Medford Bureau of Land Management
3040 Biddle Road
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Crowfoot Creek Allotment –

STANDARDS OF RANGELAND HEALTH ANALYSIS

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INTRODUCTION

This is an Oregon/Washington Bureau of Land Management (BLM) Standards of Rangeland Health Evaluation that addresses the Crowfoot Creek Allotment (10039). The Crowfoot Creek Allotment is located east of the Crowfoot Creek Road off of the Butte Falls Highway in T. 35 S., R. 1 E., Section 15 Willamette Meridian (Map 1). The allotment is 521 acres with 28 cows permitted from April 16-June 30 totaling 70 Animal Unit Months (AUMs).

Vegetation

Vegetation in the allotment is a mosaic of plant communities, including mixed hardwood-conifer woodlands; Oregon white oak woodlands; wedgeleaf ceanothus and manzanita chaparral; grassy, rocky openings; and meadows. Elevation ranges from 1,720 to 2,520 feet. All aspects are represented and slopes are moderate to gentle. While plant composition in the mixed hardwood-conifer woodlands and Oregon white oak woodlands contain mostly native species, the open grassy and chaparral areas where soils are thinner, contain annual, non-native grasses like medusahead (*Taeniatherum caput-medusae*), hedgehog dogtail (*Cynosurus echinatus*), bulbous bluegrass (*Poa bulbosa*) and non-native annual bromes. The conversion from native to non-native species in these meadows occurred as a result of historical uses and the invasiveness and dominance of non-native grasses and forbs. The BLM conducted fuels reduction treatments in some chaparral, oak woodland, and mixed hardwood conifer woodlands in the allotment a couple of years ago. The treatments returned those plant communities to more open conditions which are closer to those under natural fire regimes.

Soils

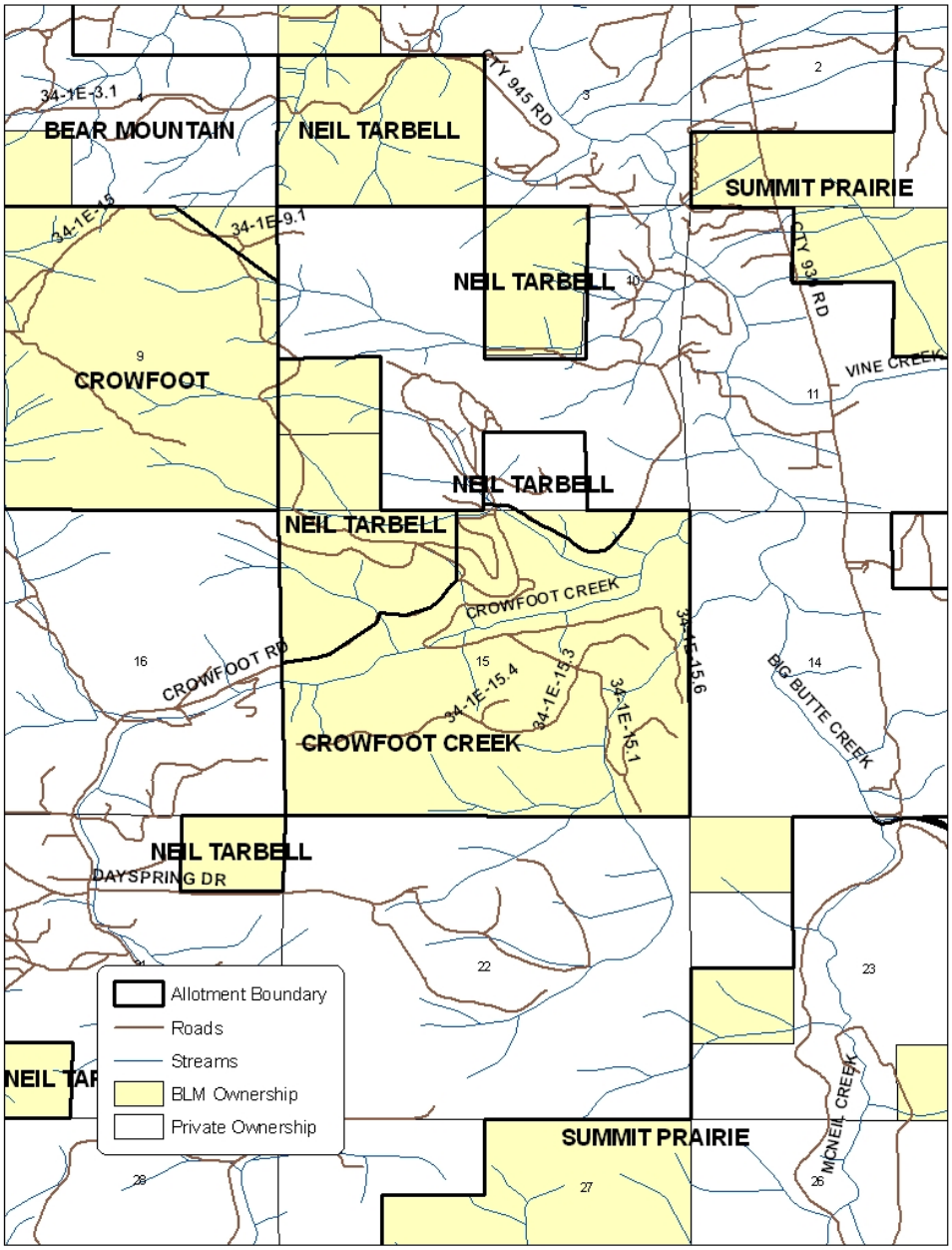
The main soil limitations affecting livestock grazing are erosion, compaction, the depth to bedrock, and the steepness of slope. This season of use and number of cattle using the allotment does not significantly diminish the health and function of the watershed by minimizing use, maintaining adequate vegetative cover, and healthy root systems. These factors aid in maintaining existing infiltration, percolation, runoff and erosion rates. Areas dominated by invasive annual grasses have shallow root zones, and thus are less able than native grassland communities to retain and slowly release moisture, capture leaching nutrients, and stabilize the soil (D'Antonio and Vitousek 1992).

