

Alaska's Predator Control Programs

Managing for Abundance or Abundant Mismanagement?



In 1995, Alaska Governor Tony Knowles responded to negative publicity over his state's predator control programs by requesting a National Academy of Sciences review of Alaska's entire approach to predator control. Following the review Governor Knowles announced that no program should be considered unless it met three criteria: cost-effectiveness, scientific scrutiny and broad public acceptability. The National Academy of Sciences' National Research Council (NRC) released its review, *Wolves, Bears, and Their Prey in Alaska*, in 1997, drawing conclusions and making recommendations for management of Alaska's predators and prey. In 1996, prior to the release of the NRC report, the Wolf Management Reform Coalition, a group dedicated to promoting fair-chase hunting and responsible management of wolves in Alaska, published *Showdown in Alaska* to document the rise of wolf control in Alaska and the efforts undertaken to stop it. This report, *Alaska's Predator Control Programs: Managing for Abundance or Abundant Mismanagement?* picks up where that 1996 report left off.

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1. Introduction

Alaska is renowned for its vast wilderness and populations of wolves, brown and black bears and other wildlife. The state is home to the largest remaining populations of gray wolves in the United States as well as stable populations of black and brown bears. Though adequate censuses are difficult to attain in a state as large and geographically isolated as Alaska, the Alaska Department of Fish and Game (ADF&G) estimates 7,700 to 11,200 wolves, 30,000 brown bears and 100,000 black bears live Alaska (ADF&G 2010a,b). These top predators play an essential role in maintaining healthy prey populations and biodiversity within their ecosystems. They are also vital to the state's tourism economy; people from all over the world come to Alaska for the opportunity to see wolves, bears and other wildlife.

Unlike wolves in the lower-48 states, Alaska's wolves are thought to be relatively numerous and it has never been necessary to list them under the Endangered Species Act. The state of Alaska classifies wolves both as big game animals and furbearers, which means they are legally hunted and trapped for trophies and subsistence purposes. Trappers and hunters took an average of 1,539 wolves per year from 1998 to 2004 (ADF&G 2006).

Like wolves, bear populations in Alaska are thought to be relatively stable compared to populations in the lower 48. Bears are also classified as big game. Black bears were recently reclassified as furbearers to liberalize means of harvest and reduce their populations in predator control areas. As a result, black bear take has increased. Brown bears are regularly harvested for trophies and for subsistence use. From 1998 to 2008, the average annual take of Alaska bears was 2,693 black bears and 1,078 brown bears (ADF&G 2010b).

While statewide populations of wolves and bears appear to be stable, regional differences exist. In predator control areas, for example, wolf populations may be decreasing and in certain cases have been locally eliminated. While this report does not address legal hunting and trapping, liberalized harvest methods and seasons are used specifically to suppress predator numbers. Note that this hunter harvest is in addition to number of animals killed under aerial predator control programs. Moreover, biologists recently demonstrated that hunting can have a greater impact on wolf populations than traditionally assumed (Creel and Rotella 2010). Unreported harvest can also be substantial, and in the case of black bears can exceed reported harvest (ADF&G 2005-2006). Understanding the true population size and total number of



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animals taken is important when developing wildlife management programs that insure predator populations remain viable. Accurate data is also essential when determining whether management actions are achieving stated goals.

Wolves in America's last frontier have long been persecuted on the claim they are decimating prey populations. Although much of this report focuses on wolves, bears of both species are increasingly targeted in areas where they are considered competition for game and not deemed important to manage for trophy harvest.

Since well before statehood, the management of Alaska's predators has generated controversy (see Appendix A for a summary of the history of predator control in Alaska). Supporters of predator control insist that caribou and moose numbers are too low and that predators must be killed to restore their populations, despite numerous scientific studies demonstrating that predators are rarely the sole cause of significant or long-term declines in prey populations. Critics of predator control often point to these studies and numerous others that show predator control can trigger an unsustainable boom in prey numbers, leading to habitat damage, poor health, decreased fertility and eventual starvation. Critics also point to the fact that critical data, such as accurate population estimates, are often lacking and that results of predator control programs are not sufficiently monitored.

The Alaska Legislature passed a landmark “intensive management” law in 1994 and other amendments to the Alaska statutes governing game management in the state. The intensive management law directed the state’s Board of Game (BOG), the governor-appointed panel of seven voting members that holds regulatory authority for wildlife in the state, to review caribou and moose populations throughout the state and determine which populations are important for high levels of harvest by hunters. It also mandated that BOG determine which are “depleted” and implement an intensive management plan for those populations. Depleted is not defined in the statute or by BOG. Although actions such as habitat improvement can be part of an intensive management plan, predator control is nearly universally adopted under these plans.

When the intensive management legislation passed, the Alaska Chapter of The Wildlife Society issued a position statement on the bill laying out their concerns. Specifically, the chapter was worried that language in the law would restrict the flexibility of BOG to manage for a variety of wildlife uses in the state. No matter how well-intentioned legislatively, the chapter reasoned, such mandated prescriptions often do not have the benefit of a public planning process to establish biologically supportable management objectives and acceptable management techniques. Furthermore, in the absence of these objectives for management, such prescriptions seldom benefit wildlife or wildlife users in the long run.

The most controversial predator control method is aerial gunning—especially when carried out by private citizens rather than trained wildlife management professionals. Many Alaska residents and other American citizens ardently oppose this practice because it is considered unsportsmanlike, unethical and nearly impossible to regulate. It also leads to many other violations of hunting regulations such as chasing, herding and harassing of wildlife.

Because of the controversy generated by predator control, Governor Tony Knowles commissioned the National Academy of Sciences to conduct a review of Alaska’s programs in 1995. In 1997, the academy’s National Research Council (NRC) released its review, *Wolves, Bears, and Their Prey in Alaska*, which included recommendations on how to improve Alaska’s predator control programs. However, Alaska policymakers have made little attempt to modify their policies. In fact, BOG, has become increasingly anti-predator and has repeatedly worked to create more opportunities to reduce predator numbers across the state. If anything, the battles have intensified since the publication of the NRC report. As the analysis presented in the following pages shows, the NRC’s science-based recommendations and guidelines remain largely unheeded, principally as a result of the intensive management law,

PREDATOR CONTROL AND AIRCRAFT

The Airborne Hunting Act of 1971 prohibits shooting, attempting to shoot or harass any animal from an aircraft except for certain specified reasons, including protection of wildlife, livestock, and human life as authorized by a federal- or state-issued license or permit. In order to conduct aerial predator control, the state of Alaska exploits the loophole in the act that allows states to issue permits for airborne hunting to “protect wildlife.” The methods allowed include:

Aerial gunning: The use of airplanes and helicopters to chase and shoot wolves in predator control areas. This method may include land-and-shoot practices.

Land-and-shoot hunting or trapping: Hunters track wolves from the air, then land and shoot them, usually with shotguns or rifles.

Same-day land-and-shoot hunting or trapping: Same as land-and-shoot hunting except that the shooter must walk at least 300 feet from the airplane before shooting.

which has had implications for lands beyond those managed by the state of Alaska.

The Bureau of Land Management (BLM), for example, considers predator control a state function and allows the practice on the public federal lands it manages without the environmental compliance documents required by the National Environmental Policy Act. Although the state historically excluded the U.S. Fish and Wildlife Service (FWS) lands from predator control, it has recently begun to press for it on national wildlife refuges and in federally designated wilderness such as Umiak Island. The National Park Service (NPS) has been very clear that predator control will not be allowed within park units; however, wolves that use national park lands have been targeted during predator control operations on adjacent lands. NPS and FWS have very clear constitutional and statutory authority to preempt the state’s predator control activities (Lurman 2007, Lurman 2010). While federal laws governing BLM are less specific, the agency is required to manage wildlife for sustained yield and manage for healthy wildlife populations (Lurman 2006).

2. The National Research Council Review

The National Research Council (NRC) review requested by Governor Knowles in 1995 marked the first comprehensive attempt to provide standards to guide Alaska's decision makers in the complex process of ensuring that sound science provides the basis for predator control programs. The review was designed to:

- Determine if appropriate types and amounts of data existed to understand interactions between moose and caribou, their habitats and predators and predict quantitative responses of prey populations to predator control efforts.
- Identify critical gaps in the scientific understanding of predator and prey populations and how to fill them.

The NRC researchers evaluated past and present wolf and bear control programs and management experiments in the United States and Canada. They also looked at predator-prey interactions and the socioeconomic implications of predator control. In their final report, *Wolves, Bears, and Their Prey in Alaska*, the NRC presented nine major conclusions and eight recommendations related to the biological aspects of predator control and

SUGGESTED STANDARDS AND GUIDELINES FOR PREDATOR CONTROL IN ALASKA

1. Manage wolves, bears and ungulates with an adaptive approach.
2. Plan management actions as experiments so it is possible to assess their outcome. Include control actions with clearly specified monitoring protocols of sufficient duration to determine whether or not predictions are borne out and why.
3. Avoid management actions with outcomes that can not be interpreted or with low probability of achieving stated goals.
4. Evaluate the status of predator and prey populations before predator reduction efforts occur.
5. Collect better data on habitat quality and evaluate the carrying capacity of the prey's habitat.
6. Monitor for changes in the growth rate of prey populations and the level of hunter satisfaction.
7. Broaden the scope of predator and prey studies and collect better data on bear ecology.
8. Continue to develop long-term data sets and collect better data on long-term consequences of predator control.
9. Investigate the use of controlled fire for increasing the carrying capacity of moose habitat.
10. Be more sensitive to signs of over-harvest.
11. Be more conservative in setting hunting regulations and designing control efforts.

eight recommendations and conclusions with socioeconomic considerations (NRC 1997:128-130). Many of the specific points included in the recommendations provided the basis for the suggested standards and guidelines for Alaska's predator control programs (see box).

The NRC review also included a section on decision making that reiterates several of the suggested standards and guidelines and provides additional standards (NRC 1997:128-130). The first step suggested in deciding whether or not to reduce predators is to identify reasons for wanting more ungulates, such as biological emergencies (a local ungulate population at risk of extirpation, for example), subsistence emergencies, lifestyle and recreational hunting demands, and wildlife viewing and other tourism demands. Next, the unmet demand should be quantified and the extent to which ungulate numbers must be increased determined. Population models and cost-benefit analyses should provide estimates of the extent and duration of management actions necessary to meet the projected demand and to estimate costs of predator reduction.

According to NRC, once these issues have been addressed, ecological investigations should be conducted to assess the likelihood that predator reduction will achieve desired goals. Necessary studies include historic population trends of ungulates, current ungulate population trends, emigration studies, an evaluation of habitat conditions, predator ecology research and the identification of limiting factors and the ecological consequences of predator control.

Management options that increase ungulate reproduction and survival or decrease predation rates should then be identified. These include habitat manipulation to improve the quantity, quality or distribution of habitats; nonlethal control methods for predators, including diversionary feeding, sterilization and translocation; selective removal of individual animals or wolf packs; timing of removal to increase efficacy; assessment of removal methods to identify those that are most humane, efficient, cost effective and politically acceptable; and identification of removal locations to concentrate actions in critical areas to maximize effectiveness while minimizing effects on predator populations.

