Quartz Valley Indian Reservation
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Mr. Ray Haupt, District Ranger
Salmon/Scott River Ranger District
11263 N. Highway 3
Fort Jones, CA 96027

August 5,2007

Dear Mr. Haupt,

Thank you for the opportunity to comment on the Draft *Kidder Creek and Shackleford Allotments Livestock Grazing Management Environmental Assessment*. The Quartz Valley Indian Community (QVIC) is located on lower Shackleford Creek and has water rights for agriculture and draws its water from sub-surface sources in the floodplain of the creek. Consequently, we have direct interest in anything that effects water quality within this drainage and would like to be consulted on any future U.S. Forest Service planned activities. We also have staff that can participate in monitoring activities, as may be appropriate.

The QVIC and all other Lower Klamath Basin Tribes are very concerned about Scott River watershed health as it relates to salmon and steelhead recovery. Indian people of our community and Tribes downstream rely on salmon for sustenance and have done so for thousands of years. The productivity of fish runs is very closely linked to forest health and we look forward to working cooperatively with your staff on advancing forest health objectives, including those associated with grazing.

We hope you find the attached comments useful and request that you provide us with a copy of the final EA, the Decision Notice and Finding of No Significant Impact (FONSI) for this project. The QVIC would also like to work with you and North Coast Regional Water Quality Control Board staff as you craft the Memorandum of Understanding regarding TMDL implementation.

We could easily provided many of the citations we have used in crafting our comments in electronic form, should your staff want to use them for on-going management needs. In particular, we would like to direct them to our Scott TMDL comments that were attached to our Westpoint Vegetation Treatment Project comments.

Sincerely,

Harold Bennett
Tribal Vice-Chairman
Quartz Valley Indian Reservation

MEMORANDUM REPORT

To: Klamath National Forest
From: Quartz Valley Indian Community
Date: August 3, 2007
Re: Comments on the Klamath National Forest's Draft *Kidder Creek and Shackleford Allotments Livestock Grazing Management Environmental Assessment*

SUMMARY OF COMMENTS

The *Draft EA* does not meet National Environmental Policy Act (NEPA) requirements for use of "best available science" in decision making. There are no data presented to support any of the conclusions drawn in the document and the methods that were used to assess prior trends in rangeland health and those to be used for future "adaptive management" are vague and inadequate. Consequently, the *Draft EA* falls short of any scientific standard for the use of adaptive management (Walters, 1997; NRC, 2004). The *Draft EA's* cumulative effects discussions focus on upland disturbance, when the analysis that is needed is that concerning how grazing across the Marble Mountain Wilderness is impacting sensitive species on these allotments and at the landscape scale.

The *Draft EA* notes the chronic pattern of over-grazing on the Kidder Creek Allotment and properly concludes that no future grazing of the area should be allowed. Although degraded conditions in the Shackelford Allotment are also acknowledged in the *Draft EA,* the Preferred Alternative would allow continued grazing of the area. The bank erosion, riparian vegetation decrease, trampling of the stream bed and deposit of cattle waste into Shackleford Creek are inconsistent with the State of California's *Scott River TMDL* (NCRWQCB, 2006) and does not comply with the North Coast Regional Water Quality Control Board's *Basin Plan* (NCRWQCB, 2007).
When all relevant monitoring data and information in the EA and BMP monitoring reports, as well as the relevant available information not included in the EA, are considered, a reasonable person would conclude that – unless there are dramatic changes in the manner in which the allotment is managed and in the manner in which the permittees meet their responsibilities – re-authorization of Shackleford Allotment grazing will constitute violation of the Clean Water Act.

The National Forest Management Act (NFMA) and the Klamath National Forest (KNF) *Land and Resource Management Plan* (LRMP) conservation objectives would be violated, if grazing in the Shackleford Allotment were to continue as described in the Preferred Alternative. Further, if grazing is continued as proposed, the objectives of the Aquatic Conservation Strategy, part of the Record of Decision and the Northwest Forest Plan (FEMAT, 1993), would not be met.

A finding of no significant impact in the final Decision Notice would be arbitrary and capricious if it allows continued grazing in the Shackleford Allotment despite the recognized associated degradation and absent a clear plan to prevent the pattern of continued environmental damage.

The author of the *Draft EA* appears to be arguing in this document that although water quality, streambank structure, and riparian conditions within areas of the allotment actually used by grazing cattle are not good and are not likely to improve, that it is alright to reauthorize the grazing permit because these impacts occur in only a small portion of the Klamath National Forest.

If such reasoning were applied to every KNF decision the cumulative effect would be large-scale resource degradation. Further, the applicable laws, including the CWA and the NFMA require that standards for the maintenance of resources in good condition to not simply apply in general but to particular areas and special habitats even if such habitats are rare or occupy only a small percent of the landscape.

Monitoring Methods

The *Draft EA* states that "Long-term monitoring is conducted on selected rangeland sites to determine if rangeland conditions (as determined by various rangeland health indicators) are meeting or moving toward desired conditions." Nine monitoring parameters are mentioned in the *Draft EA* as being associated with the Best Management Practices Effectiveness Program (BMPEP); however, nowhere are these methods described. We assume that bank stability and the disturbance of lentic habitat are measured because of chronic failures to meet properly functioning condition standards for these criteria. The other parameter used for BMP compliance and range management assessment is stubble height, with a target of 4 inches taken from the LRMP.

There is no quantitative baseline data provided to understand trends in aquatic or riparian health or in populations of sensitive species that could be disturbed by grazing, such as neotropical song birds or amphibians like the Cascade frog. Valid scientific methods of stream condition assessment need to be employed, such as cross sections, longitudinal profiles, fine sediment in spawning gravels, median particle size or other metrics from the USFS Aquatic and Riparian Ecosystem Monitoring Protocols (Gallo et al., 2002), if adaptive management is to succeed (see Adaptive Management).

