Species Management Report and Plan ADF&G/DWC/SMR&P–2021–33

Moose Management Report and Plan, Game Management Unit 1A:

Report Period 1 July 2015–30 June 2020, and

Plan Period 1 July 2020–30 June 2025

Ross Dorendorf

2021

Alaska Department of Fish and Game Division of Wildlife Conservation

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Species management reports and plans provide information about species that are hunted or trapped and management actions, goals, recommendations for those species, and plans for data collection. Detailed information is prepared for each species every 5 years by the area management biologist for game management units in their areas, who also develops a plan for data collection and species management for the next 5 years. This type of report is not produced for species that are not managed for hunting or trapping or for areas where there is no current or anticipated activity. Unit reports are reviewed and approved for publication by regional management coordinators and are available to the public via the Alaska Department of Fish and Game's public website.

This species management report and plan was reviewed and approved for publication by Richard Nelson, Management Coordinator for the Division of Wildlife Conservation.

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Cover Photo: ©2010 ADF&G. Bull moose in Kincaid Park, Anchorage, AK.

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Purpose of this Report

This report provides a record of survey and inventory management activities for moose in Unit 1A for the 5 regulatory years 2015–2019 and plans for survey and inventory management activities in the following 5 regulatory years, 2020–2024. A regulatory year (RY) begins 1 July and ends 30 June (e.g., RY14 = 1 July 2014–30 June 2015). This report is produced primarily to provide agency staff with data and analysis to help guide and record agency efforts but is also provided to the public to inform it of wildlife management activities. In 2016 the Alaska Department of Fish and Game's (ADF&G, the department) Division of Wildlife Conservation (DWC) launched this 5-year report to more efficiently report on trends and to describe potential changes in data collection activities over the next 5 years. It replaces the moose management report of survey and inventory activities that was previously produced every 2 years.

I. RY15–RY19 Management Report

Management Area

Unit 1A encompasses 5,252 mi^2 of the southern mainland and adjacent islands south of Lemesurier Point, including all drainages into Behm Canal, excluding all drainages into Ernest Sound, and bounded to the east and south by the Canadian border. The unit is bounded to the west by Clarence Straight. Larger islands within Unit 1A are Revillagigedo, Annette, and Gravina (Fig. 1). The Ketchikan Gateway Borough has an estimated population of 13,865 (U.S. Census Bureau 2018). Smaller outlying communities include Metlakatla (estimated population of 1,375), Hyder (est. pop. 87), and Meyers Chuck (est. pop. 25). Mean temperatures range from a low of 30°F (−1°C) in January to a high of 64°F (18°C) in August with 141 inches (358 cm) of rain annually (U.S. Climate Data 2019). The dominant habitat type in Unit 1A below 2,000 feet (600 m) elevation is temperate rain forest consisting of Sitka spruce (*Picea sitchensis*), western hemlock (*Tsuga heterophylla*), red cedar (*Thuja plicata*), and Alaska yellow cedar (*Chamaecyparis nootkatensis*). Other lower elevation habitats include muskeg and stands of red alder (*Alnus rubra*) and black cottonwood (*Populus balsamifera trichocarpa*) which occur along major rivers and riparian areas. Old-growth forests are interspersed with a patchwork of even-aged forest stands at different successional stages resulting from extensive clear-cut logging and a few natural windthrow events. Mainland areas above 2,000 feet (610 m) elevation are predominately rock, ice, and open alpine.

Most land in Unit 1A is administered by the U.S. Forest Service, including the 2.3 million-acre Misty Fjords National Monument. This monument is the largest wilderness area in Alaska's national forests and the second largest in the nation. There are also private, state, and native lands in Unit 1A.

The moose (*Alces alces andersoni*) population in Unit 1A is concentrated along the Unuk River drainage, which is in the Misty Fjords National Monument, 60 air miles (97 km) northeast of Ketchikan. The river valley is characterized by steep, glacially carved terrain. Forest cover extends to about 2,000 feet (610 m) elevation. Climate in the lower valley is marine influenced with moderate temperatures and abundant precipitation. Moving inland, the climate typically transitions to warmer summers and colder winters with less precipitation. Very deep snow can

accumulate in some winters. Moose habitat in Unit 1A is limited to the valley bottom where vegetative cover primarily consists of old-growth temperate rain forest dominated by Sitka spruce and western hemlock on uplands; and black cottonwood, willows (*Salix spp.*), and alders (*Alnus spp.*) on river bars and floodplains throughout the drainage.