Soils in the area are primarily classified as McMullin/McNull series. These soils are generally moderately deep, well drained, and typically composed of dark reddish-brown loams. Permeability is moderately slow to moderate, with a water capacity of about 4 inches, and a corresponding rooting depth of about 10 to 20 inches. These soils have moderate erosion factors by water, with steeper slopes more susceptible to erosion during storm events. These soil types are suitable for livestock grazing and wildlife habitat.

Hydrology

The Crowfoot Creek Allotment lies entirely within the Lower Big Butte Creek Level 6 Subwatershed in the Big Butte Creek Level 5 Watershed. Crowfoot Creek runs through the northern portion of the allotment. Crowfoot Creek flows directly into Big Butte Creek approximately one-third mile downstream of the allotment boundary. There are 3.5 miles of intermittent streams and 1.5 miles of dry draws within the allotment boundary.

Map 1. *Crowfoot Creek Allotment Map*



ASSESSMENT

Rangeland Health Assessments are required on each allotment prior to consideration of grazing lease renewal. These assessments are conducted by an interdisciplinary team of resource specialists who assess ecological processes, watershed functioning condition, water quality conditions, special status species, and wildlife habitat conditions on an allotment. Assessments include field visits to the allotments and evaluation of all available data. All available data will be used to make an overall assessment of rangeland health as described in the *Standards for Rangeland Health and Guidelines and Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the States of Oregon and Washington* (Standards and Guidelines) (USDI 1997), in light of the Fundamentals of Rangeland Health at 43 CFR § 4180.1.

The Standards and Guidelines identify five specific standards that are used to determine the degree to which "ecological function and process exist within each ecosystem." Standards address the health, productivity, and sustainability of the BLM-administered public rangelands and represent the minimum acceptable conditions for the public rangelands. The guidelines are management practices that will either maintain existing desirable conditions or move rangelands toward statewide standards within reasonable timeframes.

The Standards and Guidelines also specify a set of potential indicators for use when determining whether or not standards are being met. This assessment summarizes existing resource conditions on the Crowfoot Creek Allotment using information derived from the rangeland health field assessments; BLM monitoring data; and all other available data in relation to the five specific standards described in the Standards and Guidelines (USDI 1997).

Primary Supporting Data:

Data used by the BLM to support this assessment includes, but is not limited to, the following studies and monitoring projects.

Rangeland Health Field Assessments: Field assessments using the protocol described in *Technical Reference 1734-6: Interpreting the Indicators of Rangeland Health* (USDI and USDA 2005) were conducted July 16, 2008 at a pine-Douglas fir fescue site.

Hydrologic/Riparian Surveys: These surveys were conducted in 1995, 1998 and1999 using the Butte Falls Resource Area Stream Survey Protocol. Location, flow duration, channel classification/morphology data for streams, wetlands and other hydrologic features; instream large wood; impact descriptions and restoration opportunities, especially related to livestock, transportation, and vegetation throughout the allotment is collected. Properly functioning condition (PFC) is assessed during the surveys.

Baseline Stream Temperature Monitoring: Seasonal 30-minute interval stream temperature data is collected at three long-term monitoring sites in the Lower Big Butte Level 6 subwatershed using USGS and Oregon DEQ-established methodologies. In particular, these sites are located on Big Butte and Clark Creeks – neither within this allotment. Temperature monitoring data assists in assessment of Aquatic Conservation Strategy (ACS) Objectives 1-4 and 6-9 (USDA/USDI 1994b); for assessment of compliance with state water quality standards; and assists in development of State of Oregon/EPA-required Water Quality Management Plans for the area.

Gaging Station and Staff Gages: Flow and Water Quality Assessment: Calculation and assessment of peak, high and low flows are extremely difficult without actual field measurement and reference over time. Flow data is also required for the meaningful analysis of water quality parameters. Because of rapid fluctuation in stream levels, continuous records are required at a key location to interpret data collected in non-continuous sampling from other locations. Grab samples of turbidity, air temperature, water temperature, pH, and flow, are collected in four locations in the Lower Big Butte Level 6 subwatershed; the sites are located on Big Butte, Clark and Crowfoot Creeks. Only one site is located within the grazing allotment and is located on Crowfoot Creek. Streamflow has not been measured at this site due to the seasonal nature of its flow. There are no stream gages established at any site within the Lower Big Butte Creek Level 6 subwatershed.

Stream Channel Cross Sections: Stream cross-section measurements are collected at one site within the Lower Big Butte Level 6 subwatershed; the site is within the allotment and is located on Crowfoot Creek. Measurement methodologies include standard cadastral survey techniques and those outlined in Rosgen

(1996). Sites are measured annually and/or after major flood events. Cross-sections provide a reference point from which to document changes in channel morphology, conduct flow measurements, and estimate flood flows. Documentation of changes in channel morphology provides an indication of stability and functioning of the upstream surface hydrologic system.

