

# Seward Peninsula Muskox Census, 2005

Kyle Joly



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## **Cover Photo**

Two muskox bulls in summer. BLM photo by the author.

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## BACKGROUND

(ADFG 1994, Machida 1997, Persons 2003)

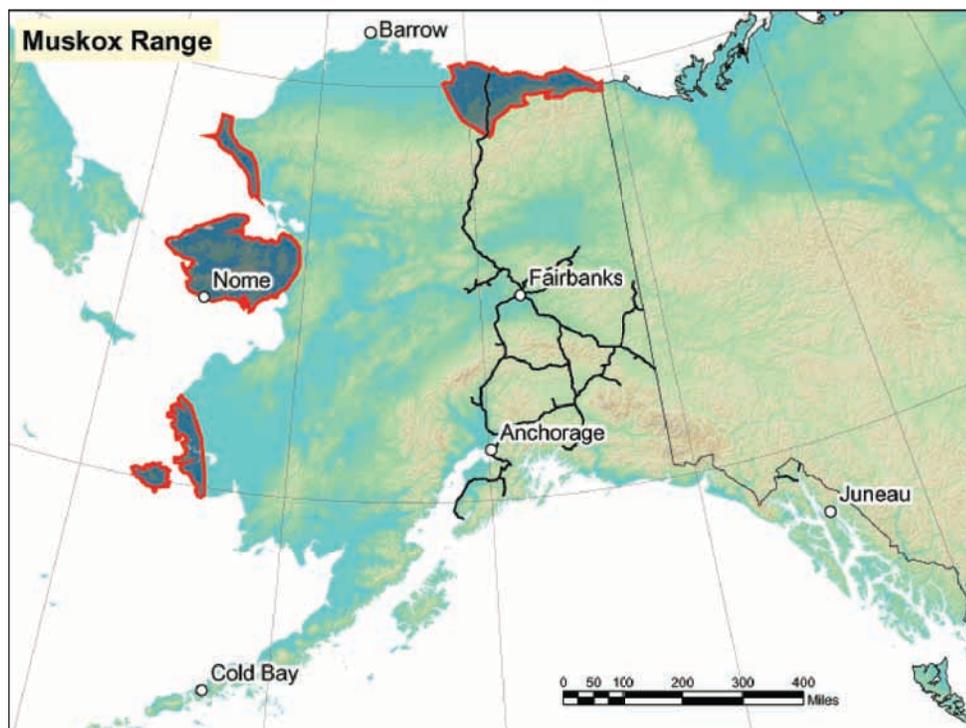
Muskoxen likely were extirpated in Alaska in the mid- or late 1800s and may have disappeared hundreds of years earlier from the Seward Peninsula. Over-hunting likely contributed to their demise in some areas. By the 1920s, the global distribution of muskoxen was reduced to arctic Canada and East Greenland, where a high take by whalers, hide hunters, and locals continued. Concern over the impending extinction of the species worldwide led to a move to restore a protected population to Alaska. In 1930, 34 muskoxen captured in East Greenland were brought to Fairbanks. In 1935 and 1936, all survivors and their calves were transported from Fairbanks to Nunivak Island and released. Muskoxen thrived on Nunivak Island and increased from 31 in 1936 to an estimated 750 by 1968.

Muskoxen from Nunivak Island provided stock for relocating animals to formerly occupied ranges. The current range of muskoxen in Alaska (Figure 1) comprises many of the locations where Nunivak Island muskoxen were transplanted. These locations included the Arctic National Wildlife Refuge, Cape Thompson, the Seward Peninsula, Nelson Island, Wrangel Island, and the Taimyr Peninsula in Russia. Thirty-six musk-