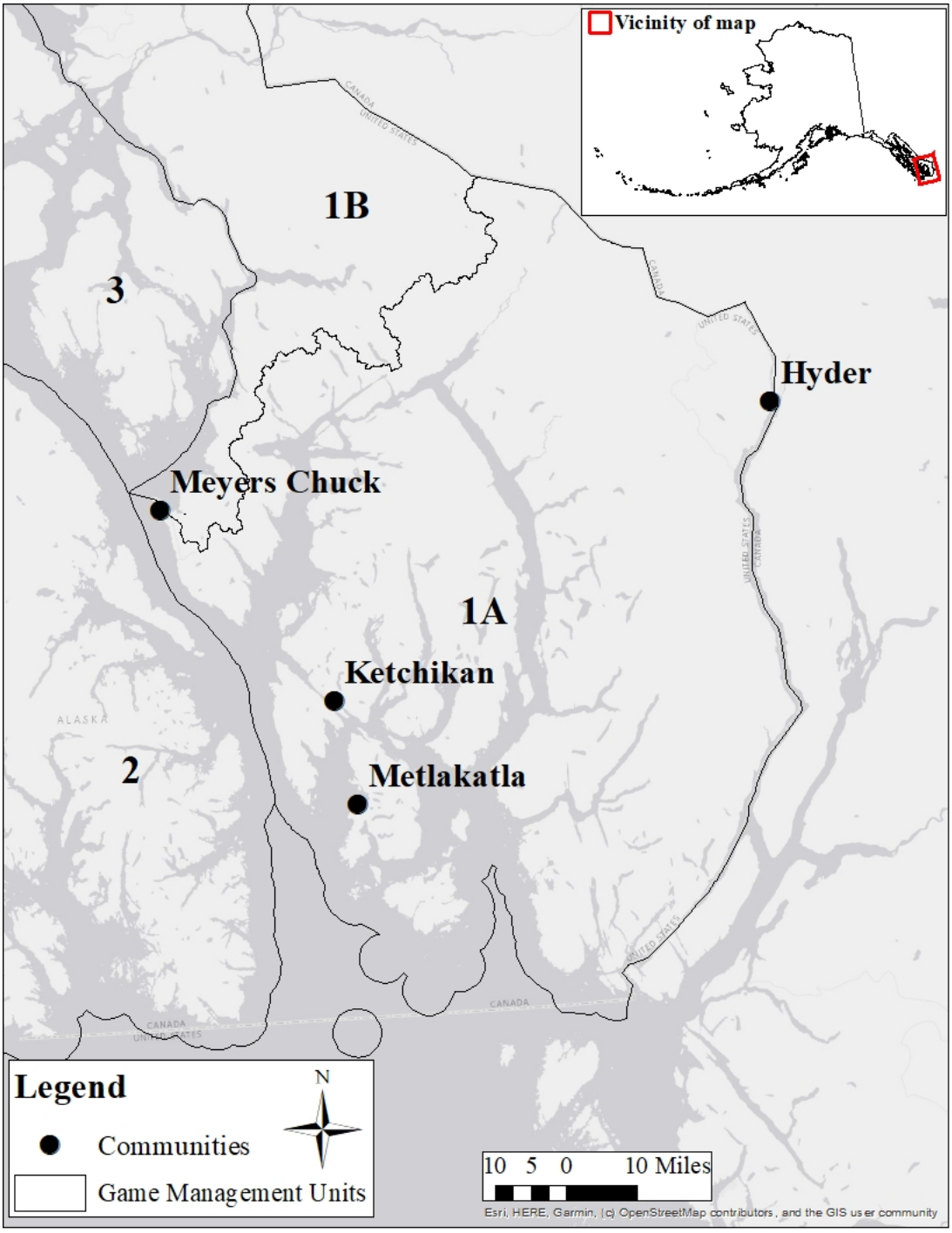

Figure 1. Map of Game Management Unit 1A boundaries, Southeast Alaska.

Summary of Status, Trend, Management Activities, and History of Moose in Unit 1A

The Unit 1A moose population is primarily located on the mainland in the Unuk River drainage, and moose numbers appear stable. Heavy timber along a narrow valley with braided river channels makes observing moose from the air difficult. Consequently, trends in abundance are based on a combination of aerial survey counts and moose track distributions after recent snowfalls. Good habitat is limited, and moose densities are low. Harvest is low and variable, ranging from 0–8 moose per year. Unit 1A moose are *Alces alces andersonii* which emigrated from interior British Columbia to the Unuk River valley (MacDonald and Cook 2008). In 1963–1964 moose were transplanted to the Chickamin River valley. The population did not establish, and the Chickamin River moose transplant was deemed a failure (Paul 2009). Moose are occasionally reported from other parts of Unit 1A including the Chickamin River valley, the southern mainland, Revillagigedo Island, and the Cleveland Peninsula.

