Klamath Plateau Fisher Project: Preliminary Report on Fisher Use of Green Diamond Resource Company Property

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The USDI Bureau of Land Management (BLM), UDSA Forest Service Pacific Northwest Research Station (PNW), and Oregon State University (OSU) are collaboratively working to understand fisher (*Pekania pennanti*) distribution, movements, habitat use, and rest/den site selection in southwestern Oregon. The study area is comprised of a matrix of federal and privately owned forests, loosely bound between Oregon State Route 66 to the south and east, and Dead Indian Memorial Road and Highway 140 to the west and north (Figure 1). Data collected will help to inform management decisions by 1) Estimating the approximate size, configuration, and overlap of fisher home range within the project area; 2) Describing the locations and habitat characteristics of denning habitat and resting sites within the project area; and 3) Evaluating how fisher are moving in a landscape mosaic of mixed forest management intensities

During summer 2016, 192 camera units surveyed the general region (n= 48 sample units). Fisher were detected at 47 stations but genetic data have not been processed to determine number of individuals (Brent Barry (OSU), Moriarty, Taal Levi (OSU), unpublished data). Similarly, the BLM have been conducting carnivore surveys for multiple decades revealing >15 individuals through genetic sample stations (Steve Hayner, Jeff Stephens, unpublished data). This project supplements non-invasive survey methods by providing information on resting, denning, movement and space use utilizing global positioning system (GPS) and very-high frequency (VHF) technology. A total of 26 individuals have been documented on the Klamath Plateau using the combined techniques. Data are still being collected - as such, this information should be considered preliminary.

Between October 2015 and February 2017, 15 individual fisher were live-captured. As an observational study where we have specific goals relating movement data on adult and sub-adult individuals, only 12 of these individuals were monitored using GPS or VHF collars. As such, the data presented in this report reflect the minimum number of sub-adult and adult fisher utilizing Green Diamond Resource Co. (GDRC) property in the Klamath Plateau study area. GPS data have been collected for 9 individuals (4 females, 5 males) with 16 collar deployments, and VHF-only data have been collected from 3 individuals (1 female, 2 males). Of the 12 individuals monitored, 9 have been documented using GDRC property.

We have collected 40,186 GPS locations and 137 VHF locations for the 12 monitored individuals. Of these, 1818 GPS locations (n=7 individuals) and 32 VHF locations (n=4 individuals) occur on GDRC property.

From the GPS and VHF location data, we modeled home ranges for 9 individual fisher using 95% kernel density estimates (Figure 2). Males on average had larger home range sizes than females (Table 1). Of the calculated fisher home ranges, 7 individuals (3 females, 4 males) overlapped GDRC property, with area of overlap totaling 81.44 km^2 (Figure 3). Field crews observed 3 additional individuals (1 female, 2 males), monitored by VHF telemetry only, whose home ranges were not calculated due to insufficient location data. All 3 individuals were documented using or likely utilized GDRC land within their prospective home ranges, thus the

total area of overlap between fisher home ranges and GDRC property presented here is likely underestimated.

Table 1. Preliminary home range size for Klamath Plateau fishers as calculated by 95% kernel density estimators.

Sex	**Average size (km^2)**	**Standard Deviation**
Female (n=4)	23.5	11.3
Male (n=5)	111.4	60.9
Overall	72.3	63.6

Using VHF telemetry, we documented 117 unique rest structures for fisher on the Klamath Plateau. Of these, 14 rest sites and 4 den sites (n=4 individuals) occur on GDR-owned property (Figure 4). GPS data also suggest an additional 34 resting locations on GDRC lands (Figure 4). Documented rest site species include white fir (*Abies concolor*), Douglas-fir (*Pseudotsuga menziesii*), Shasta red fir (*Abies magnifica*), sugar pine (*Pinus lambertiana*), ponderosa pine (*Pinus ponderosa*), lodgepole pine (*Pinus contorta*), and incense cedar (*Calocedrus decurrens*) ranging from 8.1 to 83 inches in diameter at breast height. Fisher were documented using cavities and platforms (i.e. mistletoe brooms, large branches, etc.) in live trees and snags, in addition to logs, slash piles, downed woody debris, and rock piles as rest and den sites. There has been no formal evaluation of the use of den sites as rest sites, so it is possible that dens may also be used as resting locations or vice versa.

