Remote Camera Surveys for Forest Carnivores on Lands Managed by the Coos Bay BLM

Final Report to the interagency Special Status/Sensitive Species Program

FY 2005 Inventory & Conversation Planning Project

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Introduction

American marten (*Martes americana*) and Pacific fisher (*Martes pennanti*) are two forest carnivores that are indicators of properly functioning forest ecosystems (Zielinski and Kucera 1995). Martens and fishers no longer occur throughout much of their historic ranges in the Western United States due to habitat loss, trapping, and human disturbance. In 2004, the Pacific fisher became a Candidate species for listing under the Endangered Species Act of 1973, with its range in Oregon considered greatly reduced (USDI United States Fish and Wildlife Service 2004). Similarly, the distribution of American marten in the Pacific Northwest Coast Range has undergone major declines and martens are now considered absent or scarce in areas where they were once common (Buskirk and Ruggiero 1994). Conservation of these carnivores requires knowledge of their current distributions to mitigate potential impacts from land management practices.

To address this need, coordinated and systematic surveys to determine the range of martens and fishers in the Pacific Northwest are underway. In the Coast Range of western Oregon, the Bureau of Land Management (BLM) initiated a survey for forest carnivores in 2005. As part of that effort, I conducted the survey using the protocol outlined by Zielinski and Kucera (1995) for 35-mm photographic bait stations. I surveyed the greater portion of 2 townships during the winter and spring of 2005/2006 and failed to detect either species.

Study Area

The study area is located in the Coast Range of Coos County in southwestern Oregon approximately 12 miles northeast of Coquille, Oregon on BLM owned land managed by the Coos Bay District (fig 1). Specifically, the study area is located in Township 27 South and Township 26 South (Range 10 West). BLM ownership comprises 75% (17,333 acres) of the land area in Township 27 and 65% (14,906 acres) of the land area in Township 26 (fig 2). The remaining land is owned by timber companies and is intensively managed for the production of forest products. Land ownership in these 2 townships is not allocated in the checkerboard pattern common to BLM lands in western Oregon. Instead, sections of BLM lands are contiguous within and between the

townships. Currently, the federally owned portion of the study area is in Late Successional Reserves (LSRs), thus management emphasis is on retaining and promoting forests with old-growth components.

Generally, the study area is steeply sloped with deeply dissected drainages. Regional climate consists of mild wet winters and warm dry summers, and within the study area, average rainfall from 1960 through 1980 ranged from 60-80 inches (USDI BLM 2002). Forest seral classes vary considerably across the study area from newly harvested clear-cuts on private lands to old growth on BLM lands. Approximately 33% of BLM land in Township 27 South, 10 West is comprised of forests with trees greater than 300 years old and approximately 41% is comprised of forests younger than 50 years old (fig 3). Similarly, in Township 26 South, 10 West approximately 42% of BLM land consists of forests greater than 300 years old and 55% of forests younger than 50 years old (fig 4). The private land in both townships consists mostly of forests younger than 50 years old. The Plant Series is Western Hemlock and common conifer species include Douglas-fir, western hemlock, and western redcedar. Less common tree species are Grand fir and Port-Orford-cedar. Common hardwoods found in the study area include Bigleaf maple, Oregon myrtle and red alder, less common are tanoak, chinquapin, and madrone.

Methods and Materials

I closely followed methods described in American Marten, Fisher, Lynx, and Wolverine: Survey Methods for Their Detection (Zielinski and Kucera 1995) for photographic bait stations using dual sensor monitors and 35-mm cameras. The sample unit area of 4 mi^2 described in the protocol is scaled to the home-range size of the smallest species (American marten). Within each sample unit I placed a minimum of 2 camera stations (3 sample units received 3 camera stations because of the extent of suitable habitat or due to suitable habitat that was isolated). Sample units were systematically identified and numbered using the numbering convention of sections within a township. Camera stations were located in the most structurally complex forest stands within each sample unit that could be reasonably accessed, and each station location was determined using aerial photographs, orthophotoquadrangles, topographic maps, BLM transportation maps,

and field reconnaissance. Structurally complex stands contain large diameter trees and snags with broken tops and cavities, multi-layered canopies, and an abundance of large down woody material. Camera stations were numbered to correspond to the section they were located and cameras were placed to sample different habitats such as ridges, riparian areas, upper watershed mid slopes areas, and upper watershed areas near small tributaries. Nearly all stations were operational for a minimum of 28 days with most stations operational for greater than 28 days (average 35 days). A total of 21 camera stations were deployed in 9 sample units in Township 27, and 12 camera stations were deployed in 6 sample units in Township 26.