Since 1960, a 1-month season with a 1-bull bag limit (no antler restrictions) has been in effect. The Federal Subsistence Board adopted a new regulation starting in 2011 that allowed federally qualified hunters to begin hunting on 6 September, 14 days earlier than the state season. This caused constant reporting problems since both federal and state hunters use the same state registration ticket and many hunters reported twice for the same hunt.

Harvesting moose in Unit 1A is often opportunistic. Most of the population is located within a designated wilderness area, and moose can only be effectively hunted along the Unuk River where access is limited to jet boats and floatplanes. Because most Unit 1A moose habitat is within a wilderness area, there will never be a need to alter management due to changes in access or development, but there will also be no opportunities for habitat enhancement or habitat management, and road construction is not a concern.

Population surveys are difficult due to rarely ideal weather conditions (sufficient snow cover and calm conditions) and poor sightability. Moose abundance appear sufficient to support the current hunting season and bag limit.

Management Direction

Existing Wildlife Management Plans

Region I developed a moose management plan in the late 1980s (ADF&G 1990) intended to guide management through RY94. That plan has never been formally updated. With the exception of the Gustavus moose population, the 1990 plan included objectives and management strategies for moose populations throughout the region.

Although the overall goals of the original plan are still important, the management objectives and harvest management strategies have changed since the plan was written based on public comment, staff recommendations, and Alaska Board of Game actions. These periodic changes in management planning have been reported in the division's previous species management reports.

GOALS

Regionwide moose management goals were established during creation of the Region I moose management plan (ADF&G 1990). The following goals are general and applicable to the entire region:

- Maintain, protect, and enhance moose habitat and other components of the ecosystem.
- Maintain viable populations of moose in their historic range throughout the region.
- Manage moose on a sustained yield basis.
- Manage moose in a manner consistent with the interests and desires of the public.
- Manage primarily for meat hunting and not trophy hunting of moose.
- Manage for the greatest hunter participation possible consistent with maintaining viable populations, sustained yield, subsistence priority, and the interests and desires of the public.
- Provide opportunities to view and photograph moose for the benefit of nonconsumptive users.
- Develop and maintain a database useful for making informed management decisions.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Uses

There was no customary and traditional use determination finding for moose in Unit 1A listed in 5 AAC 99.025.

Intensive Management

There was no intensive management finding for moose in Unit 1A.

MANAGEMENT OBJECTIVES

Maintain an annual harvest of at least 2 bulls.

MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Conduct aerial surveys to count the minimum number of moose in the Unuk River drainage annually as conditions allow.

Data Needs

Minimum counts are needed to inform the current moose management strategy for Unit 1A.

Methods

Aerial moose surveys were conducted during winter (December–February) when weather and snow conditions allowed. ADF&G flew surveys using a Cessna 185 on floats at a survey altitude of 500 feet. Few suitable aircraft and pilots are available in the Ketchikan area which precludes ADF&G from using better suited survey platforms. During surveys, the number of moose observed and their locations were recorded on a data sheet. Animals were then classified by age and sex whenever possible.

Results and Discussion

Due to poor weather conditions and survey aircraft availability during RY15–RY19, surveys were conducted in 2018 and 2019 only. Four moose were detected in 2018, and 3 in 2019.

Population Size

Data are insufficient to make a quantitative determination of Unit 1A moose population size or trend during the past 5 years. However, Unit 1A moose populations appear to be stable at a low density and carrying capacity is estimated to be low. Healthy brown bear, black bear, and wolf populations probably account for an unknown level of mortality in this area, particularly on young moose calves.

Distribution and Movements

It is known that moose move across the border between Canada and the U.S. along mainland drainages. However, moose have never been marked or collared in this area, and consequently we know little about their seasonal movement along the Unuk drainage. Some of the best habitat along the Unuk River occurs in Canada, just upstream of the border. That area likely supports a significant number of moose which may immigrate into Unit 1A. However, moose research on the Stikine River during the early 1980s found minimal movement between Canada and Alaska (Craighead et al. 1984). No research has ever been done on the Unuk River moose population due to higher priority areas elsewhere in Region I.

