Species Management Report and Plan ADF&G/DWC/SMR&P–2018–14

Wolf Management Report and Plan, Game Management Units 7 and 15:

Report Period 1 July 2010–30 June 2015, and

Plan Period 1 July 2015–30 June 2020

Jason Herreman

2018

Alaska Department of Fish and Game Division of Wildlife Conservation

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Hunters are important founders of the modern wildlife conservation movement. They, along with trappers and sport shooters, provided funding for this publication through payment of federal taxes on firearms, ammunition, and archery equipment, and through state hunting license and tag fees. This funding provided support for Federal Aid in Wildlife Restoration Wolf Survey and Inventory Project 14.0.

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 Cynthia Wardlow, Management Coordinator for Region II for the Division of Wildlife Conservation.

Species management reports and plans are available via the Alaska Department of Fish and Game's public website (www.adfg.alaska.gov) or by contacting Alaska Department of Fish and Game's Division of Wildlife Conservation, PO Box 115526, Juneau, Alaska 99811-5526; phone: (907) 465-4190; email: dfg.dwc.publications@alaska.gov. The report may also be accessed through most libraries, via interlibrary loan from the Alaska State Library or the Alaska Resources Library and Information Services (www.arlis.org).

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Purpose of this Report

This report provides a record of survey and inventory management activities for wolves in Units 7 and 15 for the 5 regulatory years (RY) 2010–2014 and plans for survey and inventory management activities for the next 5 regulatory years, 2015–2019. A regulatory year (RY) begins 1 July and ends 30 June (e.g., RY10 = 1 July 2010–30 June 2011). This report is produced primarily to provide agency staff with data and analysis to help guide and record its own efforts, but is also provided to the public to inform them of wildlife management activities. In 2016 the Alaska Department of Fish and Game's (ADF&G) Division of Wildlife Conservation launched this 5-year report to more efficiently report on trends and describe potential changes in data collection activities. It replaces the wolf management reports of survey and inventory activities that were previously produced every 3 years.

I. RY10–RY14 Management Report

Management Area

Unit 7 (3,520 mi^2) consists of the eastern portion of the Kenai Peninsula bounded by the western edge of the Kenai Mountains, the Russian River, and the Harding Ice Field on the west and the western edge of the Sargent Ice Field and eastern edge of Spencer Glacier on the east (Fig. 1). The landscape of Unit 7 consists of mountainous terrain interspersed with river and creek drainages, a few large lakes, and ice fields. Riparian areas and hillsides are densely forested until reaching the alpine zone. Federally managed lands make up approximately 78% of Unit 7: 50% U.S. Forest Service-Chugach National Forest, 22% National Park Service-Kenai Fjords National Park, 5% U.S. Fish and Wildlife Service-Kenai National Wildlife Refuge, and 1% other.

Unit 15 incorporates the western portion of the Kenai Peninsula and is broken up into 3 subunits 15A (1,314 mi^2), 15B (1,121 mi^2), and 15C (2,441 mi^2), hereinafter referred to as units. Each subunit is significantly different in its topography, flora, and ecological history. Unit 15A is the most northern subunit separated from Unit 15B by the Kenai River and Skilak Lake. Unit 15C is the most southerly subunit separated from Unit 15B by the Tustumena Glacier, Tustumena Lake, and the Kasilof River (Fig. 2).

Unit 15A is relatively flat with a multitude of small lakes leading up to the foothills of the Kenai Mountains in the east. The dominant flora is a mixed spruce and hardwood climax community. The Kenai National Wildlife Refuge (KNWR) is the largest landholder in Unit 15A and actively participates in a variety of cooperative moose management programs with ADF&G, including the Alaska Department of Fish and Game Moose Research Center near Sterling and cooperative management of Skilak Loop as a wildlife viewing area. No significant habitat disturbance has occurred in Unit 15A since a 1969 wildfire that encompassed approximately 85,306 acres.

The Kenai National Wildlife Refuge is also the largest landholder in Unit 15B. The western portion of Unit 15B is similar to Unit 15A in topography and flora. As you go east, however, Unit 15B becomes more mountainous and transitions into an alpine ecosystem. Forests within

