



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

Department of Fish and Game

DIVISION OF WILDLIFE CONSERVATION
Southeast Region

802 3rd Street
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4265
Fax: 907.465.4272

November 21, 2016

Chairman Ron Jackson
Heli-Ski Map Committee
P.O. Box 1209
Haines, AK 99827

Dear Mr. Jackson:

We would like to thank the Heli-Ski Map Committee and Borough Manager for their efforts and allowing us the opportunity to participate.

Our comments are based on the November 2nd, 2016 draft Heli-ski map. As discussed previously we have not yet completed modeling important winter habitat for mountain goats and denning brown bears. The models will allow us to produce maps with predicted habitat values for wintering mountain goats and denning brown bears. Until the models are complete we will base our comments on known observations during aerial surveys and from GPS collar data. It's important to remember mountain goats may overwinter in areas where no collared goats are present and some bear dens may occur in areas that were concealed from view during aerial surveys (e.g. not yet emerged from the den, below tree line, etc.). Therefore it is not possible for us to say with certainty that a specific location will not affect wildlife.

In an effort to illustrate our comments we have generated maps with bear den habitat, goat location density, and preliminary winter goat model results from the Kelsall dataset. The bear den habitat layer delineates the range of slope and elevation where we have observed 73 brown bear dens in the Haines area. This is simply a 2 factor den habitat model that contains the range of elevations where dens were observed (1358–3461 ft.) and 90% of the observed slopes (25–47degrees).). None the less it constrains the area of potential bear denning habitat by excluding areas that do not contain the elevation and slope combinations observed at brown bear dens in the Haines area. Next summer we will complete a bear den model for the Haines area, similar to an analysis that we are conducting in Yakutat, and will include additional important factors such as snow load, solar radiation, vegetation height, and terrain wetness. The second visual aid is a series of polygons created from kernel density estimation (KDE) of winter mountain goat locations. KDE calculate utilization based on the density of locations in a given area. KDE does not take habitat factors into consideration and demonstrates utilization by collared animals only. Finally, ADF&G does have a model predicting winter habitat use by mountain goats in the Kelsall area using data from a goat study conducted in the 1980s. Because that population of inland goats used a high elevation overwintering strategy it may not apply to all of the proposed sites but is likely

appropriate for many sites in the Haines area (especially in the more inland sites). After we analyze our more current data and larger sample sizes this model will certainly be more refined.

Heli-skiing activities can displace mountain goats from preferred wintering habitat during a time when goats are physically and nutritionally stressed (Cote 1996, Cote 2013, Hurley 2004). Pregnant females have the added energetic burden of supporting growing fetuses, and kids have high energetic demands because they are growing. Consequently, disturbance and displacement from preferred winter habitat may disproportionately affect nannies and kids. According to the Northern Wild Sheep and Goat Council (NWSGC) helicopter disturbance has been documented up to 2 km away from mountain goats. The NWSGC recommends that helicopter activity not occur within 1.5 km of occupied/suspected nursery groups or important winter range (Cote 1996 et al., Cote et al. 2013, Cadsand 2012, Hurley 2004). In less steep terrain the NWSGC recommends increasing the 1.5 km buffer. ADF&G agrees with these recommendations for mountain goats.

The elevation of 73 bear dens (64 obtained from aerial surveys and 9 GPS locations) ranged from 1,358–3,461 feet (mean 2,377ft.). The aspect of bear dens observed in the Chilkat Valley and its tributaries varied and 90% of slopes ranged from 25–47 degrees (mean 34 degrees). A study on Admiralty and Chichagof Islands found that bears denned between sea level and 3,904 ft. (mean 1981 ft.) and noted that aircraft traffic may lower the suitability of brown bear denning habitat (Schoen et al. 1986). Disturbance during the denning period can cause den abandonment which increases energy expenditure and reduces cub survival (Linnell 2000).

Harvest data and anecdotal reports indicate that wolverines occur in the Chilkat Valley region. Wolverines in Alaska are born between February and April. Natal dens are usually in snow caves at elevations from 984–4101 ft. (Magoun & Copeland 1998). Den abandonment after human disturbance at maternal dens has been documented (Copeland 1996). Habitat selection data from Berners Bay indicates that wolverines selected for shrub and unvegetated habitats that were farther up slopes and covered in snow during winter (Flynn et al 2012).