Recommendations for Activity 1.1

Continue with the following modification: record moose track data in an occupancy framework. See Activity 1.1 under Section II. Project Review and RY15–RY19 Plan below for a detailed explanation of the occupancy framework modification to this activity.

2. Mortality-Harvest Monitoring and Regulations

ACTIVITY 2.1. Monitor hunter effort and success.

Data Needs

We need information on hunter effort and harvest to inform management of the hunt and trends in the population.

Methods

The state and federal subsistence hunts for Unit 1A moose are managed under separate permits including the state registration moose permit (RM022) and the federal registration moose permit (FM0101). A registration permit was required to hunt for moose in Unit 1A during RY15–RY19. At the time a registration permit was issued, hunters were also provided a mandatory mail-in hunt report card. ADF&G used a registration hunt harvest report to collect information on hunter effort, hunt timing, mode of transport, and hunter success. ADF&G obtained federal registration permit hunt information from the U.S. Forest Service.

Season and Bag Limit

During regulatory years 2015–2019, the hunting season in Unit 1A for both residents and nonresidents was 15 Sep–15 Oct with a bag limit of 1 bull moose.

Results and Discussion

Harvest by Hunters

The number of hunters going into the field in search of moose and the actual number of days hunted varied during RY15–RY19. The average of 26 hunters, 112 hunter days, and 3 moose harvested demonstrate the difficulty of this hunt. The average age of harvested moose was 2-years old. The annual number of hunters ranged from 21–41 who spent a total of between 102 and 179 days afield each year. Hunter success was low during RY15–RY19, only 54% of those who obtained a permit actively hunted (Table 1).

Harvest levels fluctuate annually, however, access methods and residency of hunters pursuing moose in Unit 1A has been consistent. Hunters harvested between 1 and 5 bulls from Unit 1A each year (Table 1). No females were harvested, and no known illegal take occurred during RY15–RY19. All successful hunters were Alaska residents living in Unit 1A with boat access from Ketchikan (Table 2). Harvest dates varied during the season, and all successful hunters used boats to access this remote hunt area (Table 3).

Table 1. Unit 1A moose harvest, number of hunters, and hunting effort for regulatory years 2010–2019, Southeast Alaska.

Regulatory year	Harvest	Illegal harvest	No. of permits issued	No. of hunters	Total days spent hunting	Hunter success (%)
2010	2	0	29	17	68	11.8
2011	4	0	23	12	68	33.3
2012	3	0	53	35	131	8.6
2013	5	0	37	21	88	23.8
2014	3	0	37	23	79	13.0
2015	5	0	52	23	102	21.7
2016	4	0	70	41	152	9.8
2017	1	0	59	33	179	3.0
2018	3	0	43	29	136	10.3
2019	3	0	47	21	118	14.3
Average	3	0	45	26	112	11.8

Note: Data includes both the state (RM022) and federal (FM0101) subsistence hunts. Federal data was obtained from the U.S. Forest Service.

Table 2. Unit 1A moose hunter residency and success, Southeast Alaska, regulatory years 2015–2019.

	Successful					Unsuccessful					
Regulatory year	Local resident	Nonlocal resident	Nonresident	Total	%	Local resident	Nonlocal resident	Nonresident	Total	%	Total hunters
2015	5	0	0	5	20.8	16	3	0	19	79.2	24
2016	4	0	0	4	9.1	34	5	1	40	90.9	44
2017	1	0	0	1	2.7	29	6	1	36	97.3	37
2018	3	0	0	3	10.3	24	2	0	26	89.7	29
2019	3	0	0	3	13.6	17	2	0	19	86.4	22

Note: Data includes both the state (RM022) and federal (FM0101) subsistence hunts. Federal data was obtained from the U.S. Forest Service.

Table 3. Unit 1A moose harvest chronology, Southeast Alaska, regulatory years 2015–2019.

Regulatory year	5–14 Sep	15–21 Sep	22–28 Sept	29 Sep–5 Oct	6–15 Oct	No data	Total
2015	–	2	2	1	–	–	5
2016	–	4	–	–	–	–	4
2017	–	1	–	–	–	–	1
2018	1	–	2	–	–	–	3
2019	–	1	–	1	1	–	3

Note: Data includes both the state (RM022) and federal (FM0101) subsistence hunts. Federal data was obtained from the U.S. Forest Service.

