

• **Cascadia Wildlands • Greenpeace • Center for Biological Diversity •**  
• **Greater SE Alaska Cons. Community • The Boat Company •**  
• **Alaska Wildlife Alliance •**

July 23, 2015

Attn: Theo Matuskowitz  
(for Subsistence Policy Coordinator)  
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Subj: Request for special action to close the 2015-2016 subsistence hunting & trapping season for wolves in GMU-2

Dear sir or madam;

The undersigned organizations request the Federal Subsistence Board to take an emergency special action and a subsequent temporary special action to preemptively close the 2015-2016 subsistence hunting and trapping season for wolves in Game Management Unit 2 (GMU-2),<sup>1</sup> or alternatively to set the harvest quota to zero. We believe such action is necessary for the “conservation of [a] healthy population[]”<sup>2</sup> of wolves in the unit and that the population is presently “insufficient to sustain any use.” (FSB Policy on Closures, 2007).<sup>3</sup> We believe the closure is also needed to “ensure continuation of [the] subsistence use[.]” (Id.)

New information indicates that the GMU-2 wolf population is severely depleted to a very low number, and has a heightened risk of extirpation. We believe this necessitates a regulatory change (closure of the upcoming season) before the FSB’s next scheduled regulatory review. The current GMU-2 estimate, issued by ADF&G in June 2015 is that the fall 2014 population was only 89 wolves in GMU-2, within a range of 50 to 159.<sup>4</sup> However, that estimate is for before the 2014-2015 hunting and trapping season was conducted, in which 29 wolves were reported harvested and to which any illegal take (likely significant) is additional. The GMU-2 population is geographically and genetically isolated, and our concern apart from the direct risk of losing the population is the likelihood of creating a genetic bottleneck that would pose a longer term threat. “Emergency action” (which under 50 CFR 100.19(a) may not exceed 60 days) followed by a “temporary action” (which under 50 CFR 100.19(b) requires notice and a public hearing) to close the season are appropriate actions

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<sup>1</sup> GMU-2 is comprised of Prince of Wales Island and its associated islands, in Southeast Alaska.

<sup>2</sup> We note that conserving the population also requires *restoring* it to health, meaning ending the declining of the population and increasing its size.

<sup>3</sup> Policy on Closures to Hunting, Trapping and Fishing on Federal Public Lands and Waters in Alaska. Federal Subsistence Board. Adopted August 29, 2007.

<http://www.doi.gov/subsistence/library/policies/upload/Closures.pdf>

<sup>4</sup> This is a 95% confidence interval.

for the board to take. As you are aware, the USFWS has found that listing the Alexander Archipelago wolf under the Endangered Species Act “may be warranted,” and is in the midst of a status review.

We are making a contemporaneous request to Commissioner Cotton of the Alaska Department of Fish & Game, for the department to issues an emergency order to close the state’s separate hunting and trapping season for GMU-2 wolves.

We further note that on July 7 the American Society of Mammalogists (ASM) sent letters to the supervisor of the Tongass National Forest and the US Fish & Wildlife Service concerning the situation of GMU-2 wolves. According to a news item on the ASM website:

ASM calls upon: (1) The Alaska Department of Fish & Game to issue an emergency order (EO) closing Game Management Unit 2 (GMU2) to the hunting, trapping or other take of wolves until the wolf population there can be verified to exceed a minimum estimate of 200 animals; (2) the U.S. Forest Service to cease the construction of new roads and clearing of old growth forests on its lands within GMU2, including those of the Big Thorne project; and (3) the USFWS to protect under the Endangered Species Act (ESA) the Alexander Archipelago wolf (*C. l. ligoni*) as threatened or endangered due to the significant threats to this taxon outlined in the letter.

(ASM 2015-a). The news item includes a link<sup>5</sup> to the letter (AMS 2015-b) to Earl Stewart, Supervisor of the Tongass National Forest.

## Contents

I. Legal Authority.....	3
II. Our specific requests.....	3
III. Background .....	4
IV. The population trend since 1995, and some harvest cap history.....	4
V. Biological factors that support a closure of the 2015/2016 season .....	5
A. Illegal take and natural mortality need to be explicitly accounted for .....	5
B. The sustainable mortality is not a fixed value for a declining population.....	7
C. Field observations are important and need to be fully disclosed .....	9
D. The high prevalence of apparent population sinks in GMU-2 needs to be considered .....	9
E. Present management structure lacks precaution and consideration of uncertainty .....	10
VI. Other management factors that need to be taken into account .....	13
A. Sealing requirements under state and federal regulations .....	13
B. The amount and location of trapping and hunting effort is unregulated.....	13
VII. Conclusion.....	14
VIII. Signatures .....	14
References .....	15

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<sup>5</sup> [http://www.mammalogy.org/uploads/committee\\_files/ASM\\_AlexanderArchipelago\\_letter\\_2015.pdf](http://www.mammalogy.org/uploads/committee_files/ASM_AlexanderArchipelago_letter_2015.pdf)

## ***I. Legal Authority***

The FSB has legal authority to cancel the 2015/2016 GMU-2 wolf season. According to the Federal Subsistence Board website, “[t]he Secretaries have delegated the authority to manage fish and wildlife for subsistence uses on Federal public lands and waters in Alaska to the Federal Subsistence Board.”<sup>6</sup> The authority stems from ANILCA

ANILCA § 3126. Closure to subsistence uses. (b) Closure for \* \* \* for the continued viability of fish and wildlife population. “\* \* \* Notwithstanding any other provision of this Act or other law, the Secretary, after consultation with the State and adequate notice and public hearing, may temporarily close any public lands (including those within any conservation system unit), or any portion thereof, to subsistence uses of a particular \* \* \* wildlife population only if necessary \* \* \* to assure the continued viability of such population. If the Secretary determines that an emergency situation exists and that extraordinary measures must be taken \* \* \* to assure the continued viability of a particular \* \* \* wildlife population, the Secretary may immediately close the public lands, or any portion thereof, to the subsistence uses of such population and shall publish the reasons justifying the closure in the Federal Register. Such emergency closure shall be effective when made, shall not extend for a period exceeding sixty days, and may not subsequently be extended unless the Secretary affirmatively establishes, after notice and public hearing, that such closure should be extended.”