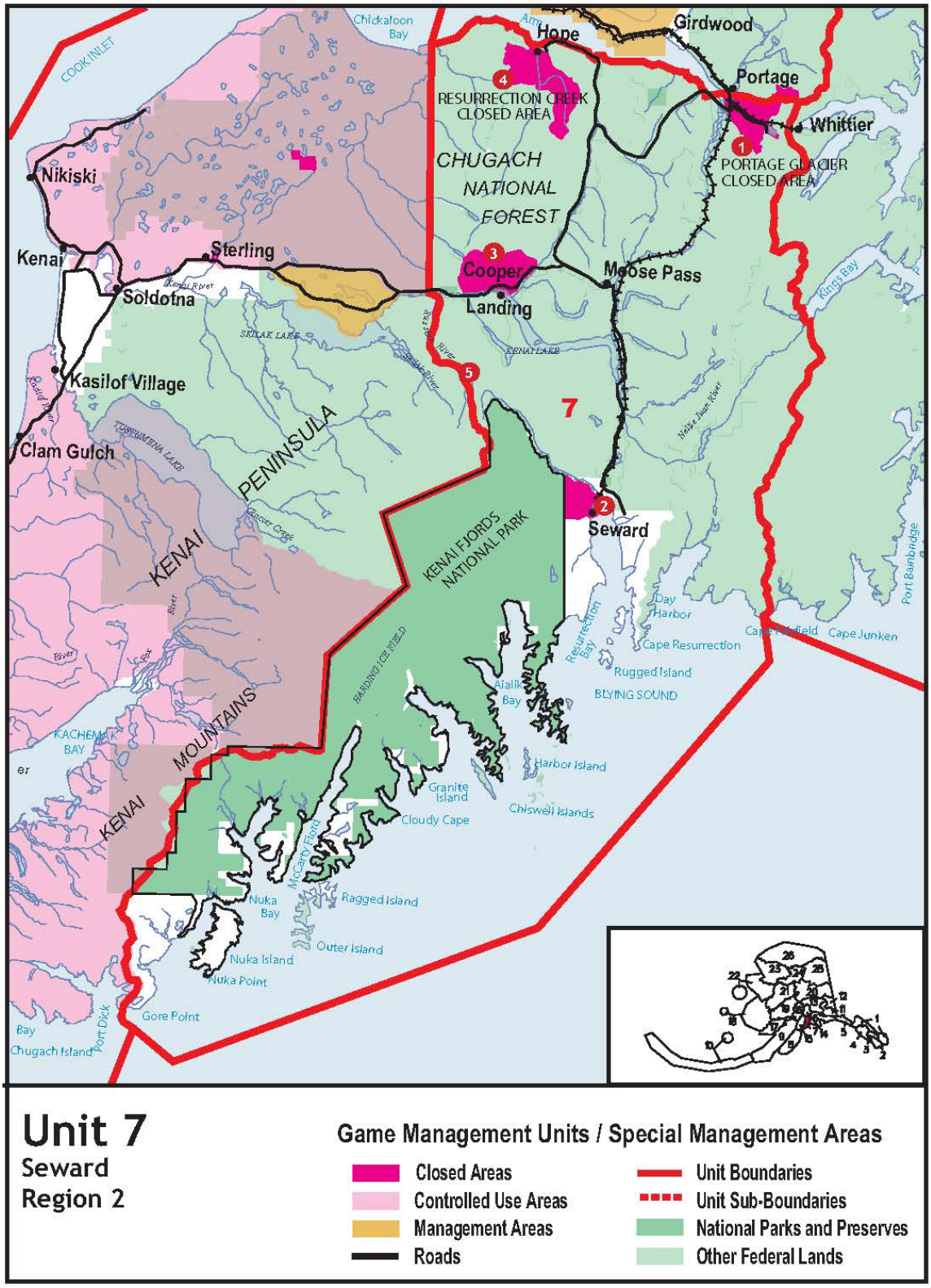

Figure 1. Map of the boundaries of Unit 7, Alaska.