Finally, the NRC report says that predator reductions must be monitored with protocols of sufficient magnitude, duration and geographic extent to show clear results. The report notes that most past programs produced unclear results. Pre-treatment and post-treatment monitoring was sometimes insufficient, non-experimental areas were not maintained, and weather conditions were often poorly measured. According to the report, "wherever possible, predator control programs should be incorporated into a reviewed experimental design to ensure that knowledge is one of the benefits of the reduction program" (NRC 1997:130).

3. Application of Recommended Standards: 2000-2001

The first extensive effort to apply the National Research Council (NRC) recommended predator control standards and guidelines came in 2000 and 2001, when Alaska addressed a long-standing demand for wolf control by residents of McGrath on the Kuskokwim River in interior Alaska. In 1995, the Board of Game (BOG) received reports from local residents of the McGrath area that moose numbers had declined greatly since the 1970s and wolves were keeping them from increasing. The BOG approved a control program to take 80 percent of the wolves in the area; however, the program was not implemented, nor were similar plans subsequently approved. In 2000, Governor Tony Knowles appointed a stakeholder's group called the Adaptive Wildlife Management Team to review the issues and to provide recommendations to the commissioner of the Alaska Department of Fish and Game (ADF&G).

The team found that the moose population in the area (estimated at 869) was insufficient to support the harvest demand of 130 to 150 annually. ADF&G biologists estimated that 3,000 to 3,500 moose could provide the desired harvest, and the team adopted these numbers as the desired population objective and harvest goals (ADF&G 2001). The team recognized that there were significant needs for additional data, notably the extent of bear predation on newborn moose, quality of moose habitat in relation to moose body condition and pregnancy rates, movements of moose in the area, and more precise estimates of moose, wolf and bear numbers. ADF&G prepared a detailed study plan that was peer-reviewed by eight qualified experts, including some outside Alaska.

The team recommended a program of wolf and bear reduction involving wolf trapping by local residents followed by aerial shooting by privately permitted gunners (ADF&G 2001). Bear hunting by local residents would be encouraged if bear predation on newborn moose was found to be significant. Moose hunting seasons in a portion of the area would be closed until the moose population increased. Studies and monitoring efforts would be designed to fill data gaps. The entire program would be conducted in an adaptive management context, and the team would reconvene periodically to review progress and suggest alternate approaches as necessary.

ADF&G's commissioner approved the plan early in 2001 with the provision that ADF&G employees in helicopters—not private pilots in fixed-wing aircraft—do the shooting. The BOG approved the plan, but before it could be implemented, a moose census in autumn 2001 indicated 3,660 moose in the area versus the previous claim of 869. Clearly, previous estimates were based on faulty censuses done under poor conditions. Plans to reduce predators were suspended in light of this new information.

In general, many of the NRC's recommendations were followed in designing the McGrath program, but there

were important exceptions. Predator reduction was to begin immediately rather than be delayed pending additional data, despite very limited information on key components such as the extent of bear predation. In addition, wolf control, bear reduction and moose hunting closures were to be simultaneously applied, thereby confounding interpretation of results and complicating assessment of the relative importance of these limiting factors. Despite these shortcomings, the process used to develop the McGrath plan provided a good model for designing plans in other areas. Unfortunately, it is not a model that has ever been repeated.


4. Aerial Predator Control: 2003-Present

Following the initial success of implementing the National Research Council's recommendations at McGrath, Alaska policymakers largely abandoned the effort and resorted to previous methods of predator control. The first aerial gunning permits were issued to pilots and gunners in the fall of 2003. Every fall since permits have been issued that allow aerial gunning in predator control areas until April 30—or earlier if annual targets are met through the combined take of aerial control and hunting and trapping. There are currently seven active predator control areas in the state and four additional programs were recently approved (see map, page 12). The programs for each of the active predator control areas are summarized below in the order they were adopted by the Board of Game (BOG).

1. McGrath (Unit 19D-East)

Frank Murkowski was elected governor of Alaska in November 2002 and shortly thereafter appointed five new members to the seven-member BOG. One of the BOG's first actions was to review the McGrath program. In March 2003, the board approved a predator control program for the McGrath area (see map, Appendix B) incorporating several important changes from the previous plan (BOG 2003a). Aerial shooting of wolves by private pilots using fixed-wing airplanes through permits issued by the Alaska Department of Fish and Game (ADF&G) replaced the proposed helicopter-shooting program to be conducted by ADF&G employees. About 35 to 45 wolves were thought to be in the control area, and all were scheduled to be shot during the first year. Brown and black bears were to be translocated after capture by ADF&G personnel. Then the Adaptive Wildlife Management Team was disbanded, the wolf control area was subsequently doubled in size and the moose population objective was also doubled with no in-depth assessment of habitat conditions or carrying capacity. The harvest objective for moose in the area was increased from 130-150 to 400-600, but harvest was temporarily halted from 2003 to 2007. The peer-reviewed study plan designed to guide research and monitoring was shelved; none of the subsequent predator control plans called for study plans.

Alaska Predator Control Areas Regulatory Year 2009/2010


 National Wildlife Refuges

 State Parks

 National Parks and Preserves

 Predator Control Areas

 BLM

 Forest Service



NOTE: NATIONAL PARKS, NATIONAL PRESERVES AND NATIONAL WILDLIFE REFUGES ARE CLOSED TO PREDATOR CONTROL; HOWEVER, NATIONAL PRESERVES AND WILDLIFE REFUGES ARE SUBJECT TO OTHER STATE HUNTING LIMITS.
SOURCE: ALASKA DEPARTMENT OF FISH AND GAME, 2007-2008 ALASKA BEAR AND WOLF CONTROL SUPPLEMENT

The combined total land area in Alaska subject to aerial predator control is currently more than 76,000 square miles or about 13 percent of the state. When national parks and national wildlife refuges are excluded, the percentage of the state's land where predator control is allowed rises to 16.7 percent.

2. Nelchina Basin (Unit 13)

A second predator control program was approved in 2003, this one for the Nelchina Basin (map, Appendix C), Game Management Unit 13 (State of Alaska 2004a). Unlike other areas of concern where prey populations were thought to be low, moose in Unit 13 remained at moderate densities following declines from higher levels in the 1980s (Board of Game 2003b). However, BOG approved a control program under provisions in the intensive management statute to restore ungulate populations to former levels of abundance. Resident moose hunting seasons would continue during the control program. In accordance with previous research indicating heavy bear predation on moose in this area, liberal bear hunting seasons and bag limits continued, but no other explicit measures to reduce bear numbers were approved. No study plan was required and no additional data collection was specified to supplement annual surveys conducted to obtain routine management information. Though limited, data

on habitat quality indicated persistently heavy use of important browse species by moose in several areas. Despite the fact that data indicated otherwise, the BOG assumed that carrying capacity was sufficient to support additional animals.

3. Upper Cook Inlet (Unit 16B)

4. Central Kuskokwim (Unit 19A)

BOG approved two additional predator control programs in March 2004. These were Upper Cook Inlet, Game Management Unit 16B (map, Appendix D), located near Anchorage, (State of Alaska 2004b) and Game Management Unit 19A in the central Kuskokwim River area (Appendix B) of interior Alaska (State of Alaska 2004c). Moose numbers and harvests were thought to have declined during the past 10 years while wolf numbers increased (BOG 2004a, 2004b). No quantitative data were available on the effect of wolf predation on moose numbers. Bears were suspected to be important predators of moose, but no quantitative data were available. Habitat conditions and carrying capacity were

unknown. Moose hunting seasons remained open, and no further steps to reduce bear numbers were approved. Study plans were not required, and no additional data collection was specified other than annual surveys for basic routine management information. In Upper Cook Inlet, despite firm resistance by ADF&G, the BOG approved a wolf control program using private pilots under permit to take about 80 percent of the estimated 140 to 200 wolves in the control area beginning in fall 2004.

5. Upper Yukon/Tanana (Units 12 and 20E)

BOG approved an additional program in 2004 (BOG 2004c). The program included portions of Game Management Units 12 and 20E (map, Appendix E), located in the eastern interior near Tok. An area of about 6,600 square miles was designated for wolf control, and an area of 2,700 square miles was approved for brown bear control. Aerial shooting for wolves and baiting and land-and-shoot hunting for brown bears were authorized. Up to 60 percent of the brown bear population, estimated at 170 animals, was targeted. Research during the 1980s and early 1990s examined the role of predation in limiting moose and caribou in this area (Gasaway et al. 1992), and a wolf sterilization and translocation program to benefit caribou was implemented.

6. Alaska Peninsula Caribou Herd (Units 9D, 9C and 9E)

BOG approved a wolf control program for the Southern Alaska Peninsula Caribou Herd, Unit 9D (map, Appendix F) in March 2008. This herd declined from a historic high of 10,000 in the 1980s to 600 caribou in 2008 with very low calf survival thought to be due to wolf predation on the calving grounds. Much of the herd's range is on national wildlife refuge (federal) land, but the calving grounds are on state land. Plans called for ADF&G personnel in helicopters to shoot wolves on the calving grounds prior to calving—the first helicopter shooting program since the current round of predator control began in 2003.

In March 2010, BOG approved two additional predator control programs for the Northern Alaska Peninsula (NAP), Units 9C and 9E (map, Appendix G) in an area of approximately 12,825 square miles where caribou populations are declining. The NAP caribou population has historically been prone to dramatic population fluctuations. While the herd has only recently recovered from a decline precipitated by nutritional stress and disease is suspected to have negatively influence its status, ADF&G determined that predation is limiting herd growth. The plan calls for reducing wolves for up to 10 years in the control area beginning July 1, 2010 (State of Alaska 2010a).

7. Unimak Island Caribou Herd (Unit 10)

In March of 2010, BOG approved a wolf control program on Unimak Island at the tip of the Southern Alaska Peninsula (SAP) within federally designated wilderness managed by the U.S. Fish and Wildlife Service (FWS) as part of the Maritime National Wildlife Refuge (map, Appendix H). ADF&G estimates the

island has a wolf population of 20 to 30 wolves. However, this estimate is based on extrapolations from SAP data; no surveys were conducted prior to the plan's approval.

According to ADF&G, the agency was not unaware of why the island's caribou began to decline precipitously around 2002, but when the bull to cow ratio fell to an extreme low of 5:100 in 2009, a biological emergency was declared. ADF&G created a Draft Environmental Review (ER) of management options for the island and adopted wolf control as their preferred option (ADF&G 2010c). The draft ER called for shooting all wolves found on the caribou calving grounds on the western edge of the island. According to the approved plan, a minimum of two breeding pairs of wolves would be left on the island. If all wolves were inadvertently removed, new wolves would be translocated from an adjacent population. Although the ER determined that control by ADF&G staff using helicopters would be the most effective method for reducing wolf numbers, the codified plan allowed for permitted private aerial gunners to conduct control activities (State of Alaska 2010b).

8. Grayling-Anvik-Shakeluk-Holy Cross Moose Management Area (Unit 21E)

In March 2010, BOG approved a wolf control program in Unit 21E to increase moose populations (map, Appendix I). In approving the proposal, BOG signaled a new approach to predator control by “proactively” implementing a predator control program in an area with no identified trend of declining moose numbers and no existing evidence of wolf predation suppressing the moose population (see State of Alaska 2010c).