Regarding specific sites requested by heli-skiing operators we offer the following:

S2, S3a, S3b

We have no collared goats at these sites, but we have observed mountain goats within 1,500 m of S2, S3a, and S3b during early fall aerial surveys. Because goats occur within 1,500 m of these sites and collared goats in the nearby Kicking Horse River valley wintered at elevations ranging from 246–4,410 ft., it is likely that heli-skiing at S2 and S3 will disturb wintering goats. Site S2 and S3b occur within the ranges of elevation and slope Haines area brown bears use for denning, and 3 dens were found within 2.5 km of S3b (closest ~700m). Based on slope and elevation of the site and the presence of known dens in the vicinity, heli-skiing operations at sites S2 & S3b has the potential to disturb denning brown bears.

S4

During early fall aerial surveys we found mountain goats within 1,500 m of S4, and collared goats wintering about 2 km from this site used elevations ranging from sea level to 3,445 ft. Heli-skiing at S4 will likely disturb wintering goats. S4 is also within ~50 m of where a brown bear mauled a skier in April of 2016. Considering the time of year and that the bear was reported to have a small cub, the

survivor believed he disturbed the bear near its den site. We found three bear dens within 2.8 km of S4 (closest ~ 800 m) indicating that heli-skiing at that site has potential to disturb denning bears.

S5

During early fall 2016 aerial surveys we found mountain goats within 1,500 m of S5. We have no collared goats in the immediate vicinity of S5, but GPS collared goats overwintering north of the Tsirku River used elevations ranging from 826–6,273 ft. In addition, the winter goat model from the Kelsall indicates high value goat habitat likely occurs within the proposed addition area. Goats living near S5 may also use a high elevation overwintering strategy and would likely be disturbed by heli-skiing.

S6a and S6b

Collared mountain goats are documented to winter within 500 m of both S6a and S6b including within the previous approved heli-skiing terrain to the south and west of these sites. It is likely that heli-skiing at S6a and S6b will disturb wintering goats. Two brown bear dens were observed within 1500 m of S6a and S6b, and elevations and slopes favored for denning by bears in the Haines area occur in the area, so there is also potential for heli-skiing to disturb denning bears.

AH1

During early fall surveys mountain goats were seen within 1500 m of AH1. Mountain goats usually have small winter home ranges, and it is likely that goats seen on the survey winter nearby. If so, they would likely be disturbed by heli-skiing. In addition, the winter goat model from the Kelsall study (about equal distance from the coast) predicts high value habitat within AH1. Regarding bears, AH1 is outside the range of slopes and elevations favored by bears in the Haines area for denning, and no dens have been observed near AH1.

AH2a is not within 1500 m of any goat observations and above the elevation for brown bear denning habitat. The Kesall model does not predict any high value winter habitat for goats within AH2a. AH2b is within 1km of 2 brown bear dens (one of which is in the area currently approved by the Borough ~600m southwest of AH2b) and much of AH2b lies within the range of slopes and elevations favored by brown bears indicating that activity in AH2b may potentially disturb denning brown bears.

AH3a has numerous winter goat locations within the polygon and the KDE indicates that much of the polygon (and a portion of the currently approved area) was utilized by collard goats during winter. Three bear dens were observed east of this polygon (within the currently approved area) from ~350–2600 m. This indicates that site AH3a and the surround area contains important habitat for both mountain goats and denning brown bears. The department has not observed mountain goats within 1500 m of site AH3b. AH3b elevation range overlaps with the range of elevations and slopes favored by denning brown bears with the nearest den observed ~2km away. Site AH3a has the potential to affect mountain goats and both AH3a and AH3b have the potential to disturb denning brown bears.

Site AH4a occurs within 1500 m of winter GPS locations of mountain goats and the KDE indicates utilization of habitat within 1500 m of site AH4 during winter. Female goats in the area overwintered at elevations up to 6,407 feet indicating that some goats in the area likely use a high elevation overwintering strategy which is consistent with the Kelsall study conducted approximately 10km away. The Kelsall model indicates that high value goat habitat lies in and around this polygon including within

the currently approved area surrounding this site. This site and portions of the surrounding area have the potential to affect overwintering mountain goats.

