but likely occurs in the region.
- * Species closed to harvest of birds or eggs, at least in certain management units.

Appendix D.–Formulas to calculate subregion estimated harvests, variances, and confidence intervals (3-stage stratified cluster sampling).

$$X_s = \frac{N_{1s}}{n_{1s}} \left[\sum_{i=1}^h \frac{N_{2si}}{n_{2si}} \left[\sum_{j=1}^{h_i} \frac{N_{3sij}}{n_{3sij}} \left[\sum_{k=1}^{n_{3sij}} x_{sijk} \right] \right] \right]$$

This formula, used to calculate estimated harvest (X_s) at the subregional level, does account for missing strata, but it does not account for missing seasons. If a whole season is missing for any village, complementary analytical procedures are necessary to implement mean replacement.

$$Var(X_s) = N_{1s}^2 \left(1 - \frac{n_{1s}}{N_{1s}}\right) \frac{s_{1s}^2}{n_{1s}} + \frac{N_{1s}}{n_{1s}} \left[\sum_{i=1}^h N_{2si}^2 \left(1 - \frac{n_{2si}}{N_{2si}}\right) \frac{s_{2si}^2}{n_{2si}} \right] + \frac{N_{1s}}{n_s} \left[\sum_{i=1}^h \frac{N_{2si}}{n_{2si}} \left[\sum_{j=1}^{h_i} N_{3sij}^2 \left(1 - \frac{n_{3sij}}{N_{3sij}}\right) \frac{s_{3sij}^2}{n_{3sij}} \right] \right]$$

$$CI(X_s) = t_{1/\alpha} \times \sqrt{Var(X_s)}$$

$$CIP(X_s) = t_{1/\alpha} \times \sqrt{Var(X_s)} \frac{1}{X_s}$$

Where:

$$s_{1s}^2 = \frac{\sum_{i=1}^h \left[\sum_{j=1}^{h_i} \left[\sum_{k=1}^{n_{3sij}} (x_{sijk} - \bar{x}_s)^2 \right] + (\bar{x}_{sij} - \bar{x}_s)^2 p_{3sij} \right]}{n_{1s}}$$

$$p_{3sij} = N_{3sij} - n_{3sij}$$

$$s_{2si}^2 = \frac{\sum_{j=1}^{h_i} \left[\sum_{k=1}^{n_{3sij}} (x_{sijk} - \bar{x}_{si})^2 \right] + (\bar{x}_{sij} - \bar{x}_{si})^2 p_{3sij}}{n_{2si}}$$

$$s_{3sij}^2 = \frac{\sum_{k=1}^{n_{3sij}} (x_{sijk} - \bar{x}_{sij})^2}{n_{3sij}}$$

$$\bar{x}_s = \frac{N_{1s}}{n_{1s}} \left[\sum_{i=1}^h \frac{N_{2si}}{n_{2si}} \left[\sum_{j=1}^{h_i} \frac{N_{3sij}}{n_{3sij}} \left[\sum_{k=1}^{n_{3sij}} x_{sijk} \right] \right] \right]$$

$$\bar{x}_{si} = \frac{N_{2si}}{n_{2si}} \left[\sum_{j=1}^{h_i} \frac{N_{3sij}}{n_{3sij}} \left[\sum_{k=1}^{n_{3sij}} x_{sijk} \right] \right]$$

$$\bar{x}_{sij} = \frac{N_{3sij}}{n_{3sij}} \left[\sum_{k=1}^{n_{3sij}} x_{sijk} \right]$$

- X_s = Subregion estimated harvest.
- $Var(X_s)$ = Variance of subregional harvest estimate.
- CI = Confidence interval.
- CIP = Confidence interval percentile.