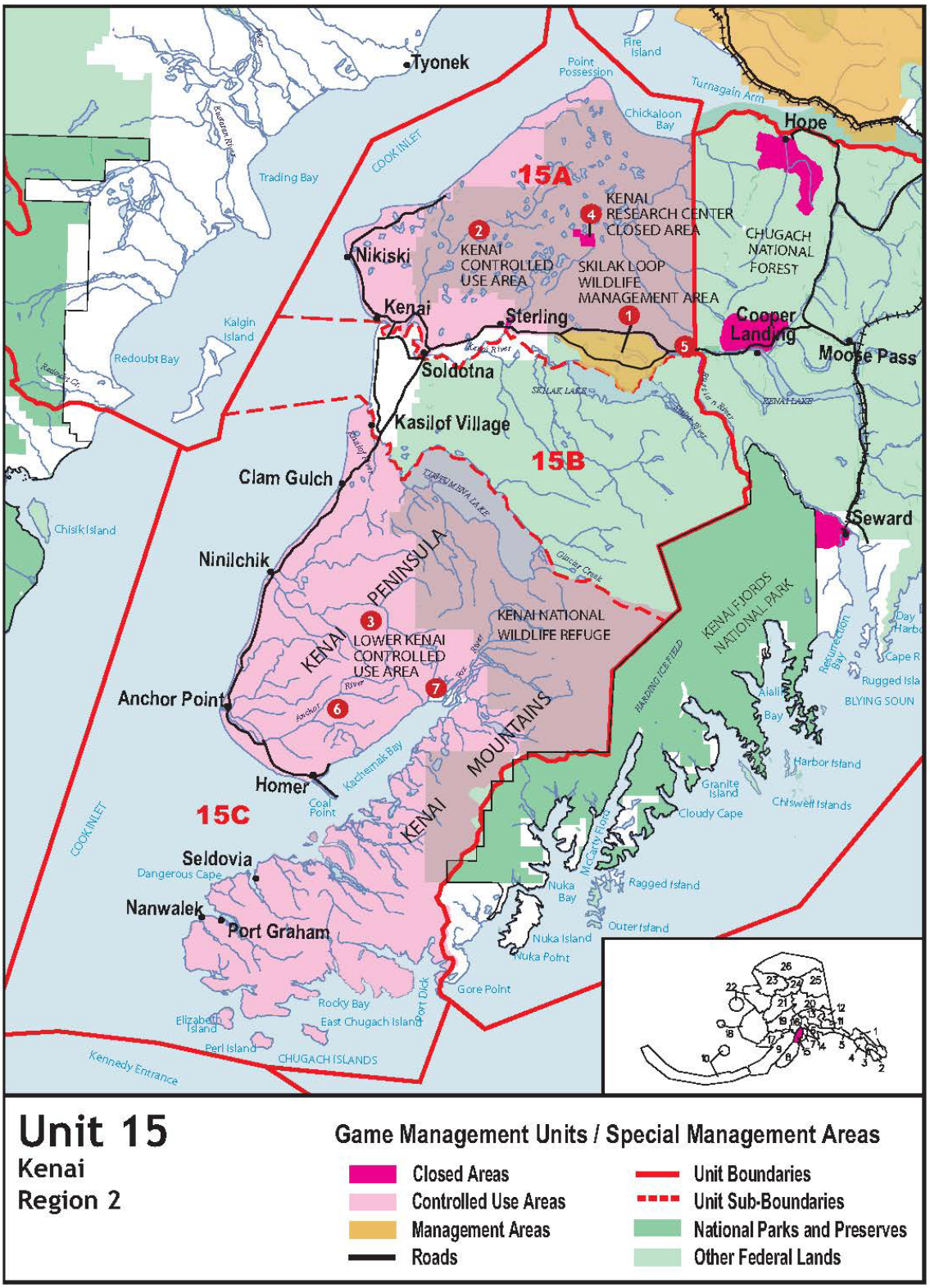

Figure 2. Map of Unit 15, Alaska unit and subunit boundaries.

Unit 15B succumbed to widespread spruce bark beetle (*Dendroctonus rufipennis*) infestations that began in the 1990s. Unlike Unit 15A, Unit 15B recently experienced significant habitat turnover in the form of the 2014 Funny River Fire that burned an area of approximately 196,610 acres, most of it in Unit 15B.

Unit 15C is significantly different from both Units 15A and 15B. KNWR lands make up only a small portion of the unit in the northeast corner. The rest of Unit 15C is in a mix of state, private, and municipal land ownership. The portion of Unit 15C north of Kachemak Bay and the Fox River peaks in the Caribou Hills and the Ninilchik Domes slopes down to the lowlands. Very few small lakes are present but numerous riparian areas exist draining from the highlands. Dominant vegetation is a mosaic consisting of spruce, willow, grasses (*Calamagrostis canadensis;* particularly in salvage logged areas), alder, and some hardwood stands. The northern portion of 15C has seen fairly consistent habitat disturbance over the past 2 decades in the form of wildfires, beetle kill, logging, and human development. The portion of 15C south of Kachemak Bay and the Fox River consists of a very different ecotype compared to the northern portion of 15C as it is comprised of coastal rain forest and subalpine habitat.

Summary of Status, Trend, Management Activities, and History of Wolves in Units 7 and 15

Wolves were extirpated from the Kenai Peninsula shortly after the turn of the twentieth century likely due to large fires that impacted their prey base and the use of poison by trappers (Peterson et al. 1984). Bounties and an extensive predator control program in Southcentral Alaska 1915–1960 likely prevented recolonization of wolves back to the Kenai Peninsula (Peterson et al. 1984). The first wolf in over 50 years was first spotted in 1961 and by 1975 wolves had recolonized most available habitat throughout the Kenai Peninsula (Peterson et al. 1984).

During the 50-year extirpation of wolves on the Kenai, the trapping and hunting seasons for wolves remained open with no closed season and no bag limit. After the first sighting in 1961, both the trapping and hunting seasons were closed. The first harvest was allowed in 1974.