Other Mortality

Predators (wolves, black bears, and brown bears) exist on the mainland but the extent of predation on moose is unknown. ADF&G receives periodic requests to harvest moose out-of-season for funerary and cultural education activities. Poaching of moose in this area is likely rare.

Alaska Board of Game Actions and Emergency Orders

No Board of Game actions took place, and no emergency orders were issued regarding Unit 1A moose during the reporting period.

Recommendations for Activity 2.1

Continue monitoring harvest as an index to trends in abundance.

3. Habitat Assessment-Enhancement

There were no habitat assessment or enhancement activities during the reporting period. Habitat is largely unchanged in the Unuk River corridor due to the lack of human development.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

- Harvest data are stored on ADF&G's internal Wildlife Information Network database (http://winfonet.alaska.gov/index.cfm).
- Survey data sheets and memoranda are stored in the Region I network drive (dfg.alaska.local/DWC/Douglas/Region1Shared-DWC/Survey).

Agreements

There were no agreements during this reporting period.

Permitting

There were no permits required or obtained to conduct moose management activities during RY15–RY19 in Unit 1A.

Conclusions and Management Recommendations

Moose reside at low densities in Unit 1A supporting a low but consistent annual harvest. Moose harvest occurs exclusively in the Unuk River drainage that connects moose in interior Canada to coastal Alaska. Habitat is limited to a small corridor that extends from Canada through the Coastal Range, thus limiting the population size. This small population resulted in the consistently low average harvest of 3 bulls per year during RY15–RY19. Access also limits harvest, and during this report period, all successful hunters used a boat to hunt for moose in the Unuk River area.

No major changes are recommended to the survey and inventory methods or season and bag limits currently in place. However, activities will be modified to include a defined occupancy format for recording tracks. This will standardize data collection and provide another index of abundance for management in RY20–RY24. ADF&G will continue to monitor the population through aerial minimum counts when weather and logistics permit. ADF&G will also continue to monitor harvest through both the state and federal registration hunts in collaboration with the U.S. Forest Service to determine hunter effort and success.

II. Project Review and RY20–RY24 Plan

Review of Management Direction

MANAGEMENT DIRECTION

Management direction for RY20–RY24 will remain the same as RY15–RY19.

GOALS

Goals for RY20–RY24 will remain the same as RY15–RY19.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Uses

There is no customary and traditional use determination finding for moose in Unit 1A listed in 5 AAC 99.025.

Intensive Management

There is no intensive management finding for moose in Unit 1A.

MANAGEMENT OBJECTIVES

Maintain an annual state harvest of at least 2 bulls.

REVIEW OF MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Conduct aerial surveys annually to count the minimum number of moose in the Unuk River drainage, as conditions allow.

Data Needs

Minimum counts are needed to inform the current moose management strategy in the Unuk River drainage.

Methods

Aerial moose surveys are conducted during winter (December–February) when weather and snow conditions allow. ADF&G will continue to use a Cessna 185 for surveys. Few suitable aircraft and pilots are available in the Ketchikan area which precludes ADF&G from using better suited survey platforms. During surveys, the number of moose and their locations will be recorded on a data sheet.

In addition to conducting minimum counts, ADF&G will record moose track locations within an occupancy framework. Using mapping software, ADF&G staff will create a 1 km^2 (0.39 mi^2) polygon grid layer over the Unuk drainage from the Canadian border to the head of Burrough's Bay, bounded on each side by the base of the mountains. This area represents suitable winter moose habitat where tracks are detectable (Fig. 2). In Southeast Alaska the average winter home range of a cow moose is 12 mi^2 (31 km^2 ; Doerr 1983, Craighead et al. 1984). The survey area is approximately 25 mi^2 (65 km^2) which may contain at least 2 cow moose home ranges.

These data will provide an idea of how many female moose home ranges are occupied within the survey area. A polygon will be considered occupied if moose tracks, a moose, or both are identified within the cell. This will provide a structured framework for monitoring the spatial distribution of moose in the Unuk river drainage. These data will provide an index of comparison for future years to determine changes in occupancy.