5. Outcomes of Predator Control Programs: 2003-2010

After the first two years of aerial predator control, a total of 422 wolves were killed in five designated predator control areas, which totaled about 43,000 square miles. In January 2006, near the start of the third aerial gunning season, the Superior Court in Anchorage ruled that the regulations governing the predator control implementation plans were invalid. The court found that the Board of Game (BOG) regulations were not in accordance with its findings in two of the control programs—Unit 19 and Units 12 and 20E. The areas approved for control were much larger than the areas specified in the findings. The court also ruled that BOG did not follow one of its own regulations in adopting the predator control implementation plans: it failed to justify the proposed actions, did not consider previous failed measures to achieve wolf and prey population objectives, and did not consider alternatives to aerial shooting. Inconsistencies from area to area in the extent of wolf reductions also did not comply with the regulation.

The court also ruled that the data used by BOG to establish moose population and harvest objectives were adequate and that

the BOG did not act unreasonably or arbitrarily in setting the objectives. The court recognized that state-appointed boards like BOG act to accommodate diverse interests in the face of substantial scientific uncertainty and that there was legal precedent establishing that courts not substitute their judgment for that of BOG in biological matters.

Immediately following the court's decision, BOG issued findings declaring that an emergency existed and convened a meeting to approve emergency regulations so that wolf control could proceed. Once the emergency regulations were crafted, wolf control resumed after a suspension of just two weeks.

The new implementation plans differed little from the old—in fact, the basic elements were identical. In May 2006, BOG reconvened to make the emergency regulations permanent and to add several new elements to the plans. These included greatly expanding the wolf control area near Tok in Units 12 and 20E by adding 12,150 square miles to encompass the range of the Fortymile caribou herd. Nonlethal efforts to increase this herd by sterilizing breeding pairs of wolves and transplanting others between 1995 and 2003 resulted in doubling caribou numbers. However, population and harvest objectives were still unmet. The brown bear control area near Tok was expanded to 4,050 square miles (up from 2,700). A black and brown bear control area was also established in the McGrath area. In Upper Cook Inlet, the wolf control area was enlarged slightly to include a portion of adjacent Unit 16A. Same-day airborne hunting of bears was approved in all predator control areas, so bait stations could be tended and bears shot more efficiently.

BOG approved the amended implementation plans reauthorizing predator control in all five of the original areas as expanded and made the regulations permanent. The new regulations were to go into effect for the following aerial gunning season. Finally, BOG deleted the requirement from all five implementation plans that the ADF&G commissioner must reduce predators in an efficient, safe and humane manner. During the emergency meeting BOG members voiced concern that these provisions, if left in the plans, might lead to litigation.

Although the Alaska Department of Fish and Game (ADF&G) provided updated information to BOG as it reconsidered each of the implementation plans to comply with the court's decision, the fundamental biological justifications and data sources remained the same. Defenders of Wildlife conducted a review of the proposed implementation plans and noted the following concerns:

- 1)** Moose population estimates based on aerial censuses in limited areas were often extrapolated too much in large census areas, which could result in inaccurate estimates and incorrect findings of unmet moose population objectives.
- 2)** Some moose population estimates were based on aerial surveys, which are known to be insufficient for accurate estimates of moose, rather than based on more thorough census techniques.

- 3)** Wolf population estimates in some areas were based on a combination of trapper reports, harvest estimates, random observations and past knowledge of territory locations. Such information is inherently biased, a poor basis for estimating current wolf numbers and inferior to estimates derived from winter aerial wolf surveys.
- 4)** Lack of annual early winter and spring aerial surveys to determine pre-control and post-control wolf numbers prevents assessment of minimum wolf number objectives required by each implementation plan.
- 5)** Inconsistent, incomplete and untimely estimates of the human population in rural areas complicate estimates of the subsistence demand for moose.
- 6)** Harvestable surplus calculations for moose are complicated by inaccurate or incomplete data on the sex and age composition of moose populations.
- 7)** The relative contributions of wolf and bear predation as limiting factors for moose populations are unknown in most areas. This complicates decisions relating to the optimal extent of reductions for each predator species.
- 8)** In two areas, McGrath and the Nelchina Basin, past research and management actions indicate that bear predation limits moose far more than wolf predation, yet wolf populations in these areas are targeted for reductions of 80 percent or more.
- 9)** In all areas, wolf sterilization and translocation, supplemental feeding, habitat improvement for moose or other nonlethal methods are labeled as inefficient, impractical or too expensive and are not recommended by BOG. However, past research and management programs in Alaska have demonstrated the success of some of these methods.

Defenders of Wildlife and the Alaska Wildlife Alliance filed a lawsuit in Alaska Superior Court in August 2006 before the start of the 2006-2007 aerial gunning season. The suit alleged a lack of required public notice for the BOG's May 2006 approval of predator control implementation plans and that the state's program was inconsistent with the sustained yield clause of the Alaska Constitution. Later that fall the groups filed a request for a preliminary injunction to halt the state's predator control programs. In January 2007, the Superior Court judge denied the preliminary injunction, finding that public notice was adequate and that BOG's approved actions constituted a game management plan. In a decision issued in August of 2010, the Alaska Supreme Court determined that both the Alaska Constitution as well as state regulations require predators be managed on a sustained yield basis. However, the court did not invalidate the programs.

At the March 2007 BOG meeting, ADF&G announced that the wolf control programs were behind schedule, with far fewer wolves taken by aerial hunters than were required to meet goals. High fuel costs and lack of snow were blamed for the poor success of private pilots. ADF&G requested approval from Governor

Palin to use helicopters and state personnel to shoot wolves in the control areas. Rather than deploy helicopters, the state announced a bounty program on wolves that would pay private pilots with aerial shooting permits \$150 for each left leg of a wolf. Defenders and others filed suit in Superior Court to halt the bounty program. The judge ruled in their favor, finding that the state had no authority to pay a bounty. The bounty program was suspended before any payments were made.

At that same March meeting, BOG amended the predator control implementation plan in Game Management Unit 16B (Upper Cook Inlet) to include a black bear control component. Bear predation on young moose calves was claimed to be limiting growth of the moose population in this area. The Unit 16B black bear population was estimated by extrapolating densities obtained in nearby aerial censuses in spring 2003. The extrapolations were variously presented by ADF&G as 1,376 to 1,574 bears in May 2006, 1,183 to 2,402 bears in March 2007, and 1,500 to 2,000 bears in the final plan approved by the BOG. The plan's objective was to reduce the bear population to 600. This would involve taking up to 1,400 black bears from the area. Under the terms of a predator control permit, hunters could take any bear, including cubs and sows with cubs, all with no bag limit. Bear-baiting restrictions were eased, hunters could take bears the same day they were airborne and the sale of hides was allowed.

In November 2007, ADF&G released *Predator Management in Alaska*, an overview of ADF&G's perspectives on the social, legal and biological justifications for predator control in Alaska (ADF&G 2007). An analysis conducted by Defenders of Wildlife and others revealed several deficiencies in the report such as a tendency to overstate impacts of predation and cite irrelevant sources while ignoring vital studies; incorrect descriptions or applications of methodologies and protocols; a failure to disclose how population objectives are determined and to provide costs of predator control programs; premature claims of success and lack of statistical evidence to support those claims; a lack of ecological analysis and discussion of the NRC recommendations (Defenders of Wildlife 2008).

In July 2009, ADF&G issued a press release touting success for their predator control programs. Included was the claim that the moose population surrounding the village of McGrath nearly doubled between 2001 and 2008. However, a moose census conducted by ADF&G in November 2008 found no significant increase in moose numbers in Unit 19D East, the area in question. The press release also claimed that moose trend count data—an unreliable estimator of population size—in Unit 13 (the Glennallen area) showed an increase in numbers, but no moose censuses have been conducted there since wolf control began in 2003. Moose calf survival in that area (as estimated by ratios of calves to cows in November) was also said to be increasing as a result of wolf control, but the data indicated only 19 calves per 100 cows, a low ratio for Alaska moose populations.

TARGET REDUCTION GOALS RARELY MET

Prior to each aerial gunning season, the Alaska Department of Fish and Game provides population estimates and sets wolf control targets for each predator control unit. These target reductions, however, are rarely met, leading analysts to conclude that either aerial gunning programs as currently instituted are not effectively achieving reduction goals—and thus have little likelihood of achieving management objectives—or the lack of accurate population estimates has led to over-harvest of wolves. Neither of these outcomes is acceptable to critics who feel that state wildlife managers have failed to provide adequate justification for their controversial programs.

In September 2009, ADF&G announced that 81 black bears had been snared in Unit 16B during the first summer of legal black bear snaring. Additional bears were killed at bait stations by a large number of hunters eager to exploit a series of liberal new regulations that include shooting cubs and sows with cubs with no bag limits and the use of helicopters to transport bear hunters.

The spring of 2010 BOG meeting resulted in the passage of several proposals that have sparked increased conflict between the state, the Fish and Wildlife Service (FWS) and the National Park Service (NPS). Initial controversy began with BOG's passage of proposal #131, which eliminated all reference to federal agency consultation or approval for predator control programs potentially involving federal lands.

The passage of this proposal was immediately followed by the accidental killing of two radio-collared NPS study wolves in Yukon Charley National Preserve (YUCH) during state predator control activities in the Upper Yukon/Tanana. After the wolves were killed, citing declining wolf numbers in the reserve, NPS closed YUCH to non-subsistence harvest of wolves, an act the agency deemed necessary to protect the preserve's wolf populations. The state, however, viewed the closure as a hostile infringement of their right to manage wildlife.

Controversy continued when ADF&G announced in May 2010 that it would carry through with predator control plans on Unimak Island—with or without federal approval. Like proposal #131, the Unimak predator control plan had also been approved during BOG's spring meeting. Since the action was to take place in federally designated wilderness on national wildlife refuge lands, ADF&G was required to apply for a special-use permit. Furthermore, ADF&G had previously agreed to work cooperatively with FWS to develop an Environmental Assessment (EA) to evaluate alternatives for protecting the island's caribou population.

After the announcement, FWS informed ADF&G staff that if they proceeded without a special-use permit, their action would be considered a trespass and referred to the U.S. attorney. The state in turn sought a court order to move forward with its program but lost the first round of the lawsuit. FWS has preparing an EA and plans to release the final draft in 2011. If the final draft determines that wolf control can move forward, it would mark the first implementation of a state intensive management program on lands managed by FWS.

The March 2010 BOG meeting resulted in the passage of a total of four new wolf control proposals and reinforced BOG's aggressive stance on Alaska's predators. The approval of wolf control in Unit 21E, where no documented ungulate declines have occurred, marked the first "pro-active" program. By approving wolf control in Unit 10, BOG, for the first time, passed a program to be entirely conducted on National Wildlife Refuge System lands. With the approval of new programs in Units 9C, 9E and 10, the entire Alaska Peninsula could now be subject to wolf control programs. However, a majority of the peninsula falls under federal ownership, and it is not yet clear whether the state's predator control programs will be allowed to move forward on these lands.

6. Application of Recommended Standards: 2003-2010

How well do the predator control programs approved after 2003 conform to standards and guidelines recommended by the National Research Council's (NRC)?