Annual KNF (1999-2006) *Best Management Practices (BMP) Water Quality Evaluation Program Monitoring Reports* all note that the forest is not following Region 5 protocols for grazing assessment, but also that the Forest has not adopted clearly defined alternative methods, either in a revision of the LRMP or in Annual Operation Permits.

Adaptive Management Criteria Not Met

Adaptive Management is a concept advanced, in particular, by Professor Carl Walters of the University of British Columbia. Walters (1997) noted that of 25 riparian and coastal ecosystem restoration projects that he participated in over 20 years, "only seven of these have resulted in relatively large-scale management experiments, and only two of these experiments would be considered well planned in terms of statistical design……Various reasons have been offered for low success rates in implementing adaptive management, mainly having to do with cost and institutional barriers."

The National Research Council (2004), in recommending that adaptive management be used to recover the endangered fishes of the Klamath basin, described it as follows:

> "Adaptive management is a formal, systematic, and rigorous program of learning from the outcomes of management actions, accommodating change, and improving management (Holling 1978). Its primary purpose is to establish a continuous, iterative process for increasing the probability that a plan for environmental restoration will be successful. In practice, adaptive management uses conceptual and numerical models and the scientific method to develop and test management options."

NRC (2004) also points out that the first step in carrying out an adaptive management project is to determine baseline conditions:

> "The ecosystem baseline includes all relevant information, past and present, such as physical, chemical, and biological features and benchmark indicators of the abundance of critical species. The baseline is the reference condition against which progress toward management goals is measured."

As noted in our "Monitoring Methods" discussion above, there are no quantitative baseline data provided on stream habitat or riparian condition, water quality or sensitive species likely affected by grazing. NRC (2004) also explained how models are used in successful adaptive management projects.

> "The analytical basis of adaptive management typically is a set of conceptual and numerical models…... The conceptual model can be used to identify a small number of representative biological, chemical, and physical indicators of system-wide responses to restoration on various spatial and temporal scales. The indicators then can be used in developing models or protocols for monitoring and testing the efficiency of the restoration efforts. Performance measures are developed for each of the elements (ideally for both stressors and indicators) and are used as the standards for evaluating the restoration program."

In other words, the KNF should be devising models based on physical and biological measurements from the Shackleford Allotment with specific targets for restoration of ecosystem function (e.g., fine sediment particles should be <0.85 less than 14% in spawning gravels, successful recruitment of Cascade frogs). However, no field data are presented in the *Draft EA* and the only models referenced are for upland cumulative effects.

There is no indication in the *Draft EA* that KNF staff has an understanding of adaptive management. Rather, they appear to be using it to <u>defer</u> management decisions until after some collection of additional data. NRC (2004) characterized such an approach as follows:

> "In the deferred-action approach, management methods are not changed until ecosystems are fully understood (Walters and Hillborn 1978, Walters and Holling 1990, Wilhere 2002). This approach is cautious but has two notable drawbacks: deferral of management changes may magnify losses, and knowledge acquired by deferred action may reveal little about the response of ecosystems to changes in

management. Stakeholder groups or agencies that are opposed to changes in management often are strong proponents of deferred action."

The *Draft EA* continually downplays damage from grazing because of the small number of cows in the Allotments and the small area being grazed. This ignores the fact that meadows are rare habitats and their riparian zones provide habitat for dozens of specialized wildlife species. Patterns of grazing in these habitats across the landscape of the Marble Mountain Wilderness could be contributing to decline in species like the Cascade frog or song bird species that might subsequently require ESA protection because of the failure of KNF to be proactive in its grazing policy. The absence of data concerning soil compaction, water table depth and other physical factors may well be masking risk the of potential catastrophic change, such as gully formation or channel straightening through meadows in a flood event.

A valid potential adaptive management experiment is offered below in the discussion of Alternatives that should be considered by the *Draft EA*.

Kidder Creek and Shackleford Allotment Assessment Based on Limited Data

The information provided in the *Draft EA* and in KNF BMP water quality reports (1999-2006) grazing sections show a pattern of failure to meet effectiveness criteria for bank stability and disturbance of lentic habitat. Kidder Creek and Shackleford Allotments both had 20-30% bank erosion in meadow reaches and nearly 10% of the stream bottom had been physically trampled by cows. The latter information also indicates that cattle defecate in streams, adding nutrients and, potentially, pathogens.

The pattern of bank failure along 20-30% of stream banks within all Scott River grazing allotments, and those in other Ranger Districts, indicates a KNF-wide problem with grazing management (KNF, 1999-2006).

Table 1 shows the frequency of failure to meet effectiveness (FE) standards or the 4 inch stubble height criteria, signaling over-grazing (OG), in the Kidder Creek and Shackleford Allotments. There are no monitoring data for other years, but there appears to be a chronic problem with livestock management. There is no reason to believe that bank conditions would vary in the other years or that the pattern of cattle dispersal in streams would be any different. In other words, BMP effectiveness criteria are <u>never</u> being met in the Kidder Creek or Shackleford Allotments, nor are they met in most other Scott River Ranger District allotments.

Table 1. Summary of Kidder Creek and Shackleford Allotments failure to meet effectiveness monitoring standards (FE) or over-grazing (OG) (stubble height less than 4 ").

Allotment	1998	2001	2002	2003	2004	2005	2006
Kidder Creek	OG	OG	OG		OG	OG	OG
Shackleford		OG		OG	OG	FE	

The pattern of over-grazing and the failure to meet BMP effectiveness monitoring standards appear similar on both the Kidder Creek and Shackleford Allotments, yet the *Draft EA* suggests continued grazing on the latter with no change in practices.

Despite a reduction from 100 to 80 cow/calf pairs on the Shackleford Allotment since 2004, bank trampling and damage to the stream bed was evident in 2005 (KNF, 2005). With the pattern of over-grazing on the Shackleford Allotment in 2001, 2003 and 2004 and the failure to meet BMP effectiveness criteria in 2005, the logical management action would seem to be to further decrease grazing and to substantially change management techniques, or to cease grazing altogether.