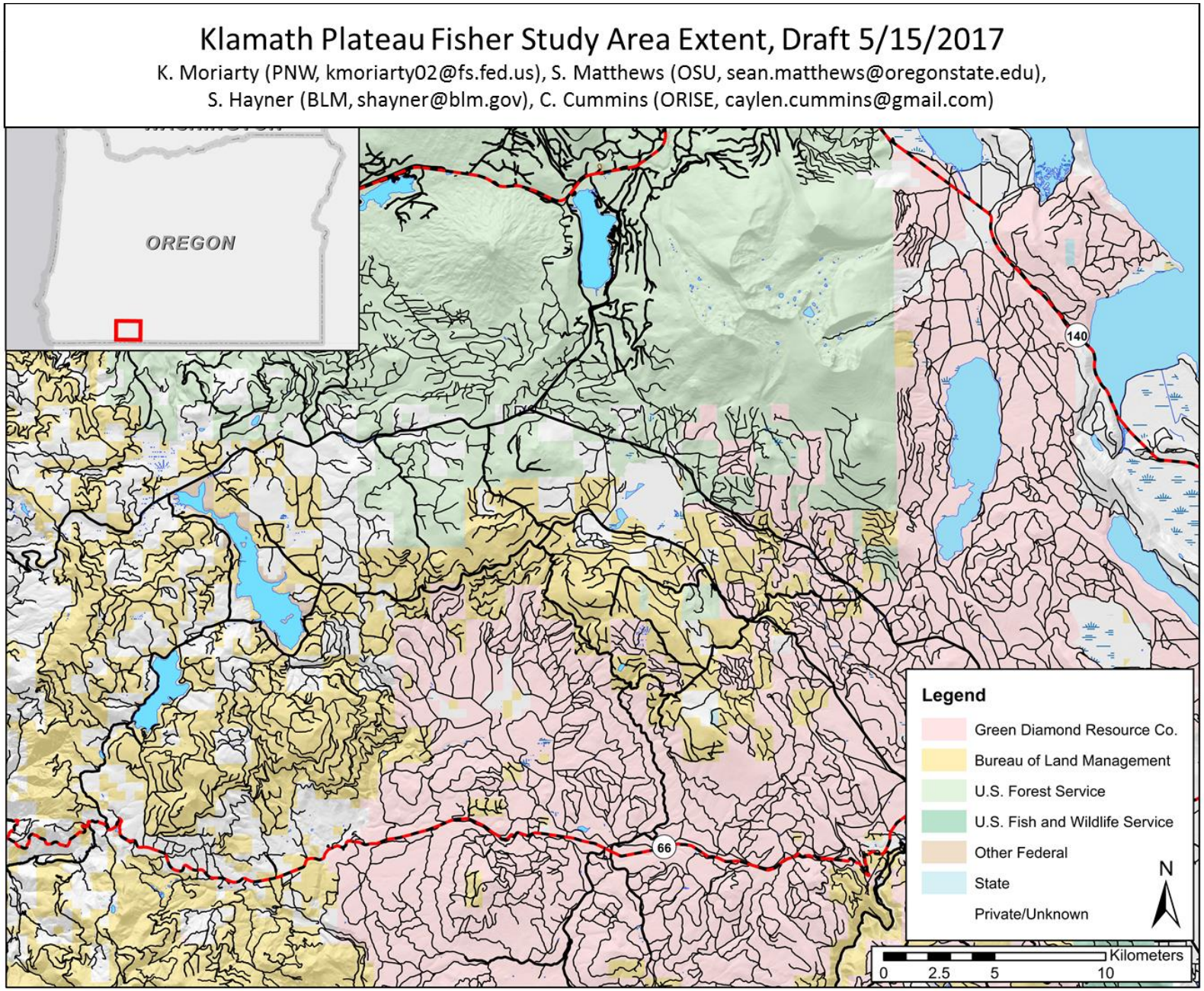

Figure 1. General location of the Klamath Plateau fisher study in southwestern Oregon.