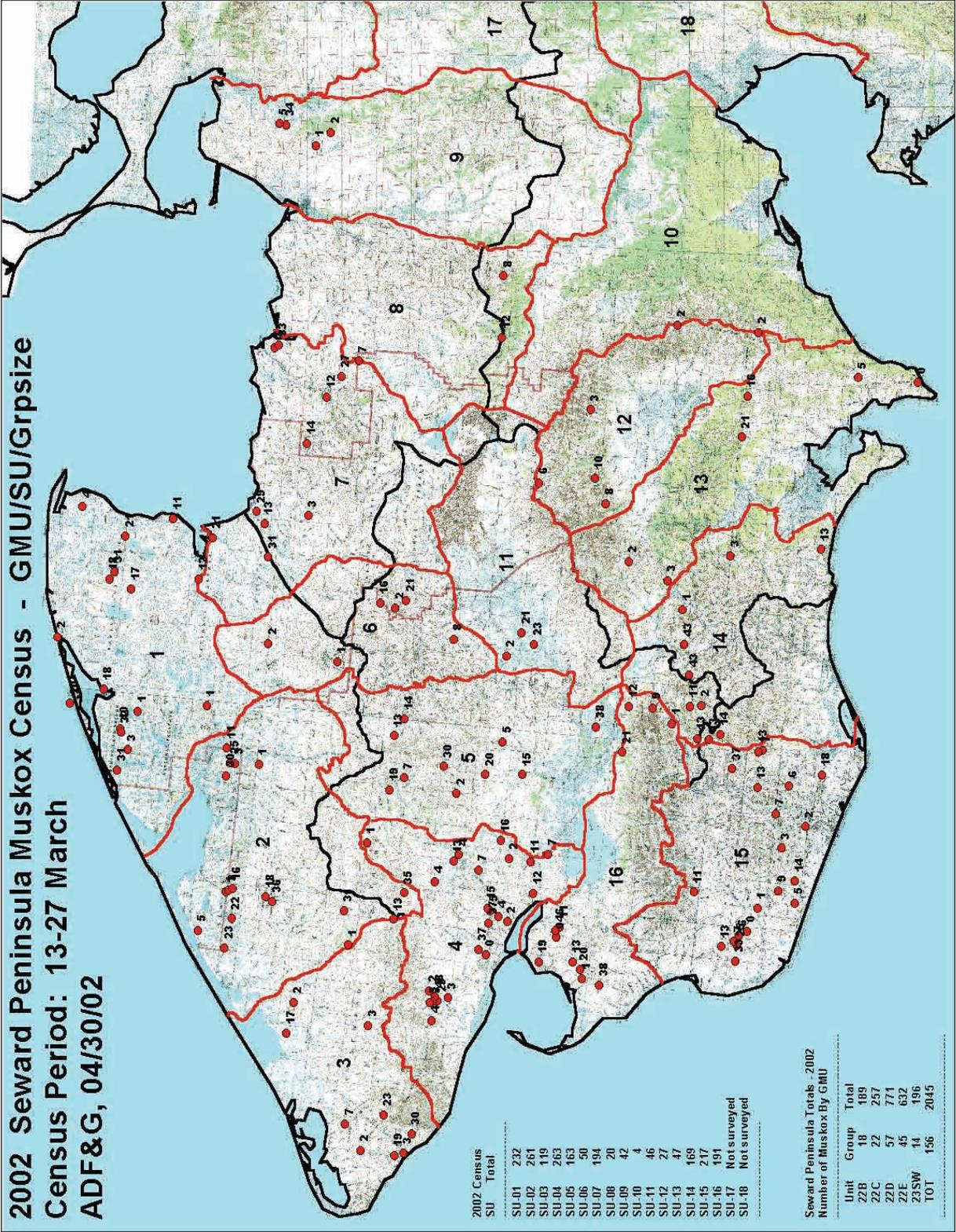
oxen were brought to the Feather River on the Seward Peninsula in 1970 and an additional 35 in 1981 to Brevig Mission.

Most of the transplanted animals quickly adapted to their new surroundings and increased. The Seward Peninsula population has grown steadily from 1970 and was estimated at 2050 animals in 2002 (Figure 2). Dispersal will be the primary method by which future range expansion occurs. Muskoxen have extended their range to occupy suitable habitat throughout the Seward Peninsula. Herds are well established in Units 22C, 22D, 22E, 22B-West, and 23-SW (Figure 2). Muskoxen continue to expand their range to the east, with individuals and small groups being found in Units 22B-East, 22A-North, along the Tagagawik River and in the Purcell Mountains in Unit 23, along the Yukon River near Ruby in Unit 21, and near Huslia in Unit 24.