I used a dual sensor passive infrared motion detector (TM500) manufactured by Trailmaster (Goodson & Associates, Inc. Lenexa, KS 66215) connected to an Olympus Infinity Mini DLX 35-mm camera. I used 24 exposure 400 ASA print film. The camera and motion sensor were trained on a bait pile that contained whole coho salmon obtained from Cole M. Rivers Fish Hatchery and whole chicken carcasses obtained from the Willamette Egg farm in Eagle Point, Oregon. The bait was placed in a pouch fashioned from poultry wire and suspended on the bole of a tree approximately 1.5 meters from the ground and 2 meters from the camera/monitor. Motion sensors (monitors) were oriented due north so the sun would not falsely trigger the heat sensitive monitors. Also, understory vegetation and low hanging branches within the field of the motion sensor were removed in an effort to reduced wind-driven events. Monitor sensitivity level and camera delay settings were initially left on default, but in many instances later changed to accommodate differences in station sites and equipment.

The survey began December 1, 2005 and ended May 10, 2006. I was able to operate up to 15 camera stations simultaneously which I serviced approximately once every seven days. The TM500 monitors operated on alkaline ‘C’ cell batteries that lasted the entire survey effort. The cameras operated on alkaline ‘AA’ cell batteries that needed replacing every 14 days. Typically fresh bait and a marten/fisher scent paste was renewed at every visit. Film was replaced if the roll was more than half exposed or if the bait appeared to have been tampered with by a mid-sized to large animal. Camera station activity and

photographic data were entered into a database that generated summary reports (see attached). Photographs were stored in their processing envelopes and labeled with the township, range and station number, time period over which the film was exposed, and the identified species. If no species were detected on an exposed frame, that photograph was entered as undetected in the database unless it was obviously triggered by wind-driven vegetation or by equipment malfunction.

Results

Thirty-three stations (12 stations in Township 26, and 21 stations in Township 27) were operational for a total of 1,161 days. Spotted skunks were the most common and widespread species encountered occurring in 905 photographs at 23 stations. Raccoons were recorded in 431 photographs but only found at 10 stations. Bobcats appeared in 294 photographs and were documented at 16 stations. Images that did not contain an animal were labeled as undetected and accounted for 184 photographs at 19 stations. Other species recorded included: Mice (183 photographs/13 stations), Turkey Vultures (33 photographs/2 stations), Bears (24 photographs/4 stations), Elk (7 photographs/6 stations), Chipmunks (3 photographs/1 station), Voles (4 photographs/1 station), Flying Squirrels (2 photographs/1 station), Deer (1 photograph/1 station), and Douglas squirrel (1 photograph/1 station). The database summary reports included in this narrative provide further analysis and station location information.

Discussion

Survey efficiency (72%) was based on a ratio of total operational days (days cameras were available to take a photograph – 1,161 days) to camera on-site days (days that equipment and bait were deployed – 1,619 days). Equipment malfunction and early film exposure were the primary reasons for the low survey efficiency rating. The most troublesome and difficult to detect of the equipment malfunctions concerned a monitor's failure to send an electronic signal to the camera every hour to keep the camera on standby mode. In the absence of this signal the camera turns off and is unavailable to take a photograph even when the monitor registers events and is signaling the camera. Another common occurrence that diminished survey efficiency was the early exposure of

the film in the time period between servicing (this could only be determined after the film had been processed so that the date stamp on the last photograph could be read). It was common for animals to visit the bait pile soon after I serviced that station (within 1 or 2 days) and stay long enough to expose the entire roll. This left the camera unavailable to record data. In this scenario the monitor was still available to record events but without photographic evidence the record of monitor events does not contribute any useable data. Other reasons for survey inefficiency included wind-driven vegetation that would trigger an event and subsequent photograph. If the wind persisted an entire roll of film could quickly be consumed recording only moving branches. Undetermined equipment malfunctions also contributed to survey inefficiency. On several occasions a malfunctioning monitor would signal the camera to record a photograph at 2-minute intervals for no apparent reason.