The process of approving these programs differed significantly from the process used in 2000-2001 to design a predator control program in the McGrath area. For example, of all predator control plans or proposals approved through June of 2010, only Unit 19 involved a citizen's planning team, and while a team was convened to review the issues for Unit 19, the level of biological detail involved was substantially less than for the McGrath program. By disbanding the McGrath team, the Board of Game (BOG) lost the opportunity to learn from experience and gather future valuable input, including from one McGrath resident who had served on the team from the outset.

For the McGrath program, much of the groundwork was completed by 2003 as a result of the team's efforts. Nonetheless, the decision was made to proceed with wolf control despite the 2001 moose census that indicated nearly four times as many moose as estimated earlier. Studies in the McGrath area on moose calf mortality, bear translocation and moose population characteristics continued through 2005. Similar studies are not being conducted in any of the other areas. Despite obvious deficiencies in data, BOG did not identify the need for such studies when it approved additional predator control programs.

BOG failed to recognize the importance of filling data gaps and was willing to proceed with insufficient data on several key

components of predator control programs including current, quantitative data on predator and prey numbers. This ignored the NRC guideline of evaluating the status of predator and prey populations prior to predator reduction. The BOG's approval of wolf control in Unit 16B despite warnings from ADF&G that data were nonexistent or insufficient is particularly alarming.

BOG also retreated from the McGrath model's approach of requiring study plans that provided protocols for implementing, monitoring and evaluating predator control actions and for conducting additional studies. Peer review of the McGrath plan in 2001 by biologists outside the Alaska Department of Fish and Game (ADF&G) with no stake in the plan's outcome resulted in several ADF&G revisions to the study plan. Similar reviews of plans for other areas, if they had been required, would undoubtedly have resulted in improved experimental designs and monitoring protocols, which in turn, would allow managers to draw more accurate conclusions of the consequences of predator control actions. By continuing to implement similar management programs with insufficient monitoring, recent BOG actions will result in more unclear outcomes and continued inability to improve future programs.

UNCLEAR OUTCOMES

An important NRC finding was that most previous predator control programs in Alaska and Canada had unclear outcomes, in part because the programs were primarily management actions based on certain assumptions about predator-prey dynamics and were not designed to test those assumptions. As a result, NRC concluded that "less has been learned from these experiments than would have been possible had they been better designed and executed, and if the results had been more extensively monitored" (NRC 1997:5).

A consistent and often repeated concern in the NRC review pertained to ungulate habitat quality and carrying capacity issues. Obviously, predator reductions will not result in increased ungulate numbers if the necessary habitat to support more animals is lacking. In theory, all predators could be removed with no response in ungulate numbers if habitat quality is poor. There is extensive data linking ungulate nutrition, body condition, growth rates, pregnancy rates and survival to habitat quality (Klein 1981). Furthermore, winter severity can lower carrying capacity as snow buries forage and increases the energy costs of movement (Parker and Robbins 1984). The NRC review recognized these important ecological relationships and their significance to predator control programs and provided suggested guidelines for incorporating them in management actions. BOG's approach in approving recent control programs has been to accept crude, qualitative information and broad generalizations on habitat quality and

carrying capacity rather than to require quantitative data. This is a serious breach of the NRC-recommended standards.

In general, BOG's recent approval of programs to reduce wolf and bear numbers in an attempt to increase ungulates represents a retreat from prior efforts made to implement scientific standards. Arguably, most of the important biological standards and guidelines recommended in 1997 have not been followed. The NRC strongly recommended that predator control should be done as adaptive management, that management actions should be planned so that outcomes are clear, and that programs with a low probability of success should be avoided. Contrary to these NRC recommendations, BOG has begun a process that pays less rather than more attention to experimental design and monitoring of results and that increasingly relies on anecdotal and qualitative information to justify control programs. This approach jeopardizes any efforts to apply science-based management to the controversial practice of predator control in Alaska.

In January 2005, a letter signed by 123 North American biologists was sent to Governor Murkowski. It recommended that the state return to the process used in 2000–2001 for McGrath—a process that generally followed the recommended standards and guidelines of the NRC review. A similar letter was sent to Governor Murkowski in July 2005 by the American Society of Mammalogists (ASM), the oldest international organization of professional biologists.

A year later, after the state failed to address its concerns, the society passed a resolution calling on Governor Murkowski and BOG to collect reliable data on populations to ensure the sound design of predator-control programs. The resolution further recommended that assessment of predator control be conducted with approaches of sufficient scope, duration and spatial scale to implement adaptive-management practices that ensure the conservation of the Alaska's ecosystems and unique mammalian fauna.

Another letter from ASM was sent to Governor Palin in February of 2007 to inform her of the group's long-standing concerns. The state responded to these letters by claiming that the scientists were requesting more research and such research was not appropriate for management programs adopted by BOG. In fact, research was not mentioned in the letter from the 123 biologists; rather it asked state wildlife managers to follow the NRC assessment guidelines as they had prior to 2003. These research concerns were ignored.

In March 2007, The Wildlife Society, another organization of professional scientists, approved a technical review of predator control in Alaska due to its concerns with the state's intensive management of its predators. ADF&G opposed a review focused solely on Alaska and successfully lobbied to expand the scope of the review to include predator control in other states. The Wildlife Society appointed a committee and the final report is scheduled for release in early 2011.

The continued disregard for independent and respected scientific opinion on intensive management and predator control places the credibility of ADF&G's science and management programs in question. Further, as actions by BOG and ADF&G continue to erode the public trust, public acceptance of these programs and the public process through which they are approved will undoubtedly continue to diminish.

7. Problems Created By Intensive Management

A fundamental problem in applying recommended biological standards and guidelines to predator control in Alaska is the state's intensive management statute (Alaska Legal Resource Center). This 1994 law requires a political standard aimed at restoring so-called "depleted" ungulate populations to previous levels, including unsustainable historical highs. In many instances such highs resulted from irruptions (sudden increases) linked to large-scale predator control in the 1950s and 1960s. Restoring these population levels to previous peaks is likely unattainable and most certainly unsustainable. Furthermore, estimates of the magnitude of peak populations, even those reached as recently as the 1980s, are often little more than guesses and inflated ones at that.

Despite these problems, the Board of Game (BOG), guided by the intensive management statute, has consistently set ungulate population and harvest objectives at high levels or, as was the case in McGrath, raised previous objectives without data on habitat quality and carrying capacity. As a result, BOG is committed to approving perpetual predator control programs that chase unattainable objectives. The current programs—if successful—will likely repeat the past pattern of ungulate irruptions triggered by wolf and bear control followed by habitat damage and sharp ungulate declines. Past predator control programs in Alaska, including the federal poisoning effort of the 1950s, had exactly these effects.

MANAGING FOR ABUNDANCE

Intensive management, also known as "abundance management," places sound wildlife management practices at risk in areas where widespread predator control programs are implemented. It also jeopardizes overall ecological integrity and the sustainability of ungulate populations that exceed carrying capacity as wolf and bear populations are suppressed.

More recent examples of the effects of abundance management include the increase in moose in the Tanana Flats area from 2,800 in 1975 to about 11,000 by the early 1990s following wolf control efforts between 1976 and 1983. As the moose population continued to grow in the 1990s, BOG took

exactly the wrong approach and increased the population objective. The Tanana Flats moose population reached about 18,375 in 2003. Browsing intensity on winter forage plants remains very high, and the population continues to show all the density-dependent signs of approaching or exceeding carrying capacity, including reduced twinning rates, poor body condition, reduced growth of calves, female reproductive pauses and increased age of first reproduction (Young 2004).

Alaska's record of managing for high-density ungulate populations demonstrates a consistent inability to prevent ungulates from exceeding carrying capacity or quickly responding once problems are apparent. Clearly, the irruptions of the 1950s and

1960s were unmanaged, and the resulting sharp declines were, in some cases, worsened by excessive take. The Tanana Flats moose population is also an example of the difficulty in quickly responding to such irruptions. In this case, public opposition to taking cow moose has complicated matters. In the Nelchina Basin, moose increased during the 1980s as wolves were heavily harvested. Thereafter, in response to severe winters, moose declined, but managers had overestimated carrying capacity and failed to anticipate the decline. Despite moderate moose densities, predator control continually aims to increase the Nelchina Basin moose population and threatens to repeat past patterns of increases and declines in response to severe winter weather.

8. Conclusion

While attempts were made to implement the recommendations of the National Research Council (NRC) in the early part of this decade, those efforts were largely abandoned by 2003. The Board of Game's (BOG) continual approval of programs to reduce bear and wolf numbers in an attempt to increase ungulates in the absence of sufficient data and monitoring plans represents a failure to follow the scientifically sound biological standards and guidelines recommended by NRC. Arguably, not only are most of those standards not being implemented, but there is also decreasing attention to experimental design and monitoring of results and increasing reliance on anecdotal and qualitative information. This approach risks unexplainable or unclear results at best and a wasted effort or local failure of predator or prey populations—or both—at worst.

Alaska's intensive management law remains firmly in place and the current BOG members and Alaska Department of Fish and Game (ADF&G) leadership demonstrate an increasingly aggressive stance toward the state's predator populations. These factors combined will continue to force broad-scale implementation of predator control methods with questionable results.

Alaska's intensive management statute is a major barrier to the implementation of the NRC's recommendations. Efforts to meet unattainable population and harvest objectives with poorly designed predator control programs risk the long-term sustainability of ungulates, the viability of predator populations and the protection of habitat integrity.

To compound matters, the last three governors of the state have been resistant to an open dialogue concerning responsible and appropriate predator management. Representatives of ballot measure initiatives and conservation groups who question current predator policy made at least 12 requests to meet

with Governor Palin but never received an audience. Similarly Governor Parnell has not agreed to a meeting request sent by members of the conservation community and Alaskan biologists. The governor continues to stack BOG with members strongly aligned with intensive management advocates rather than include advocates for science-based predator management or nonconsumptive wildlife uses, some of which bring substantial economic benefits to the state.

By largely abandoning the implementation of NRC's recommendations, wildlife authorities lose an opportunity to improve predator control programs, thus risking the ecological integrity of the ecosystem as well as the viability of wildlife populations and eroding the public trust. Furthermore, continued disregard for independent and respected scientific opinion calls the credibility of ADF&G's wildlife management programs into question. While predator control will undoubtedly remain controversial, a renewed commitment to scientifically justified and publicly acceptable programs is necessary not only to assure that wildlife populations and ecological systems remain healthy, but also to restore confidence in Alaska's wildlife management authorities.

As this report went to press, the state continued to expand the land area managed under predator control programs. While the Bureau of Land Management has long allowed predator control to occur on lands under its management, the state is now pressing the Fish and Wildlife Service to allow predator control to increase ungulate populations on national refuge lands—including areas designated as wilderness. Should the current trend of expanding intensive management programs persist, the majority of the state could one day be managed under predator control plans—plans that fail to hold up to scientific or public scrutiny and produce dubious results.

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A. A Brief History of Predator Control in Alaska

1915-1959

- In March 1915, the Territory of Alaska begins paying bounties for wolf killing. In the 1940s and 1950s, the federal government kills hundreds of wolves each year through bounties, poison and shooting from ground and air. The first known or recorded aerial gunning occurs in 1948. In 1959, Alaska becomes a state.

