Inyo National Forest Land and Resources Management Plan Update/Revision

Biological Resources Focus Paper

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Executive Summary

Inyo County (County) is compiling information on a variety of topics to help guide coordination with the U.S. Department of Agriculture, Forest Service (Forest Service) during the planning process for updating the Inyo National Forest (Inyo NF or Forest) Land and Resources Management Plan (LRMP). This focus paper about biological resources has been prepared to provide an overview of issues and trends for biological resources of interest to the County on the Inyo NF and identify opportunities and constraints associated with management of those resources. The County has a keen interest in the updates to the Inyo NF LRMP because management of the resources on the Forest could affect activities in the county that contribute to its economy and way of life, such as recreational and agricultural uses. Its key priorities relating to the Inyo NF LRMP update are providing access on the Forest, contributing to a vibrant economy, and enhancing the local culture through use of the Forest. Specific biological priorities include planning for conflicts between biological resources and human access, restoring degraded wilderness areas, and encouraging use of biological resources on the Forest for recreation and other purposes. An overview of the findings and recommendations discussed in the focus paper is presented below.

Findings Summary

Biological resources are important in Inyo County because of their contribution to the local economy and culture through recreation and tourism opportunities. The key opportunities are hunting, fishing, and wildlife and nature viewing, all of which are available on the Inyo NF. The continued management of biological resources to support and promote recreational opportunities, as well as the continued provision of access to recreational areas, is important to the County. Overall, recreational opportunities are expected to continue to be abundant in the county, although some limitations or restrictions may arise as management for biological resources, such as protection of sensitive species and habitat restoration, becomes more of a priority in some areas (e.g., alpine lakes where Sierra Nevada yellow-legged frog, a species proposed for listing under the Endangered Species Act, is found).

The County has many opportunities to contribute to the management of biological resources in order to balance recreational uses with the conservation and enhancement of habitats and species diversity. Agency coordination and partnerships with others are key to establishing common goals and implementing management activities. Examples of beneficial activities include enhancing access to prime recreational areas while protecting sensitive biological resources, protecting habitats on the Forest to enhance viewing opportunities, continuing to provide diverse hunting and fishing opportunities across the Forest, expanding and enhancing education and interpretation programs to better inform visitors about the important biological resources and their trends on the Forest, and identifying other uses of resources on the Forest that are sustainable and beneficial to the management of biological resources (e.g., timber cutting/thinning, grazing).

Constraints may arise with implementing management activities for biological resources and enhancing or expanding wildlife-dependent recreational uses, such as man-made influences, disease, natural hazards, and habitat modifications and changes. Permitting and regulatory compliance requirements can constrain or limit certain activities, particularly when sensitive species or habitats are affected. Population growth

with its accompanying increase in visitation can lead to increased concerns with the protection of resources and can result in unnecessary impacts on biological resources or unnecessary constraints on the utilization of the forest without proper management of recreational areas and opportunities. Natural hazards and disease will continue to be present in the environment and need to be managed to protect the resources on the Forest while ensuring the long-term enjoyment of nature by visitors without unnecessary constraints.

Recommendations

The County should continue to be involved in the planning and development process for the Inyo NF LRMP update and provide comments and input to the Forest Service throughout the process. Ongoing coordination with the Forest Service will be key to ensuring the agency understands the County's key priorities and shares a common understanding of the County's goals and objectives related to biological resources management and the provision of associated recreational opportunities. The County may consider identifying specific management actions, such as those noted in the Opportunities section of this focus paper, that it can contribute to over the long term to improve management of biological resources.

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1. Introduction

Inyo County (County) is compiling information on a variety of topics to help guide coordination with the U.S. Department of Agriculture, Forest Service (Forest Service) during the planning process for updating the Inyo National Forest (Inyo NF or Forest) Land and Resources Management Plan (LRMP). To date, the Forest Service has completed a science synthesis on landscape-scale issues specific to Sierra Nevada forests, a bio-regional assessment for the Sierra Nevada, and various topic papers to describe the current conditions and trends of the various resources on the Inyo NF that are anticipated to be addressed in the updated LRMP. The draft LRMP is expected to be available for public review in 2015-2016. This focus paper about biological resources has been prepared to provide an overview of issues and trends for biological resources of interest to the County on the Inyo NF and identify opportunities and constraints associated with management of those resources.