The return of muskoxen to Alaska is a success story in wildlife conservation. However, the story holds an important lesson. Local villages were not part of the planning process to reintroduce muskoxen and have voiced their disappointment with that. Muskoxen have disturbed grave sites and become a nuisance in some villages. The primary defense strategy for muskoxen is to stand their ground and face any threat. This strategy



**Figure 1.** Current range of muskoxen in Alaska (courtesy of Alaska Department of Fish & Game).



**Figure 2.** Seward Peninsula muskox census results, 2002 (courtesy ADF&G). Black lines are GMU (game management unit) boundaries; red lines are SU (survey unit) boundaries.

makes it difficult to scare off animals that wander too close to villages, airfields, or berry picking locations.

The Seward Peninsula Muskox Cooperators Group was formed to help guide muskox management on the Seward Peninsula and to avoid user conflicts. Member groups include the Bureau of Land Management (BLM), Alaska Department of Fish and Game (ADF&G), National Park Service (NPS), U.S. Fish and Wildlife Service (FWS), Bering Straits Native Corporation, Kawerak Inc., Reindeer Herders Association, Northwest Alaska Native Association, residents of the Seward Peninsula, and representatives of other interested groups. The Seward Peninsula Cooperative Muskox Management Plan, finalized in 1994, outlined management goals developed by the Group. The first hunt, during which 15 bulls were harvested, occurred in 1995 and involved only subunits 22D, 22E, and 23SW.

One of the management goals highlighted in the plan is to conduct a complete census of the entire Seward Peninsula (GMU 22 [except 22A-South and portions of the Nulato Hills that drain east] and the southwest

portion of GMU 23) every 2 years. This census has been conducted in March and April by the cooperators every 2 years from 1992 to 2002. It was decided then to conduct the survey every 3 years because of expanding populations and a desire to reduce costs. The results presented here are for the entire census cooperatively conducted by numerous members of the group and compiled by the ADF&G.

The data gathered by the effort are directly used to manage muskox populations on the Seward Peninsula. The census data is used to determine the number of muskoxen that can be harvested in each subunit and how to divide the permits between the state and federal agencies to reach combined quotas. The state administers Tier II hunts in Units 22B, 22C, 22D, 22E, and 23SW. Federal subsistence hunts for muskoxen occur in Units 22B, 22D, and 22E. The Northern Field Office [now renamed the Fairbanks District Office] administered the 22B hunt for the 2004–2005 season, during which 2 muskox bulls were taken (6 permits were available). The Anchorage Field Office took over management responsibilities for the Seward Peninsula starting October 1, 2005. This

**Table 1.** 2005 census data summarized. (Percent yearlings is the number of yearlings divided by the number of yearlings plus the number of adults.)

Unit	Groups	Adults	Yearlings	Unclassified	Total
22B	26	260	45 (15%)	21	326
22C	18	200	20 (9%)	0	220
22D	56	713	61 (8%)	22	796
22E	62	445	84 (16%)	334	863
23SW	15	133	29 (18%)	20	182
TOTAL	177	1751	239 (12%)	397	2387

**Table 2.** Results from the Seward Peninsula muskox censuses, 1992–2005.

Year	Unit						Annual % Change
	22B	22C	22D	22E	23	Total	
1992	3	49	340	180	134	706	-
1994	11	79	405	184	246	925	15.6
1996	51	87	308	327	178	951	1.3
1998	27	124	714	362	205	1432	25.3
2000	159	148	774	461	255	1797	12.7
2002	189	257	771	632	201	2050	7.0
2005	326	220	796	863	182	2387	5.5

included the federal muskox hunt in 22B that began in August 2005. Seven permits were available for this hunt.

## RESULTS

(Persons 2005)

The overall estimate for the total number of muskoxen on the Seward Peninsula in 2005 is 2387 (Table 1). This is a 16.4% increase since 2002, when 2050 muskoxen were counted, representing an average annual increase of 5.5% since 2002 (Table 2). The distribution of muskox groups was similar to the distribution seen in 2002 (Figures 2, 3 and 4). No muskoxen were found in Sample Unit 19, which is to the east of the Seward Peninsula in the Selawik Refuge (Figure 5).

Snow cover was complete in most parts of the census area and sightability was generally very good. Patchy, low cloud cover initially interfered with complete coverage of Sample Unit 3, but the area was resurveyed when conditions improved and a few new groups were discovered.