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- s = Subscript that denotes first-stage units (subregion).
 i = Subscript that denotes second-stage units (sampled strata, or harvest level).
 j = Subscript that denotes third-stage unit (sampled strata).
 k = Subscript that denotes households.
 h = Total number of villages sampled in a subregion.
 h_i = Total number of strata sampled in the village.
 N_{1s} = Total number of households in subregion s .
 n_{1s} = Total number of households in sampled villages in subregion s .
 N_{2s} = Total number of households in all strata of a village in subregion s .
 n_{2s} = Total number of households in sampled strata of a village in subregion s .
 N_{3s} = Total number of households in each stratum of a village in subregion s .
 n_{3s} = Number of households sampled in each stratum of a village in subregion s .
 x_{sijk} = Individual household reported harvest.
 s_1^2 = First-stage sample variance.
 s_2^2 = Second-stage sample variance.
 s_3^2 = Third-stage sample variance.
 $\bar{x}$ = Weighted household harvest mean.
 $\bar{x}_r$ = mean household harvest at subregional level.
 $\bar{x}_{si}$ = mean household harvest at village level.
 $\bar{x}_{sij}$ = mean household harvest at harvest level.
 P_{3sij} = Factor to account for variance of non-sampled households for which a mean harvest was applied.
 $t_{1/\alpha}$ = Student's t distribution value with tail area probability α .
Note The term " N_{2si}/n_{2s} " accounts for missing stratum at the village level; this term equals 1 if all strata in the village have been surveyed. For instance:

	None	Low	High	
Total households	20	40	20	$N_{2si} = 80$
Sampled households	0	20	20	$n_{2si} = 60$

Appendix E.–Formulas to calculate region estimated harvests, variances, and confidence intervals (4-stage stratified cluster sampling).

$$X_r = \frac{N_{1r}}{n_{1r}} \left[\sum_{s=1}^h \frac{N_{2rs}}{n_{2rs}} \left[\sum_{i=1}^{h_s} \frac{N_{3rsi}}{n_{3rsi}} \left[\sum_{j=1}^{h_{si}} \frac{N_{4rsij}}{n_{4rsij}} \left[\sum_{k=1}^{n_{4rsij}} x_{rsijk} \right] \right] \right] \right]$$

Note: This formula, used to calculate estimated harvest (X_r) at the regional level, does account for missing strata, but it does not account for missing seasons. If a whole season is missing for any village, complementary analytical procedures are necessary to implement mean replacement.

$$\begin{aligned} Var(X_r) = & N_{1r}^2 \left(1 - \frac{n_{1r}}{N_{1r}}\right) \frac{s_{1r}^2}{n_{1r}} + \frac{N_{1r}}{n_{1r}} \left[\sum_{s=1}^h N_{2rs}^2 \left(1 - \frac{n_{2rs}}{N_{2rs}}\right) \frac{s_{2rs}^2}{n_{2rs}} \right] + \frac{N_{1r}}{n_{1r}} \left[\sum_{s=1}^h \frac{N_{2rs}}{n_{2rs}} \left[\sum_{i=1}^{h_s} N_{3rsi}^2 \left(1 - \frac{n_{3rsi}}{N_{3rsi}}\right) \frac{s_{3rsi}^2}{n_{3rsi}} \right] \right] \\ & + \frac{N_{1r}}{n_{1r}} \left[\sum_{s=1}^h \frac{N_{2rs}}{n_{2rs}} \left[\sum_{i=1}^{h_s} \frac{N_{3rsi}}{n_{3rsi}} \left[\sum_{j=1}^{h_{si}} N_{4rsij}^2 \left(1 - \frac{n_{4rsij}}{N_{4rsij}}\right) \frac{s_{4rsij}^2}{n_{4rsij}} \right] \right] \right] \end{aligned}$$

$$CI(X_r) = t_{1/\alpha} \times \sqrt{Var(X_r)}$$

$$CIP(X_r) = t_{1/\alpha} \times \sqrt{Var(X_r)} \frac{1}{X_r}$$

Where:

$$s_{1r}^2 = \frac{\sum_{s=1}^h \left[\sum_{j=1}^{h_s} \left[\sum_{k=1}^{n_{4rsij}} (x_{rsijk} - \bar{x}_r)^2 \right] + (\bar{x}_{rsij} - \bar{x}_r)^2 p_{4rsij} \right]}{n_{1r}}$$

$$p_{4rsij} = N_{4rsij} - n_{4rsij}$$

$$s_{2rs}^2 = \frac{\sum_{i=1}^{h_s} \left[\sum_{j=1}^{h_{si}} \left[\sum_{k=1}^{n_{4rsij}} (x_{rsijk} - \bar{x}_{rs})^2 \right] + (\bar{x}_{rsij} - \bar{x}_{rs})^2 p_{4rsij} \right]}{n_{2rs}}$$