An infestation of dog louse (*Trichodectes canis*) was first identified on the Kenai in 1982. Attempts to stop the spread of the infestation were unsuccessful and the parasite spread rapidly across the Kenai. Infested wolves are now common, but lice prevalence has decreased since approximately 2012.

Other factors that have had an impact on wolf harvests include land and shoot provisions which were eliminated in 1984 and changes in trapping regulations within the Kenai National Wildlife Refuge (KNWR). In 1985, KNWR required a 7-day trap check, in 1988 a 4-day check on leg-hold traps was adopted, and in 1989 a mandatory trapper education class for anyone trapping on the refuge was instituted.

Peterson et al. (1984) estimated the Unit 7 and 15 wolf population at 186. Since that time, the population has been considered stable at approximately 200 animals (Spraker 1997, Selinger 2003).

Management Direction

Wolves in Units 7 and 15 will be managed to provide for human uses and ensure that wolves remain an integral part of the Kenai Peninsula's ecosystem. Compatible human uses include hunting and trapping (both for personal use and commercial sale of furs), photography, viewing, listening, and scientific and educational uses (ADF&G 2002). The aesthetic value of being aware of or observing wolves in natural interactions with their environment is also recognized as an important human use of wolves. Domestication of wolves for personal use or for commercial purposes is generally considered incompatible with department management policies. Wolf reduction has been identified as an objective in the intensive management plans for moose in Units 15A and 15C and if implemented will affect the management direction of wolves in these units.

EXISTING WILDLIFE MANAGEMENT PLANS

- Draft Operational Plan for Intensive Management (IM) of moose in Game Management Unit 15A during regulatory years 2012–2017, January 2012. This operational plan describes evidence of limiting factors; potential indices for evaluating treatment response; and decision frameworks for predation control, habitat enhancement, and prey harvest strategies. The operational plan complements the intensive management plan in regulation (5 AAC 92.118).

  http://www.adfg.alaska.gov/index.cfm?adfg=intensivemanagement.unit15a#anchor

- Draft Operational Plan for Intensive Management (IM) of moose in Game Management Unit 15C during regulatory years 2012–2017, January 2012. This operational plan describes evidence of limiting factors; choice of indices for evaluating treatment response; and decision frameworks for predation control, habitat enhancement, and prey harvest strategies. (5 AAC 92.118).

  http://www.adfg.alaska.gov/index.cfm?adfg=intensivemanagement.unit15c#anchor

GOALS

- Ensure long-term conservation of wolves throughout their historic range in Alaska in relation to their prey and habitat.

- Provide for the broadest possible range of human uses and values of wolves and their prey populations that meet wildlife conservation principles and which reflect the public's interest.

- Increase public awareness and understanding of uses, conservation, and management of wolves, their prey, and habitat in Alaska.

CODIFIED OBJECTIVES

No codified objectives exist for wolves in Units 7 or 15.

Amounts Reasonably Necessary for Subsistence Harvest

No subsistence finding currently exists for wolves in Units 7 or 15.

Intensive Management (IM)

Wolves are identified for predator control within the draft operational plans for moose management in Units 15A and 15C. Implementation of this predator control could affect wolf harvest strategies.

MANAGEMENT OBJECTIVES

- Survey all areas outside Kenai Fjords National Park at least once every 5 years.
- Survey units under intensive management on a yearly basis to verify wolf numbers.
- Maintain a minimum of 15 wolves in Unit 15A.
- Maintain a healthy, viable population of wolves in Units 7 and 15.

MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Conduct an annual minimum wolf count (MWC; Gardner and Pamperin 2014) in Units 7 and 15 using fixed-wing aircraft when appropriate snow conditions exist.

Data Needs

An estimate of wolf abundance is needed to establish that a minimum number of wolves persist in Units 7 and 15B to ensure that they remain a functioning part of the ecosystem and to ascertain whether IM objectives are being met in Units 15A and 15C.

Methods

Wide transects concentrating on major travel corridors such as drainages and ridges are flown across the unit at low altitude using a PA-18 Super Cub or equivalent aircraft approximately 2 days after a fresh snowfall, with the intent of giving animals enough time to leave fresh tracks. Multiple planes with pilot/spotter pairs are used so that the entire unit can be covered in 1 to 1 ½ days. When animals are encountered, they are enumerated. If tracks are encountered, they are flown out until animals are seen or the number of animals within the group can be confidently estimated. GPS locations are taken of all animal sightings to help differentiate between groups. Track lines are recorded to ensure appropriate coverage of the survey area.

Results and Discussion

No surveys were flown in Unit 7 during this management period due to budget restrictions and snow conditions.