AH5 has GPS locations from overwintering mountain goats located within 1500m this site which is consistent with the KDE. The Kesall model indicates that critical winter goat habitat overlaps with portions of this line and some of the adjacent area ADF&G Biologist Kevin White contacted the Haines Borough about this site after he located a nannie kid group in February of 2012 and during a return trip in May of the same year there were no goats observed. During the return trip Mr. White noted a helicopter landing zone and forwarded photos with an email to the Haines Borough notifying them that continued activity in the Summit Creek area goes against the NWSGC recommendations of a 1500m buffer. Some of the GPS locations occur within the approved area as well. Some of the area adjacent to this site overlaps with the range of elevations and slopes favorable for denning brown bears. A brown bear den was observed within 750 m of the northeastern portion of this line. Activity in and around this site is very likely to affect overwintering goats and has the potential to also affect denning brown bears.

AH6- Aerial survey data from mountain goats were observed throughout the polygon and the Kesall model indicates that portions of this polygon are high value winter mountain goat habitat indicating that mountain goats observed during aerial surveys likely also overwinter in the area. GPS collared mountain goats that winter within 2.5–5 km from this site used utilized elevations ranging from 570–5419 ft. Much of the polygon overlaps with the range of elevation and slope favorable by denning brown bears which is consistent with the fact that a brown bear den was observed within this polygon indicating that it contains high quality brown bear denning habitat. This site is likely to affect both mountain goats and denning brown bears.

AH7- Much of the both AH7a and AH7b overlap in elevation with the ranges favorable for brown bear dens. ADF&G has observed mountain goats within and around both polygons during aerial surveys. The Kesall model indicates that high value mountain goat habitat exists in both AH7a and AH7b indicating that the goats observed during aerial surveys may overwinter in and around these polygons. Given that this site far inland may indicate that goats in this area use the high elevation overwintering strategy. AH7a and AH7b are likely to affect mountain goats and have the potential to affect denning brown bears.

We thank you for the opportunity to comment and respectfully request that the heli-skiing map and any sites approved during this process be reconsidered in one year. By that time we will have completed modeling winter mountain goat habitat and brown bear denning habitat models.

