Draft Unit 2 Wolf Harvest Management Strategy

Game Management Unit 2 (Unit 2) is a densely forested island archipelago in southern Southeast Alaska (Figure 1). The unit has a temperate, maritime climate and supports a relatively high abundance of prey including deer, beaver, and seasonally abundant salmon. It also supports one of the highest densities of wolves documented in Alaska (National Research Council 1997, Stephenson 1997). Extensive clearcut timber harvest throughout the unit has resulted in a decline in deer habitat capability, and a widespread network of logging roads has greatly increased access for hunters and trappers. Deer are the primary prey of Unit 2 wolves, but deer are also highly valued by hunters. Consequently, hunters and trappers commonly view wolves as competitors for deer and seek to limit wolf abundance.

Wolves throughout Southeast Alaska are classified as Alexander Archipelago wolves (*Canis lupus ligoni*), a subspecies of gray wolves (*Canis lupus*). The Unit 2 wolf population is mostly geographically isolated and genetically differentiated from other wolf populations within the region (Weckworth et al. 2005, Cronin et al. 2014) The most likely corridor for dispersing wolves to enter or leave Unit 2 is by relatively short swims (~1 mile) between islands linking the northeastern end of Prince of Wales Island with Zarembo Island in Unit 3. However, since the 1990s approximately 60 wolves have been radiocollared in Unit 2, and although some of those wolves traveled throughout the unit, none ever left Unit 2. A genetic analysis also found relatively high levels of genetic differentiation between wolves in GMU 2 and wolves in adjacent GMUs 1A and 3 suggesting little immigration into Unit 2 (Weckworth et al. 2005).

The Alaska Department of Fish and Game (ADF&G) manages deer and wolf populations in Unit 2, and federal subsistence regulations implemented by the U.S. Forest Service (USFS) ensure a rural priority for federally-qualified subsistence users on federal lands, which make up over 70 percent of Unit 2. Management of Unit 2 wolves has been contentious with Endangered Species Act (ESA) petitions submitted in 1993 and 2011. Both petitions were found not warranted, but management of this high-profile population remains controversial and future ESA petitions are considered likely. Establishing a population objective will clarify goals for this population and provide managers with a quantitative benchmark by which to gauge successful management.

Since 1997 ADF&G has set annual wolf harvest quotas based on the Harvest Guideline Level (HGL) in regulation and the most recent population estimate. From 1997 through 2013 harvest quotas were based on a population estimate completed in 1994. From 2014 to the present harvest quotas have been based on annual SECR population estimates. ADF&G and the USFS cooperatively manage harvest by monitoring the number of wolves taken and closing state and federal hunting and trapping seasons through emergency order authority. An absence of explicit population goals has left ADF&G to determine when the population is too small. For example, in