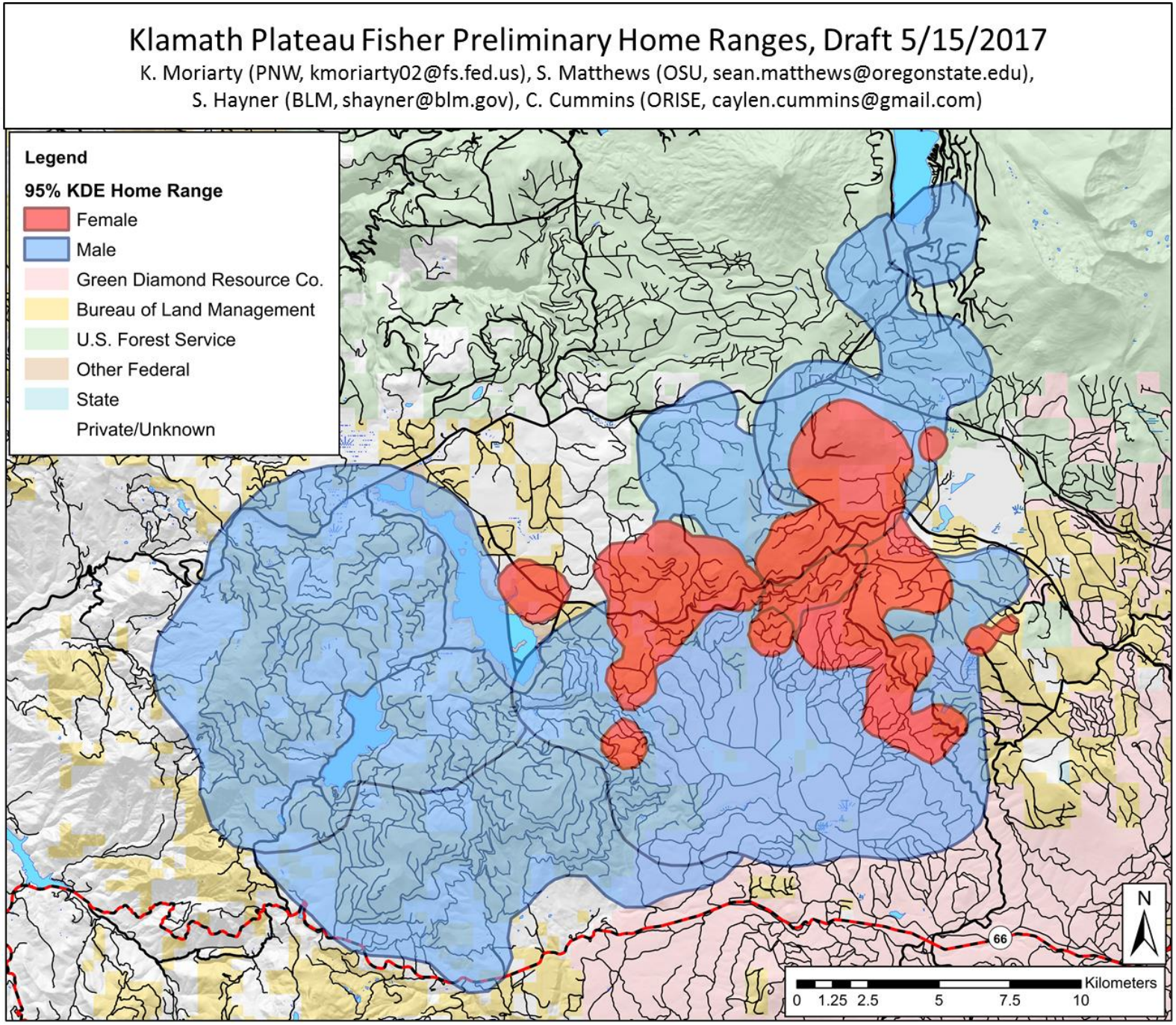

Figure 2. Preliminary 95% kernel density estimated home ranges for 9 GPS-collared fisher on the Klamath Plateau.