Rain Gages: Assessment of hydrologic response and water quality parameters, as well as many other aspects of ecosystem function, can only be analyzed accurately in the context of recent precipitation. Rainfall data is not collected within the Lower Big Butte Creek Level 6 subwatershed. Similarly, daily snowfall and snow-on-the-ground is not collected. Data from non-BLM sources however, indicates that annual precipitation is between 34 and 48 inches. Year-to-year trends in precipitation tend to be uniform over an area the size of the Crowfoot Creek Allotment, but there is substantial variability in precipitation across the Lower Big Butte Creek Level 6 subwatershed based on terrain, elevation, aspect, etc. Precipitation data from a number of sites at varying elevations and locations in and around the subwatershed is needed for accurate interpretation of related data including hydrologic and vegetation conditions. The nearest BLM-monitored rain gage is in the community of Butte Falls, Oregon – approximately six miles southeast and in the Lower South Fork Big Butte Creek Level 6 subwatershed.

Botany Surveys: Botany surveys have been conducted in various parts of the Crowfoot Creek Allotment in 1999, 2001, 2003, 2004, and 2008 using the Intuitive Controlled Survey. In this method the surveyor traverses the project area enough to see a representative cross section of all the major habitats and topographic features, looking for Special Status plant species while en route between different areas. When the surveyor arrives at an area of high potential habitat, he makes a more intensive search for the target species.

Wildlife Surveys: Surveys have been conducted in various parts of the allotment for northern spotted owls, terrestrial mollusks, great gray owls, and goshawks, using the appropriate survey protocols.

Standard 1 Watershed Function - Uplands

To meet this standard, upland soils exhibit infiltration and permeability rates, moisture storage, and stability that are appropriate to soil, climate, and landform.

This standard focuses on the basic physical functions of upland soils that support plant growth, the maintenance or development of plant populations and communities, and promote dependable flows of quality water from the watershed.

To achieve and sustain rangeland health, watersheds must function properly. Watersheds consist of three principle components: the uplands, riparian/wetland areas and the aquatic zone. This standard addresses the upland component of the watershed. When functioning properly, within its potential, a watershed captures, stores and safely releases the moisture associated with normal precipitation events (equal to or less than the 25-year, 5-hour event) that falls within its boundaries. Uplands make up the largest part of the watershed and are where most of the moisture received during precipitation events is captured and stored.

While all watersheds consist of similar components and processes, each is unique in its individual makeup. Each watershed displays its own pattern of landform and soil, its unique climate and weather patterns, and its own history of use and current condition. In directing management toward achieving this standard, it is essential to treat each unit of the landscape (soil, ecological site, and watershed) according to its own capability and how it fits with both smaller and larger units of the landscape.

A Rangeland Health Assessment was conducted on the allotment at a pine-Douglas fir fescue ecological site in July of 2008. The indicators pertaining to Soil/Site Stability revealed that all ten indicators were rated a none-to-slight departure from the ecological sites reference condition.

Standard 2 Watershed Function - Riparian/Wetland Areas

To meet this standard, riparian-wetland areas are in properly functioning physical condition appropriate to soil, climate, and landform.

Riparian-wetland areas include standing water systems such as lakes, ponds, seeps, bogs, and meadows; and moving water systems such as rivers, streams, and springs. Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and which under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Riparian areas commonly occupy the transition zone between the uplands and surface water bodies (the aquatic zone) or permanently saturated wetlands.

Properly functioning condition of riparian and wetland areas describes the degree of physical function of these components of the watershed. Their functionality is important to water quality in the capture and retention of sediment and debris, the detention and detoxification of pollutants, and in moderating seasonal extremes of water temperature. Properly functioning riparian areas and wetlands enhance the timing and duration of stream flow through dissipation of flood energy, improved bank storage, and ground water recharge. Properly functioning condition should not be confused with the Desired Plant Community (DPC) or the Desired Future Condition (DFC) since, in most cases, it is the precursor to these levels of resource condition and is required for their attainment.

Functioning Condition Assessments were conducted in the riparian areas of the allotment in 1995, 1998 and 1999 (BLM Stream Surveys). These assessments refer to a consistent approach for considering hydrology, vegetation, and erosion/deposition (soils) attributes and processes to assess the condition of riparian areas. Crowfoot Creek runs through this allotment and is fed by numerous intermittent tributaries. Crowfoot Creek is a tributary of Big Butte Creek.

Crowfoot Creek and several of its tributaries lack structure and large woody debris recruitment. On several of the intermittent tributaries of Crowfoot Creek, downcutting and sidewall erosion has been observed. Many streams lack structure, but do not appear to be unstable. The general stability of this drainage network can be attributed to bedrock control of many of the streams. Nonetheless, some horizontal instability has been documented as seen in channel definition and migration. Approximately 60% of the surveyed streams in the allotment are in Proper Functional Condition. Forty percent of the surveyed streams are Functional At Risk; of these only one stream segment has a Downward trend, but can be attributed to a road crossing. Active erosion was only noted on 10% of the surveyed streams. Cattle grazing was observed, but does not appear to negatively influence hydrology.

The road density in the Lower Big Butte Creek Subwatershed is 4.85 $^{mi.}/_{mi.^2}$. Roads within riparian areas can greatly influence aquatic and riparian conditions. Roads contribute to the disruption of aquatic connectivity, large wood and nutrient storage regimes, peak flow routing, aquatic habitat complexity, temperature regimes, channel morphology, and direct sediment inputs from road failures. The Matrix of Pathways and Indicators for the Klamath Province/Siskiyou Mountains considers road densities of less than 2.0 mi./mi.^{2} as properly functioning condition and greater than 3.0 mi./mi.^{2} as not properly functioning (ODFW 2002, 2003).