Sincerely,



Carl H. Koch

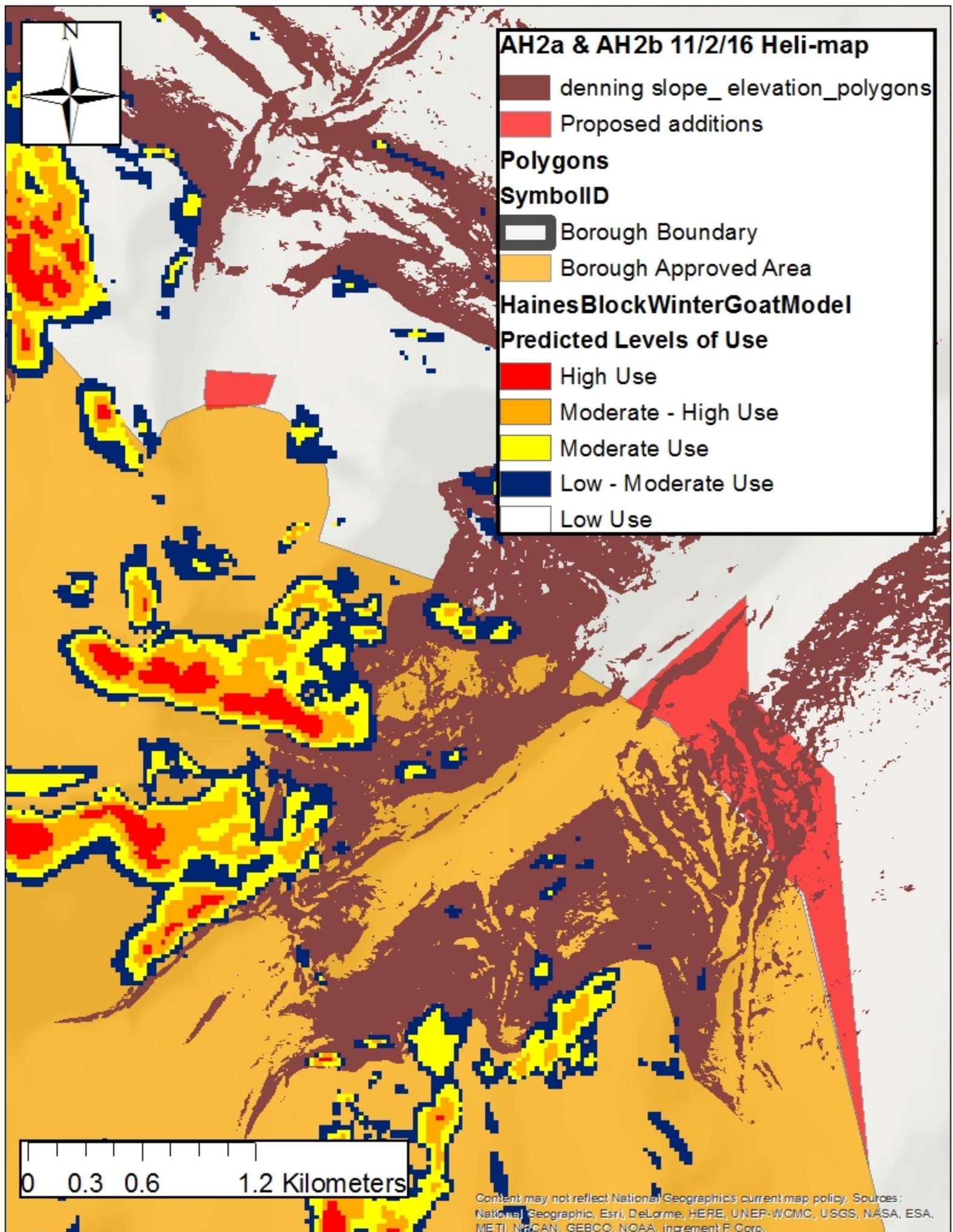
Wildlife Biologist II

AH1,AH7a & AH7b 11/2/16 Heli-map

-  denning slope_elevation_polygons
-  Proposed additions
- Polygons**
- SymbolID**
-  Borough Boundary
-  Borough Approved Area
- HainesBlockWinterGoatModel**
- Predicted Levels of Use**
-  High Use
-  Moderate - High Use
-  Moderate Use
-  Low - Moderate Use
-  Low Use



Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, Increment P Corp.