Following the muskox census, the ADF&G, in conjunction with the NPS, classified 495 (57%) of the 863

muskoxen found in Unit 22E during the census by age and sex (Table 3). They found 15% yearlings, 14% 2-year-olds, and 18% 3-year-olds with a surprising number of 3-year-old cows. There were 33 yearlings: 100 cows. The bull:cow ratio dropped to 36:100

## CONCLUSION

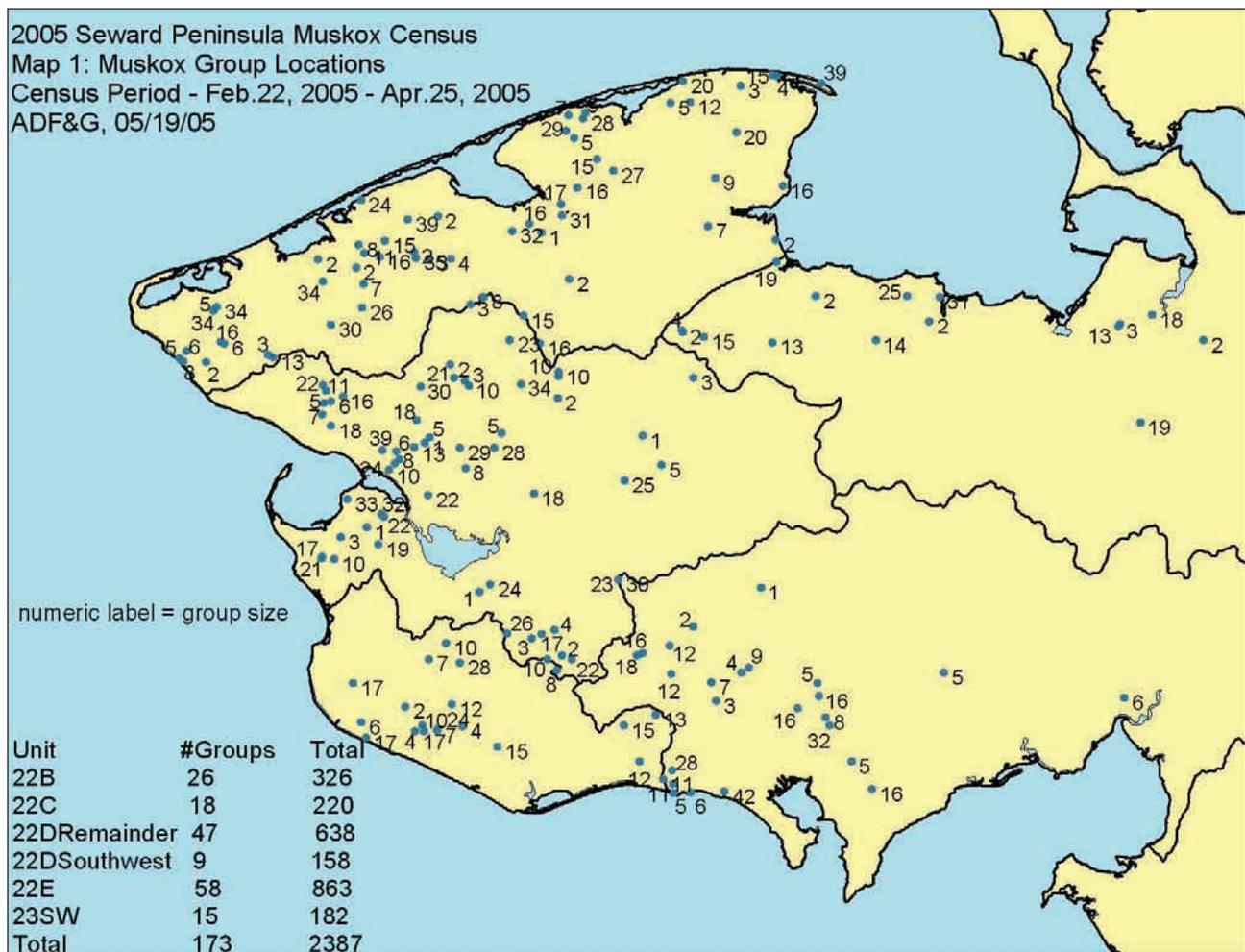
The results of the 2005 Seward Peninsula Muskox Census were utilized at the Muskox Cooperators Group meeting held June 20–21, 2005, in Nome. Although there was 16.4% increase in muskox numbers since 2002, representing an average annual increase of 5.5%, the dynamics of this population are more complicated than this single metric. The annual rate of population growth slowed dramatically in the last decade, when it reached a high of 25.3% (Tables 2, 4). This reduction in growth rate has been steady since it reached this peak between 1996 and 1998. The average growth rate from initial introduction (1970) until 2000 was 14%, but from 2000 to 2005 the growth rate dropped to 7% (Persons 2005). The even slower rate