Bait acquisition and management were a large and critical part of the survey effort. Cole M. Rivers fish hatchery supplied approximately 1,600 lbs of frozen whole coho salmon and Willamette Egg Farms provided 500 lbs of whole, feathered, chicken carcasses. Both types of bait worked equally well in attracting animals, although it was my impression that spotted skunks and raccoons appeared more attracted to chicken bait and bobcats more attracted to fish bait. I often mixed the two bait types into the same pouch.

When determining station locations, I was constrained by availability of suitable habitat, protocol demands (i.e. two stations within a 4 mi^2 area but separated by at least 1 mile), and access. Once suitable areas were identified I then tried to sample different habitat types even though vegetation throughout the study area was relatively homogeneous. I classified these different habitat types as upper watershed bench or mid-slope (13 stations, 39%), upper watershed near small tributary (11 stations, 33%), riparian or near riparian to large stream (5 stations, 11%), and ridge or spur ridge (4 stations, 12%). The database summary reports show where species were detected within these general habitats.

Conclusion

I failed to detect either American pine marten or Pacific fisher, however I also failed to detected other carnivore species that are known to occur within the study area such as coyote, cougar, fox, and weasel. The absence of the latter species could be attributed to food preferences that do not include carrion (unlikely) or general wariness toward human scented electronic devices that emit detectable sound waves. Further, there may be differences in effectiveness of survey methods such that track plates may be more effective at detecting some species for a variety of reasons. Conversely, the failure to detect martens and fishers given the intensity of the sampling effort and the high degree of forest fragmentation within the study area (including a lack of suitable habitat connecting the study area to additional large blocks late seral forest) indicates a high probability that one or both of these species are not present within the study area.

Literature Cited

Buskirk, S. W. and L. Ruggiero. 1994. American Marten. Chapter 2 *in* L. Ruggiero, K. B. Aubrey, S. W. Buskirk, L. J. Lyon and W. J. Zielinski, technical editors: American marten, fisher, lynx, and wolverine in the western United States. USDA Forest Service, General Technical Report RM-254. Fort Collins, CO. 184 pp.

USDA Bureau of Land Management. 2002. North Fork Coquille Watershed Analysis. On file, Coos Bay District, North Bend, Oregon.

USDI United States Fish and Wildlife Service. 2004. 12-month Finding for a Petition To List the West Coast Distinct Population Segment of the Fisher (Martes pennanti). Federal Register Publication Volume 69 No. 68 Pages 18770-18792.

Zielinski, W. J. and T. E. Kucera. 1995. American marten, fisher, lynx, and Wolverine: survey methods for their detection. USDA Forest Service PSW General Technical Report No. 157. 163 pp.