The continued viability of the GMU-2 wolf population is currently not “assure[d],” and an emergency situation exists that requires extraordinary measures to “assure” continued viability of the population. Therefore, one available option to protect the viability of GMU-2 wolves would be for the FSB to issue an emergency temporary closure of the season effective on its starting date, with steps then taken for a further temporary extension of the closure per the above provisions of ANILCA.

Moreover, a simpler option of setting the quota to zero may effectively close the season, as suggested by the Unit 2 wolf regulations in the 2014-2016 regulations book.<sup>7</sup> Regarding Unit 2 wolves:

The Federal hunting and trapping seasons may be closed when the combined Federal-State harvest quota is reached. Any wolf taken in Unit 2 must be sealed within 14 days of harvest.

The FSB could therefore preemptively set the harvest quota to zero and close the season before it begins.

## ***II. Our specific requests.***

1. We request that the FSB preemptively close the 2015-2016 season by either: (1) setting the harvest quota to zero and declaring that accordingly the season will not open; or (2) making an emergency closure effective on the opening date of the planned season, September 1, and commencing with any necessary notice and public hearings to extend the closure beyond the 60-day initial period.

2. We further request that the FSB adopt a regulation that the GMU-2 wolf season be closed until: (1) a scientifically credible population goal<sup>8</sup> has been established for GMU-2 wolves;

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<sup>6</sup> <http://www.doi.gov/subsistence/board/members.cfm>

<sup>7</sup> Subsistence harvest of wildlife harvest of wildlife: Management regulations for the on federal public lands in Alaska. Effective 1 July 2014 - 30 June 2016. OSM/Federal Subsistence Board.

<sup>8</sup> To date, a population goal for GMU-2 wolves has never been established.

and (2) the population has rebounded to sufficiently above that level to support the additive mortality of harvest.

3. We further request that the FSB request the US Forest Service and US Fish & Wildlife Service to launch a coordinated law enforcement effort sufficient to ensure that the illegal take of wolves in GMU-2 will be essentially ended. Enforcement is necessary to assure the subsistence resource will endure.

### III. Background

All wolves in Southeast Alaska (including GMU-2) are Alexander Archipelago wolves, a subspecies that is endemic to the region.

Conservation of the subspecies has been a concern since at least the 1980s. There have been two Endangered Species Act petitions to list the subspecies, of which one is presently pending and to be decided in December.

Since the 1990s, population estimates have been based on studies in central and northern Prince of Wales Island. These estimates have been extrapolated to cover GMU-2 (1990s and presently) and the territory occupied by wolves in Southeast Alaska (1990s). On the basis of land area, habitat types and differing habitat capabilities for the principal prey (deer) it was estimated in the 1990s that about one-third of the population was in GMU-2. Wolf territory is shown to the right in black, and the game management units are identified.

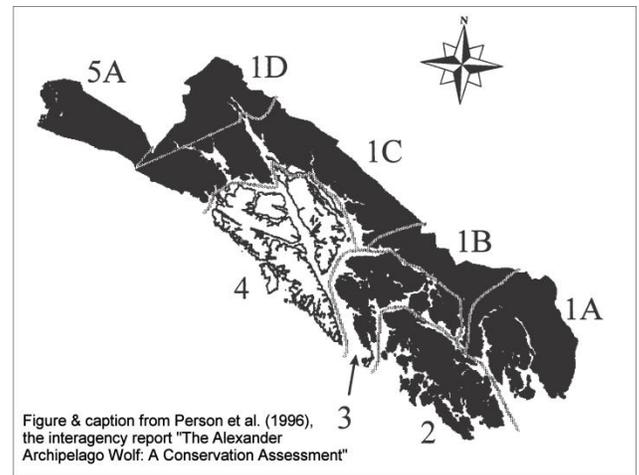


Figure 2—Distribution of Alexander Archipelago wolves in southeast Alaska. Wolves occupy areas shown in black. Map also shows game management units (GMUs) in southeast Alaska.

Alexander Archipelago wolves are geographically and genetically isolated from other North American wolves by the Wrangell-St. Elias mountains to the north, by the ice-capped border mountain range with interior British Columbia to the east, and from coastal British Columbia by Dixon Entrance, to the south. (Person et al. 1996, Weckworth et al. 2005, 2010, 2011, 2015).