**Table 3.** Composition surveys, 2002–2005.

Unit	Year	#, % Sampled	Bulls	Cows	Yrlg	Bulls:100 Cows	% Yrlg	Yrlg:100 Cows
22B	2002	178 (94%)	39	67	32	58	18	48
	2004	236 (87%)	42	109	43	39	18	39
22C	2002	208 (81%)	49	70	40	70	19	57
	2004	217 (84%)	70	81	21	86	10	26
22D	2002	454 (59%)	95	215	88	44	19	41
22E	2002	314 (50%)	57	116	57	49	18	49
	2005	495 (57%)	83	230	77	36	15	33
23SW	2002	170 (88%)	33	72	22	46	13	31

**Table 4.** Results of previous muskox population estimates, 1970–1991.

Year	Estimate	Annual % Change
1970	36	Initial introduction
1980	104	Second introduction
1983	175	22.8
1984	225	28.6
1985	271	20.4
1988	527	31.5



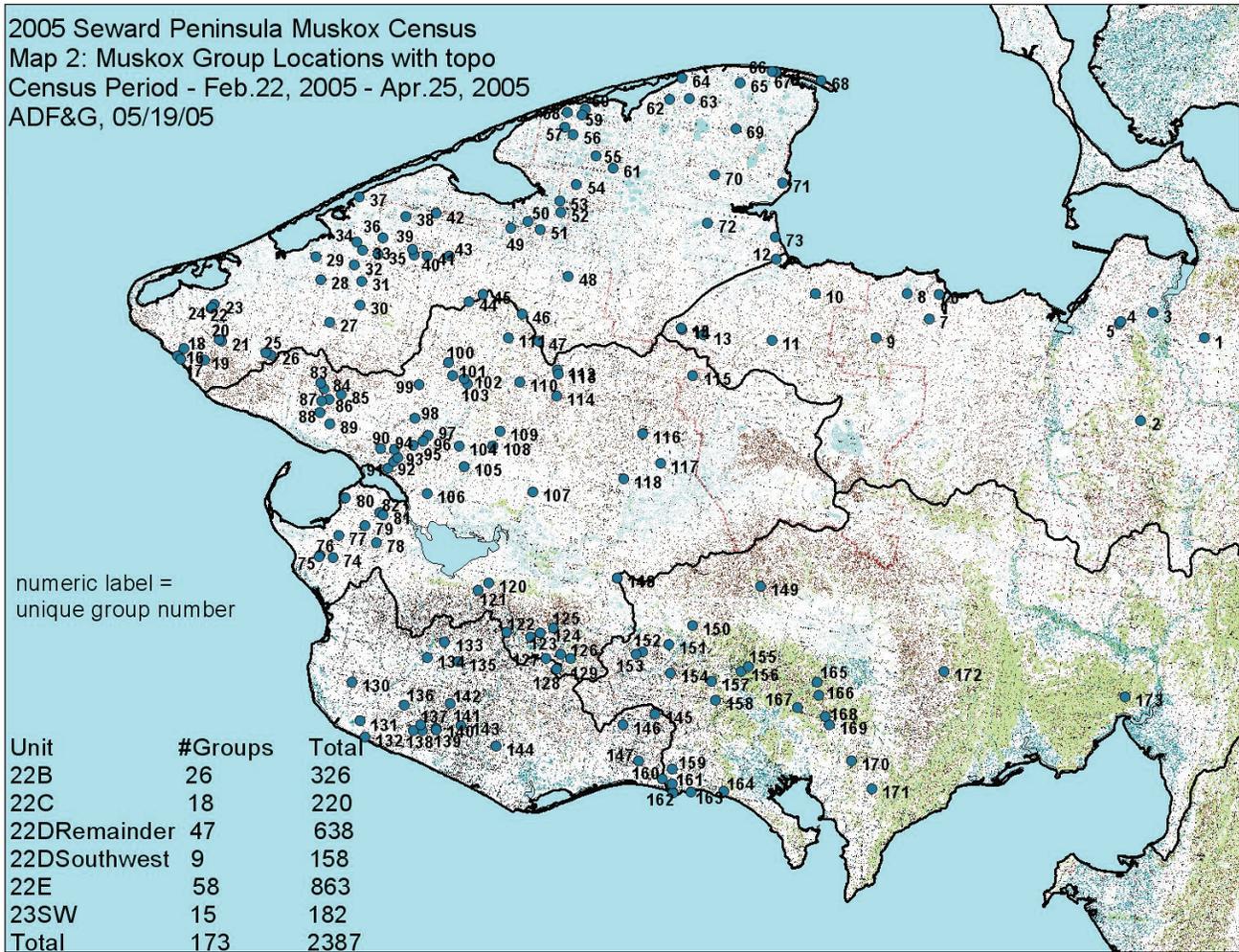
**Figure 3.** Seward Peninsula muskox census results, 2005 (courtesy of ADF&G).