Standard 3 Ecological Processes

To meet this standard, healthy, productive, and diverse plant and animal populations and communities appropriate to soil, climate, and landform are supported by ecological processes of nutrient cycling, energy flow and the hydrologic cycle.

This standard addresses the ecological processes of energy flow and nutrient cycling as influenced by existing plant and animal communities. While emphasis may be on native species, an ecological site may be capable of supporting a number of different native and introduced plant and animal populations and communities while meeting this standard. This standard also addresses the hydrologic cycle which is essential for plant growth and appropriate levels of energy flow and nutrient cycling.

The ability of plants to capture sunlight energy, to grow and develop, plays a role in soil development and watershed function. Nutrients necessary for plant growth are made available to plants through the decomposition and metabolization of organic matter by insects, bacteria and fungi, the weathering of rocks and extraction from the atmosphere. Nutrients are transported through the soil by plant uptake, leaching and by rodent, insect and microbial activity. They follow cyclical patterns as they are used and reused by living organisms.

The ability of rangelands to provide habitat for wildlife and satisfy social and economic needs depends on the buildup and cycling of nutrients over time. Interrupting or slowing nutrient cycle can lead to site degradation, as these lands become increasingly deficient in the nutrients plants require.

Some plant communities, because of past livestock use, fire frequency, or other past extreme or continued disturbances, are incapable of meeting this standard. For example, shallow-rooted winter-annual grasses that completely dominate some sites do not fully occupy the potential rooting depth of some soils, thereby reducing nutrient cycling well below optimum levels. In addition, these plants have a relatively short growth period and thus capture less sunlight than more diverse plant communities. Plant communities like those cited in this example are considered to have crossed the threshold of recovery and often require great expense to be recovered. The cost of recovery must be weighed against the site's potential ecological/economic value in establishing treatment priorities.

There is a healthy mix of live and dead/decaying matter on the rangeland. The dry meadows and oak woodland plant communities support a diverse mix of plant species. However, invasive plant species are scattered in patches through out the majority of the non-conifer areas, particularly annual grasses. In addition to reducing habitat quality for wildlife, annual grasses have shallower root systems and shorter life cycles than native perennial grasses, and thus have reduced capacity to hold the soil and retain water and nutrients. Medusahead where it is well established interrupts the nutrient cycle as it forms litter mats on the soil surface which decay slowly due to high silica content and retain nutrients. It also grows early in the season thus outcompeting perennial grass seedlings for early soil moisture and nutrients. In areas where these annual grass species are already well established the plant community has likely crossed over a threshold into a less desirable stable state. Introduction and establishment of exotic annual grasses occurred in past decades, and current livestock grazing is not intense enough to contribute to additional conversion of native plant communities to exotic annual grasslands.

Standard 4 Water Quality

To meet this standard, surface water and groundwater quality, influenced by agency actions, complies with State water quality standards.

The quality of the water yielded by a watershed is determined by the physical and chemical properties of the geology and soils unique to the watershed, the prevailing climate and weather patterns, current

resource conditions, the uses to which the land is put and the quality of the management of those uses. Standards 1, 2 and 3 contribute to attaining this standard.

States are legally required to establish water quality standards and federal land management agencies are to comply with those standards. In mixed ownership watersheds, agencies, like any other land owners, have limited influence on the quality of the water yielded by the watershed. The actions taken by the agency will contribute to meeting State water quality standards during the period that water crosses agency administered holdings.

The Oregon Department of Environmental Quality (DEQ) is required by the federal Clean Water Act (CWA) to maintain a list of stream segments that do not meet water quality standards for one or more beneficial uses. This list is called the 303(d) list because of the section of the CWA that makes the requirement. DEQs 2004/2006 303(d) list is the most recent listing of these streams (ODEQ 2006a). Within the Crowfoot Creek Allotment, there are no known listed streams on DEQs 2004/2006 303 (d) list. Big Butte Creek (approximately one-third mile downstream), however, is listed for summer stream temperature, *E. coli* and dissolved oxygen from its mouth to stream mile 11.6.

Roads may alter the groundwater and surface flow patterns locally and may create an imbalance in hydrologic systems. Natural and graveled road surfaces, road cuts, fill slopes, and ditch lines are subject to erosion. Ditch lines that are not effectively drained by relief culverts (cross drains) act as extensions of stream networks that deliver fine sediment, as well as intercepted ground and surface water directly into stream channels. Research (Jones and Grant 1994; Wemple 1994; Wemple, et al. 1996) suggests that roads that contribute to the extension of the stream channel network are related to changes in the timing and magnitude of peak flows. Road cuts intercept subsurface flow, effectively increasing the amount of surface flow, and the ditch lines allow the water to move through the stream systems quicker. The road density in the Lower Big Butte Creek Subwatershed is 4.85 $^{mi.}/_{mi.^2}$.

Standard 5 Native, T&E, and Locally Important Species

To meet this standard, habitats support healthy, productive, and diverse populations and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate, and landform.

Federal agencies are mandated to protect threatened and endangered species and will take appropriate action to avoid the listing of any species. This standard focuses on retaining and restoring native plant and animal (including fish) species, populations and communities (including threatened, endangered and other special status species and species of local importance). In meeting the standard, native plant communities and animal habitats would be spatially distributed across the landscape with a density and frequency of species suitable to ensure reproductive capability and sustainability. Plant populations and communities would exhibit a range of age classes necessary to sustain recruitment and mortality fluctuations.
The plant communities on this allotment are floristically diverse, healthy, and support a wide variety of animal species consistent with the surrounding soil, landscape and climate.