2015 and 2016 when the population was estimated at 89 and 108 wolves, respectively, the department halved the harvest quota available under the HGL to allow the population to grow. Currently, there is no guidance on the maximum size for this population either. Given the contentious nature of the Unit 2 wolf population and the wide range of social, political and biological values associated with it, the Department believes it is appropriate for the Alaska Board of Game (Board) with input from the public to determine objectives for this population.
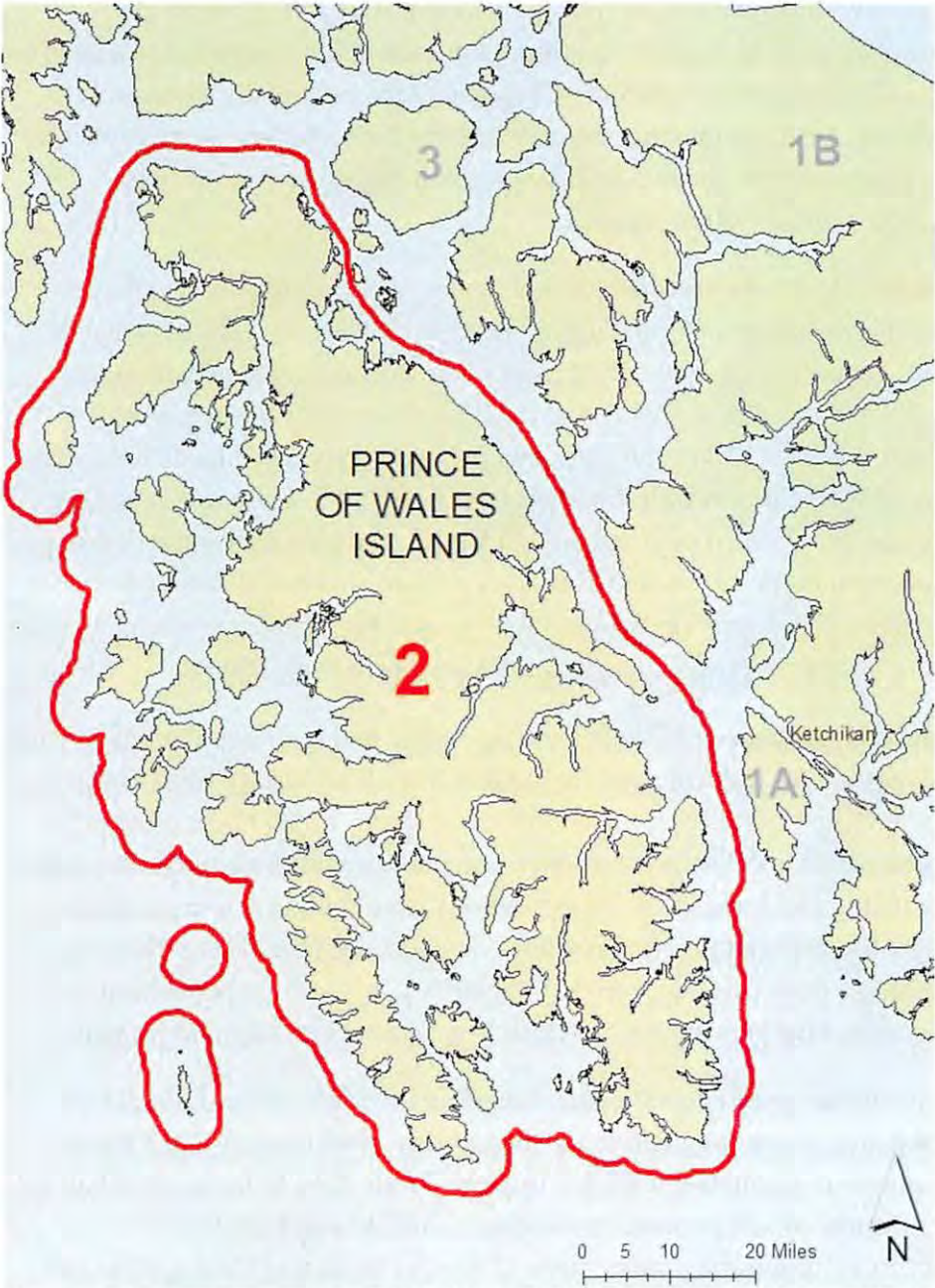

Figure 1. Game Management Unit 2 in southern Southeast Alaska. The Unit is comprised of Prince of Wales and associated islands.

At the Board's January 2019 meeting ADF&G submitted Proposal 43 requesting guidance on managing the Unit 2 wolf population through endorsement of a new harvest management strategy based on a numerical population objective established by the Board. The goal of this draft management strategy is to foster a public understanding of how harvest management decisions for this high-profile population would be made under a Board-established population objective.

A key advance that enables this proposed harvest management strategy is development of a DNA-based spatially explicit capture-recapture (SECR) method for estimating wolf abundance. Roffler et al. (2016) evaluated this method and found it to be the most robust and least biased method of estimating wolf abundance in a forested environment, and since 2014 ADF&G has based harvest management in Unit 2 on this method. The department will incorporate new population estimation techniques if they are demonstrated to provide more accurate estimates and are practical to apply in Unit 2.