of growth between 2002 and 2005 may be a signal that the Seward Peninsula muskox population has reached or is nearing a population plateau, at least in some subunits. Analysis of the trends within the subunits gives us a better understanding of muskox population dynamics on the Seward Peninsula.

Subunits 22B and 22E showed an annual increase of 24% and 12%, respectively. However, subunit 22D was fairly stable with an annual increase of just 1%. Muskox numbers actually declined in subunits 22C and 23SW by 5% and 3% annually, respectively, from the previous census. It is not known whether the declines in these two subunits, and population stagnation in 22D, represent actual declines or emigration to other subunits. Factors identified as possibly limiting muskox numbers in these subunits were reaching carrying capacity, predation, adverse winter conditions, and social-density dependent factors (Persons 2005). The huge increase in muskox numbers in subunit 22B may

have been in part due to emigration from these three other subunits. Likewise, it is possible that the increase in 22E may have involved emigration from 22D (Adkisson 2005) and 23SW (Persons 2005). Subunit 22E is the only area in which the population has increased during every census. Subunit 23SW is the only unit to have less muskoxen in two consecutive censuses (2000 to 2002 and 2002 to 2005).

Although composition surveys tend to underestimate bulls because they are found in smaller groups, it is important to keep track of the bull:cow ratio to determine if a trend toward lower bull:cow ratios is beginning. There were fewer cows were taken in the 22E hunts than in past years, and local people suggest that a preference is developing for young bulls (Persons 2005). Subunits 22B and 22E have had approximately 15% yearlings for the past 5 years and have had expanding populations. Subunits 22C and 22D have shown just less than 10% yearlings and relatively