Species are recognized as "special status" if they are federally or state listed as threatened or endangered, are proposed or a candidate for listing as threatened or endangered, or are Bureau sensitive. BLM policy is to manage for the conservation and recovery of listed and proposed species and their habitats; ensure that all actions authorized, funded, or carried out by the BLM are in compliance with the Endangered Species Act; evaluate all proposed actions to determine if individuals or populations of listed species or their habitat, including designated habitat, may be affected; and ensure that decisions, standards and guidelines, and best management practices are consistent with meeting recovery plan objectives and terms

and conditions of applicable biological opinions. BLM policy for candidate, state listed and sensitive species is to ensure that actions authorized, funded, or carried out by the BLM do not contribute to the need for these species to become listed.

There are no designated Critical Habitat Units (CHU) or Late Successional Reserves (LSR) for the threatened northern spotted owl within this allotment.

Bureau Special Status terrestrial wildlife:
Special Status species known or likely to be present on the allotment are displayed in Table 1.

Table 1. *Special Status Species (Terrestrial Wildlife)*

Species	**Species Status**
Streaked Horned Lark (*Eremophila alpestris strigata*)	BS
Lewis' Woodpecker (*Melanerpes lewis*)	BS
Northern Spotted Owl (*Strix occidentalis caurina*)	FT
Foothill Yellow-legged Frog (*Rana boylii*)	BS
Northwestern Pond Turtle (*Actinemys marmorata marmorata*)	BS
Pallid Bat (*Antrozous pallidus*)	BS
Townsend's Big-eared Bat (*Corynorhinus townsendii*)	BS
Oregon Shoulderband Snail (*Helminthoglypta hertleini*)	BS
Chace Sideband Snail (*Monadenia chaceana*)	BS
Traveling Sideband Snail (*Monadenia fidelis celeuthia*)	BS
Siskiyou Hesperian Snail (*Vespericola sierranus*)	BS
Coronis Fritillary Butterfly (*Coronis fritillary*)	BS

BS - Bureau Sensitive
FT- Federally Threatened

The BLM recently issued interim guidance for meeting it's responsibilities under the Migratory Bird Treaty Act and Executive Order (EO) 13186. Both the Act and the EO promote the conservation of migratory bird populations. The interim guidance was transmitted through Instruction Memorandum (IM) No. 2008-050. The IM relies on two lists prepared by the U.S. Fish and Wildlife Service in determining which species are to receive special attention in land management activities; the lists are *Bird Species of Conservation Concern* (BCC) found in various Bird Conservation Regions and *Game Birds Below Desired Condition* (GBBDC). Table 2 displays those species that are known or likely to present on the allotment in this type of habitat.

Table 2. *Bird Species of Conservation Concern*

Species	**Species Status**
Band-tailed Pigeon (*Columba fasciata*)	GBBDC
Flammulated Owl (*Otus flammeolus*)	BCC
Grasshopper Sparrow (*Ammodramus savannarum*)	BCC
Lewis' Woodpecker (*Melanerpes lewis*)	BCC
Mourning Dove (*Zenaida macroura*)	GBBDC
Olive-sided Flycatcher (*Contopus cooperi*)	BCC
Red-naped Sapsucker (*Sphyrapicus nuchalis*)	BCC
Rufous Hummingbird (*Selasphorus rufus*)	BCC

White-headed Woodpecker (*Picoides albolarvatus*)	BCC
Williamson's Sapsucker (*Sphyrapicus thyroideus*)	BCC

BCC - Bird of Conservation Concern
GBBDC - Game Birds Below Desired Condition

Table 1 lists the Bureau Sensitive terrestrial wildlife species and Table 2 lists additional bird species of concern, that have a possibility of being found in the Crowfoot Creek Allotment based on the type of habitat at that location. Livestock grazing primarily affects wildlife by changing vegetation composition, structure, and function. Grazing can result in a reduction of forage available to native herbivores, as well as reductions in vegetative ground cover for ground-nesting birds, rodents, and other wildlife species dependent on ground cover for protection, food, and breeding sites. Grazing may reduce water quality in seeps, springs, and streams used by native wildlife. The presence of livestock can also change local distribution and habitat use by native species due to site-specific behavioral traits. Generally, the extent of impacts to individual T&E species and their habitats are unknown.

Streaked horned larks likely will not be disturbed by grazing in this allotment because they are not known to nest in southwestern Oregon. Horned larks migrate through the Rogue Valley in the spring and fall and have been sighted near Lost Creek Lake during these times (Barrett, personal communication). Horned larks are commonly found in open fields with short (<1 ft), herb-dominated ground cover, and areas of significant sparse vegetation and patches of bare ground (Marshall 2003). Sightings of horned larks on Table Rock were reported in 2007 (Schnoes personal communication). It is unknown if this is the sub-species *strigata*. Lewis's woodpeckers are associated with open woodlands near streams and rivers. They breed sparingly along Bear Creek and areas of the Upper Rogue Valley in Jackson County. Habitat preference is hardwood oak stands with scattered ponderosa pine near grassland shrub communities. Threats not related to grazing include the decline of lowland oak habitat, competition with European starlings, prospects for nest and food storage trees, competition for nest holes, and effects of pesticides. Because grazing does not remove nest and forage trees from the Lewis' woodpecker, there will be no negative impact to the bird within this allotment. Band-tailed pigeons may be present in the Crowfoot Creek allotment. They primarily nest in Douglas-fir trees within closed-canopy mixed conifer stands, a condition present here. The short duration and small number of cows in Crowfoot Creek will not negatively impact the band-tailed pigeon, and grazing does not remove mature Douglas fir trees.