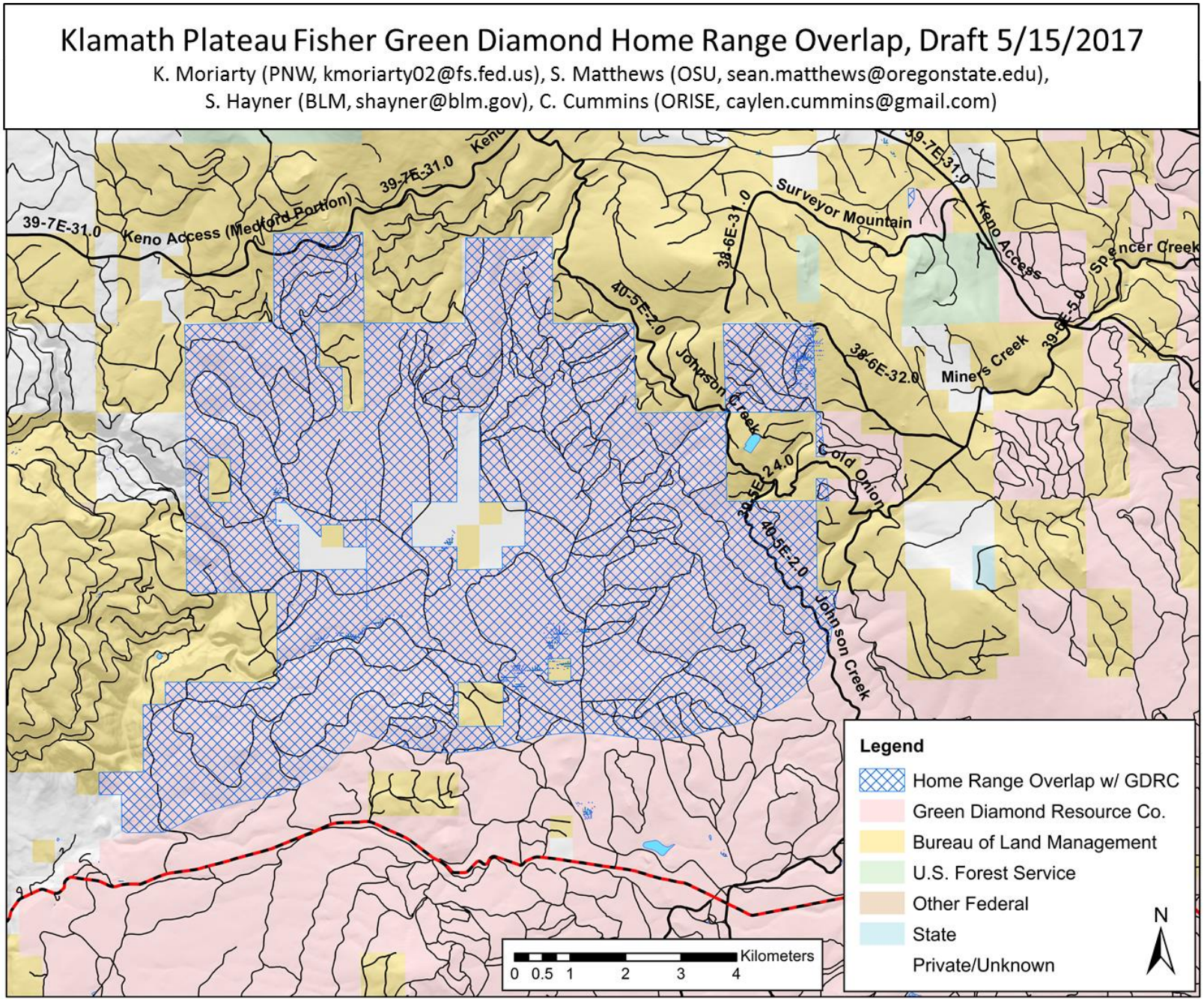

Figure 3. Area of overlap between preliminary fisher home ranges and Green Diamond Resource Company owned property in the Klamath Plateau study area.