Population Objective

ADF&G recommends that in addition to a population objective range, the Board also establish numerical thresholds for when the population is; (1) below the objective range but can still support limited harvest opportunity while increasing to the objective range, and (2) too low to support harvest. Each threshold should be accompanied by an explicit change in harvest management. Figure 2 illustrates the department's proposed population thresholds and harvest management changes to maintain the Unit 2 wolf population within the objective range.
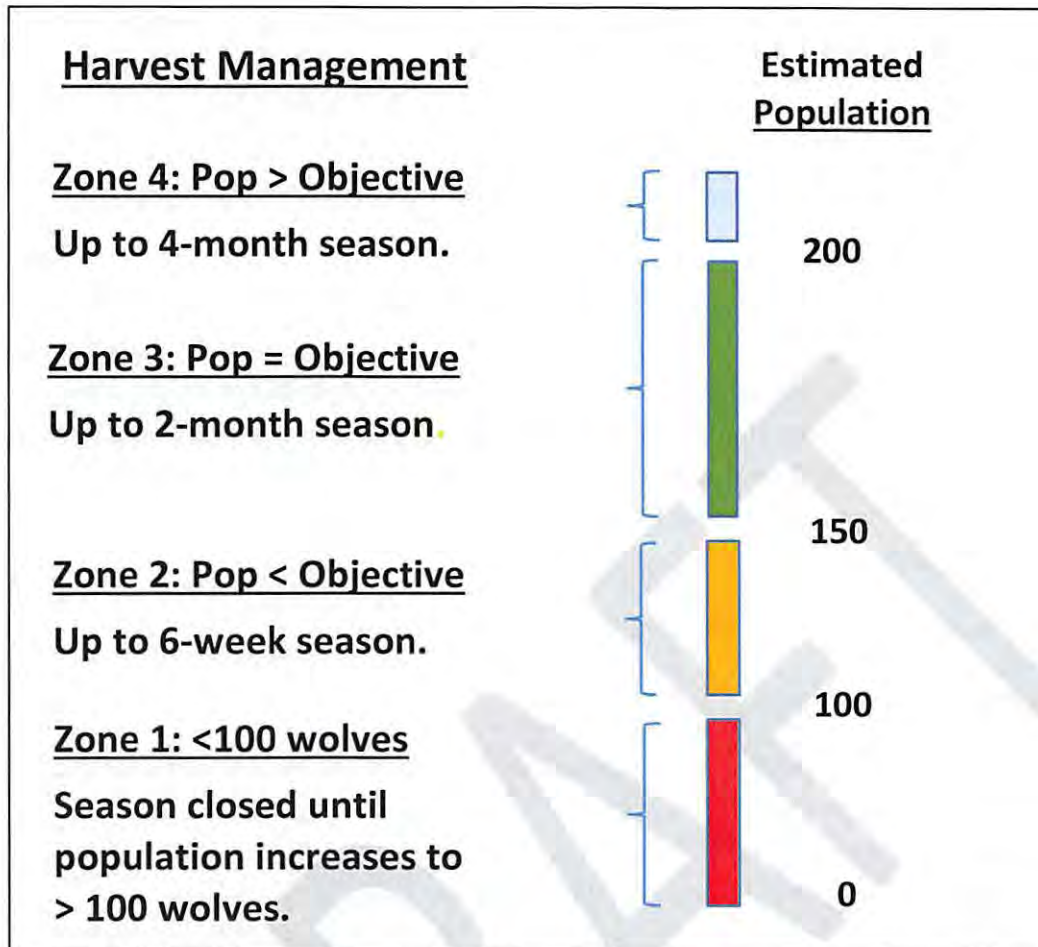
Harvest Management

Zone 4: Pop > Objective
Up to 4-month season.