AH3a & AH3b 11/2/16 Heli-map

 denning slope_elevation_polygons

 Proposed additions

Polygons

SymbolID

 Borough Boundary

 Borough Approved Area

HainesBlockWinterGoatModel

Predicted Levels of Use

 High Use

 Moderate - High Use

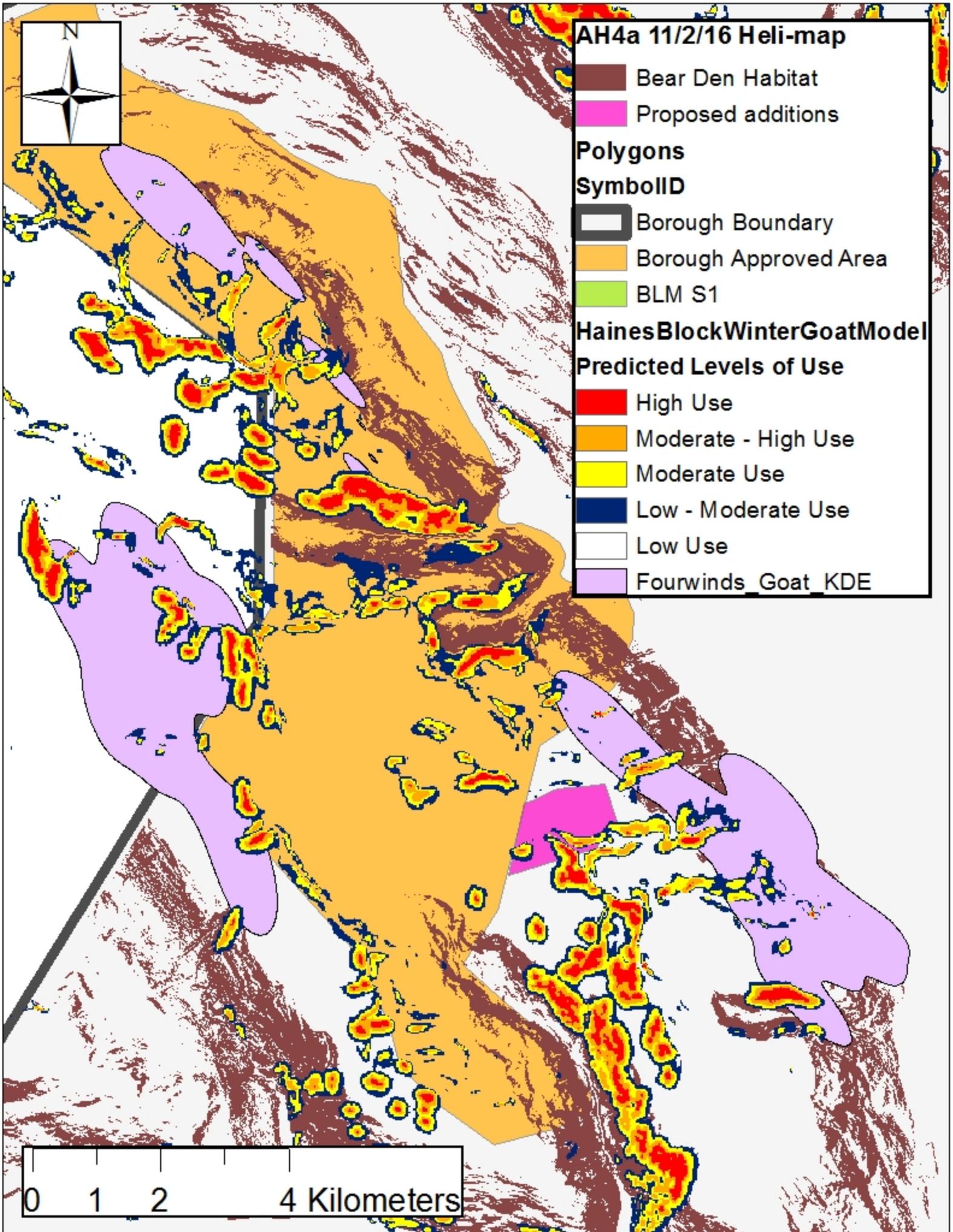
 Moderate Use

 Low - Moderate Use

 Low Use

 Cahoon Goat KDE





AH4a 11/2/16 Heli-map

- Bear Den Habitat
- Proposed additions

Polygons

SymbolID

- Borough Boundary
- Borough Approved Area
- BLM S1

HainesBlockWinterGoatModel

Predicted Levels of Use

- High Use
- Moderate - High Use
- Moderate Use
- Low - Moderate Use
- Low Use
- Fourwinds Goat KDE

0 1 2 4 Kilometers



AH5,S6a & 6b 11/2/16 Heli-map

- denning slope_elevation_polygons
- Proposed additions

Polygons

SymbolID

- Borough Boundary
- Borough Approved Area

HainesBlockWinterGoatModel

Predicted Levels of Use

- High Use
- Moderate - High Use
- Moderate Use
- Low - Moderate Use
- Low Use
- Summit Crk Goat KDE