Finding of No Significant Impact (FONSI) is Unsupported

The *Draft EA* section on Effects of Proposed Action discusses potential problems that could result from grazing in the Shackleford Allotment and concludes that none of these are significant, but no data are supplied to support these conclusions. Each subject broached is discussed below with quotes from the *Draft EA* followed by a discussion of the validity of arguments offered.

Soil Compaction/Altered Drainage: "Because cattle follow established trails, which account for an insignificant percentage of the allotment area, and because major trails are maintained annually, the amount of soil compaction by livestock is minor and does not alter drainage patterns in the watersheds or result in accelerated runoff (USDA-FS 2006a)" (KNF, 2007).

The *Draft EA* presents no data to show that meadows and stream banks are not being compacted, which is a principal concern in the allotments. Only the official trails are maintained; the many trails created and used by cattle are not maintained.

Sediment/Turbidity: "Because the project requires 4-inch minimum stubble heights in streamside vegetation, there is low probability that streambanks in the meadows would become degraded; therefore, the project would not have significant effects to stream turbidity" (KNF, 2007).

The *Draft EA* and KNF (1999-2006) BMP water quality compliance reports both describe bank erosion and lack of appropriate vegetation on 20-30% of the streambanks monitored in the Shackleford Allotment. Such an extent of bare soil on streambanks is likely contributing elevated levels of fine sediment to streams, with the potential to elevate suspended sediment and turbidity during storm events. The *Draft EA* simply denies that elevated turbidity is resulting without presenting any data to support such a conclusion.

Further, the BMP reports specifically state that the KNF has not established objectives for the maintenance of riparian woody cover.

Stream Substrate: "Because of the gentle gradient of cattle-accessible stream reaches in key areas, sediment generated from disturbed streambanks would probably settle near the source. When fine sediment is added to a stream system, it generally is stored in the matrix between gravel and larger particles. There is no probability that the project would result in enough sediment input to exceed the storage capacity of matrix interstices….. Any grazing-

related sediment inputs would be temporarily stored in substrate interstices near the source, and then be naturally diluted and flushed from streams several times a year" (KNF, 2007).

The *Draft EA* fails to recognize that there is a *Scott River Sediment and Temperature TMDL* (NCRWQCB, 2006), which clearly requires that human-caused sediment sources be abated. There are no baseline or trend data offered to support the hypothesis that interstitial stream gravel spaces have low fine sediment, nor that sediment impacts to invertebrates, fish and other biota are not already significant.

Stream Temperature: "Below grazed areas, streams are steep, incised, and have ample stream shade to maintain low water temperatures. In areas where cattle are directly accessing streams, there is potential for localized effects to stream temperature due to grazing of overhanging vegetation" (KNF, 2007).

This *Draft EA* discussion again fails to reference the *Scott River TMDL* (NCRWQCB, 2006), nor does it acknowledge the key issue. The fact that grazing takes place at high elevations where water temperatures are cool does not change the fact that the TMDL bars human-caused increases in stream temperatures and that the *Scott River TMDL* is now a component of the NCRWQCB's enforceable *Water Quality Control Plan for the North Coast Region.*

The Draft EA ignores the available science that makes clear that shade is more effective in cooling streamflow at higher elevations.

As part of adaptive management, the KNF should place automated temperature sensors above and below meadows to demonstrate that there is no thermal loading resulting from cattle grazing on streamside vegetation. If grazing drops the water table in any meadow habitat, it could potentially decrease water storage and decrease summer base flows which would, in turn, exacerbate stream temperature problems.

Wildlife: "Neotropical migratory bird species habitat modification caused by livestock grazing would not cause a measurable negative effect to migratory bird populations due to the minimal acreage on which grazing would occur relative to the amount of migratory bird habitat across the Forest. In general, the grazing would result in immeasurable changes in species diversity and abundance. Some species would benefit from grazing while others may be negatively affected within the project area" (KNF, 2007).

These contentions concerning song birds are totally baseless. The *Draft EA* ignores available information concerning neotropical song bird use of Marble Mountain riparian zones (Alexander and Johnson, 2001) that demonstrates the precise opposite to be the case.

Alexander and Johnson (2001) found that there was a significant preference of song birds for riparian forests versus upland forests and that this was reflected in both species abundance (Figure 1) and in the number of taxa present (Figure 2). Statements in the *Draft EA* that the limited extent of grazing somehow limits damage to sensitive bird species do not square with the available science. More importantly, the *Draft EA* ignores the finding of Alexander and Johnson (2001) that "that bird abundance (Figure 3), species richness (Figure 4) and the abundance of species of concern is higher in basins where grazing had been

reduced or eliminated." They specifically suggest monitoring bird presence and abundance as a tool for trend monitoring in conjunction with adaptive management of grazing allotments. No data on birds was provided in the *Draft EA,* nor is bird monitoring proposed.