Zone 3: Pop = Objective
Up to 2-month season.

Zone 2: Pop < Objective
Up to 6-week season.

Zone 1: <100 wolves
Season closed until population increases to > 100 wolves.

Estimated Population

200

150

100

0

Figure 2. The Alaska Department of Fish and Game's proposed population thresholds and harvest management changes to maintain the Unit 2 wolf population within a Board-established objective range.

Rationales for population thresholds:

Zone 1: Closed Season – When the most recent population estimate is fewer than 100 wolves, hunting and trapping seasons will be closed to encourage growth toward the objective range. Due to the 1-year lag between when data are collected and a population estimate is produced, an additional trapping season would occur prior to managers learning the population is <100 wolves. Thus, the department recommends the threshold for closing the trapping season be no lower than 100 wolves. Population estimates will be done annually until the population has reached the objective range.

> **Harvest Management** – No harvest. Hunting and trapping seasons closed by emergency order until population is estimated at 100 wolves or greater.

Zone 2: Conservation – When the population is estimated at 100–149 wolves, the department proposes reducing season length to offer some harvest opportunity while allowing the population to increase to the objective range. The purpose of this management zone is to help account for the 1-year lag required to produce a population estimate. By adjusting harvest opportunity when the population is in this range, managers can prevent the population from declining into the closure range (Zone 1) and allow it to increase to the objective range (Zone 3). In RY2015 and RY2016, shortened seasons that still offered some harvest opportunity were effective at increasing wolf abundance. Population estimates will be done annually until the population has reached the objective range.

> **Harvest Management:** Full hunting season (Dec. 1 – Mar. 31), and up to a 6-week trapping season. The length of the trapping season will be based on the most recent population estimate. The goal will be to offer a reduced, but still meaningful, level of harvest opportunity, likely 10-20 percent of the estimated population. When harvest was reduced to that level in 2015 and 2016 the population quickly rebounded. Trapping season length will be announced by a news release prior to the season.

Zone 3: Normal Season – The department recommends a population objective of 150–200 wolves for Unit 2. We believe this range will allow ample sustainable harvest and viewing opportunity while limiting the effects of predation on deer harvest. When the population is within the objective range, SECR population estimates will be conducted every 2-4 years or more often as the department determines they are needed.

> **Harvest Management:** Full hunting season (Dec. 1 – Mar. 31), and up to a 2-month trapping season. The length of the trapping season will be based on the most recent population estimate and other indicators of population trend and abundance (see Monitoring Trend and Abundance section below). The goal will be to allow adequate harvest to maintain the wolf population within the objective range. Trapping season length will be announced by a news release prior to the season.

Zone 4: Extended season – When a population estimate indicates the population exceeds the objective range (i.e. >200 wolves) the department may extend the trapping season to up to 4 months.

> **Harvest Management:** Full hunting season (Dec. 1 – Mar. 31), and up to a 4-month trapping season. The length of the trapping season will be based on the most recent population estimate and indicators of trend and abundance listed below. The goal of an extended season will be to reduce the wolf population to the objective range by offering

additional harvest opportunity. Trapping season length will be announced by a news release prior to the season.

Monitoring Abundance and Trend of the Unit 2 Wolf Population

The department will estimate Unit 2 wolf abundance using the SECR method implemented by Roffler et al. (2016) every 2-4 years or more often if deemed necessary to ensure harvest remains sustainable. Other scientifically-proven methods of abundance estimation may also be employed. ADF&G also anticipates periods of relative stability when annual population estimates are not needed and less intensive methods of monitoring trend, abundance, and distribution of wolves within the unit may be used.

Other population monitoring techniques that the department may employ include:

- Trail cameras to confirm presence, reproduction, and relative abundance of wolves around the unit
- Collecting foreleg bones to monitor ages (pup, yearling, adult) of harvested wolves. Documenting that pups are being recruited into the population may be a key indicator in years without SECR population estimates.

Literature Cited

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