Surveys in Unit 15 where flown as conditions and funds allowed during this reporting period. Units 15A and 15C where the focus of flights when conditions and funding allowed due to intensive management programs in these areas. Unit 15B was surveyed only once during this reporting period (Table 1). Though counts varied, when survey conditions and harvest are considered, counts indicate that the wolf population has remained stable in Units 15A and 15B throughout this reporting period (Table 1).

Survey conditions were highly variable during the reporting period. Survey conditions in Unit 15A during RY10 were good with fresh snow, but deep shadows made it difficult to track wolves in timbered areas. No surveys were flown in any other units. In RY11, surveys were flown throughout Unit 15. Overall survey conditions were poor due to high winds the day before the survey started and during portions of the survey. Approximately 12 inches of fresh snow fell just prior to the survey, but high winds (exceeding 40 mph) blew the snow off of the lakes in all units and portions of the higher elevations in Unit 15C, and compacted the snow in many areas, resulting in poor tracking conditions. Turbulent conditions during the survey also prevented pilots from surveying some of the mountainous portions of Unit 15B. Surveys were conducted in Units 15A and 15C during RY12 under reasonable conditions. Surveys were attempted but not completed in RY13 and RY14 due to poor survey conditions.

Recommendations for Activity 1.1.

Continue.

2. Mortality–Harvest Monitoring and Regulations

ACTIVITY 2.1. Monitor wolf harvest through sealing records.

Data Needs

Information is needed about the number and characteristics of animals harvested in order to assess harvest trends. Supplemental data related to the harvest, including the size of packs from which wolves are harvested, location of harvest, and hunter and trapper effort are additional critical elements needed to assess harvest trends and corroborate aerial survey observations. Harvest estimates are used to establish whether IM objectives are being met and to ensure that wolves remain a viable part of the Kenai Peninsula ecosystem.

Methods

Regulations require that hunters and trappers present harvested wolves to ADF&G staff or an ADF&G-approved "sealer" for a process that involves attaching a seal to the wolf pelt to verify that it has been presented and collecting data about it that are then archived in the ADF&G harvest database (WinfoNet). Paper copies of sealing records are maintained at sealing locations. Harvest is reported by regulatory year. Information recorded for each wolf includes date of kill, name of harvester, location of kill, method of take, transportation used, sex and color of wolf, and number of other wolves thought to be in the pack from which the animal was taken. Sealing must occur within 30 days of harvest if taken under hunting regulations or within 30 days of season closure if taken by trapping. Harvest data are summarized by regulatory year (RY).

Table 1. Unit 15, Alaska aerial wolf surveys by subunit during regulatory years[a] 2010–2014.

Unit	RY	Season	Low	High	Comments
15A	2010	Spring	38	48	5 packs (3–15 wolves/pack) and 4 pairs or 4 singles
15A	2011	Fall	60	62	2 packs seen, 5 identified by tracks, 10–11 tracks not assoc. with a pack, 1 pack seen during moose comp counts added to count
15A	2012	Spring	45	50	7 packs identified
15A	2013	Spring	-	-	partial surveys completed due to conditions, number appear similar to previous year
15A	2014	Spring	-	-	partial surveys completed due to conditions, number appear similar to previous year
15B	2010	Spring	-	-	no survey
15B	2011	Spring	40	46	1 pack seen, 6 identified by tracks, 4 tracks not associated with a pack
15B	2012	Spring	-	-	no survey
15B	2013	Spring	-	-	no survey
15B	2014	Spring	-	-	no survey
15C	2010	Spring	-	-	no survey
15C	2011	Fall	44	52	12–14 wolf tracks not associated with a pack, 2 packs seen 4 identified by tracks
15C	2012	Spring	35	40	Added 4 additional wolves seen across the bay above Sadie Cove on 4-2-13
15C	2013	Spring	-	-	no survey
15C	2014	Spring	-	-	No survey attempted due to conditions

[a] A regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.

Season and Bag Limit

Current seasons and bag limits are listed on the ADF&G website: http://www.adfg.alaska.gov/index.cfm?adfg=wildliferegulations.main

Seasons and bag limits for RY10–14 were as follows:

Units and Bag Limits	Resident Open Seasons	Nonresident Open Seasons
Unit 7		
Hunting: 5 wolves	10 Aug–30 Apr	10 Aug–30 Apr
Trapping: No limit	15 Oct–31 Mar	15 Oct–31 Mar
Unit 15		
Hunting: 5 wolves	10 Aug–30 Apr	10 Aug–30 Apr
Trapping: No limit	15 Oct–31 Mar	15 Oct–31 Mar

Results and Discussion

Harvest by Hunters–Trappers

The average annual combined wolf harvest for Units 7 and 15 over the past 5 seasons was 38 animals. Females have represented more than 50% of the harvest in all years except RY12. Harvest has declined in recent years across all areas (Table 2), which is likely due to recent low snow years and poor trapping conditions. Most wolf harvest occurs in Units 15C and 15A between December and March (Table 3).