Flammulated owls may be present in the forested areas of the allotment. No nest sites have been documented on the Butte Falls Resource Area (BFRA), but they prefer ponderosa pine and mixed coniferous forests with high levels of canopy closure. They tend to nest in snags in cavities excavated by woodpeckers. Prey items they pursue include crickets, moths, and beetles. There will be no removal of nesting or foraging habitat and grazing here will not negatively impact the persistence of the species. Olive-sided flycatchers are often encountered on the BFRA and occur in coniferous forests where they use tall trees and snags for nesting and foraging. The white-headed woodpecker may use this area for nesting. It prefers mature forest with large-diameter ponderosa pines. Cattle grazing will not remove habitat for the olive-sided flycatcher or the white-headed woodpecker, which forage on insects, and nest, in trees. Red-naped sapsuckers have not been found to nest west of the crest of the Cascades, but they may be present during the spring and fall migrations. They forage on sap, cambium, and soft parts beneath the bark, of ash, cottonwood, big-leaf maple, and Douglas fir, on the west side of the Cascades. Grazing will not remove the trees they depend upon for food. The Williamson's sapsucker may be present on the east side of the BFRA in small numbers. As with the red-naped sapsucker, Williamson's sapsuckers feed on tree sap, phloem fibers, and cambium, but will also forage on insects. They primarily use Douglas-fir and ponderosa pine for their sap wells. The persistence of this species will not be impacted by grazing of ground vegetation.

Northern spotted owls were observed within this allotment in August of 2005. An adult female and a juvenile were found together in the forested area to the south of the main creek. The female was a bird we placed a colored leg band on in 2004, about one mile north of here. We were unable to determine exactly where they nested. The young fledge in late May or early June, and they may have been a large distance from their nest tree by August. In 2006, 2007, and 2008, the area was surveyed for spotted owls to protocol, but none were detected since 2005. Spotted owls nest in coniferous forests with a well-developed overstory and the presence of large stick nests, cavities, or mistletoe, and forage on forest-dependant mammals such as flying squirrels and wood rats. In the Crowfoot Creek Allotment, livestock grazing occurs in open areas or along the creek, outside of the forested slope to the south. The short duration of grazing here will neither have any impact on the spotted owl's ability to forage, nor will it remove any mature trees it requires for nesting.

One frog species and one reptile are listed on the Bureau Sensitive list that may be present in the Crowfoot Creek Allotment. The foothill yellow-legged frog depends on aquatic environments for their entire life cycle. Foothill yellow-legged frogs are associated with low gradient streams, which are present within the boundaries of this allotment. We saw light to moderate use of grazing along the streams here, including evidence that elk grazed along the stream. The northwestern pond turtle may occur within the Crowfoot Creek Allotment. Northwestern pond turtles spend the majority of their life cycle in aquatic environs, but must leave the water to dig terrestrial nests and lay their eggs. These turtles often over-winter in upland settings as well. Both of these activities may be impacted by heavy grazing and post-holing by livestock. We have not observed evidence of heavy grazing or post-holing by cows in Crowfoot Creek, and do not expect that grazing poses a threat to the persistence of the pond turtle or the yellow-legged frog in this allotment.

Pallid bats roost during the day in rocky outcroppings, buildings, caves, mines, rock piles, and tree cavities, especially near water. They forage on most types of insects on the ground and on vegetation. The short duration of grazing in Crowfoot Creek is not expected to interfere with their food supply, nor will it remove any of their roost sites. Townsend's big-eared bats hibernate and give birth to their young in caves or mines and feed mainly on moths. There are no caves or mines in this allotment and it is not expected that grazing here will disrupt any of their colonies.

Species that may be affected by forage removal include rufous hummingbirds, mourning doves, grasshopper sparrows, and coronis fritillary. Coronis fritillary may be present, but there is no record of any being observed on the Medford District of the BLM. One of their favorite plants to obtain nectar from is the bull thistle, which livestock will not forage on. They lay their eggs on litter near violets and the hatched caterpillars will feed on violet leaves. Violets used by coronis fritillary for ovipositing may be removed or trampled, and heavy grazing facilitates the invasion of non-native species (Hosten 2007a). Because grazing is light and the duration is short within this allotment, violets adapted to this habitat, like *Viola purpurea*, will not be completely removed. While the mourning dove may also be affected by the removal of seed-producing plants like some grasses, it will also forage on seeds of many other herbaceous plants and trees. Mourning doves are well-distributed throughout the resource area and grazing in Crowfoot Creek will not negatively disrupt their ability to survive. In the Rogue Valley, one small colony of grasshopper sparrows has been located outside of land administered by the BLM. They prefer to nest and forage in open grasslands, generally free of woody shrubs. The Crowfoot Creek Allotment is not ideal habitat for the grasshopper sparrow. Heavy grazing poses a threat to this species, but it is expected that with the short duration of use within this allotment that there will be no areas of heavy use, even if the sparrows do occur here. The rufous hummingbird may use this allotment for foraging and nesting, preferring the wooded areas with a well-developed understory and high canopy cover for nesting. While it feeds on nectar from flowering plants, it will also forage on insects and take advantage of hummingbird feeders near houses. Because of the short duration of grazing here and nesting habitat will not be removed, it is not expected that grazing will have a negative impact on the persistence

of the species.