### IV. The population trend since 1995, and some harvest cap history

A good population estimate for GMU-2 in 1995, based on radio-telemetry, put the population at 250-350. (Person et al. 1996).<sup>9</sup> A view of the scale of illegal take is provided by Person & Russell (2008),<sup>10</sup> based on 55 radio-collared wolves studied over the periods 1993-1995 and 1999-2004. Between estimates made for 1995 and 2013, wolf population estimates were guesswork, using the 1995 estimate as a starting point. A decline in the population was becoming apparent by 2008. In its Proposal 18 for the November 2010 meeting of the Alaska Board of Game, ADF&G advocated a GMU-2 harvest cap of 45 wolves, based on a guess that

<sup>9</sup> Person, D.; Kirchhoff, M.; van Ballenberghe, V.; Iverson, G.C.; & Grossman, E. (1996). *The Alexander Archipelago Wolf: A Conservation Assessment*. Gen. Tech. Rep. PNW-GTR-384, November 1996, USDA/FS, Pacific NW Research Sta., Portland, Or. Produced in cooperation with the US Fish & Wildlife Service and the Alaska Dept. of Fish & Game. <http://www.treesearch.fs.fed.us/pubs/3056>

<sup>10</sup> Person & Russell (2008). "Correlates of Mortality in an Exploited Wolf Population," *Journal Of Wildlife Management* 72(7):1540-1549; 2008). <http://onlinelibrary.wiley.com/doi/10.2193/2007-520/abstract>

the population was 150;<sup>11</sup> however, the new regulation (harvest cap of 30% of the estimated population) and season quota (up to 60 wolves) were based on a population of 200 wolves. This quota of up to 60 wolves based on an assumed population of 200 was used in annual season management up through the 2013/2014 season.

The 2013/2014 season was closed by emergency order two weeks early when the quota was about to be reached, with 57 wolves ultimately reported harvested by hunters and trappers.

In a November 17, 2014 press release — about 2-1/2 months after the FSB's 2014/2015 seasons opened — ADF&G announced<sup>12</sup> that it was administratively lowering the harvest cap to 20%,<sup>13</sup> and that the quota for the season would be 25 wolves, instead of 60. The FSB followed suit. The arithmetic for this was based on a population of 130 wolves, *the low-end of the range in a new estimate for the prior fall — fall 2013*. That full estimate was 221 wolves with a range of 130 to 378 (95% confidence interval), determined from camera traps and hair follicle DNA mark/recapture analysis. (ADF&G 2014). These numbers, from fall 2013, were ADF&G's current population estimate up through at least the January 2015 Board of Game meeting (Roffler 2015 at 20).<sup>14</sup> By the time the 2014/2015 season was closed by emergency order in February, the 25 wolf quota had been exceeded by 16%, with a reported harvest of 29 wolves. *However*, at the start of the season in Fall 2014 the population was already far less than the estimate that was used for management, as revealed by a new ADF&G estimate finalized in June 2015 for the fall 2014 population, based on DNA mark/recapture research.

On June 16, 2015, ADF&G revealed the fall 2014 population estimate, in a memorandum titled "GMU 2 Wolf Population Estimate Update, Fall 2014." (ADF&G 2015). The estimate was 89 wolves, with a range of 50 to 159 (95% confidence interval). This means that by the time the season was closed in February the population would have to be at most 21 to 130 wolves with a mid-value of 64, but even that is *without* illegal take and natural mortality considered. The report's estimate of the population is therefore an overestimate for present purposes.

## **V. Biological factors that support a closure of the 2015/2016 season**

### **A. Illegal take and natural mortality need to be explicitly accounted for**

In ADF&G's June 16 report (ADF&G 2015),<sup>15</sup> the question of sustainability of the POW wolf harvest is discussed in the last paragraph on page 2 with respect to a determination that the 2013-2014 harvest amounted to a 26% mortality. This percentage is the reported harvest of 57 wolves in comparison to the then-current mid range population estimate of 221 at the start of the season.

The report says this 26% mortality "should not be high enough to cause the wolf population to decline at all (Fuller 1989, Person and Russell 2008)." (ADF&G 2015 at 2). The report similarly states a 33% mortality for the 2014-2015 season, based on the reported harvest of

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<sup>11</sup> Board of Game proposals book for 2010. PDF page 32 here: <http://www.adfg.alaska.gov/static-f/regulations/regprocess/gameboard/pdfs/2010-2011/southeast/crass-final9-7-10.pdf>

<sup>12</sup> ADF&G press release, Nov. 17, 2013. <http://www.adfg.alaska.gov/static-f/applications/webintra/wcnews/2014/releases/11-18-2014.pdf>

<sup>13</sup> The harvest cap in the regulations was still 30%, and the regulation was changed to 20% by the Board of Game at its January 2015 meeting.

<sup>14</sup> PowerPoint by Gretchen Roffler, "Region I GMU 2 Wolf Staff Report," Slide 20. Jan. 9, 2015. [http://www.adfg.alaska.gov/static-f/regulations/regprocess/gameboard/pdfs/2014-2015/Southeast\\_01\\_08\\_15/Unit\\_2\\_Wolf\\_Population\\_Assessment.pdf](http://www.adfg.alaska.gov/static-f/regulations/regprocess/gameboard/pdfs/2014-2015/Southeast_01_08_15/Unit_2_Wolf_Population_Assessment.pdf). Transcript and audio also available from closure requesters.

<sup>15</sup> See: Edwards (2015), provided on the accompanying DVD disk, for a critique of the report.

29 wolves in comparison to the mid-range estimate of 89 wolves at the start of the season. (Id. at 3). However, the implications of this much higher mortality on the sustainability of the population *was not discussed at all*. Also not mentioned is that if the pre-season population was at the low-end estimate (50 wolves) for fall 2014, mortality from the reported harvest alone was 58%. This is a reasonable perspective because ADF&G calculated the season's quota from the low-end population estimate; it is an apples to apples comparison.