Table 2. Combined trapping and hunting harvest totals for Units 7 and 15, regulatory years[a] 2010–2014.

	Unit Harvest				Total
RY	7	15A	15B	15C	harvest
2010	11	15	2	13	41
2011	6	10	6	23	45
2012	6	23	5	26	60
2013	2	7	4	8	21
2014	1	13	3	6	23

[a] A regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.

Table 3. Harvest chronology of wolves in Units 7 and 15, Alaska during regulatory years[a] 2010–2014.

	Month of harvest										
RY	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Other	Total
2010	1	2	2	0	5	9	14	5	3	0	41
2011	1	0	2	3	5	17	11	5	0	1	45
2012	1	10	2	7	8	13	11	7	1	0	60
2013	2	1	0	2	4	2	6	4	0	0	21
2014	1	2	1	1	4	6	5	3	0	0	23

[a] A regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.

Alaska Board of Game Actions and Emergency Orders

- In 2011, the board aligned the hunting season bag limit within the KNWR and the remainder of Unit 15 at 5 wolves per season. The previous limit was 2 wolves per season.
- In 2012, the trapping season was lengthened to begin 15 October starting RY13.

Recommendations for Activity 2.1

Continue.

3. Habitat Assessment–Enhancement

ACTIVITY 3.1. No habitat assessment or enhancement activities were conducted.

Data Needs

None

Methods

None

Results and Discussion

None

Recommendations for Activity 3.1

Continue

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

- Wolf survey memos are stored in the office file cabinets of the Soldotna Area Biologist. Electronic copies starting in 2016 are stored on the Homer shared drive (O:\DWC\ADF&G-Homer Files\Species Data\Furbearer\Wolf\Surveys)

- Electronic records of the survey results, track files, and animals locations are stored on the Homer office shared drive (O:\DWC\ADF&G-Homer Files\Species Data\Furbearer\Wolf\GPS data).

Agreements

None

Permitting

Under IM operations in Unit 15A aerial pilot and gunner teams were permitted to take wolves beginning in December of 2013, RY13–RY15 in the designated control area (Fig. 3). Additionally, a trapper was hired and permitted by ADF&G in RY 2013. Operations were permitted only in the designated control areas. The 14 mi^2 section in the northwest corner of 15A was added to the control area in RY15.

Conclusions and Management Recommendations

The current wolf population in Unit 15 seems to be consistent with what was observed in the 1980s and 1990s when wolves were surveyed more frequently. We believe it is important to continue flying these surveys, particularly considering the IM mandate; with recent funding received, it is our intent to do so. We also believe that we need to complete a survey in Unit 7 since the last comprehensive survey of that unit was done in the 1980s. However, in the long-term, surveying Unit 15 should take priority over Unit 7 since Unit 15 has been identified for intensive management.

ADF&G will continue to work with trappers to supply them with road-killed or other moose and caribou meat that is unfit for human consumption to use for bait.