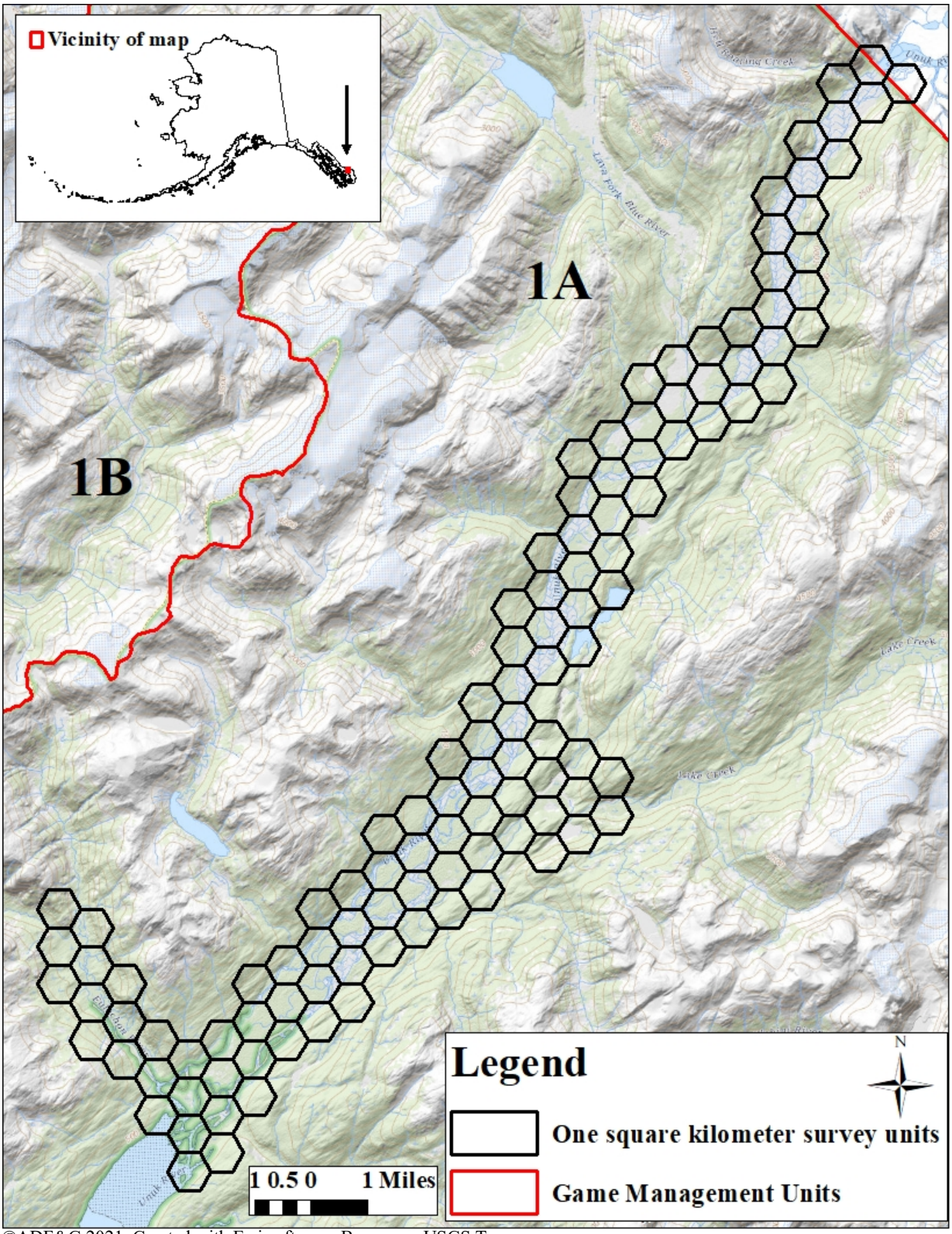

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Figure 2. Unuk River drainage moose survey area with 1-kilometer^2 survey polygons, Southeast Alaska. Map view includes portions of Game Management Units 1A and 1B.

2. Mortality-Harvest Monitoring

ACTIVITY 2.1. Monitor hunter effort and harvest.

Data Needs

We need information on hunter effort and harvest to inform management of the hunt and the moose population.

Methods

Methods for this activity are the same as RY15–RY19 Management Report, Activity 2.1 (above).

3. Habitat Assessment-Enhancement

There are no planned habitat assessment or enhancement activities for RY20–RY24.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

- Harvest data are stored on ADF&G's internal Wildlife Information Network database (http://winfonet.alaska.gov/index.cfm).
- Survey data sheets and memoranda are stored in the Region I network drive (dfg.alaska.local/DWC/Douglas/Region1Shared-DWC/Survey).

Agreements

There are no agreements anticipated for RY20–RY24.

Permitting

There were no permits required or obtained to conduct moose management activities during RY15–RY19 in Unit 1A.

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