Figure 1

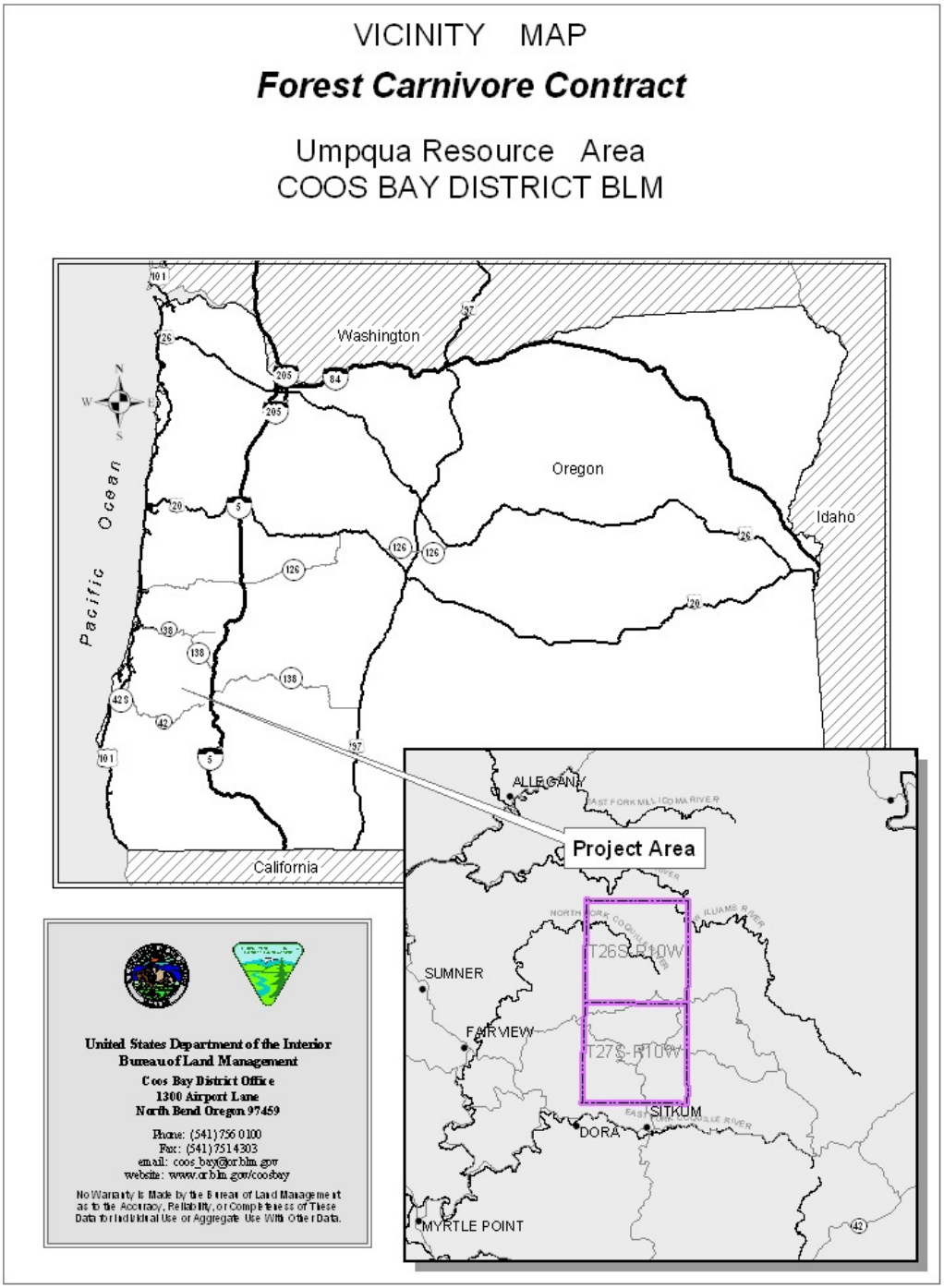

VICINITY MAP
Forest Carnivore Contract
Umpqua Resource Area
COOS BAY DISTRICT BLM
Washington
Oregon
Idaho
California
Pacific Ocean
Project Area
ALLEGANY
SUMNER
FAIRVIEW
SITKUM
DORA
MYRTLE POINT
T26S-R10W
T27S-R10W
United States Department of the Interior
Bureau of Land Management
Coos Bay District Office
1300 Airport Lane
North Bend Oregon 97459
Phone: (541) 756 0100
Fax: (541) 751 4303
email: coos_bay@or.blm.gov
website: www.or.blm.gov/coosbay
No Warranty is Made by the Bureau of Land Management as to the Accuracy, Reliability, or Completeness of These Data for Individual Use or Aggregate Use With Other Data.