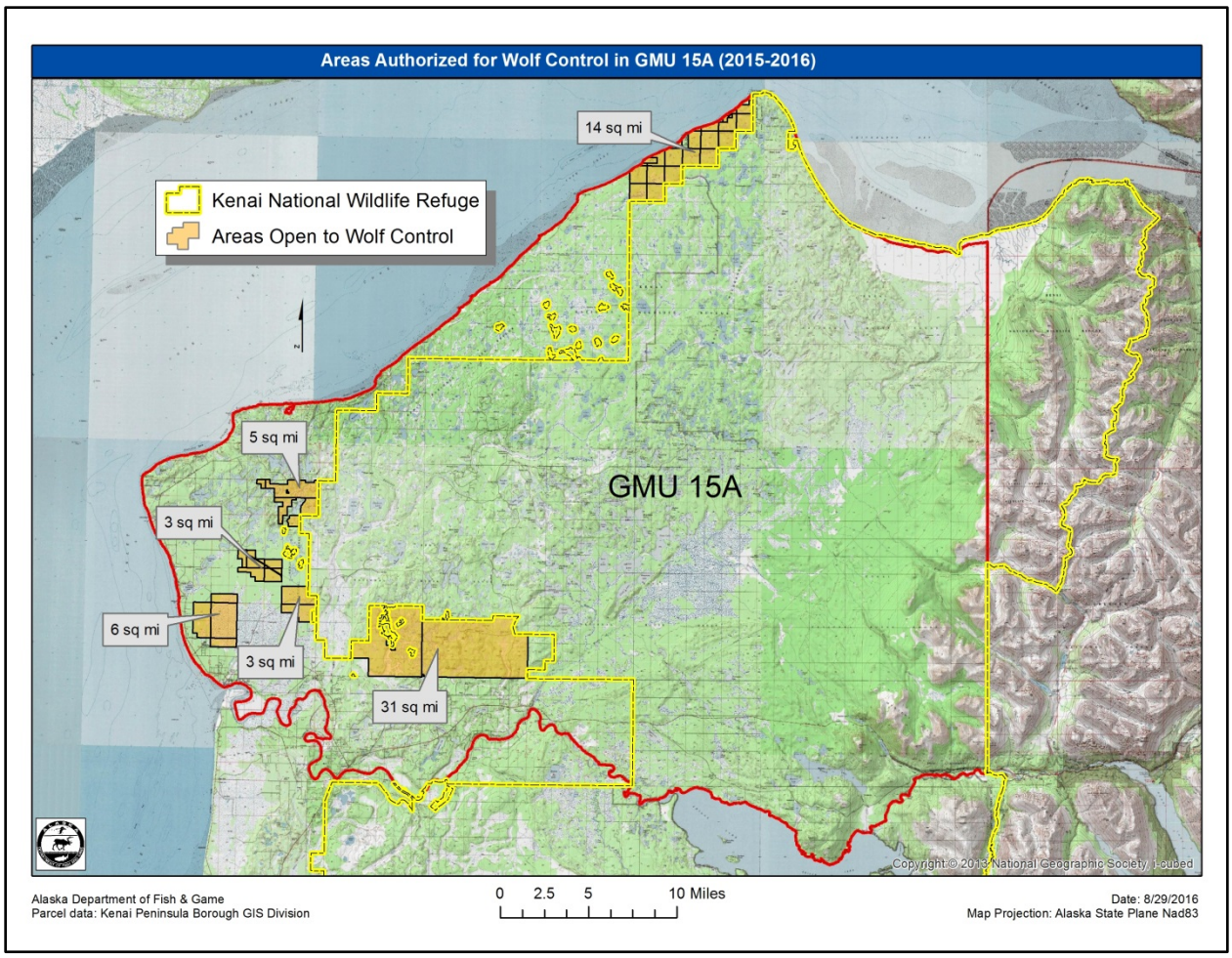

Figure 3. Map showing the boundaries of the Kenai National Wildlife Refuge and the areas open to wolf control.

II. Project Review and RY15–RY19 Plan

Review of Management Direction

MANAGEMENT DIRECTION

The existing management direction and goals appropriately direct management of wolves in Units 7 and 15. The management direction for these units ensures that wolves will persist as part of the natural ecosystem and ensures continued wolf hunting, trapping, and viewing opportunities. Unit 7 and 15 management directions will continue to be that wolves will be managed in a manner that complements the statewide wolf management goals (ADF&G 2002). The IM objectives for moose management and subsequent operation plans for Units 15A and 15C conflict with the statewide management goals for wolves on a short-term basis. When or if predator control is initiated in these units, only the long-term sustainability of a viable wolf population objective will be applicable; the human use objectives for moose will supersede the human use objectives for wolves.

GOALS

- Ensure long-term conservation of wolves throughout their historic range in Alaska in relation to their prey and habitat.

- Provide for the broadest possible range of human uses and values of wolves and their prey populations that meet wildlife conservation principles and which reflect the public's interest.

- Increase public awareness and understanding of uses, conservation, and management of wolves, their prey, and habitat in Alaska

CODIFIED OBJECTIVES

- No codified objectives exist for wolves in game management Units 7 or 15.

- Moose IM objectives and subsequent operational plans for predator control affect optimal wolf management strategies.

MANAGEMENT OBJECTIVES

RY10–RY14 objectives will be maintained or modified for RY15–RY19 as indicated below:

1. Survey all areas outside Kenai Fjords National Park at least once every 5 years.

   Maintain this management objective and complete as time, conditions, and funding allow.

2. Survey subunits under intensive management on a yearly basis to verify wolf numbers.

   Maintain this management objective and complete as conditions allow.

3. Maintain a minimum of 15 wolves in 15A.

   Maintain this objective as it ensures a viable wolf population within the unit while meeting IM standards.

3. Maintain a healthy viable population of wolves in Units 7 and 15.

   Maintain this management objective in Unit 7 and in the portions of Unit 15 without active IM predator control operations. In predator control areas, modify this objective to match IM objectives.

MANAGEMENT ACTIVITIES

Activities will be adapted for RY15–RY19 as indicated below:

1. Population Status and Trend

ACTIVITY 1.1. Conduct a minimum wolf count (MWC; Gardner and Pamperin 2014) in Units 7 and 15 using fixed-wing aircraft when appropriate snow conditions exist.