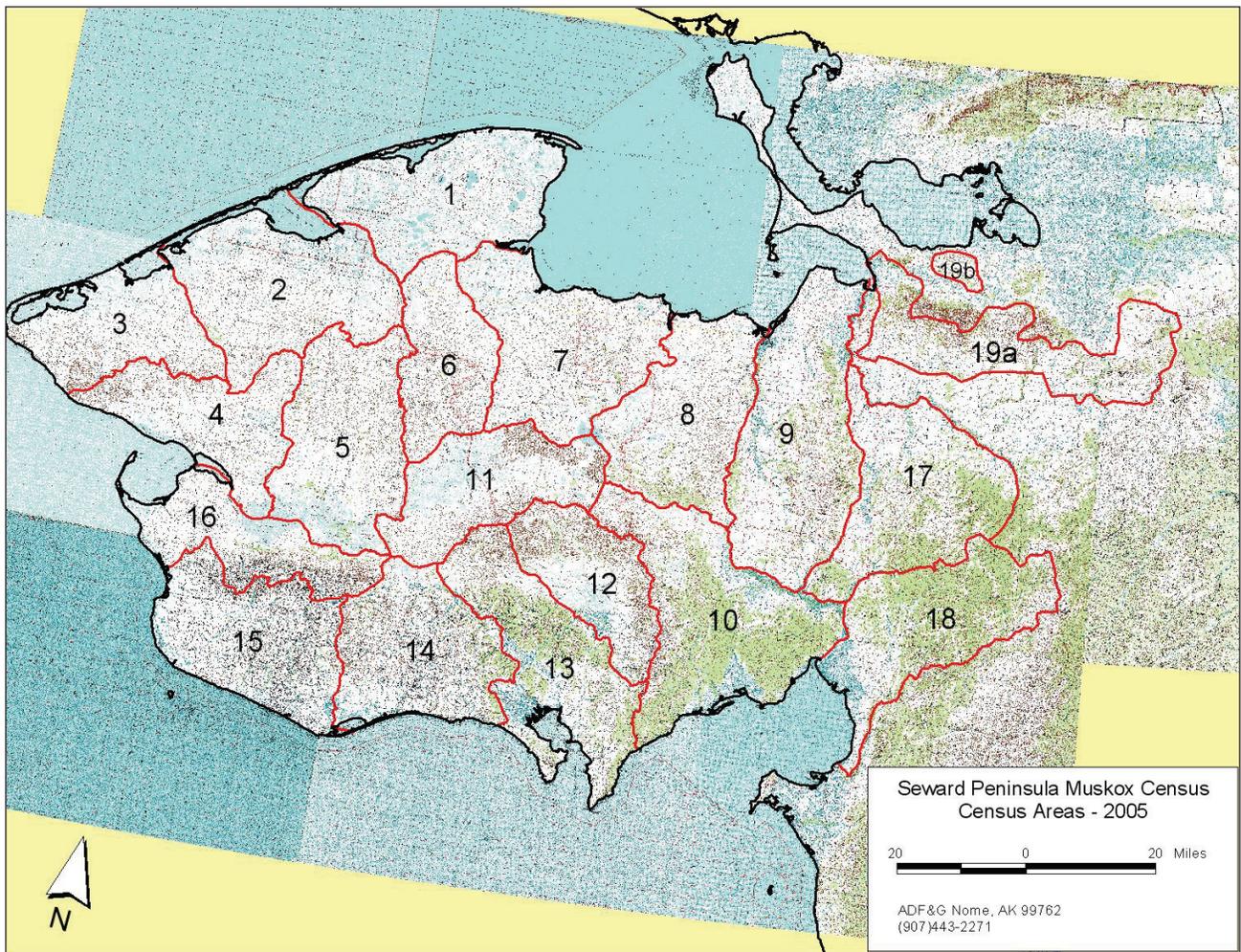


**Figure 4.** 2005 Seward Peninsula muskox census results, with topography (courtesy ADF&G).

stable populations. Composition counts can give managers a good tool to analyze muskox population trajectories (the yearling : cow ratio); however, real-life situations may be more complicated. There were 18% yearlings in subunit 23SW, but the population showed declines in both the 2002 and 2005 censuses. The obvious implication is that muskoxen from subunit 23SW are emigrating to other subunits.

The Seward Peninsula Muskox Cooperators Group Meeting was well attended and productive. Consensus was reached on a number of items. The first was that the ADF&G should try to replace codified harvest quotas with codified harvest goals based on agreed-upon percentages. These percentages represent the maximum harvest level that ADF&G could allow. More liberal harvest percentages would be presented to the group if necessary. There was consensus to raise harvest rates in some limited areas (e.g., 22D-SW). The group also endorsed proxy/designated hunter regulations for muskox. The ADF&G revealed data showing that only

about 50% of the allowable harvest is currently being taken. The group then came to consensus on allowing managers to change how the number of permits is determined. Previously, 33% more permits than harvestable musk-oxen were distributed; now the managers can pass out permits based on past harvest success rates. This change may allow actual harvest to reach allowable harvest. The largest regulatory change was that consensus was reached to allow changing the Tier II hunt in 22E to a Tier I hunt. Permits would only be available in Wales and Shishmaref, and all subsistence hunt regulations would still be in place (destruction of trophy value and utilization of meat). These regulatory changes would still have to be adopted by the Board of Game to be enacted. Several of the participants suggested that research needs to be conducted on the habitat requirements of muskoxen and how that would relate to carrying capacity. Finally, June 2007 was agreed upon for the next group meeting and March 2008 will be the next census.



**Figure 5.** Seward Peninsula muskox census survey units for 2005 (courtesy ADF&G).

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