*Nowhere* in the report is the real criterion for sustainability discussed — total mortality — which also includes illegal take and natural mortality. Similarly, the only explicit consideration in the regulation that governs the GMU-2 wolf season (5 AAC 92.008)<sup>16</sup> is mortality from reported “harvest,” in an incomplete attempt to manage the wolf resource sustainably. The sustainable mortality estimates in the references (Fuller 1989, Person and Russell 2008) that the report cited (see quote in prior paragraph) are for *total* mortality, not merely the mortality from reported harvest.

The June 16 report (ADF&G 2015) lists what ADF&G considers to be six possible causes for the decline in the POW wolf population, but misses the mark. Those posited causes of the decline are: (1) the contribution of “the known take”; (2) an *increase* in illegal take;<sup>17</sup> (3) fewer deer;<sup>18</sup> (4) inadequate alternate prey availability;<sup>19</sup> (5) an increase in disease; and (6) mild winters making deer harder to catch.<sup>20</sup> (Id. at 2). Of the six, the report noted that there is no evidence that posited causes 2 through 6 are involved in the decline. Additionally, item 2 misses the mark because it is an assumption that *only an increase* in illegal take would be a factor, as opposed to the preexisting rate of illegal take or even a somewhat reduced but still harmful rate. More to the point is that the ADF&G report entirely overlooked the most likely cause of decline (see e.g. Person & Russell 2008):

- a) Item 1 (the known harvest), plus
- b) the *amount* of illegal take, plus
- c) natural mortality.

It is necessary to explicitly account for each of items (a) through (c) to understand the decline of wolves in GMU-2 and to manage for recovery from their present low number. If hard data is unavailable for items (b) and (c), guesses must be made based on past research and other known facts, and given the present low number of wolves a *precautionary* approach is necessary (see section E, below) in making those estimates. Moreover as explained next, the assumption that the tolerable total mortality (as a percentage of the population) is a *fixed* value is faulty – given the present low population – so *even more precaution is necessary* to conserve these wolves.

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<sup>16</sup> 5 AAC 92.008. “Harvest guideline levels. For purposes of management of the named species, the department shall manage harvest by hunting and trapping as follows: (1) wolves: the annual harvest of wolves in Unit 2 should not exceed 20 percent of the unitwide, preseason population as estimated by the department;...”. The regulation was changed in January 2015 from 30% to 20%, but the 20% cap was effectively put into effect ahead of that by ADF&G, in November 2014.

<sup>17</sup> Item “2” is presented out of order here, because it is useful to group it with the first item. Also, the posited causes are not numbered in the report.

<sup>18</sup> There is no cause to believe there have been few deer during the years in question, since winters in recent years have been mild.

<sup>19</sup> This would not be a factor if the deer population is adequate, which seems to be the case.

<sup>20</sup> Past studies have included periods of mild weather, and POW wolf researcher Dr. David Person commented on the report: “[M]uch of my work on wolves and deer took place during very mild winters and wolves still killed my radiocollared deer. I think ADF&G could do a little better home work and think through its statements a bit more thoroughly and logically. (Person pers. comm.).

We believe the low population and need to consider *total* mortality support closure of at least the 2015-2016 season.

### ***B. The sustainable mortality level is not a fixed value for a declining population***

Dr. David Person studied GMU-2 wolves and their ecosystem for 22 years. He criticized ADF&G's June 16 report (ADF&G 2015):

It "is wrong to assume a harvest rate of 26% cannot cause a decline in wolves. If reproduction is low compared with what we measured several years ago, then sustainable levels of total mortality are going to be less than my estimate of 38%. That means current harvest, particularly in conjunction with illegal take, may be entirely sufficient to cause a decline in [the] wolf population. Remember, my 2009 paper on wolf reproduction specifically described how intense harvest and turnover of reproductive females could reduce reproduction in wolf packs."

(Person pers. comm., citing Person & Russell 2009).<sup>21</sup> We believe *both* factors (intense harvest combined with loss of breeding females) are likely to be at play against GMU-2 wolves. ADF&G's June 16 report notes that the proportion of females in the population declined from an estimated 50% in fall 2013 to 25% in fall 2014. (ADF&G 2015 at 2). The latter estimate must be viewed in combination with the low estimated population (50 to 159, with a mid-pint of 89).

We challenge, for an additional reason, ADF&G's apparent assumption that a *fixed* limit obtained from the literature for a tolerable total mortality (as a percent of the population) is an appropriate way to manage the GMU-2 wolf population. The robustness (e.g., size) of the populations for which a sustainability limit was estimated in the literature needs to be considered. Then, the GMU-2 population's currently small size, low proportion of females and its rate of recruitment need to be evaluated in relation to those other populations. For example, ADF&G *has not demonstrated* that it is reasonable for it to take the prior estimated sustainability limit — 30-35% total mortality (Person et al. 1996) for a GMU-2 population of 250-350 wolves, or perhaps as much as 38% (Person & Russell 2008) — and base management on that limit for a population that surely *is now less than* the 50 to 159 (with a mid-point of 89) estimated for fall 2014. After the 2014-2015 trapping and hunting season, due to the reported harvest alone of 29 wolves (not counting illegal take and natural mortality) the corresponding post-season GMU-2 population estimate would have to be, at most,<sup>22</sup> 21 to 130 wolves (with a mid-point of 60), and recruitment is apparently low.<sup>23</sup> The sustainable total mortality for such a small population should be expected to be much lower than the earlier estimates, because the reproduction rate may be lower (Person pers. comm.), the natural mortality among fractured packs may be higher, and the proportion of dispersing wolves — which have markedly higher mortality than resident wolves (Person & Russell 2008, Person 2013, 2014) — may have increased. The sink/source structure of the habitat and population may also be quite different now. (Person 2014).