1960s

- State-sponsored wolf control consists mainly of aerial gunning and land-and-shoot hunting and trapping.

1970s

- Congress passes the Airborne Hunting Act in 1971, generally prohibiting the use of aircraft to shoot or harass wildlife from the air.
- Alaska implements various predator control programs from the mid-to late-70s, especially in areas south of Fairbanks and east of Denali National Park.
- In 1979, Alaska designates three new areas in west-central Alaska for wolf control and issues aerial hunting permits to pilot-gunner teams. The state also expands trapping seasons to include "land-and-shoot" methods.

1980s

- The state implements wolf control programs in six areas in 1980-81 and five areas in 1981-82.
- In 1983, the Alaska Wildlife Alliance successfully seeks a preliminary injunction to halt wolf control on the basis that the less-than 24-hour public comment period allowed for the 1982 predator control plan was inadequate.
- In 1984, the Board of Game adopts the policy that all wolf control authorizations must be done by regulation to ensure public input and must be reauthorized every three years. The policy also prohibits denning and poisoning and requires federal agency approval for additional state wolf control on federal lands.
- In 1986, Governor Steve Cooper stops all wolf control for four years but controversy continues as land-and-shoot hunting remains a legal method for hunting and trapping license holders.

- In 1987, Greenpeace sues to stop land-and-shoot wolf hunting, but the Alaska Supreme Court rules in favor of the state allowing the practice to continue.
- In 1989, the state initiates development of a statewide wolf management plan using a stakeholder process.

1990

- The Alaska Board of Game attempts to adopt a strategic management plan for wolves, and negotiators reach consensus on a plan. When Governor Walter Hickel assumes office, the consensus plan is overturned in favor of broader wolf control methods.

1991

- The Alaska Board of Game prohibits "land-and-shoot" wolf killing by requiring shooters to be at least 100 yards from their planes. This board action ended legal land-and-shoot hunting of wolves by the public. The board expected aerial wolf control by department personnel to replace land-and-shoot hunting and become the standard method to reduce wolf numbers where necessary.

1992

- The Alaska Board of Game adopts an extensive wolf control program in three large areas to benefit hunters from Anchorage and Fairbanks. The program has a target of reducing wolves by 80 percent over 20,000 square miles. It also allows Alaska Department of Fish and Game wolf control staff to locate packs to target from the air by following radio-collared wolves.

1993

- Governor Hickel, overwhelmed by public pressure, a threatened tourist boycott and 75,000 letters, halts the hunts and calls a wolf summit meeting. At the meeting, the Board of Game formally cancels all three programs.
- The Alaska Board of Game adopts a new state-sponsored program in a large area south of Fairbanks employing ground-based snaring, trapping or shooting. The Board of Game also approves "land-and-shoot" trapping regulations.

1994

- The Alaska legislature passes an "intensive management" law, requiring intensive management of game species in order to insure high levels of human harvest. Predator control is one of the primary methods for increasing game abundance.

1995

- The Alaska Board of Game adopts a new state predator control program for three areas in central Alaska. Governor Tony Knowles halts the program in February and asks for a National Academy of Sciences review of the wolf control issue. In October the Wolf Management Reform Coalition forms to gather the 22,000 signatures needed to place Proposition 3, a citizen initiative to prohibit the use of airplanes to hunt wolves in Alaska except for "biological emergencies," on the November 1996 general election ballot. The coalition gathers more than 33,000 signatures and Alaska voters pass Proposition 3 by 58.5 percent in the November.

1997

- The National Academy of Sciences publishes its review of Alaska's wolf control efforts, providing biological standards and recommendations for the program.

1999

- The Alaska Legislature passes a bill (SB 74) to remove the biological emergency prerequisite for conducting aerial wolf control. Governor Knowles vetoes the bill, but lawmakers override the veto.

2000

- The Alaska Legislature passes a bill (SB 267) to open aerial shooting to gunners other than Alaska Department of Fish and Game personnel and to establish land-and-shoot wolf hunting in specific areas slated by the Board of Game for intensive management; the Legislature overrides the governor's veto.
- Alaskans for Wildlife submits Proposition 6, a ballot measure for referendum, to repeal SB 267. In November, Alaska voters approve the measure by 53 percent, again restricting airborne wolf control to Alaska Department of Fish and Game personnel. Voters also defeat a measure placed on the ballot by state legislators that would have

banned all future ballot initiatives related to wildlife management issues.

2003

- The Alaska Legislature reinstates airborne wolf control by private pilots and gunners by passing SB 155. Governor Frank Murkowski signs the bill into law. Aerial wolf control is permitted in almost 2,000 square miles of interior Alaska. Land-and-shoot hunting is approved in a 15,000 square mile area east of Anchorage where 80 percent of the wolves are targeted.

2003 -2004

- Alaska Board of Game implements SB 155, expanding wolf control to five areas covering more than 56,000 square miles.

2005

- The American Society of Mammalogists—a group representing 4,000 professional scientists—sends a letter to Governor Frank Murkowski expressing concern that Alaska's predator control programs do not meet scientifically sound standards. The letter encourages the governor to adopt practices that result in sustainable populations of predators and prey.

2006

- An *Environmental Law* article concludes that the Bureau of Land Management is not managing for sustained yield of predators as mandated under the Alaska National Interest Lands Conservation Act and the National Environmental Policy Act.
- 123 scientists send a letter to Governor Murkowski urging science-based management of Alaska's predators and prey. The request is ignored, but an Alaska Superior Court judge rules that the state's airborne wolf control program established by SB 155 is illegal because the state failed to follow its own rules in adopting the regulations. Specifically, the state had not examined alternatives to wolf control, sufficiently evaluated prey population numbers or met other procedural requirements. The Board of Game adopts emergency regulations to make the program consistent with the rules. Other than one control area, which is reduced in size, wolf control resumes.

- The Board of Game expands predator control to allow hunters to shoot black bears over bait stations in designated predator control areas under same-day, land-and-shoot rules.

- Defenders of Wildlife and the Alaska Wildlife Alliance file suit (later joined by the Alaska Chapter of the Sierra Club) in Alaska Superior Court to stop the 2006-2007 aerial gunning season. Meanwhile, the American Society of Mammalogists sends a second letter and a resolution to Governor Murkowski, which are also ignored.

- Alaskans for Wildlife submits nearly 57,000 signatures to the state to put a new predator control restriction before Alaska voters.

2007

- A request for a preliminary injunction in the case brought by Defenders and others in late summer 2006 is denied, and the programs are allowed to continue.

- The American Society of Mammalogists sends a third letter, this time to Governor Sarah Palin, expressing their continued concern over Alaska's predator control programs. The society encourages adequate data collection and management practices that will result in healthy functioning ecological systems. Their concerns are not addressed.

- The Alaska Department of Fish and Game decides to issue more permits and offer a \$150 incentive, or bounty, for killing wolves. The Board of Game also expands black bear control, and, for the first time, allows sows and bear cubs to be killed. Defenders of Wildlife, the Alaska Wildlife Alliance and the Alaska Chapter of the Sierra Club file a request for a temporary restraining order to stop the bounty payments, and a restraining order is issued.

- The Alaska Department of Fish and Game files court documents saying it has decided to drop the incentive/bounty payments.

- At the end of the legislative session Governor Palin introduces Senate Bill 176 and House Bill 256, which would remove many barriers to predator control. The bills are referred to committee but not voted on.

- Governor Palin signs an annual state budget that includes \$400,000 for an "education campaign" to promote its predator control efforts.

- The Protect America's Wildlife Act (HR 3663) is introduced in the U.S. House of Representatives. The bill would amend existing federal law to clarify the conditions under which a state can use aerial gunning.

- 172 scientists send a letter to Governor Palin asking her to examine and reconsider predator control practices on scientific grounds. Concerns raised by the biologists are not addressed.

- The Alaska Department of Fish and Game releases *Predator Management in Alaska*, an overview of the basis for predator control in Alaska. A critical review of the report by Defenders of Wildlife finds it deficient in many respects.

- An *Alaska Law Review* article concludes that federal law requires the National Park Service to preempt the state of Alaska from implementing intensive management on national park lands because such management is inconsistent with park service mandates.

2008

- The Board of Game approves a new predator control program for the Southern Alaska Peninsula Caribou Herd. The program allows state employees to shoot wolves from helicopters on the herd's calving grounds. This is the first time since 1985 that helicopter shooting of wolves is approved. The board also approves the shooting of black bear cubs and sows with cubs with no bag limit in Upper Cook Inlet (Unit 16B) and the sale of bear hides with claws attached with no requirement to salvage the meat. Same-day airborne hunting of bears is also allowed.

- Sportsmen for Fish and Wildlife—a Utah-based hunting organization that supports aggressive predator control to achieve high densities of game—announces it will launch a concerted effort to help hundreds of hunters kill as many black bears as possible in Unit 16B, one of six areas with predator control programs approved by the Board of Game in place.

A. A Brief History of Predator Control in Alaska

- An Alaska Superior Court judge rules the Board of Game's actions invalid in some of the five approved predator control programs, including one to enhance the Fortymile Caribou Herd north of Tok and another to increase moose numbers in Unit 16B.
- HB 256 and SB 176, two bills that would have removed the few remaining standards guiding the Board of Game in approving intensive management predator control plans and eliminated the requirement that control programs be based on information provided by the Department of Fish and Game, dies in committee.
- As part of the \$400,000 campaign to educate voters about predator control, Board of Game members begin offering public presentations across the state. Critics call it a blatant effort to influence the ballot initiative before voters in August to prohibit aerial shooting of predators by the public.
- The state shoots 14 adult wolves from helicopters on the calving grounds of the Southern Alaska Peninsula Caribou Herd.
- The Alaska Department of Fish and Game announces that 14 young wolf pups were removed from two dens and killed in May as part of the wolf control program for the Southern Alaska Peninsula Caribou Herd, igniting a storm of controversy over the ethical and legal constraints on "denning" of wolves as a control measure.
- The initiative measure to prohibit public aerial shooting of predators is defeated by a 55 to 44 percent margin.
- The Alaska Department of Fish and Game issues protocols for dealing with active wolf dens found in predator control areas. These range from seeking to place the pups in captive facilities to killing them in the field.

2009

- Twelve former Board of Game members send a letter to Governor Palin urging her to appoint board members who can represent a broad array of wildlife interests. The request is ignored.
- Newly appointed assistant commissioner for the Alaska Department of Fish and Game, Corey Rossi, publishes an opinion piece in the *Anchorage Daily News* strongly endorsing predator control to increase moose and caribou numbers for hunters.
- The Board of Game approves several new and controversial proposals for black bear reduction in Unit 16B. These include using helicopters to transport bear hunters and using foot snares to capture bears. A proposal to use carbon monoxide gas for the practice known as denning—killing denned wolf pups orphaned as a result of predator control—is also approved.
- Alaska Fish and Game personnel shoot 84 wolves from helicopters in Unit 20E north of Tok as part of a predator control program to increase the Fortymile Caribou Herd for hunters, the first application of helicopter shooting as a wolf control measure since 1985. Previously, permits were issued to private pilots. The National Park Service, notified just hours before the shooting begins, requests that radio-collared wolves from the Yukon-Charley Rivers National Preserve be spared.
- Defenders of Wildlife, the Alaska Wildlife Alliance and the Sierra Club file an appeal to the Alaska Supreme Court arguing that the state's predator control programs violate Alaska's constitution, which requires all wildlife (including predators) be managed for sustained yield.
- The Protect America's Wildlife Act is re-introduced in the House of Representatives (H.R. 3381) and later introduced in the U.S. Senate (S. 1535).