1.1 Purpose

The primary purposes of this focus paper are to document information on biological resources of interest to the County and provide baseline information for the County to coordinate with the Forest Service during the planning process for the Inyo NF LRMP update. The County has a keen interest in the updates to the Inyo NF LRMP because management of the resources on the Forest could affect activities in the county that contribute to its economy and way of life, such as recreational and agricultural uses. This paper also presents a brief overview of the issues and trends associated with biological resources that may be the subject of management direction in the LRMP.

1.2 Road Map

The focus paper is organized into the following sections:

- Background: discusses the Forest Service planning process and County priorities for the LRMP update.
- Setting: briefly describes the biological resources of interest to the County and applicable management policies.
- Issues and Trends: identifies the current issues and trends of the biological resources of interest to the County on the Inyo NF.
- Opportunities: discusses opportunities available to improve management or use of biological resources on the Inyo NF and in the county.
- Constraints: identifies concerns or potential constraints associated with management or use of biological resources on the Inyo NF and in the county.
- Forest Service Approach: provides an update on the Forest Service planning process to date.
- Conclusions: summarizes the key opportunities and constraints.

2. Background

2.1 1988 Planning Update

The Forest Service previously updated the Inyo NF LRMP in 1988, which is the current version of the plan, as amended by subsequent decisions relating to the Inyo NF. The 1988 LRMP provided similar management guidance as the previous 1982 LRMP, but it emphasized recreational values, including uses based on fish and wildlife. Standards and guidelines were identified to provide for diverse and productive fish and wildlife populations in order to ensure habitat diversity. Specific guidance was provided for habitat for threatened and endangered species in order to meet recovery goals for the species and for mule deer and mountain sheep habitat.

2.2 Planning Since 1988

The Forest Service has issued several amendments to the 1988 Inyo NF LRMP to update or refine management guidance for the Forest. These amendments contain management direction for wilderness, wild and scenic rivers, motor vehicle use, range, vegetation management, and species management. Specific to biological resources, the 2004 Sierra Nevada Forest Plan Amendment modifies management direction for fuel treatments to avoid California spotted owl and northern goshawk protected activity centers wherever possible; improves protection and enhancement of old forests; and provides additional protections for aquatic, riparian, and meadow ecosystems, specifically the willow flycatcher and Yosemite toad. The 2007 Sierra Nevada Forests Management Indicator Species Amendment modified the management indicator species direction by updating the list of species to consider. The updated list includes 11 terrestrial habitats and ecosystem components with 12 associated management indicator species and one aquatic habitat (lakes, rivers, streams) with one associated management indicator species group (aquatic macroinvertebrates).

2.3 2012 Planning Rule

The Forest Service is implementing the 2012 National Forest System land management planning rule, which provides updated guidance on the development, amendment, and revision of LRMPs. One aspect of the new planning rule relevant to biological resources is the designation of species of conservation concern in each plan area, which are to be managed to maintain viable populations of the species within the plan area. These species are defined as: “a species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species’ capability to persist over the long-term in the plan area” (36 CFR Sec. 219.9(c)). The list of species of conservation concern may replace the lists of Forest Service sensitive and management indicator species. Other aspects of the planning rule enhance management of biological resources to provide ecological sustainability, a diversity of plant and animal communities, and multiple uses.

Implementation of the planning rule is guided by directives in the Forest Service Handbook 1909.12 and Forest Service Manual 1900, as amended. The revised handbook provides new guidance for conducting an assessment as part of the planning process for the development of an LRMP or updates or amendments to an existing LRMP. The assessment involves a detailed review of existing information and

coordination with the public and other agencies. The approach for assessing biological resources considers the ecological integrity of the terrestrial, aquatic, and riparian ecosystems and at-risk species in the plan area. As part of the assessment, issues and trends for the resources are characterized, and a list of species of conservation concern is established. Management of the Forest will then be based on the information contained in the assessment, which will be used to establish specific policies to guide management of the resources in the LRMP.

2.4 County Priorities for LRMP Update

On June 19, 2012, Inyo County sent a letter to the Forest Service regarding its priorities for the update/revision of the Inyo NF LRMP. The key priorities are providing access on the Forest, contributing to a vibrant economy, and enhancing the local culture through use of the Forest. Specific biological priorities include planning for conflicts between biological resources and human access, restoring degraded wilderness areas, and encouraging use of biological resources on the Forest for recreation and other purposes.