Finally, the rate of recruitment needs to be explicitly considered. Recruitment in the GMU-2 wolf population apparently has not been studied since Person & Russell (2009), likely based on data from before the population decline was first noted. Even though the recruitment situation is sure to be different for the present low population, Person & Russell (2009)

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<sup>21</sup> Person, D.K.; Russell, A. 2009. Reproduction and Den Site Selection by Wolves in a Disturbed Landscape

<sup>22</sup> Illegal take and natural mortality over the course of season also need to be accounted for.

<sup>23</sup> In the spring 2015 field season, only one active den with only one pup was found. (Pers. comm. with ADF&G's Ryan Scott, 4 June 2015).

provides understandings (based on successful internal inspections of 23 GMU-2 dens occupied with pups) that are relevant to the current recruitment situation:

*First*, the average litter size of 4.1 pups was lower than for populations elsewhere North America. (Id. at 216). In comparison, 17 studies on other North American wolf populations found average litter sizes ranging “from 4.2-6.9 with an overall average of 5.5 pups.” (Id. at 219).

*Second*, in GMU-2 the average litter size for first time mothers was 3.0 pups, which is lower than 4.8 pup average for experienced mothers.<sup>24</sup> (Id. at 216).

*Third*, although litter size can be affected by prey abundance, in the Person & Russell (2009) study the primary prey (deer) were moderately abundant and “[i]n addition, salmon producing streams were located within all of our wolf pack home ranges and beavers were widely available. Therefore, it is unlikely that small average litter size was because of low densities of prey.” (Id. at 220).

*Fourth*, the study found that the high proportion of first-time breeders in GMU-2 “clearly affected litter size.” (Id.)

*Fifth*, is the apparent cause of that phenomenon and overall low average litter size:

We can only speculate why that was the case. Female wolves that recently settled after dispersal may not have been in prime condition during gestation and parturition. All females that survived dispersal and settled produced small litters or did not reproduce at all during their first year in a new territory. For other first-time breeding females, our observations may simply be a consequence of small sample size. Indeed, despite mostly small litters, one of those wolves produced the largest litter observed during the study. Regardless of cause, the net effect was that most first-time breeders produced smaller litters and the frequency of new mothers was related to turnover in packs owing to harvest. Therefore, harvest of wolves that induces turnover of breeding females may reduce average litter sizes. Intense harvests during predator control programs that eliminate packs over large areas may increase the number of breeding wolves in an area temporarily as colonizing wolves scramble to fill vacant habitat (Hayes and Harestad 2000). Surviving or colonizing wolves simultaneously may benefit from high ratios of ungulate prey to wolves stimulating large litter sizes (Boertje and Stephenson 1992) and multiple litters within packs (Ballard et al. 1987). Those factors can dramatically increase reproduction in wolf populations that have been reduced to very low numbers (Ballard et al. 1987, Hayes and Harestad 2000). Within our study area, however, individual wolf packs were occasionally eliminated and others reduced, but large-scale removal of wolves did not take place. There also was no substantial increase in deer population. We did not observe an increase in the number of successfully breeding females after intense harvests nor did we find evidence of multiple litters within packs. Consequently, wolf harvest in our study area induced turnover of breeding individuals and likely reduced reproduction overall.

(Id. at 220-221, *emph. added*). The conclusion that should be drawn from this is that harvest of this never-large population of wolves causes a positive feedback that results from not only the direct subtraction of the reported harvest (and the illegal take and natural mortality) from the population but also from suppression of the recruitment that is necessary for the population to rebound from the loss. This double-whammy has never been taken into account in management of the GMU-2 wolf population by ADF&G and the Federal Subsistence Board. The double-whammy is directly linked to the percentage of the population that can be taken annually by humans (legal harvest plus illegal take) without

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<sup>24</sup> Among the 23 dens there were 6 new mothers, 12 experienced mothers, and 5 indeterminate.

causing a population decline<sup>25</sup> — that is, the sustainable yield. However, it is apparent from Person & Russell (2009) as discussed above that the sustainable yield (a percentage) is a function of the size of the population, and that following rules of thumb for sustainability (or fixed values extracted from the literature) are bound to lead to continual and perhaps accelerating decline of the population, ending at zero. And this is without taking into account the additional impact of reducing the genetic diversity of a population that is pushed to a low number.

We believe the actual (even if undeterminable) tolerable sustainability limit for the GMU-2 wolf population, *under present circumstances*, should be assumed to be zero. A precautionary approach is necessary, and closure of at least the 2015-2016 season is needed.

### ***C. Field observations are important and need to be fully disclosed***

Because very few wolves have been radio-collared over the past several years and because the camera and hair board census methods are not suitable for the purpose, there has recently been no way to estimate the amount of illegal take of wolves. Consequently, field observations become all the more important in estimating the population and its trend. However, ADF&G's June 16 report contains only one field observation (that at least one wolf pack previously in the study area is "believed to no longer be present"). Prior reports were rich in field observations; however, this practice ceased after these reports were used in appeals and lawsuits over Tongass timber projects. (*Compare*: e.g. Person 2010 and Person & Larson 2013 to ADF&G 2015).