Figure 2

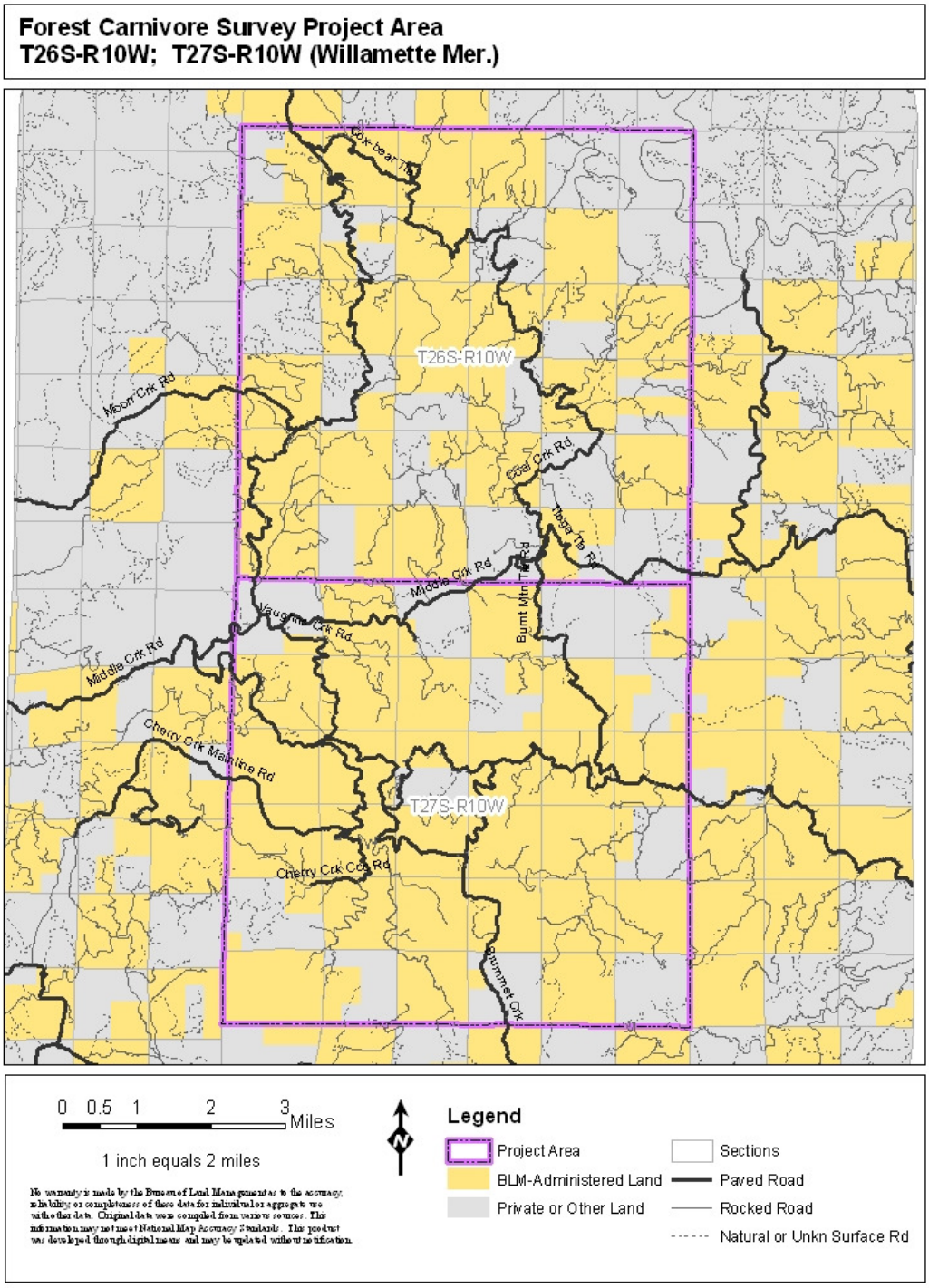

Forest Carnivore Survey Project Area
T26S-R10W; T27S-R10W (Willamette Mer.)
T26S-R10W
T27S-R10W
Moon Crk Rd
Coal Crk Rd
Middle Crk Rd
Vaughn Crk Rd
Burnt Mtn Tie Rd
Middle Crk Rd
Cherry Crk Mainline Rd
Cherry Crk Cut Rd
Shummet Crk
0 0.5 1 2 3 Miles
1 inch equals 2 miles
Legend
Project Area
BLM-Administered Land
Private or Other Land
Sections
Paved Road
Rocked Road
Natural or Unkn Surface Rd