3. Setting

3.1 Importance of Biological Resources

The settlement of the county was based on the beneficial uses of the land and the diverse natural resources it provides, such as timber, wildlife, grazing lands, water, and minerals. Recreation and tourism are prominent uses in the county and contribute to its economy and culture as a result of the location of the county in the Sierra Nevada within a short drive from major cities, such as Los Angeles and Las Vegas. The county's extensive forests, wide elevation ranges, and unique setting appeal to a wide range of people and offer diverse recreational opportunities. Many wildlife-based recreational opportunities are available, such as hunting, fishing, and wildlife viewing, particularly on the Inyo NF. The provision of these uses and management of deer herds, recreational fisheries, and a diversity of wildlife are important to Inyo County because they affect the future economy and culture of the county. With most of the land in the county being managed by other agencies, the integration of county-dependent uses into federal and other land management plans is important, as is the need to ensure that other agencies' management actions do not impede the use of wildlife and other biological resources for the enjoyment of visitors and residents in the county.

3.2 Policy Direction

Inyo County seeks to collaborate with other land managers and owners in the county and integrate the County's General Plan into their management guidelines and policies. The County is in the process of updating its General Plan, which was last updated in 2001, except for the Government Element, which was updated in 2010, and the Housing Element, which was updated in 2009. The Government and Conservation/Open Space Elements identify specific policies for management and protection of biological resources, and the Public Safety Element identifies policies relating to hazards, such as wildfires and floods, that could affect biological resources. The draft update of the General Plan (May 2013) and the 2001 General Plan identify policies to protect and recover special-status species, manage

game and non-game wildlife species, protect riparian areas and wetlands, protect wildlife corridors, reduce the spread of invasive weeds, and promote wildlife-dependent recreational opportunities. Some of these policies include:

- **Policy GOV-7.1a-g:** The County supports and encourages varied use of public and private recreational opportunities:
    - The County requests coordination of federal, state, wildlife and fishery management and enforcement agencies with the County.
    - The County will work closely with any agency with which it shares jurisdiction.
    - Off road vehicle use is a significant recreational activity in the County. Existing off-road vehicles use areas should be continued and additional off-road vehicle areas should be developed.
    - The County approves any retention of revenues proposed under the authority of the Federal Lands Recreation Enhancement Act or similar law.
    - The County strongly supports and requests continuing maintenance of roads and expansion of motorized access to public lands.
    - The existing network of off-road vehicle routes on public lands in the County is of paramount importance to the recreational and resource goals of the County. All existing four-wheel and off-highway-vehicle drive routes should be maintained and the resource should be expanded where possible, subject to the avoidance of environmental or cultural harm. The four-wheel and off-highway vehicle drive network, as shown on USGS maps and maps referenced in Appendix B (of the General Plan), should be preserved.
    - The existing network of hiking, backpacking and stock trails in the Sierra Nevada must be enhanced and protected. Sierra Nevada tourism involving access to the backcountry is a fundamental ingredient to the economic and social health of the County. No existing trail should be closed. Where trails and natural habitat coincide, human use of the trails should be preserved.
- **Policy GOV-8.1a:** The County should cooperate with federal and state agencies who oversee the protection and recovery of federal and state listed threatened, endangered, sensitive or candidate species and their habitat.
- **Policy GOV-8.1c:** Federal and state agencies shall prepare a plan in coordination with the County before the introduction or re-introduction of any species onto public or private land that is likely to impact the planning area.
- **Policy GOV-8.1d:** The County supports wildlife management that:
    - Enhances populations of game and non-game species native to the project area.
    - Recognizes that enhancing non-native game and non-game species may negatively impact native species and rangeland ecosystems.
    - Increase wildlife numbers where practicable that is not in conflict with existing economic uses or ecosystem health.
    - Recognizes that large game animals compete for forage and water with other economic uses.
    - Supports the need for a private property compensation program for certain wildlife damages.
- **Policy BIO-1.3:** Encourage the restoration of degraded biological communities.

- **Policy BIO-1.5:** The County shall work to preserve and protect existing wildlife corridors where appropriate.
- **Policy BIO-2.1:** Work with other government land management agencies to preserve and protect biological resources while maintaining the ability to utilize and enjoy the natural resources in the County.
- **Policy BIO-2.2:** Encourage appropriate access to resource-managed lands.
- **Policy BIO-2.3:** Promote hunting and fishing activities within the County pursuant to appropriate regulations of the California Fish & Game Code.
- **Policy BIO-2.4:** Provide and support passive recreational opportunities and interpretive education in the natural environment.