0 0.5 1 2 Kilometers



AH6 & S5 11/2/16 Heli-map

denning slope_elevation_polygons

Proposed additions

Polygons

SymbolID

Borough Boundary

Borough Approved Area

HainesBlockWinterGoatModel

Predicted Levels of Use

High Use

Moderate - High Use

Moderate Use

Low - Moderate Use

Low Use





S2, S3a,S3b,S4 11/2/16 Heli-map

- Bear Den Habitat
- Proposed additions

Polygons

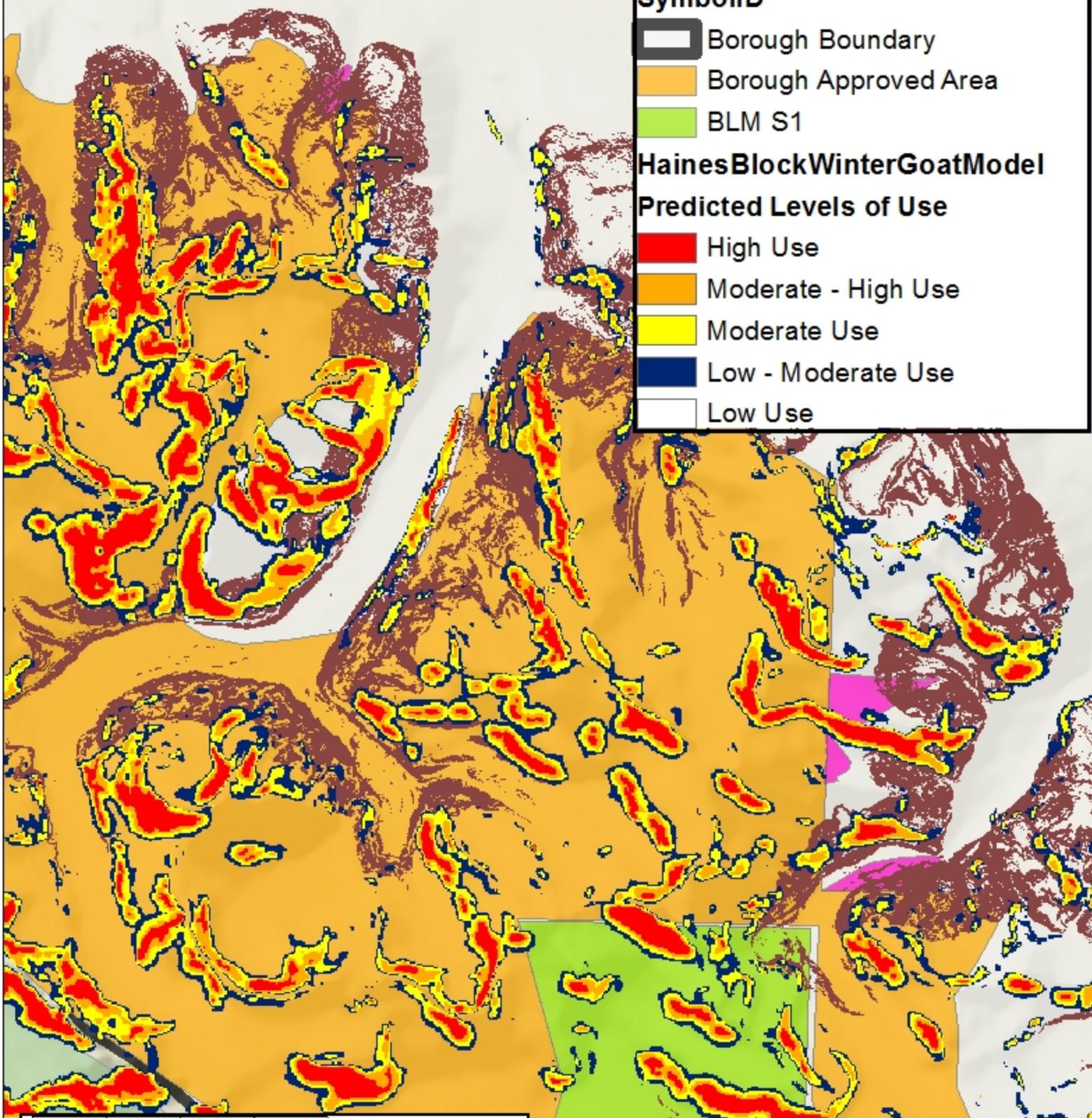
SymbolID

- Borough Boundary
- Borough Approved Area
- BLM S1

HainesBlockWinterGoatModel

Predicted Levels of Use

- High Use
- Moderate - High Use
- Moderate Use
- Low - Moderate Use
- Low Use



Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, Increment P 961p.