Figure 3

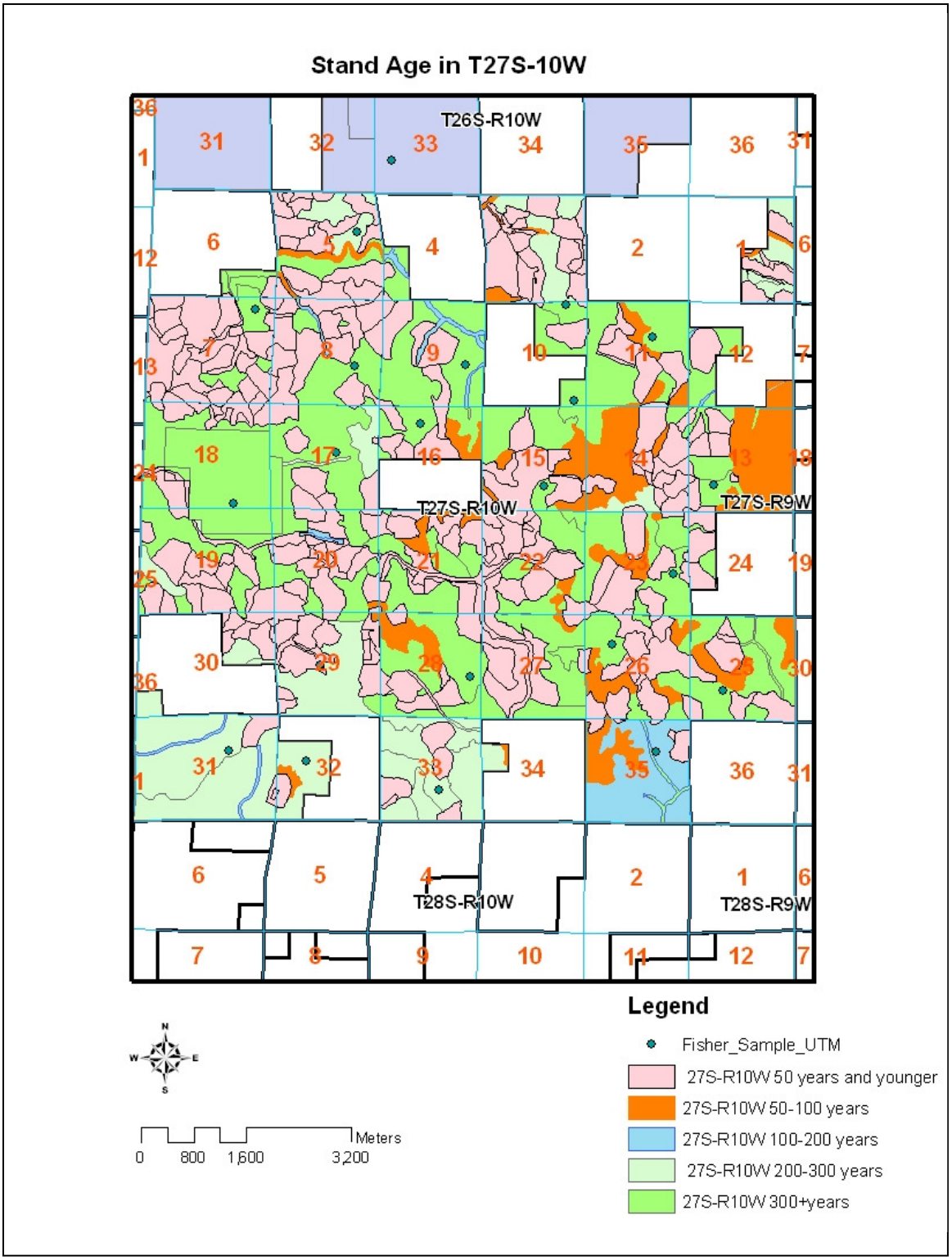
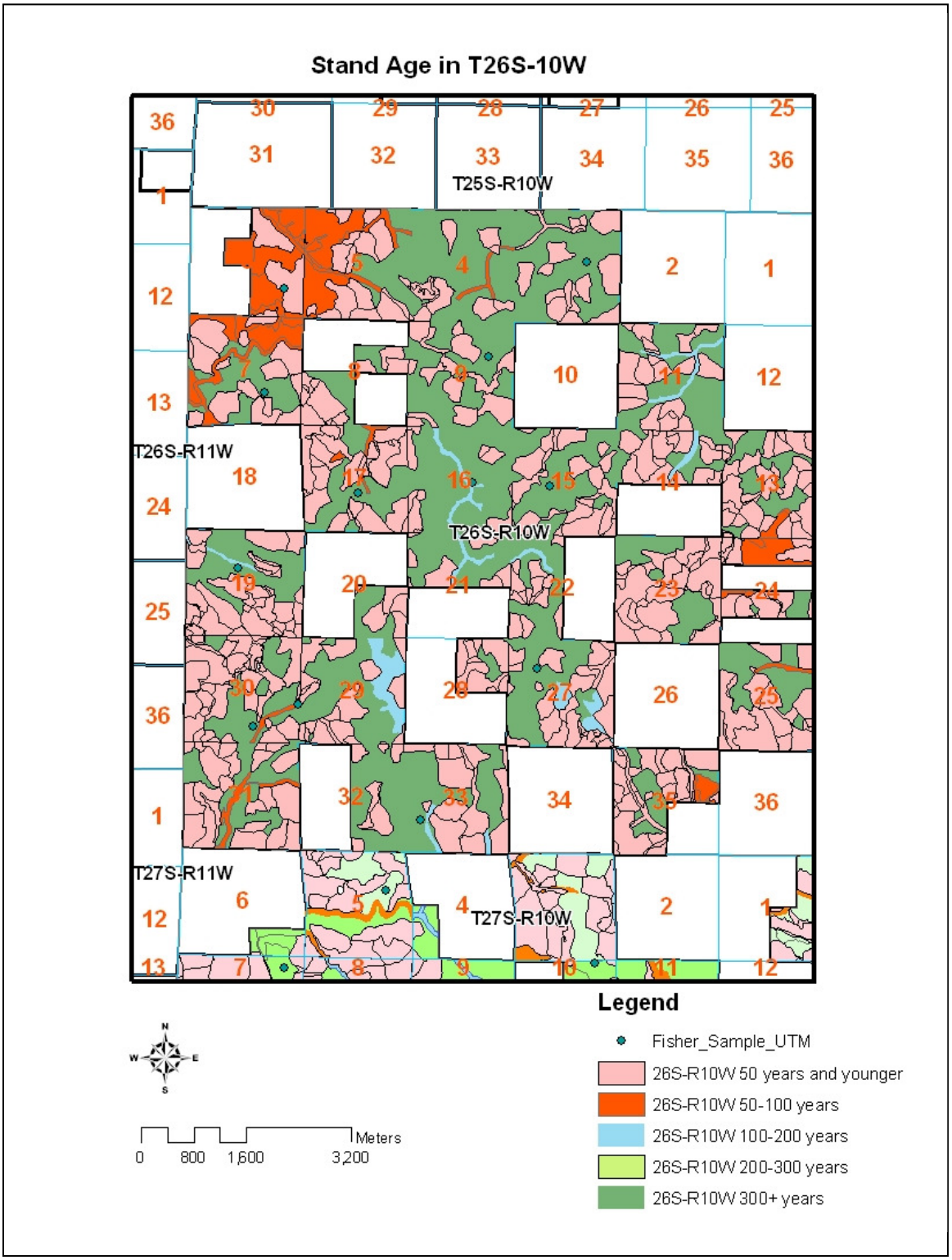

Stand Age in T27S-10W
T26S-R10W
T27S-R10W
T27S-R9W
T28S-R10W
T28S-R9W
Legend
Fisher_Sample_UTM
27S-R10W 50 years and younger
27S-R10W 50-100 years
27S-R10W 100-200 years
27S-R10W 200-300 years
27S-R10W 300+years
Meters
0 800 1,600 3,200

Figure 4


Stand Age in T26S-10W
T25S-R10W
T26S-R11W
T26S-R10W
T27S-R11W
T27S-R10W
Legend
Fisher_Sample_UTM
26S-R10W 50 years and younger
26S-R10W 50-100 years
26S-R10W 100-200 years
26S-R10W 200-300 years
26S-R10W 300+ years
Meters
0 800 1,600 3,200