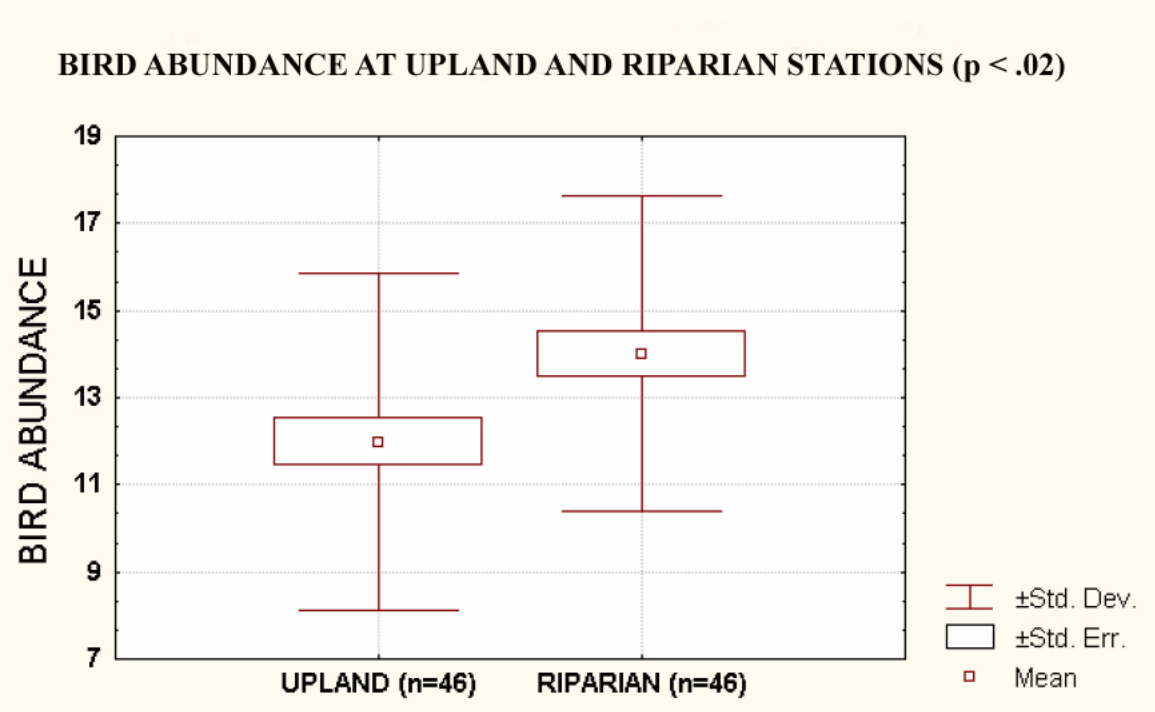

Figure 1. The diversity of bird species was significantly higher in riparian zones than in uplands in the Marble Mountains. Chart adapted from Alexander and Johnson (2001).

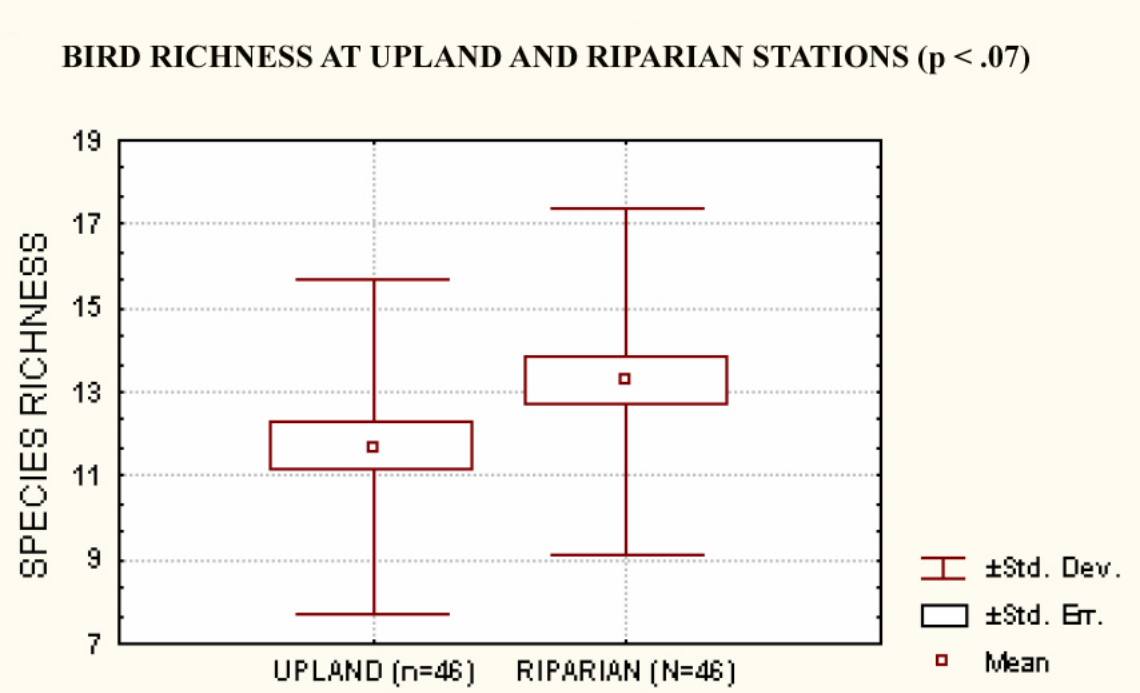

Figure 2. This chart demonstrates that there were significantly more species of birds in riparian habitats than there were in the uplands of the Marble Mountains. From Alexander and Johnson (2001).