Each of the mollusk species listed in Table 1 have been found on the BFRA. Mollusk surveys have been performed in the Crowfoot Creek Allotment to protocol, but none of the species listed were noted within this area. The terrestrial mollusk species in Table 1 seek refuge in moist areas under rocks and large woody debris during the summer and late winter seasons, and are generally associated with mixed conifer forests with a high percentage of canopy cover. Oregon shoulderband, Chace sideband, and Siskiyou hesperian snails have been found to be well-distributed across the BFRA, while the traveling sideband has been observed in four different locations, based on protocol mollusk surveys. No impact to the large woody debris or talus areas is expected from grazing and it is not anticipated that grazing in Crowfoot Creek will impact the persistence of these species.

Table 3. *Special Status Species (Aquatic)*

Species	**Status**
SONC coho salmon (*Oncorhynchus kisutch*)	FT

FT- Federally Threatened

Special Status Species (Aquatic):
Crowfoot Creek is accessible by Southern Oregon/Northern California (SONC) coho salmon (*Oncorhynchus kisutch*), a "threatened" species under the Endangered Species Act (ESA). However, Crowfoot Creek is a very flashy system and does not contain low gradient, meandering habitat preferable to coho salmon. Crowfoot Creek only has water in the creek during the winter and spring months so it is unlikely that very much coho salmon production occurs within this stream and any rearing juvenile fish would have to migrate out of Crowfoot Creek before it dries up during the early summer months. There are small (<1 acre) areas of light to moderate use along Crowfoot Creek however; this stream is bedrock dominated and has very little or no water during the authorized use period.

Threatened and Endangered (T&E) Plants
The Crowfoot Creek allotment is within the range of and contains suitable habitat for one federally endangered plant, *Fritillaria gentneri* (Gentner's fritillary). This species is endemic to Jackson and Josephine Counties. It grows in the rural foothills of the Rogue River and Illinois River Valleys in grassland and chaparral habitats within, or on the edge of dry, open woodlands. Consultation with the U.S. Fish and Wildlife Service was completed for T&E plants for planned activities in the Fiscal Year 2004-2008 Rogue River/South Coast Biological Assessment (USDA and USDI, 2003) and Biological Opinion (FWS) 1-14-03-F-511 (USFWS 2003). The Project Design Criteria (PDC) requirements for livestock grazing are to survey suitable habitat in the allotments at the appropriate time of year prior to the ten-year allotment renewals, identify sites, and implement protection measures. Surveys are good for five years. Over the past eight years vascular plant surveys have been conducted in different areas of section 15 in the Crowfoot Creek allotment for different projects. Surveys targeting *Fritillaria gentneri* were conducted in some areas of section 15 in May 2001, May 2003, and April and June 2004. The entire allotment in section 15 was surveyed in May and June 2008. No *Fritillaria gentneri* sites have been documented there. Forty acres of the allotment in Township 34 South, Range 1 East, Section 23, located in the northwest ¼ of the northwest ¼ has not been surveyed , but will be surveyed in spring 2009.

Special Status Vascular and Nonvascular Plants
Surveys for Special Status vascular plants were conducted in various parts of section 15 of the Crowfoot Creek allotment in 2001, 2003, 2004, and 2008 and for Special Status nonvascular plants in 1999. Surveys for Special Status vascular plants will be conducted in section 23 of the allotment in 2009. Four Sensitive plant or fungi species were found in the allotment.

Table 4. *Special Status Plant Species*

Species	Status
Sawtooth sedge (*Carex serratodens*)	BS
Bellinger's meadowfoam (*Limnanthes floccosa* ssp. *bellingeriana)*	BS
Austin's popcornflower (*Plagiobothrys austiniae*)	BS
Stalked orange peel fungus (*Sowerbyella rhenana*)	BS

BS- Bureau Sensitive

Two populations of *Carex serratodens* (sawtooth sedge) have been documented in the allotment. A large population, originally discovered in 2001 and revisited in 2008, is located on the main channel of Crowfoot Creek. A small population, also originally discovered in 2001 and revisited in 2008, is located on a side branch. Both populations grow in or next to the stream channels, which are intermittent streams that were virtually dry during our site visit on July 17, 2008. *Carex serratodens* is a perennial sedge that blooms between late May to July. The allotment dates are April 16 – June 30, so cows are present when the plants are in bloom. The palatability of this sedge to cows is unknown. However, the plants, which are large and robust, were not browsed in 2001 or 2008 and the larger population had expanded downstream between 2001 and 2008. The current level of livestock grazing is not negatively impacting this species in section 15. Livestock could negatively impact the populations by trampling the plants. There were cow hoof prints along the stream at one of the populations, but none of the plants had been trampled. At this time, cows are not negatively impacting these two populations, but they should be periodically monitored and protection measures implemented if the sites are repeatedly impacted.

Four populations of *Limnanthes floccosa* ssp. *bellingeriana* (Bellinger's meadowfoam) were discovered in section 15 of the Crowfoot Creek allotment. This species blooms between March and May in vernally wet meadows on basalt scablands. It blooms in spring prior to development of annual grasses and forbs. The four populations occur in typical habitat, consisting of grassy openings surrounded by wedgeleaf ceanothus thickets and oak woodlands. One site was originally discovered in 2001 and the other three were discovered in 2008. *Limnanthes floccosa* ssp. *bellingeriana* is a small annual herbaceous forb. No populations of this species have been observed browsed by cattle in the Butte Falls Resource Area. However, because it grows in the openings of shrub thickets, it is at risk of being trampled or having its habitat altered when cows, deer, and elk pass through the openings to avoid the brush thickets. In July 2008, cow and elk hoof prints were observed at one of the populations. When animals walk across the wet clay soil, it becomes compacted and hardens when it dries out, resulting in a change in water flow patterns across the site. This could potentially impact the population because the plants are adapted to moist conditions. However, because this species is an annual and some seeds will fall into places with favorable conditions and bloom and set seed, the population will persist. The site should continue to be monitored and protection measures implemented if necessary to ensure that the population does not decline over time.