Nonetheless, two recent field observations have become known. In the spring 2015 field season, only one active den was found on POW, and it had only one pup. (Pers. comm., Ryan Scott, 6/4/15). Also, the inability of the ADF&G/Forest Service team to collar more than one or so wolves per year is itself evidence of a population that is very low.

There is a high need for full disclosure of field observations and their transparent incorporation into management decisions. We believe the field observations from 2010 through 2013, and the ones for 2015 to the limited extent they have been disclosed, in combination with the current low population estimate demonstrate the need to close at least the 2015-2016 season.

### ***D. The high prevalence of apparent population sinks in GMU-2 needs to be considered***

ADF&G's June 16 report (ADF&G 2015) states (at 2):

Wolves recolonize vacant pack areas. We believe that as long as harvest remains low and other factors like prey availability and habitat suitability remain unchanged, wolves will recolonize the vacant pack territory within the study area and future density estimates will be higher.

That opinion was given without explanation or citations. Dr. Person said that the report:

... fails to note that over the last 15 years, there is no evidence that wolves in GMU 2 have ever rebounded in numbers. The memo should honestly say that wolves have the potential to rebound but no rebound has been observed in GMU 2 even after reported harvest declined substantially during the last 8 years.

(Person pers. comm.). Person has explained in several fora this low resilience for GMU-2 wolves as being due to substantial development (logging and roading) and its relationship to

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<sup>25</sup> And as well, there are natural factors that in addition could cause or contribute to a decline. Leeway must be provided for these, even the intensity or occurrence of these causes is indeterminate.

the geographic source/sink structure for the GMU-2 wolf population.<sup>26</sup> Those fora include: the 2006 Tongass Conservation Strategy Review Workshop; a peer reviewed book chapter; internal communications at ADF&G; and in two legal declarations. (Person 2006; Person & Brinkman 2013; ADF&G 2010; and Person 2013, 2014). The map on the next page (Figure 5 from Person 2014) is a GIS exercise illustrating the basic source/sink habitat structure for wolves in GMU-2. The analysis used a moving-window the size of a typical wolf pack home range, and ascribed the average percent development (logged and roaded areas) to the moving window's center point. The caption reads (with a quote from Person 2013):

"My analyses indicated that when about 40% of a pack's total home range is logged and roaded, there is a very high risk that mortality (mostly from hunting and trapping) will exceed reproduction and the pack area becomes a population sink. Indeed, even when as little as 25% of a pack's home range is logged, the ratio of reproduction to mortality is very close to one. Sinks are only maintained by immigration of wolves from other areas, which [...] is not likely to happen on Prince of Wales Island given the population's isolation and small numbers." - Statement of David K. Person Regarding the Big Thorne Project, Prince of Wales Island (August 16, 2013). Wolf Home Range = 300 sq. km; Roaded = area within 1 km of a road.

Further, regarding the few green areas on the map, the island group to the west does not support a permanent wolf population (Person & Ingle 1995 at 10) and three of the four islands do not have large deer populations (Person 1997). The South Prince of Wales Wilderness Area is mostly muskeg and unproductive forestland, making it mostly unfavorable winter habitat for the primary prey (deer). (Person 2006 at 5; Person & Logan 2012 at 24).

We believe — considering the circumstances facing the GMU-2 wolf population, the response characteristics to date of the population itself, and information in the sections above — that the resilience of the population is low. Given the present small number of wolves, the season should be closed for at least the 2015-2016 season, because high precaution is necessary.

### ***E. Present management structure lacks precaution and consideration of uncertainty***

Several types of uncertainty in the biological system and the management system need to be taken into account in making management decisions for GMU-2 wolves. Relevant uncertainties are discussed in two recent papers concerning wildlife management in British Columbia, and the findings apply equally here. The papers are: Artelle et al. 2014 (“When science-based management isn’t”) and Artelle et al. 2013 (“Confronting uncertainty in wildlife management”).

These quotes are a good introduction (internal citations omitted; all emph. is added):