$$s_{3rsi}^2 = \frac{\sum_{j=1}^{h_{si}} \left[\sum_{k=1}^{n_{4rsij}} (x_{rsijk} - \bar{x}_{rsi})^2 \right] + (\bar{x}_{rsij} - \bar{x}_{rsi})^2 p_{4rsij}}{n_{3rsi}}$$

$$s_{4rsij}^2 = \frac{\sum_{k=1}^{n_{4rsij}} (x_{rsijk} - \bar{x}_{rsij})^2}{n_{4rsij}}$$

$$\bar{x}_r = \frac{N_{1r}}{n_{1r}} \left[\sum_{s=1}^h \frac{N_{2rs}}{n_{2rs}} \left[\sum_{i=1}^{h_s} \frac{N_{3rsi}}{n_{3rsi}} \left[\sum_{j=1}^{h_{si}} \frac{N_{4rsij}}{n_{4rsij}} \left[\sum_{k=1}^{n_{4rsij}} x_{rsijk} \right] \right] \right] \right]$$

$$\bar{x}_{rs} = \frac{N_{2rs}}{n_{2rs}} \left[\sum_{i=1}^{h_s} \frac{N_{3rsi}}{n_{3rsi}} \left[\sum_{j=1}^{h_{si}} \frac{N_{4rsij}}{n_{4rsij}} \left[\sum_{k=1}^{n_{4rsij}} x_{rsijk} \right] \right] \right]$$

$$\bar{x}_{rsi} = \frac{N_{3rsi}}{n_{3rsi}} \left[\sum_{j=1}^{h_{si}} \frac{N_{4rsij}}{n_{4rsij}} \left[\sum_{k=1}^{n_{4rsij}} x_{rsijk} \right] \right]$$

$$\bar{x}_{rsij} = \frac{N_{4rsij}}{n_{4rsij}} \left[\sum_{k=1}^{n_{4rsij}} x_{rsijk} \right]$$

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- X_r = Region estimated harvest.
- $Var(X_r)$ = Variance of region harvest estimate.
- r = Subscript denoting first-stage units (region).
- s = Subscript denoting second-stage units (subregion).
- i = Subscript denoting third-stage units (sampled strata, or harvest level).
- j = Subscript denoting fourth-stage unit (strata).
- k = Subscript denoting individual households.
- h = Total sampled subregions in region r .
- h_s = total sampled villages in subregion s .
- h_{si} = Total sample strata in the village.
- N_{1r} = Total number of households in region r .
- n_{1r} = Total number of households in sampled subregions in region r .
- N_{2rs} = Total number of households in subregion s .
- n_{2rs} = Total number of households in sampled villages in subregion s .
- N_{3rsi} = Total number of households in all strata of a village.
- n_{3rsi} = Total number of households in sampled strata of a village.
- N_{4rsij} = Total number of households in each stratum of a village.
- n_{4rsij} = Number of households sampled in each stratum of a village.
- x_{rsijk} = Individual household reported harvest.
- s_1^2 = First-stage sample variance.
- s_2^2 = Second-stage sample variance.
- s_3^2 = Third-stage sample variance.
- s_4^2 = Fourth-stage sample variance.
- $\bar{x}$ = Weighted household harvest mean.
- $\bar{x}_r$ = mean household harvest at region level.
- $\bar{x}_{rs}$ = mean household harvest at subregion level.
- $\bar{x}_{rsi}$ = mean household harvest at village level.
- $\bar{x}_{rsij}$ = mean household harvest at harvest level.
- P_{4rsij} = Factor to account for variance of non-sampled households for which a mean harvest was applied.
- CI = Confidence interval.
- CIP = Confidence interval percentile.
- $t_{1/\alpha}$ = Student's t distribution value with tail area probability α .
- Note** The term " N_{3rsi}/n_{3rsi} " accounts for missing stratum at the village level; this term equals 1 if all strata in the village have been surveyed. For instance:

	None	Low	High	
Total households	20	40	20	$N_{3rsi} = 80$
Sampled households	0	20	20	$n_{3rsi} = 60$