- Governor Sarah Palin, a strong proponent of intensive management of wildlife and extreme predator reduction to benefit hunters, resigns. Her lieutenant governor, Sean Parnell, replaces her and publicly vows to continue her wildlife management policies.
- The Alaska Department of Fish and Game labels the Unit 16B foot-snaring bear program a success, with 81 black bears snared and killed over the summer.
- The Alaska Supreme Court hears oral arguments in the Defenders of Wildlife, Alaska Wildlife Alliance and Sierra Club appeal arguing that the state's predator control programs violate its constitutional mandate to manage predators for sustained yield.

2010

- Al Barrette, a Fairbanks fur tanner and wolf-trap seller who claims to be the first recipient of a permit under the aerial wolf control effort begun in 2003, is appointed to the Board of Game by Governor Parnell.
- As part of a program to kill more bears to increase the moose population for hunters, the Board of Game reclassifies black bears as furbearers, a designation that promotes the selling of their hides, claws and skulls.
- The Alaska Department of Fish and Game issues supplemental proposals for approval by the Board of Game at their March 2010 meeting. Included is proposal #131, which would eliminate the requirement for the state to obtain approval from federal agencies for predator control programs on federal lands. The state contends that with the new regulation in place it would only have to consult with, not seek the approval of, the federal government. The federal agencies disagree.
- Also included is proposal #132, which would institute a new wolf control program on Unimak Island to increase the caribou herd there—the first such effort by the state to

increase game for hunting on Fish and Wildlife Service lands. The majority of the island is managed as part of the Maritime National Wildlife Refuge, and much of the island is also federally designated wilderness.

- The Board of Game passes proposals #132 and #131 with amendments. The Board of Game also approves a new wolf control program near Holy Cross (Unit 21E). The program is labeled “proactive,” meaning that moose have not yet declined to low numbers but might decline in the future. Previously approved programs have all resulted from documented game population declines.
- For the second year in a row, the Alaska Department of Fish and Game uses helicopters to shoot wolves in the area of the Fortymile Caribou Herd north of Tok. Radio frequencies of collared wolves from seven packs, at least five of which den in Yukon-Charley Rivers National Preserve, are given to state agency personnel so they can avoid shooting these study wolves and their packs. The Webber pack, consisting of four wolves including two that were radio-collared, however, is shot. The Department of Fish and Game suspends their helicopter program after 15 wolves are killed.
- Corey Rossi, the assistant commissioner for the Alaska Department of Fish and Game, is appointed Director of the Division of Wildlife Conservation. Fifty-three former Department of Fish and Game wildlife biologists send a letter to Commissioner Denby Lloyd questioning Rossi's qualifications to head the Division of Wildlife Conservation as he lacks a college degree and his professional experience is limited to animal damage control.
- By a vote of 27-31, the Alaska State Legislature refuses to confirm Al Barrette's appointment to the Board of Game. Barrette was opposed by conservation groups because of

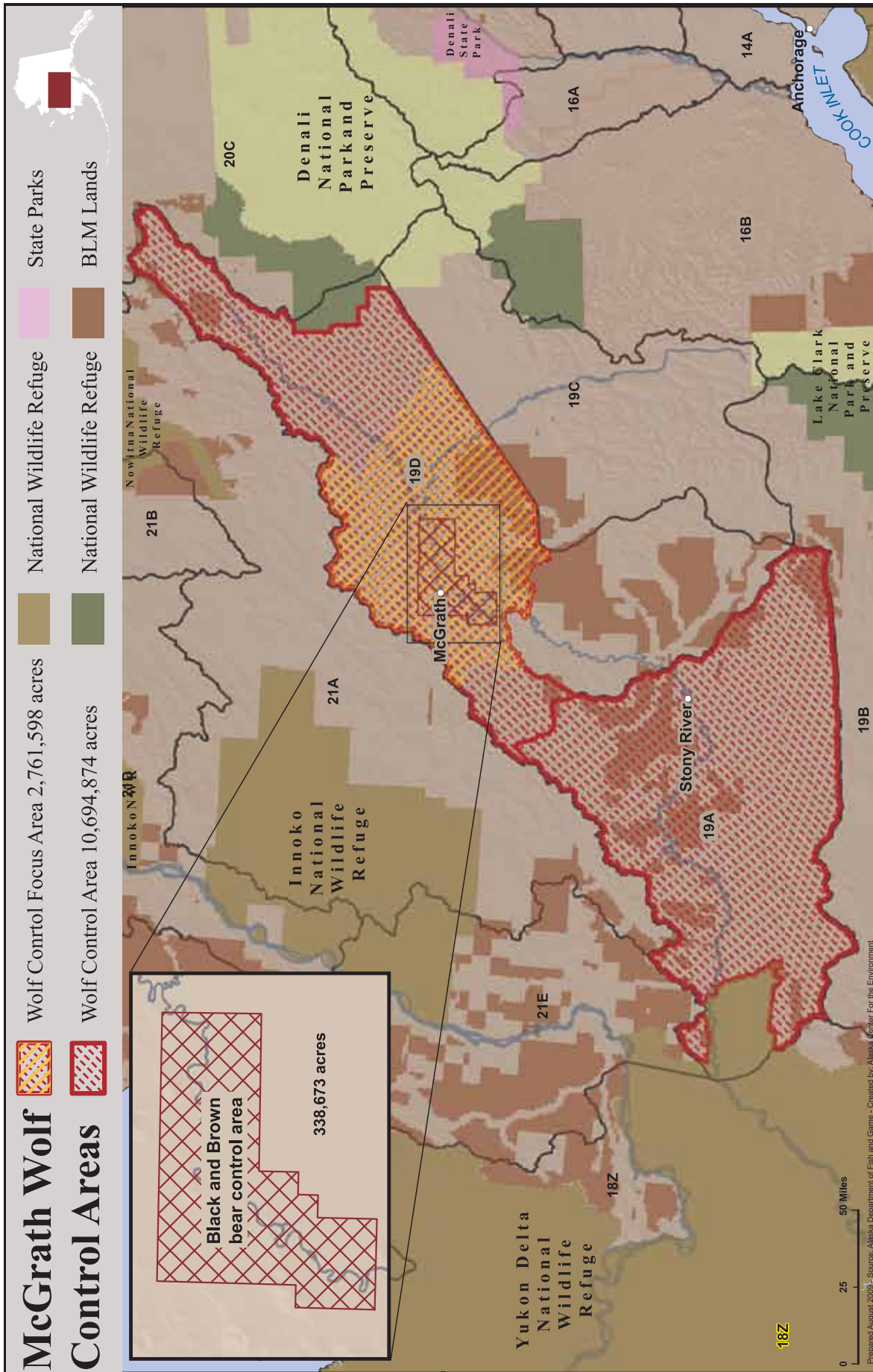
his aggressive predator control stance and his conflict of interest as a seller of trapping equipment. Legislators representing rural residents and Native Alaskans for whom subsistence harvest of wild resources is a way of life also opposed his confirmation.

- Yukon-Charley Rivers National Preserve closes the sport hunting and trapping seasons for wolves in response to data showing a decline in wolf numbers over the winter. Alaska Department of Fish and Game Commissioner Denby Lloyd calls the National Park Service's wolf and other hunting regulation closures “...unwarranted and confrontational intrusion upon the state's management prerogatives.”
- The Alaska Department of Fish and Game announces that it will proceed with predator control on Unimak Island. The U.S. Fish and Wildlife Service informs the state that proceeding without federal approval and a special-use permit will be considered trespassing and the matter will be referred to the U.S. attorney for possible prosecution. The state seeks a court order to allow it to move forward.
- A federal district judge rules that the U.S. Fish and Wildlife Service has the authority to disallow the state's actions on Unimak Island in absence of an Environmental Assessment.
- An article in the *Alaska Law Review* concludes that the state of Alaska's intensive management policies are in direct conflict with the federal mandates for U.S. Fish and Wildlife Service lands and should be preempted by federal policy.
- The Alaska Supreme Court issues its decision on the appeal brought by Defenders of Wildlife, the Alaska Wildlife Alliance and the Sierra Club that claimed that the state's predator control programs violated its constitutional mandate to manage predators for sustained yield. The Court

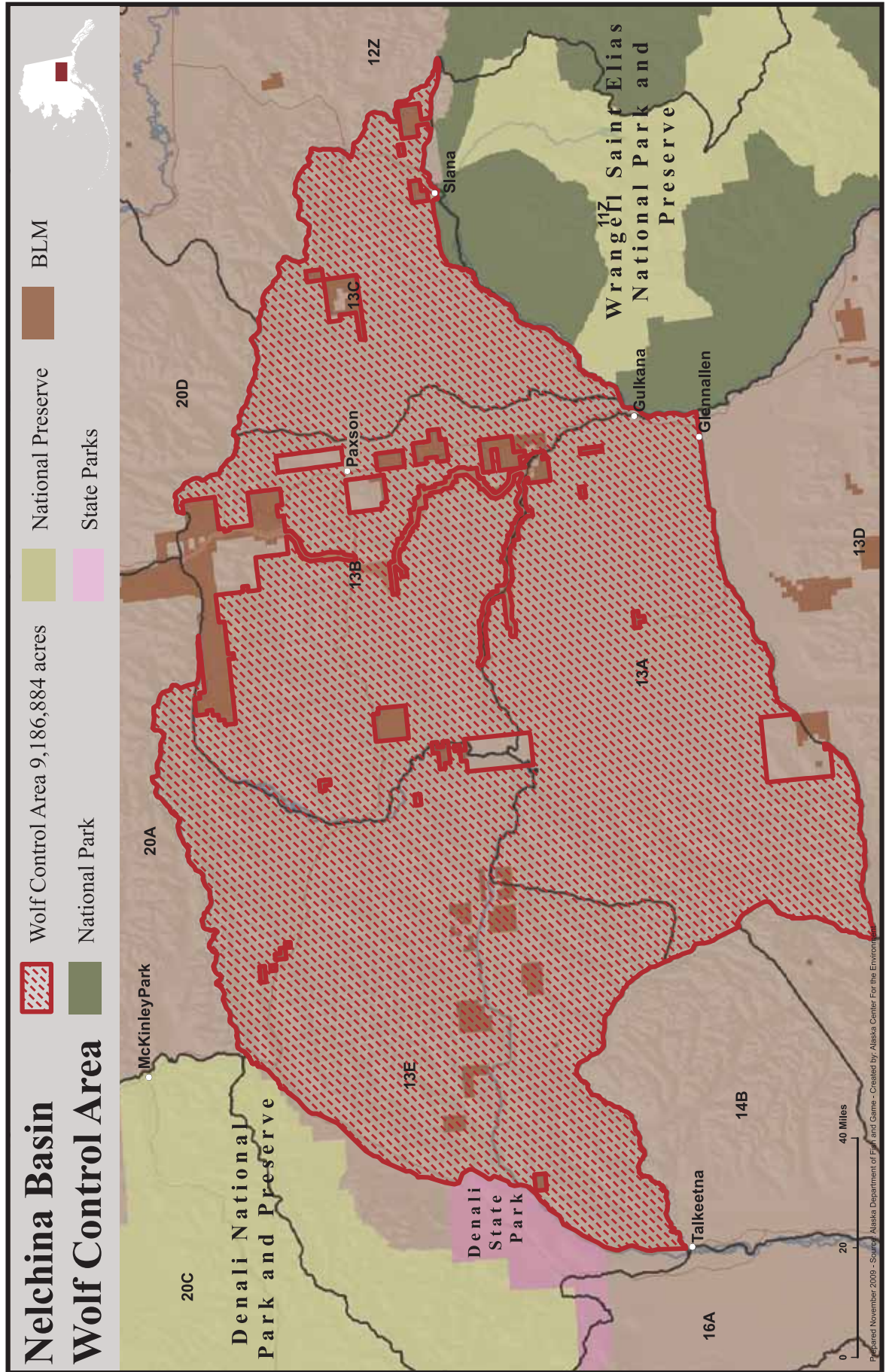
rules that both the Alaska Constitution and state regulation mandate that all wildlife, including wolves and bears, must be protected and managed for sustained yield. The decision invalidates the Board of Game's claim that whether or not to protect wolf and bear populations in predator control areas is a policy decision. The Court does not declare the 2006 predator control programs invalid, noting that they were based on sustained yield regulations the board had since repealed.