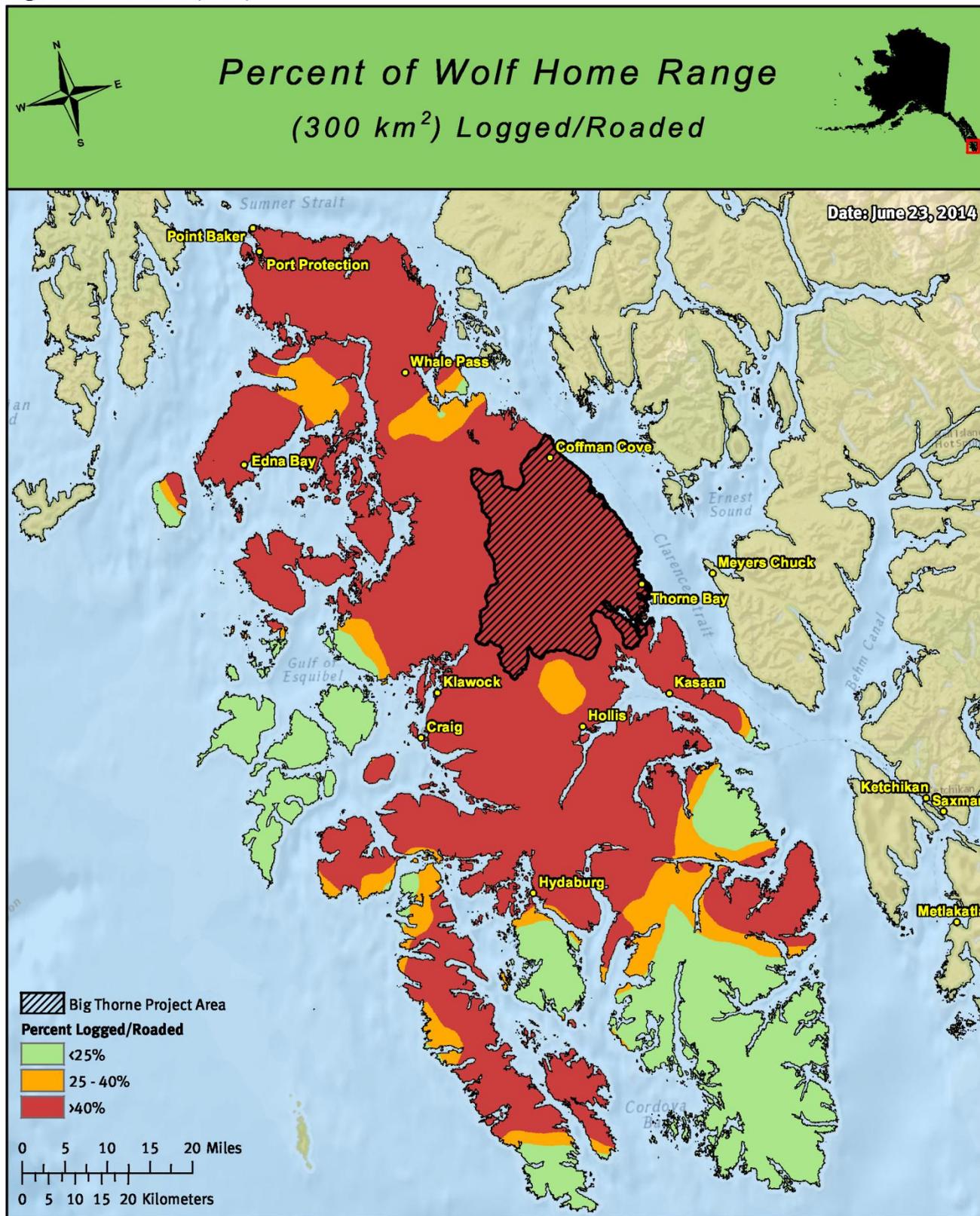
Given the substantial economic and ecological costs of management failure, it is alarming that purported scientific management often proceeds without the hallmarks of science—transparency, intelligibility, and rigorous evidence. (Artelle et al. 2014 at 1311).

We used grizzly bears to illustrate general issues applicable to many other taxa, rather than prescribing specific management actions for this particular species. (Artelle et al. 2013 at 5). ... as with many vertebrate taxa, mortality is primarily human-caused. As such, management decisions can have considerable influence on population viability. (Artelle et al. 2013. at 5).

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<sup>26</sup> Source/sink structure is more than just a matter of geography. It involves: (1) the demographics, ecology and distribution of the wolf population; and (2) the social, regulatory and land development factors that determine both the legal and illegal take of wolves by humans, and the distribution of those factors and that take across the landscape.

Figure 5. Person (2014)



*"My analyses indicated that when about 40% of a pack's total home range is logged and roaded, there is a very high risk that mortality (mostly from hunting and trapping) will exceed reproduction and the pack area becomes a population sink. Indeed, even when as little as 25% of a pack's home range is logged, the ratio of reproduction to mortality is very close to one. Sinks are only maintained by immigration of wolves from other areas, which [...] is not likely to happen on Prince of Wales Island given the population's isolation and small numbers."*

- Statement of David K. Person Regarding the Big Thorne Project, Prince of Wales Island (August 16, 2013).

Wolf Home Range = 300 sq. km; Roaded = area within 1 km of a road

Scientific management of wildlife requires confronting the complexities of natural and social systems. Uncertainty poses a central problem. Whereas the importance of considering uncertainty has been widely discussed, studies of the effects of unaddressed uncertainty on real management systems have been rare. We examined the effects of outcome uncertainty and components of biological uncertainty on hunt management performance ... We found that both forms of uncertainty can have serious impacts on management performance. (Id., abstract).

Outcome uncertainty alone – discrepancy between expected and realized mortality levels – led to excess mortality in 19% of cases (population-years) examined. (Id.).

Accounting for uncertainty around estimated biological parameters (i.e., biological uncertainty) revealed that excess mortality might have occurred in up to 70% of cases. We offer a general method for identifying targets for exploited species that incorporates uncertainty and maintains the probability of exceeding mortality limits below specified thresholds. Setting targets in our focal system using this method at thresholds of 25% and 5% probability of overmortality would require average target mortality reductions of 47% and 81%, respectively. ... (Id.)

This study illustrates the merit of incorporating approaches from other disciplines and taxa into wildlife management. Whereas BC grizzly bear management incorporates data and management techniques from grizzly bear management in other jurisdictions, it does not incorporate some promising methods from other disciplines. For example, **our approach, which relies on the principle that targets should be set sufficiently low to account for uncertainty (and lower than most of the estimated range of mortality limits)** is used in fisheries but far less commonly in wildlife management, highlighting the need for better integration of best practices across taxa and disciplines. (Id. at 7).

Honing in on specific considerations directly parallel to current and historic GMU-2 wolf management:

The government subtracts predicted non-hunt mortality (e.g. road kill, animal control kills, and illegal hunting) estimates from mortality limits and allocates the remaining mortality to hunting. (Id. at 2).