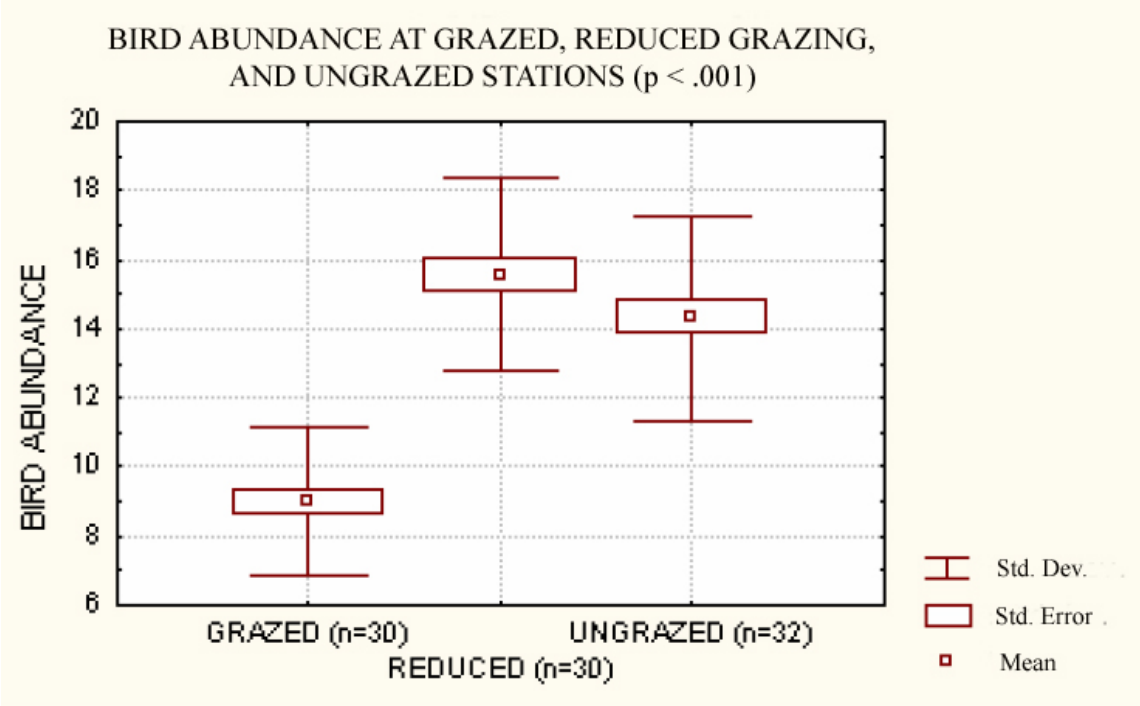

Figure 3. Bird abundance was significantly higher at Marble Mountain sites that were ungrazed or where grazing had been reduced, than there were at grazed stations. Adapted from Alexander and Johnson (2001).

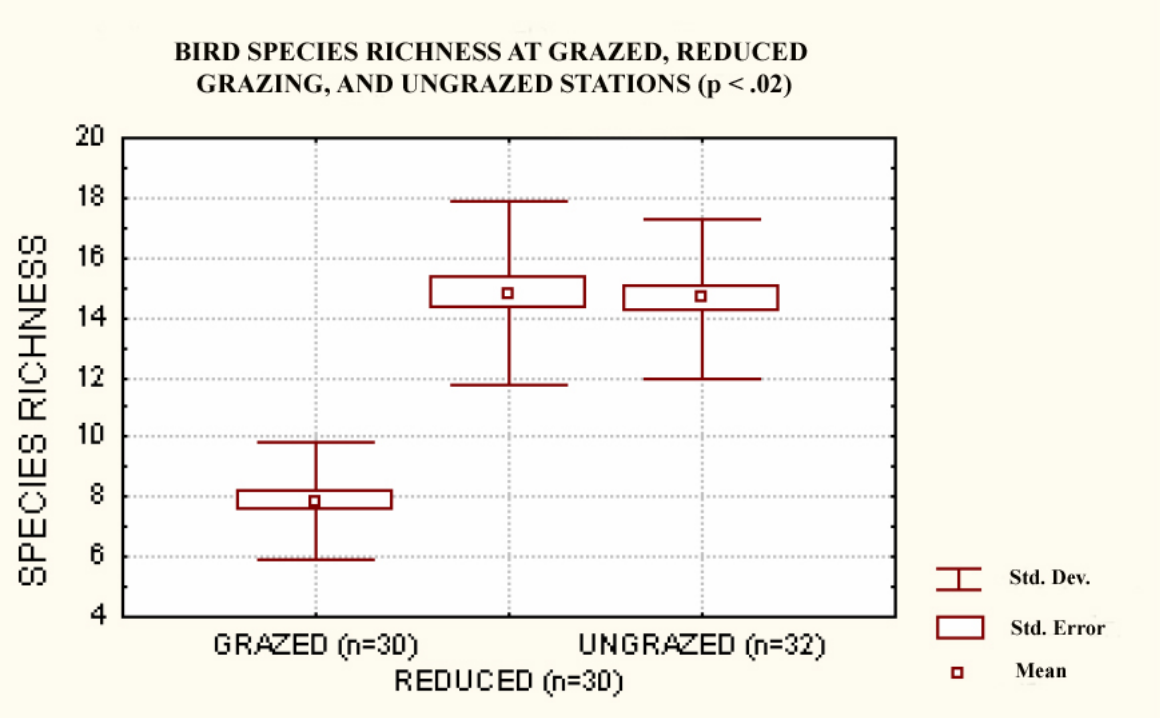

Figure 4. There were significantly more bird species at reduced grazing or ungrazed Marble Mountain sites than there were at grazed stations. Adapted from Alexander and Johnson (2001).

Fish: Coho and chinook salmon and steelhead trout use lower Shackleford Creek, but cannot access Marble Mountain headwater areas because of natural barriers caused by high stream gradient. Any pollution generated by grazing would, however, have effects on downstream water quality. Coho salmon are listed as Threatened under State and federal Endangered Species Acts. Coho runs in the Scott River show that there are two very weak year classes and only one relatively strong year class (QVIC, 2006) indicating a very high risk of local extinction (Rieman et al., 1993).

Steelhead are also recognized as Threatened under the federal ESA. Summer steelhead have been virtually eliminated from the Scott River basin as a result of water extraction for agriculture and degradation of aquatic habitat attributable to land use (Kier Associates, 1991). Alarmingly, fall chinook returns have fallen from thousands to near 500 fish in several recent years (QVIC, 2006), which is near the lower limit for maintaining their population viability (Gilpin and Soule, 1991).

Although impacts from grazing allotments are less than those related to activities such as logging or road building, pollution from grazing should be abated in order to assist with recovery of the Scott River basin's at-risk anadromous salmonids.