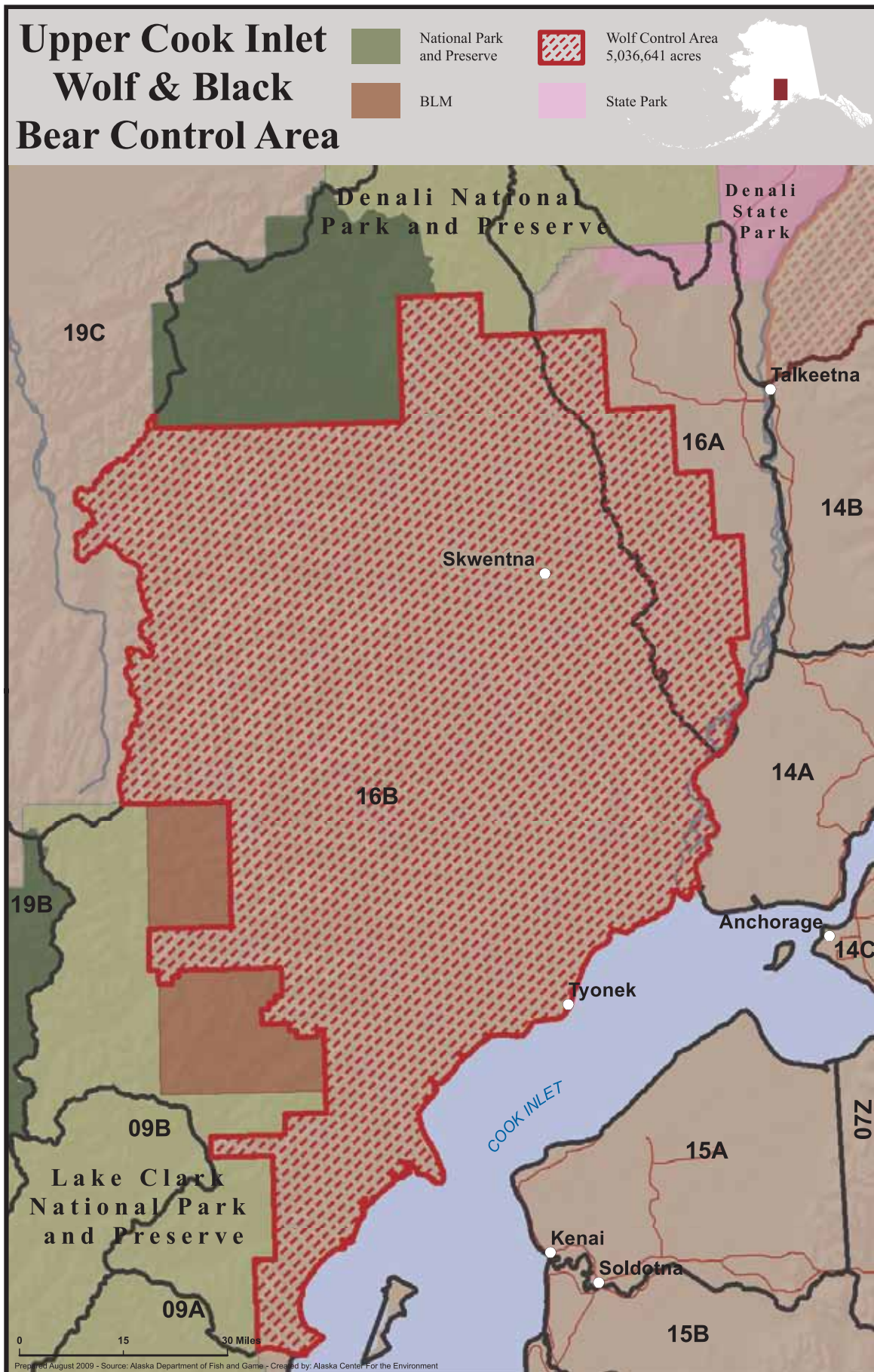
- The proposal book—a document produced by the Board of Game that incorporates all proposals submitted for each Board of Game meeting—is released for a special October meeting originally scheduled to discuss management of the Nelchina Caribou Herd but now to also consider a reauthorization plan for wolf control in Game Management Unit 13 and a proposal to expand the use of snaring as a general management tool for controlling black bear populations in numerous parts of the state in absence of a predator control implementation plan. Among other provisions, the bear management proposal would allow the taking of black bear sows with cubs and the incidental take of brown bears, including sows with cubs. The lack of public notice over the broader scope of the special meeting and the proposal to make bear snaring a general management tool causes widespread public outcry.
- The Board of Game reauthorizes the wolf control plan for Game Management Unit 13 with little discussion. However, after hearing overwhelming opposition to the Alaska Department of Fish and Game's bear snaring proposal, the board postpones further consideration of bear snaring until their March 2012 meeting.