That is what Alaska's revised Unit 2 wolf regulation (5 AAC 92.008) does and the preexisting version did.

We note, however, that **by allocating mortality right up to mortality limits, BC managers treat limits as targets, conflating the two** ... current management procedure (above) treats mortality limits as point estimates ... (Artelle et al. 3013 at 2).

Again, this is what the new regulation does and the preexisting one did.

The most common factor associated with total overmortalities was unpredicted non-hunting mortality. However, *most of the total overmortalities from 2001–2011 (17 of 18, or 94%) could have been avoided with reduced hunting mortality* ... (Id. at 5).

... by accounting for mortality limit uncertainty, our simulations revealed that **overmortality events might have occurred in many cases in which mortality did not exceed government-determined mortality limits**. (Id. at 7).

Although ADF&G's claims are to the contrary (e.g. Bruce Dale at Board of Game 2015, transcript at 4 & 7), we conclude that Alaska's regulation (5 AAC 92.008) is non-transparent, failing to explicitly account for all the involved causes of mortality and uncertainties. From the Artelle et al. (2013) approach and similarities of the BC regulations they studied to the one in Alaska for Unit 2 wolves, it seems quite likely that Alaska's regulation (5 AAC 92.008) can easily lead to undetected wolf overmortalities, especially in a population already known to be low. Indeed, the available evidence indicates such overmortality has occurred repeatedly for GMU-2 wolves. For these reasons, closure of the season is warranted.

## **VI. Other management factors that need to be taken into account**

Apart from the above explanations of why the season should be canceled entirely, problems of the management mechanism for conducting a season are germane, as discussed below.

### **A. Sealing requirements under state and federal regulations**

In GMU-2, ADF&G and the FSB attempt to enforce a season's wolf quota by counting wolf skins that are brought in for sealing.<sup>27</sup> Both State of Alaska and FSB regulations have GMU-2 specific requirements for the sealing of wolf skins taken by trapping. The FSB regulation also applies to skins taken by hunting. In these cases a skin must be sealed within 14 days. However, ADF&G's GMU-2 specific regulation applies only to skins taken by trapping, and skins taken by hunting fall under a general statewide regulation that requires sealing within 30 days.

The FSB regulation:

The Federal hunting and trapping seasons may be closed when the combined Federal-State harvest quota is reached. Any wolf taken in Unit 2 must be sealed within 14 days of harvest.<sup>28</sup>

The State of Alaska regulation:

5 AAC 92.170. SEALING OF \* \* \* WOLF \* \* \*. ... (b) The sealing of \* \* \* wolf \* \* \* must be accomplished as follows: (1) in Unit 2, wolf taken *by trapping* must be sealed on or before the 14th day after the date of taking; (2) wolf, wolverine, and lynx taken *by hunting* must be sealed on or before the 30th day after the date of taking;

(Emph. added).

Regardless of which time limit applies (14 or 30 days) in a given instance, the allotted time is ill-suited for enforcing a small quota. This is evident from the quota for 2014/2015 being exceeded by 16% despite an emergency order closing the season. In that event, two delays were likely in play. (1) On the date enough skins had been submitted for sealing to cause alarm leading to an emergency order, an additional take that need not be reported for another 14 days (or 30 for non-subsistence hunters) likely had occurred. (2) Once the emergency order was issued, it did not take effect for 4 more days, and trappers and hunters then had an additional 14 days (or 30 for non-subsistence hunters) to bring skins in for sealing.<sup>29</sup> As a consequence the harvest exceeded the quota by 16%, with 29 wolves taken instead of 25.

The smaller the quota, the greater and more perilous this systemic problem will be.

### **B. The amount and location of trapping and hunting effort is unregulated**

Neither the State of Alaska nor the FSB have regulations that limit the number of trappers and hunters who may take wolves in GMU-2, nor is there any limit on the number of traps.

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<sup>27</sup> "Sealing" is the practice of crimping a serial-numbered metal tag into the margin of the skin, as verification that the trapper or hunter has reported the take and that the wolf has been included in the harvest count.

<sup>28</sup> See: <http://www.doi.gov/subsistence/regulation/wildlife/upload/Unit-2-Prince-of-Wales-Island-405-KB.pdf>

<sup>29</sup> From the EO's Justification section: "...Recognizing that several trappers are actively trapping on the island at this time, and in order to avoid exceeding the 25 wolf harvest limit, the trapping and hunting seasons are being closed at 11:59 PM on Sunday, February 22, 2015. This timeframe is expected to allow trappers time to retrieve their traps from the field while also keeping the harvest within the guideline level."

The smaller the quota, the more crucial this factor becomes. The only limitation is for hunters, who by regulation can harvest no more than 5 wolves each during the season.

## **VII. Conclusion**

We believe the situation for wolves in Game Management Unit 2 is clearly dire, that the population there is in great danger of being wiped out in the near future, and that at the least it will suffer a loss of the genetic diversity that is crucial for this isolated population if the decline in numbers is not arrested and recovery commenced. For all of the reasons in this petition, we ask the Federal Subsistence Board and Commissioner to close at least the 2015-2016 season for subsistence trapping and hunting of wolves in Game Management Unit 2. Immediate action is necessary.

## **VIII. Signatures**

Sincerely,

(Verifiable signatures upon request)

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Note: The Board of Game revised the regulation in January 2015 (changing 30% to 20%), but this is not yet reflected on-line.  
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