Steelhead trout may exhibit anadromous life histories or they may sometimes remain in fresh water as resident rainbow trout. It is unknown whether rainbow trout in the headwaters of Shackleford Creek may become steelhead if flushed downstream by flood events. Regardless, the standing crop of trout within the grazing allotments is one measure of aquatic health. No data were provided on the use by fish of the streams within the

allotments, but standing crops should be estimated using electro-fishing as part of any adaptive management.

Management Indicator Species: "A review was conducted using the Forest Project Level Assessment Checklist to determine: 1) if the project is within the range of any Management Indicator Species (MIS), 2) if habitat, for which the species is an indicator, is present within the proposed project area, and 3) if there are potential direct, indirect, or cumulative effects on habitat components" (KNF, 2007).

The discussion of Management Indication Species (MIS) in the *Draft EA* alludes to documents concerning consultations with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, yet no data on sensitive indicator species are provided.

Although the *Draft EA* says that a suite of species associated with streams within the allotments were chosen as indicators, no data are supplied for rainbow trout, tailed frog, Cascade frog, American dipper or the other species selected.

Cascade frogs may reside in wet meadows after breeding to rest and feed so that they can build up fat reserves to survive the winter (Dr. Hartwell Welsh, personal communication). Stubble height of 4 inches is not likely sufficient cover to protect this species from predation. The association of this species with the wet meadows of the Marble Mountains is not well studied; therefore impacts to this species from grazing are unknown. Grazing in wet meadows of the Lassen National Forest has lead to a substantial decline in this species (Dr. Hartwell Welsh, personal communication) and it is recognized as declining on USFS lands in the Sierra Nevada Mountains (Welsh et al., 1991).

E. coli and Pathogens: "Concern for elevated bacteria (E. coli) levels in cattle-accessible streams is limited to areas of high stocking density (Biskie et al. 1988). Because the project involves a relatively small number of animals that are unconfined and do not spend considerable time in the stream, there is low probability that bacteria from wastes would accumulate in streams." (KNF, 2007)

The *Draft EA* avoids the question of whether cows add to loads of *Cryptosporidium* and *Giardia* pathogen by noting that wild animals such as striped skunks, coyotes, California ground squirrels, and yellow-bellied marmots also harbor them. As is the case with all other parameters discussed, no data are provided to help confirm assertions that cows are not adding to disease risk. Measuring for *E. coli* above and below meadows and at the KNF boundary downstream would be a suitable monitoring approach, if a legitimate adaptive management program is pursued.

Cumulative Effects

The *Draft EA* discussion of cumulative watershed effects (CWE) is very confused:

> "Because the effects of grazing are not detectable at the 7th field watershed scale, the Forest CWE models do not quantify grazing disturbances. Therefore, the potential effects of grazing are discussed qualitatively, based on field review and analysis of conditions."

The effects of grazing are not necessarily undetectable at any watershed scale – there has simply been no effort to collect field data to detect them, nor even to access the relevant data that is available.

The basic assertion regarding CWEs in the *Draft EA* is that the effects generated by grazing are so small, when compared to those of logging and road building, that they are insignificant. In fact, the effects of grazing should be considered in conjunction with these other sources of pollution, i.e. and recognize the basin's very degraded watershed condition (QVIC, 2006). These conditions triggered the listing of the Scott River, under the CWA, as impaired for sediment and water temperature and led to the pollution abatement measures prescribed by the TMDL process (NCRWQCB, 2006). The discussion of CWE in the *Draft EA* actually serves as a diversion from the real question: what are the effects of grazing at a watershed and landscape scale in the Marble Mountains?

The *Draft EA* should have considered grazing leases at least at the scale of the Marble Mountains (Figure 5). Wet meadow habitats and associated riparian zones are rare habitats and a significant amount of this habitat is being disturbed by grazing. Given the recognized relationships between grazing and neotropical song birds (Alexander and Johnson, 2001), cumulative effects to these species needs to be considered at a minimum.

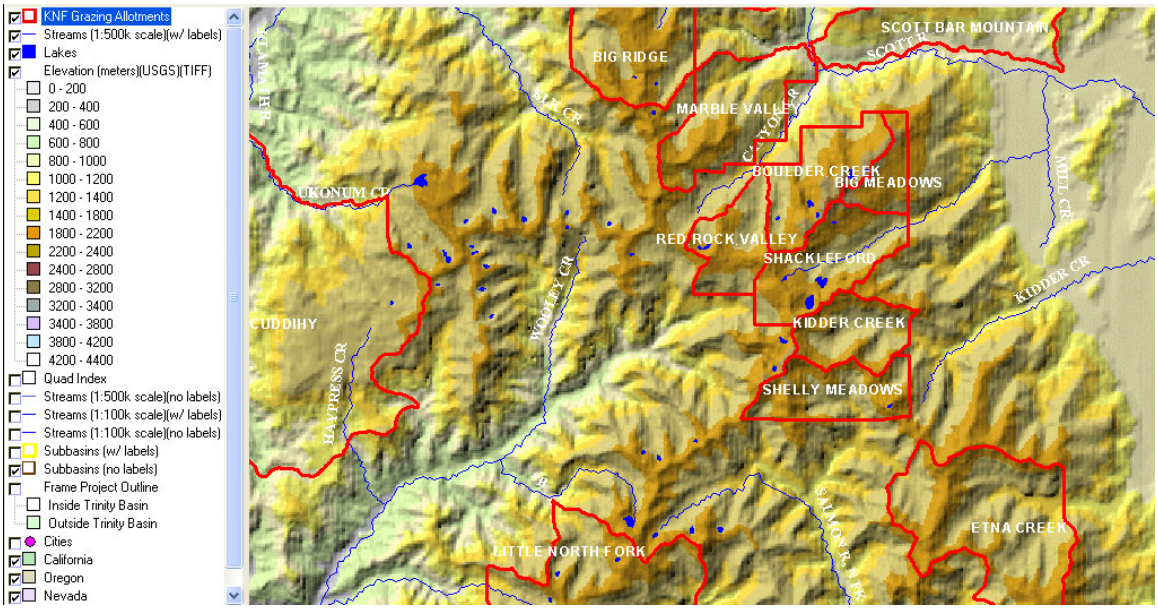

Figure 5. This map shows the grazing allotments within and adjacent to the Marble Mountain Wilderness and demonstrates that the logical scales for understanding cumulative effects from grazing includes the landscape scale.