Data Needs

An index of wolf abundance is needed to establish that a minimum number of wolves persist in Units 7 and 15B to ensure that they remain a functioning part of the ecosystem. An estimate of wolf abundance is needed to establish that IM objectives are being met in units 15A and 15C. A MWC survey will adequately gather this information.

Methods

MWC surveys are described by Gardner and Pamperin (2014), and all MWC surveys conducted in Units 7 and 15 will be designed to implement those previously described methods.

2. Mortality–Harvest Monitoring

ACTIVITY 2.1. Monitor wolf harvest through sealing records.

Data Needs

No change.

Methods

The current harvest documentation system appears to be adequate for Units 7 and 15. We do not believe there is a significant amount of undocumented harvest at this time. Harvest rates appear to be most affected by harvest conditions and as such we will continue to note observations during the trapping season and include these in our analysis of harvest.

3. Habitat Assessment–Enhancement

ACTIVITY 3.1. No habitat assessment or enhancement activities were conducted.

Data Needs

None

Methods

None

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

Data collected during aerial surveys starting in 2016 will be recorded on the Wolf Census Form (Appendix A). Paper files of wolf survey memos are stored in the office file cabinets of the Soldotna Area Biologist. Electronic copies starting in 2016 will be stored on the Homer shared

drive (O:\DWC\ADF&G-Homer Files\Species Data\Furbearer\Wolf\Surveys). Electronic copies of old survey memos will be saved on the Homer shared drive.

Global Position System (GPS) location data will be logged using WGS84 datum. GPS files will be stored on the Homer office shared drive (O:\DWC\ADF&G-Homer Files\Species Data\Furbearer\Wolf).

Agreements

No management agreements are anticipated for RY15–RY19.

Permitting

No predator control permits were renewed beginning in RY16 for Unit 15A and we do not anticipate permitting any control activities in RY16–RY19.

References Cited

Alaska Department of Fish and Game. 2002. Strategic plan. Division of Wildlife Conservation, Juneau.

Gardner, C. L. and N. J. Pamperin. 2014. Intensive aerial wolf survey operations manual for Interior Alaska. Alaska Department of Fish and Game, Wildlife Special Publication ADF&G/DWC/WSP-2014-01, Juneau.

Peterson, R. O., and J. D. Woolington. 1984. Wolves of the Kenai Peninsula, Alaska. Wildlife Monographs, No. 88.

Selinger, J. 2003. Units 7 and 15 wolf management report. Pages 58–65 [*In*] C. Healy, editor. Wolf management report of survey and inventory activities 1 July 1999–30 June 2002. Alaska Department of Fish and Game, Division of Wildlife Conservation, Federal Aid in Wildlife Restoration Project 14.0, Juneau.

Selinger, J. 2006. Units 7 and 15 wolf management report. Pages 59–64 [*In*] P. Harper, editor. Wolf management report of survey and inventory activities 1 July 2002–30 June 2005. Alaska Department of Fish and Game, Division of Wildlife Conservation, Federal Aid in Wildlife Restoration Project 14.0, Juneau.

Spraker, T. S. 1997. Units 7 and 15 wolf management report. Pages 35–41 [*In*] M.V. Hicks, editor. Wolf management report of survey and inventory activities 1 July 1993–30 June 1996. Alaska Department of Fish and Game, Division of Wildlife Conservation, Federal Aid in Wildlife Restoration Project 14.0, Juneau.

Appendix A. Wolf census form.

Wolf Census Form

Date_____ **GMU**_____ **Takeoff time** _____ **Flight hours**_____

Pilot_____ **Observer**_____ **Land Time**_____

Snow age	Snow Cover	Light type	Light intensity	Wind speed	Predominant Habitat	Survey Rating
1-2 days	1. Complete	Bright	High	<5 mph	1. OPEN lower elev. Shrubs/wetland	Excellent
3-4 days	2. Some low veg showing	Flat	Medium	6-10 mph	2. DECIDUOUS FOREST birch/aspen	Good
5-6 days	3. Bare ground showing		Low	>10 mph	3. MIXED FOREST	Fair
7+ days					4. OPEN CONFEROUS FORES	Poor
					5. DENSE CONIFEROUS FORE	
					6. SUBALPINE FOREST	
					7. BURN	

Point	Lat/Long first spotted	Time track spotted	Time wolves found	Lat/Long pack sighted	Pack size	Wolf Colors	Lat/Long backtrack ends	Time track ends

Point	Lat/Long first spotted	Time track spotted	Time wolves found	Lat/Long pack sighted	Pack size	Wolf Colors	Lat/Long backtrack ends	Time track ends

Comments_____
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