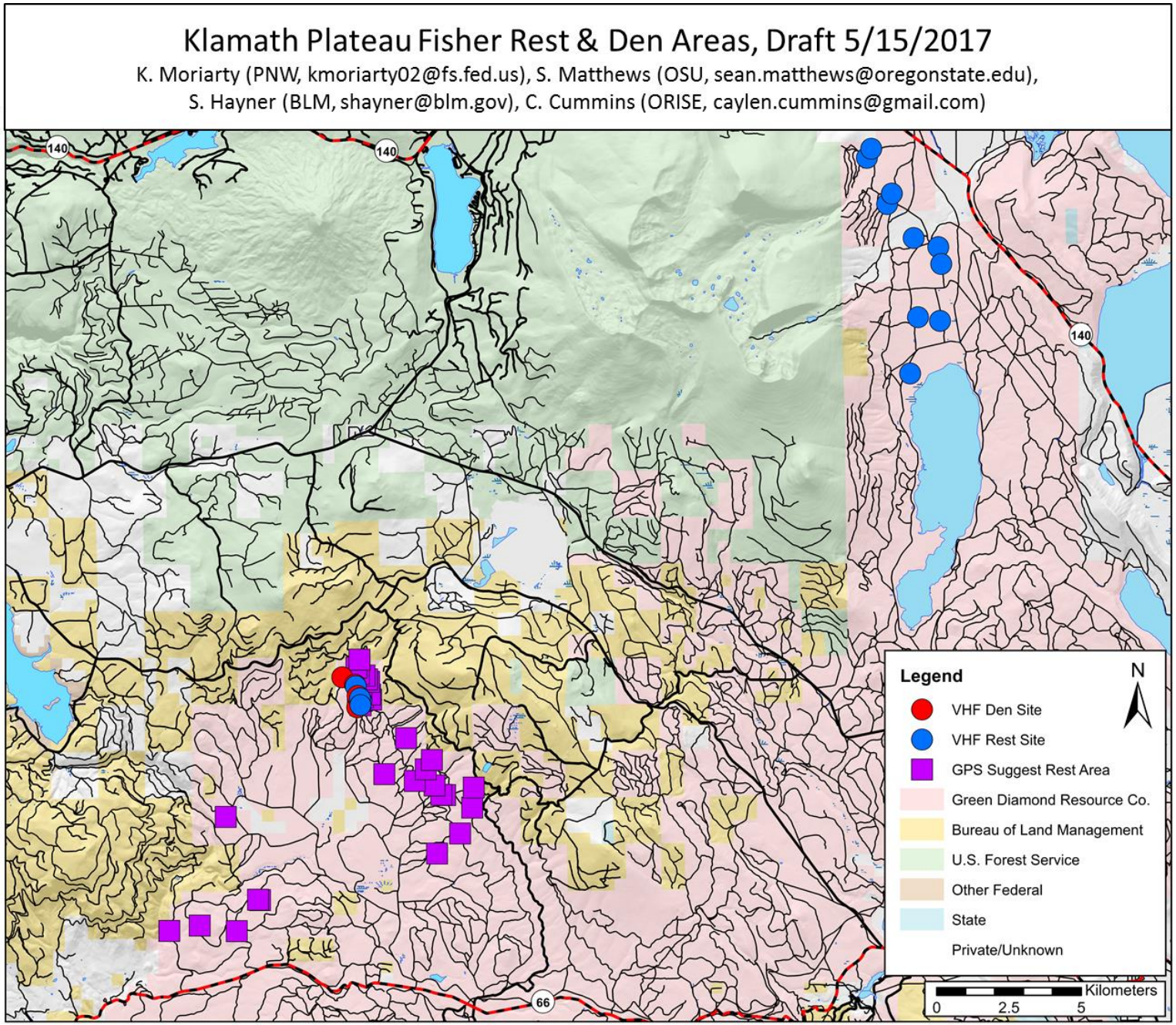

Figure 4. Documented rest and den site locations, utilizing both VHF and GPS technologies, located on Green Diamond Resource Company property in in the Klamath Plateau study area.