Instead the *Draft EA* makes the following statements regarding the scale of analysis:

> "The analysis area for cumulative effects to rangeland resources is the area within the boundaries of the Kidder Creek and Shackleford Allotments, because the proposed alternatives would not affect rangeland resources outside the allotments. Also, other activities outside the allotments would have negligible effects on the rangeland resources within the allotments. None of the proposed alternatives would cause

> significant cumulative effects to rangeland resources in the analysis area because the allotments are almost entirely within a wilderness area where few other activities occur. None of the other current or future activities described above would have a significant effect on rangeland resources, even when combined with the effects of the proposed alternatives."

Alexander and Johnson (1993) point out that "livestock mostly affect riparian vegetation through cumulative effects of soil compaction, altered hydrology and direct consumption." They also described how "hoof action compacts the soil, causing lower water infiltration into soil macro pores, resulting in increased surface erosion" and decreased "establishment, reproduction and recruitment of vegetation into the older canopy layers of willow riparian communities."

If there are fewer trees holding the stream banks as a result of cattle trampling, catastrophic change in channels during winter storm events become more likely. The *Draft EA* alludes to significant bank erosion resulting from the January 1997 storm in the Shackleford Allotment. This storm was characterized by de la Fuente and Elder (1997) as a 15 to 35-year recurrence interval event. An unresolved question is whether degraded riparian conditions within the allotment increased damage to the stream. This is another CWE question that should have been addressed in the *Draft EA*.

Clean Water Act, Basin Plan and TMDL Compliance

The *Draft EA* fails to acknowledge the impaired status of the Scott River basin, the sub-basins it discusses, and the Clean Water Act-driven *Scott TMDL* (NCRWQCB, 2006) to abate pollution in them. The *Scott TMDL* implementation plan has now become an amendment to the Basin Plan (NCRWQCB, 2007) and is, therefore, an enforceable regulation. The *Scott TMDL* (NCRWQCB, 2006) contemplates a Memorandum of Understanding (MOU) with the USFS and the U.S. Bureau of Land Management (BLM) that will include:

- A commitment by the USFS/BLM to develop revised grazing management practices and monitoring activities, should existing measures be inadequate or ineffective, subject to the approval of the Regional Water Board's Executive Officer."

The current *Draft EA* correctly reacted to chronic sediment and temperature pollution within the Kidder Creek Allotment by calling for cessation of grazing. Continued grazing on the Shackleford Allotment, however, with no change in management, insures that bank erosion and stream trampling will continue. This human-caused degradation runs counter to the TMDL recommendations and will violate the *Basin Plan* (NCRWQCB, 2007) objectives and the Clean Water Act.

The KNF (2002-2006) BMP water quality evaluation reports consistently point out that KNF has not adopted Region 5 riparian assessment protocols and has also not adopted appropriate management objectives with defined monitoring tools and assessment methods:

> "The new (R5) evaluation protocol requires measuring specific stream bank disturbance and woody plant utilization against Forest or Annual Operating Plan (AOP) objectives. The specific objectives do not exist on the Klamath NF AOPs" (KNF, 2005).

The *Draft EA* fails to define specific and appropriate management objectives and monitoring protocols to address this problem. Without these objectives, the KNF cannot adequately evaluate how it is managing grazing for water quality on this or any other grazing allotment.

The ultimate failure is that the USFS does not require the herding needed to keep the cattle dispersed and out of riparian areas, resulting in chronic and persistent failure to meet applicable standards, including BMPs. Failure to consistently meet BMP effectiveness standards is a Clean Water Act violation. The EA must describe practical management requirements that will result in ending all impacts by cattle to riparian vegetation shades streams. If zero impacts can not feasibly be achieved, the allotment cannot legally be renewed.

The *Scott TMDL* (NCRWQCB, 2006) also makes the following requirement of private land owners in the Scott River, which could serve as a guideline for USFS staff in future consideration of grazing assessment:

> "A Grazing and Riparian Management Plan shall describe, in detail, (1) sediment waste discharges and sources of elevated water temperatures caused by livestock grazing, (2) how and when such sources are to be controlled and monitored, and (3) management practices that will prevent and reduce future sources."

Draft EA **Compliance Issues with the NFMA, KNF LRMP, and the ACS**

The *Draft EA* fails to meet requirements governing the U.S. Forest Service, including the National Forest Management Act (NFMA), Klamath National Forest (KNF) Land and Resource Management Plan (LRMP), and the Aquatic Conservation Strategy (ACS).

NFMA: The National Forest Management Act requires that all Forests within the National Forest system:

- Maintain viable populations of native vertebrate species,
- Preserve biological diversity, and
- Protect lakes, streams, streambanks, wetlands, and riparian areas

The discussions above show clearly that grazing in the Kidder and Shackleford Allotments is causing a loss of habitat and a decline in the use of sensitive avian species (Alexander and Johnson, 2001). The status of other indicator species such as the Cascade frog remain unknown, as do potential grazing impacts. Clearly, the pattern of grazing of un-tended cows in the Kidder Creek and Shackleford Allotments has been to congregate in sensitive riparian zones and to cross streams at multiple points causing substantial bank erosion, in violation of the third NFMA objective cited above.

KNF LRMP: Several KNF *Land and Resource Management Plan* objectives are not met under the Kidder Creek and Shackleford Allotments and would continue to be unmet if grazing continues without substantial changes in management.