One *Plagiobothrys austiniae* (Austin's popcornflower) site was discovered in 2008 in a small southeast-facing vernally wet grassy opening surrounded by wedgeleaf ceanothus and scattered Oregon white oaks. Approximately 200 plants were observed at the site in 2008. *Plagiobothrys austiniae* is a small, spring-blooming annual that grows in vernally wet meadows. Thirty-two populations have been reported in the Medford District BLM, with all but one located in central Jackson County. The one outlier population is located in the Cascade-Siskiyou National Monument. Although *Plagiobothrys austiniae* plants are not large enough to provide significant forage to livestock, they could be browsed with other grasses and forbs that grow in the same habitat. The plants are in bloom in April and May during the allotment turn-out dates of April 16 to June 30, so cows are present when the plants are growing. In addition to a threat of browsing, livestock could trample plants or alter habitat when they walk through the wet meadows and their hooves create small depressions in the soil. However, the population in the Crowfoot Creek

Allotment is growing in an area with shallow soils, andesite rock outcrops, and mostly annual nonnative grasses and forbs. It does not provide much forage for cows, deer or elk and there were no signs of impacts from livestock in 2008.

Sowerbyella rhenana (stalked orange peel fungus) is a mushroom that fruits in October through December in the duff of moist, relatively undisturbed, older conifer forests. Because it fruits outside the dates that the allotment is grazed, livestock pose no threat to it, although it could be indirectly impacted if livestock disturb or compact the soil at the site. At this time, the site shows no disturbance from livestock.

One diffuse knapweed population containing one plant was discovered and pulled in 2008. Five populations of yellow star-thistle were documented in the allotment in 2008. A large yellow star-thistle population located along a decommissioned road in the central part of section 15 has been treated over the last couple of years and was much diminished in 2008. The four other populations were located along streams. Yellow star-thistle begins growing in May and June and generally flowers and sets seed beginning in June and continuing into the fall. Livestock can contribute to the spread of yellow star-thistle if overgrazing occurs. If it grows with plants that are desirable to cows, they favor the desirable vegetation and leave the yellow star-thistle which then has an advantage in spreading into the areas where the competing vegetation has been grazed. They can also spread yellow star-thistle when seeds attach to their hooves and hair and are carried to non-occupied areas. Botanical surveys conducted in the allotment in spring 2008 when cows were present reported some impacts from grazing along most riparian areas, with one high livestock influence (trampling and forage intake) area along a drainage in the southern part of the allotment. The high livestock influence area was also the location of a large yellow star-thistle population. During our site visit in July 2008, grasses had recovered somewhat. On-going treatment and monitoring of the yellow star-thistle populations in the allotment should continue to prevent further degradation of the plant communities.

RANGELAND HEALTH FIELD ASSESSMENT SUMMARY OF FINDINGS

Rangeland Health is defined as the degree in which the integrity of the soil, vegetation, water, and air as well as the ecological processes of the rangeland ecosystem are balanced and sustained (USDA 1997). This qualitative assessment along with quantitative monitoring data is an attempt to look at how well ecological processes such as the water cycle (capture, storage, and safe release of precipitation), energy flow (conversion of sunlight to plant and then animal matter), and nutrient cycle (the cycle of nutrients through the physical and biotic components of the environment) are functioning. The product of this qualitative assessment is not a single rating of rangeland health, but an assessment of three interrelated attributes: soil/site stability, hydrologic function, and biotic integrity. Attributes are rated based on what would be expected for the site or a "reference state" based on soils, climate and topography compared to the current state. The attributes are split into seventeen indicators that are rated as none-to-slight, slight-to-moderate, moderate, moderate-to-extreme, and extreme-to-total departures from the reference state (Table 5).

A Rangeland Health Field Assessment was completed at a Pine-Douglas fir- Fescue ecological site on the Crowfoot Creek Allotment. This ecological site was chosen by using GIS (Global Information Systems) mapping that defined vegetative communities and soils followed by field surveys to determine a representative location to complete the assessment. The assessment was completed with an interdisciplinary team (IDT).

***Location 1*: Pine-Douglas fir-Fescue Summary**

The overall rating for this location is a slight-to-moderate departure from what would be expected for this site. Thirteen indicators (76 percent) were rated none-to-slight, one indicator (six percent) was rated

slight-to-moderate, two indicators (12 percent) was rated moderate, one of the indicators (six percent) was rated moderate-to-extreme and none of the indicators were rated extreme-to-total.

Photo 1. Photo taken at the Pine-Douglas fir- Fescue ecological site.

Table 5: RHA location 1 indicator summary

Location 1: Pine-Douglas fir-Fescue					
Indicator	**Degree of Departure from Ecological Site Description**				
	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
1. Rills					✔
2. Water Flow Patterns					✔
3. Pedestals and/or Terracettes					✔
4.Bareground					✔
5. Gullies					✔
6. Windscoured Blowouts					✔
7. Litter movement					✔
8. Soil surface resistance to erosion					✔
9. Soil surface loss or degradation					✔
10. Plant community composition and distribution relative to infiltration					✔
11. Compaction Layer					✔
12. Functional/Structural groups				✔	

13. Plant mortality/ decadence					✓
14. Litter amount					✓
15. Annual Production					✓
16. Invasive Plants			✓		
17. Reproductive capability of Perennial plants					✓

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