B. McGrath (Unit 19D-East) and Central Kuskokwim River (Unit 19A)

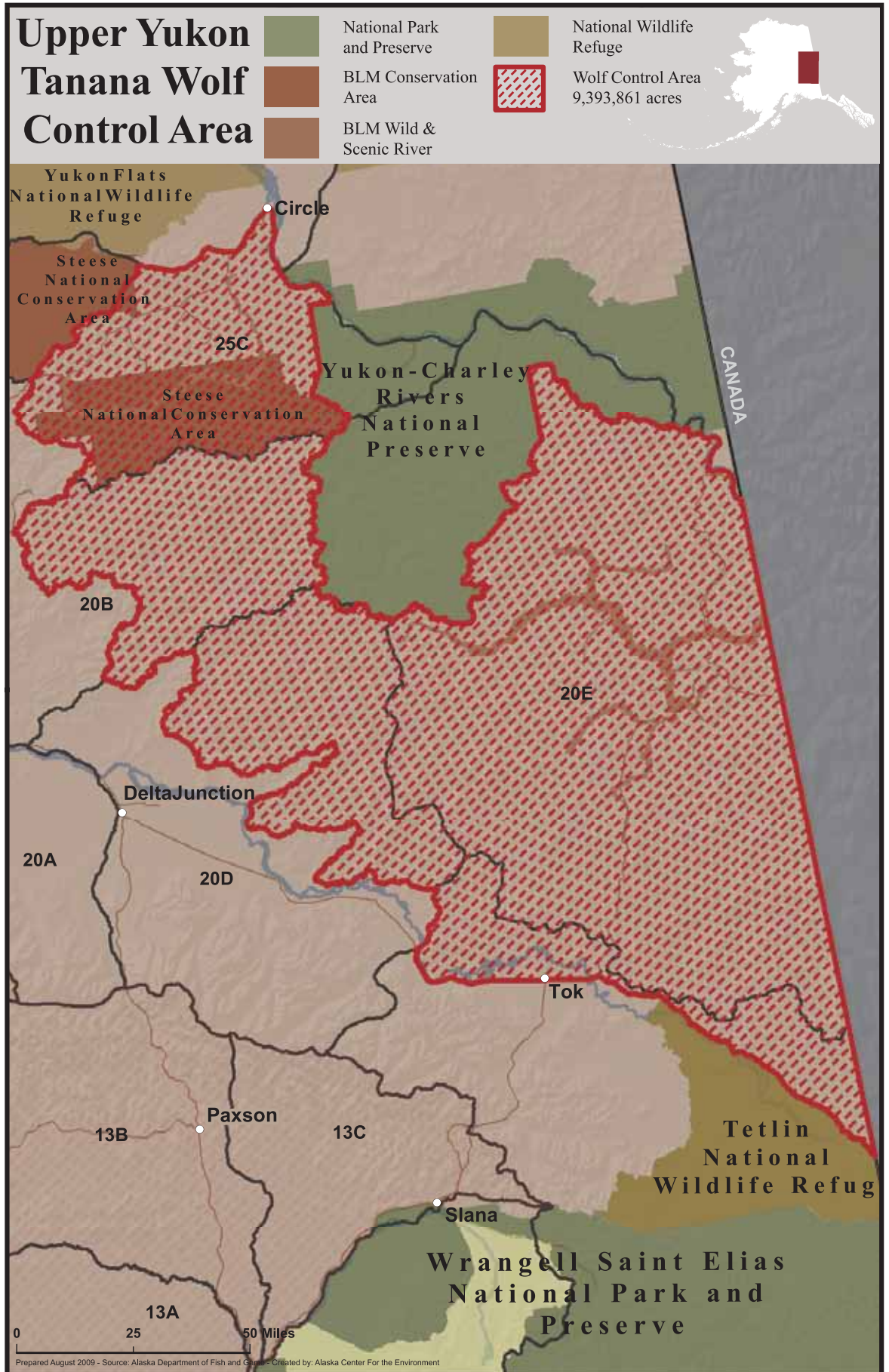


C. Nelchina Basin (Unit 13)

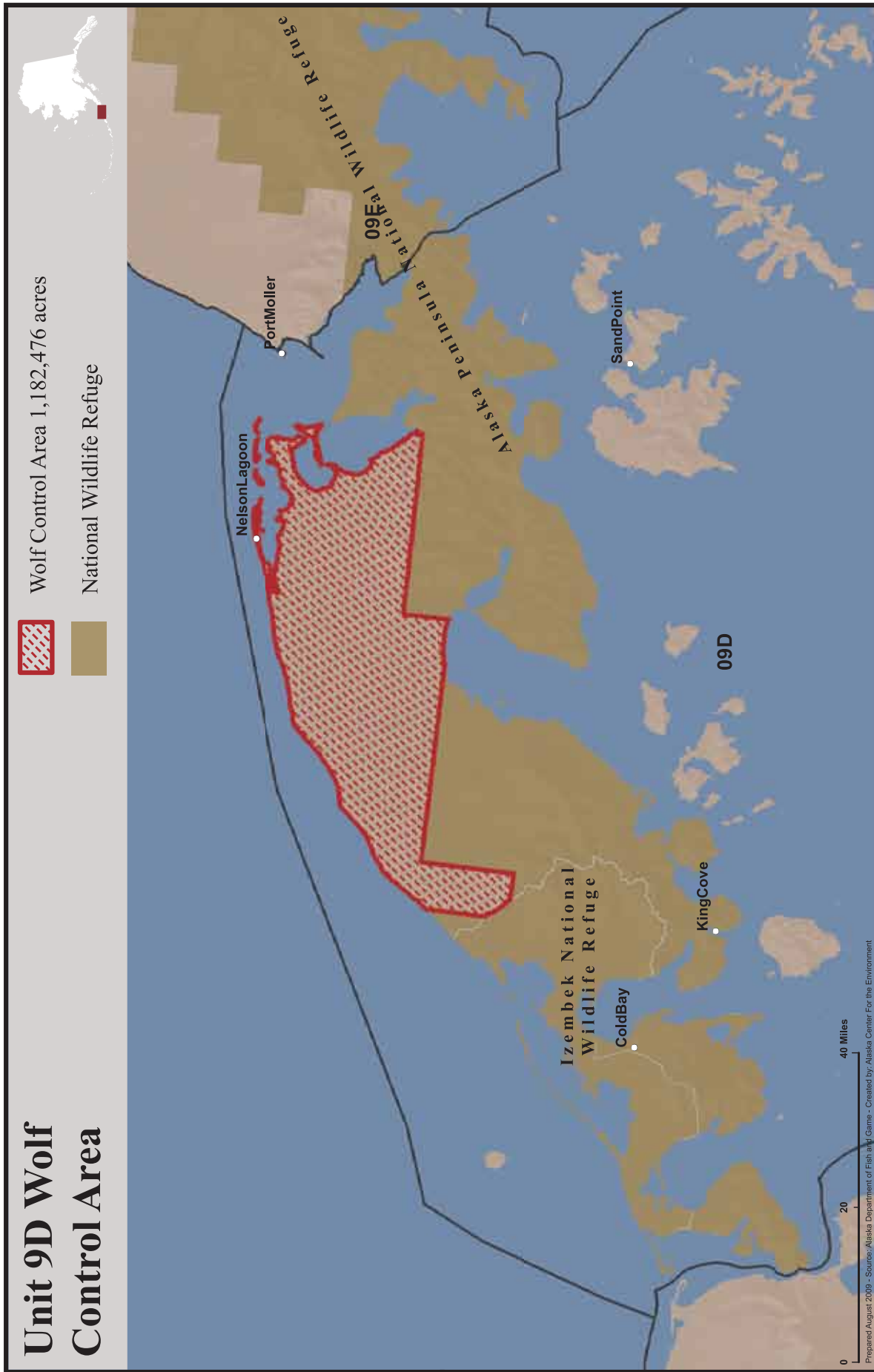




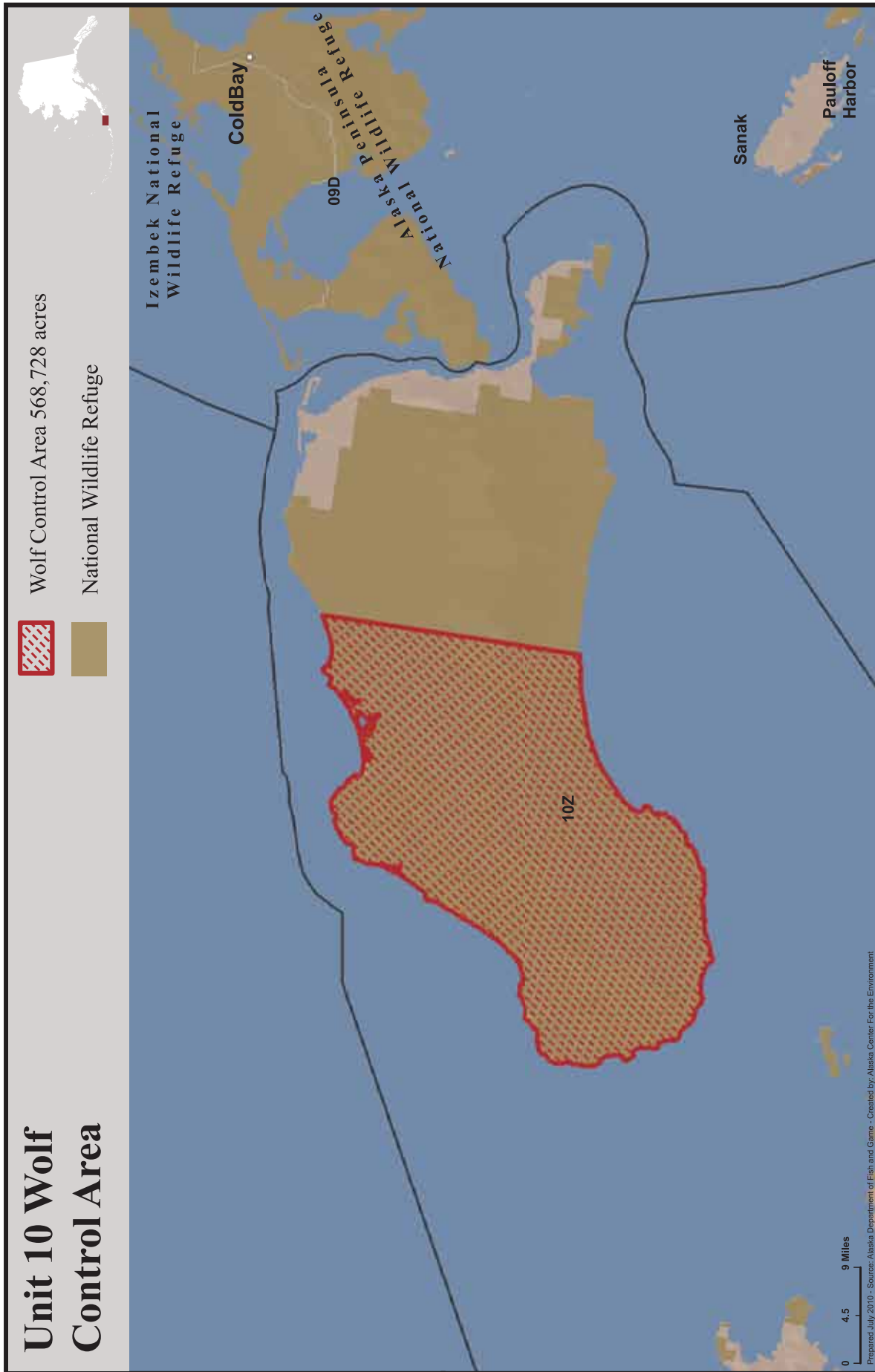
E. Upper Yukon/Tanana (Units 12 and 20E)



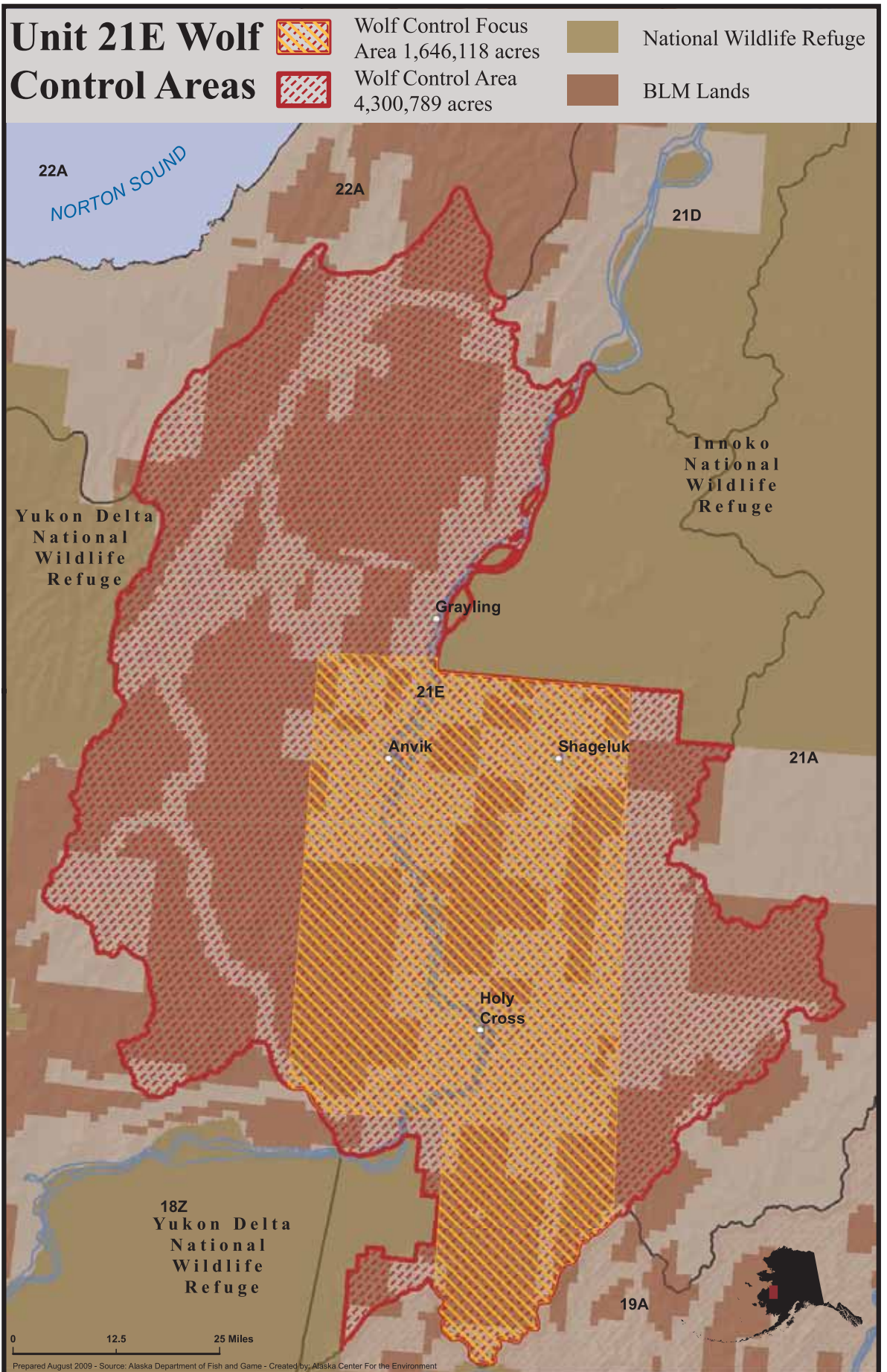
F. Southern Alaska Peninsula Caribou Herd (Unit 9D)



H. Unimak Island Caribou Herd (Unit 10)



I. Grayling-Anvik-Ahakeluk-Holy Cross Moose Management Area (Unit 21E)





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