4. Issues and Trends

This section discusses the current issues and trends associated with management and use of biological resources on the Inyo NF, with a focus on resources of importance to Inyo County. Biological resources on the Inyo NF in Inyo County are important because of their recreational and aesthetic values and their contribution to the local culture and economy. Specific issues of concern to the County are the management of deer herds, other game species, and fisheries to provide wildlife-dependent recreational opportunities and the provision of diverse flora and fauna to support wildlife and wildflower viewing opportunities and the local culture and economy of the county. Maintaining access to recreational areas is also important to ensure such opportunities continue to be available to the public.

4.1 Overall Biological Issues and Trends

Inyo County has extensive undeveloped land with few developed areas due to the limited amount of private lands available. Because of the limited development, the expansive habitats support a diversity of plant and wildlife species and provide contiguous tracts of land that are managed by federal agencies, such as the Forest Service. In addition, the wide elevation range of the county, from below sea level to more than 14,000 feet above mean sea level, provides for a diversity of ecosystem types and associated habitats and species. With its diversity of natural resources, Inyo County offers a wide range of uses for visitors and residents and attracts people from all over the country and other countries, with the primary visitors coming from nearby urban areas in southern California and Nevada. A network of Forest Service, County, and other roads provide access to the Forest and other areas of the county. More than half of the Forest is designated as wilderness and has limited access for motorized vehicles to protect the resources. Trails provide access to some of the wilderness areas as well as to other areas without designated roads. Road maintenance is an ongoing management issue because of the varying conditions of the roads and the inadequate funds to properly maintain roads on the Forest.

Wildlife-dependent recreational uses are a key attraction for visitors, who travel to the county to hunt; fish; view wildlife, wildflowers, and the changing seasons; and collect native plants. Tourism is a staple of the county economy, and the provision of a variety of uses is important to maintain the tourism base. Visitation to the Inyo NF has been fairly constant since 2006 with more than 2.8 million visitors in 2006 and more than 2.5 million visitors in 2011, according to the Forest Service National Visitor Use Monitoring program (http://apps.fs.usda.gov/nrm/nvum/results/). The primary use of the Forest has been

for day use at developed sites, with a smaller number of visitors staying overnight and fewer visitors going to designated wilderness areas. Skiing, viewing natural features, hiking, fishing, and relaxing were the most common reported activities during both sample years. Increased growth in nearby urban areas, such as Los Angeles and Las Vegas, would also be expected to increase visitation to the county, thereby increasing use of the Inyo NF. Increased use of the Forest needs to be properly managed to avoid unacceptable overuse and degradation of resources or over regulation of the resources, particularly if the use is focused in specific areas or "hot spots" where the public prefers to go, such as popular day use areas, campgrounds, or trails.

Other key uses of the resources in the county include water supply for the Los Angeles Department of Water and Power, mineral extraction, and energy development using renewable resources for power supply. These uses are also important to the economy of the county, but they must remain compatible with the County's goals and policies. The County reviews applications for minor building permits or conditional use permits on private lands and for larger projects, such as solar energy, water development, and habitat restoration, and prepares plans for its resources and uses, such as the Regional Transportation Plan, Collaborative Bikeways Plan, and Lower Owens River Project Recreational Use Plan. Ongoing projects contribute to the county economy, but some can result in adverse effects on the trends of biological resources, such as deer, sensitive habitats, and special-status species. Access (e.g., roads, trails) to support the various uses in the county and on the Inyo NF can be an issue for biological resources because roads, while providing opportunities for visitors to experience nature, create unvegetated corridors through migration routes and disturb habitat.

The Forest Service discusses trends of the ecosystems on the Inyo NF, which are fairly representative of Inyo County, in its topic paper for "Terrestrial, Aquatic, and Riparian Ecosystems," which is primarily extracted from the "Inyo National Forest" section of Chapter 1, Assessing Terrestrial Ecosystems, Aquatic Ecosystems, and Watersheds, of the Sierra Nevada Bioregional Assessment (http://livingassessment.wikispaces.com/Chapters). Primary issues identified in that paper relate to climate, fire, insects, disease, invasive species, human activities, and air pollution, and the general trends in the terrestrial, aquatic, and riparian ecosystems vary based on those influences. Future changes in ecosystems are predicted to be the greatest where vegetation types transition into other vegetation types (e.g., at the edge of a forest). Higher elevation ecosystems are predicted to decline as vegetation types migrate upward.