Standards and Guideline (6-1) in the LRMP require maintenance of "the structure, composition, and function of forest, rangeland, and aquatic ecosystems within the range of natural variability." The 20-30% bare banks in the Shackleford Allotment and changes in willow thicket structure associated with grazing obviously run counter to this objective.

"Grazing must be managed so as not to not retard or prevent attainment of the Aquatic Conservation Strategy objectives" (LRMP 4-9). See discussion below.

ACS: The Aquatic Conservation Strategy is tiered to the *Record of Decision/Standards and Guidelines for Management of Habitat for Late Successional and Old Growth Forest Related Species within the Range of the Northern Spotted Owl* (ROD) and the *Northwest Forest Plan* (FEMAT, 1993). FEMAT (1993) states that:

> "Complying with the Aquatic Conservation Strategy objectives means that an agency must manage the riparian-dependent resources to maintain the existing condition or implement actions to restore conditions."

Specifically with regard to grazing, the *Northwest Forest Plan* (FEMAT, 1993) makes the following recommendation:

> "Adjust grazing practices to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives. If adjusting practices is not effective, eliminate grazing."

To comply with the foregoing statute, grazing would have to be eliminated on both the Kidder Creek and Shackleford Allotments. The *Draft EA* provides evidence that the following ACS objectives are unmet, and will remain unmet if grazing is continued on the Shackleford Allotment without substantial changes in management:

- Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

Repeated violations of BMP effectiveness standards for bank stability and lentic disturbance show this objective is not met. Specifically, within the Shackleford Allotment, the following passage from the *Draft EA* has relevance: "During a 2005 visit, areas of unstable stream banks with bank chiseling and sloughing, and localized channel widening and down-cutting were noted (USDA-FS 2005a). These localized effected areas make up less than 20% of the cattle-accessible streambanks in the allotment."

- Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

Insufficient information is provided to determine whether this objective is being met on the Shackleford Allotment, but the pattern of gully erosion and down-cutting described in the Kidder Creek Allotment clearly shows it is unmet there.

- Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

This objective parallels those of the Clean Water Act described above and the *Draft EA* and BMP reports (KNF, 1999-2006) both indicate chronic water pollution on the allotments.

- Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate and character of sediment input, storage, and transport.

As mentioned above, there are no sediment data provided in the *Draft EA* and assertions that bank erosion is not leading to elevated sediment yield are unsupported.

- Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

The *Draft EA* focuses a great deal on the 4-inch stubble height of browse as an indicator of overall range health, but no data are provided on riparian vegetation. The *Draft EA* states that the rare plant Botrychium would be adversely effected by the grazing proposed under the Preferred Alternative: "Trampling to the extent that begins to affect percent vegetation cover and stream banks can lead to habitat degradation for Botrychium, especially if the hydrologic regime changes as a result of down cutting and bank destabilization."

Proposed Additional Alternative Compatible with Adaptive Management

NEPA requires consideration of a full range of alternatives, but the *Draft EA* does not propose intermediate levels of grazing, including appropriate changes in management, that could bring the Shackleford Allotment into compliance with the laws and statutes governing the Forest Service, described above. The *Draft EA* suggests a range of options in management, but offers no specific plan for how herding or placement of salt blocks might be used to reverse BMP non-compliance. What follows is a prescription for a practical adaptive management approach to preventing further damage to, and allowing recovery of wet meadows and streams in, the Shackleford Allotment.

Recommended changes in management:

1) Reduce the number of cow/calf pairs to the minimum of 25 for five years.
2) Require herd management sufficient to prevent cattle from congregating in sensitive areas, riparian zones and streams -- or install seasonal cattle exclosures.
3) Provide salt blocks in less sensitive areas having suitable forage to attract cattle.

Recommended monitoring:

1) Take cross sections and long profiles of stream channels impacted by grazing.
2) Place automated temperature probes in key locations throughout grazing allotment and collect data from May 15 to October 15.
3) Place automated temperature sensors in grazed and ungrazed riparian zones within or near the allotment.
4) Measure aquatic invertebrate diversity (EPT/Richness) above and below grazing impacts and in an ungrazed control stream.
5) Collect bulk gravel samples (fines <0.85 mm) in grazed streams and in controls.
6) Compare the volume of sediment in pools (V*) in grazed streams and in controls.
7) Measure bird abundance, richness and trends in grazed and ungrazed riparian zones.
8) Measure Cascade frog abundance and distribution relative to grazed and ungrazed meadows and riparian zones.
9) Measure soil compaction in meadows and riparian zones.
10) Measure water table depth in meadows and track changes over time.
11) Measure E. coli above and below meadows and at lower USFS Shackleford Creek boundary.
12) Use electrofishing to measure standing crops in meadow streams and repeat for trend monitoring over time.

The KNF must employ standard monitoring methods and recognize specific targets or population levels as surrogates for properly functioning ecological conditions. Data collection should be annual or scheduled when needed, if some conditions only change in repose to periodic meteorological events. Water quality reference values should be similar to those employed in the *Scott River TMDL* (NCRWQCB, 2006). The data resulting from monitoring could then be used for construction of a model that useful in predicting ecosystem response to grazing. If, after five years under minimum grazing levels (25 cow/calf pairs) and more close stock management, the trends show recovery of physical habitat and sensitive species populations, then stock levels could be gradually increased.

Conclusion

The *Draft EA* does not provide data to support its conclusions. It ignores the existing scientific literature concerning the resources potentially impacted by the proposed grazing. It therefore fails to comply with NEPA standards. We have explained in some detail above, that were the KNF to pursue the Preferred Alternative that allows grazing on the Shackleford Allotment, it will violate the Clean Water Act, NFMA, and KNF LRMP standards and those of the ACS. Given the clear damage from prior grazing and the failure of the KNF to supply data to support its proposed management actions, a finding in the final Decision Notice that approves grazing, as before, on the Shackleford Allotment would be considered arbitrary and capricious under the Administrative Procedures Act.

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