The following issues have affected and can affect biological resources:

- Wildfire, such as the Inyo Complex fires in 2007 that burned 35,200 acres, including 1,600 acres of forests on the Inyo NF (http://www.fs.fed.us/r5/rsl/projects/postfirecondition/2007/);
- Major wind storms, such as the November 2011 blow down that affected 300-400 trees in the Mammoth Lakes Basin (http://www.fs.usda.gov/detail/inyo/home/?cid=stelprdb5341073);
- Other natural hazards, such as earthquakes, flooding, landslides, and mudflows that can dislodge or knock down trees and modify habitats;
- Prescribed burns, which may benefit some habitats and species, while adversely affecting others;
- Fire suppression, which can lead to greater intensity fires and overgrown understories in forests;
- Increased use of the Forest, which could lead to overuse of resources and increased effects from recreationists;

- Increased access, which would benefit recreationists, can be designed to minimize impacts on habitats and species; and
- Grazing activities provide a form of fuels treatment, but overgrazing may not be compatible with native species.

4.2 Game Species

Hunting, including big game, upland game, and waterfowl hunting, is an important use in Inyo County. Wildlife populations are managed by the California Department of Fish and Wildlife (CDFW), but wildlife habitat on NFS lands is managed by the Forest Service. The Forest Service discusses issues and trends related to hunting on the Inyo NF in its topic paper for "Multiple Uses." Little information is available on population trends of upland game and waterfowl. Most species appear to have stable populations, although their presence on the Forest fluctuates annually based on habitat conditions and migration trends. Population trends of big game species, such as mule deer, elk, and bighorn sheep, are generally stable, but some local populations or herds are experiencing declines. A key issue identified by the Forest Service is the availability of quality forage on winter ranges, which increases competition between species and affects migration routes.

Mule deer hunting is an important wildlife-dependent use in Inyo County. The county supports multiple deer herds that use both summer and winter habitats in the county, and it encompasses several hunt zones established by the CDFW. Overall populations of deer in the Sierra Nevada have declined since the early to mid 1900s, but they appear to have stabilized since the 1990s (CDFW 1998; Forest Service 2013c). Population trends of the deer herds in the county vary based on their summer and winter ranges, the availability and quality of habitats, and the availability of migration corridors. The Inyo-White Mountains deer herd appears to be slightly declining, while the Goodale deer herd appears to be stable to slightly increasing (CDFW 2013). The Round Valley deer herd appears to be stable to slightly declining.

Habitat modifications are the primary threat to deer herds and other big game species in the county. Development on private lands can fragment habitat, reduce migration corridors, and affect foraging availability in winter and spring ranges (Forest Service 2013c). Wildfire suppression has reduced forage habitat by reducing wildfire potential; wildfires result in new growth that provides quality forage for deer. These changes in habitat, as well as competition with other species (e.g., elk, wild horses, livestock), have affected the distribution of deer across the county.

Hunting opportunities are regulated by CDFW through the issuance of hunting licenses. Licenses are issued by CDFW or its vendors for one or two days, the entire year, or lifetime, and tags are issued for specific animals, such as elk, mule deer, or bighorn sheep (http://www.dfg.ca.gov/licensing/statistics/). In 2011, CDFW issued more than 7,000 licenses and tags to Inyo County residents in locations across California, including an estimated 1,310 annual licenses, more than 170 tags for bighorn sheep, and more than 2,000 tags for deer. (Note that these data are based on sales across the state where the licensee reported being from Inyo County.) A total of more than 4,300 licenses were sold in Inyo County to both residents and non-residents, which appears to indicate that many Inyo County residents purchased licenses and tags outside the county and may hunt in other areas. In 2012, CDFW issued more than 8,000 licenses and tags to Inyo County residents, including an estimated 1,320 annual licenses, more than 190 tags for bighorn sheep, and more than 2,300 tags for deer, which was an increase from the previous year.

A total of more than 4,900 licenses were sold in Inyo County to residents and non-residents. Data from 2011 and 2012 indicate similar statistics in licenses being issued across the state to Inyo County residents compared with those issued in the county to residents and non-residents. These statistics appear to show that many residents purchase licenses outside the county and fewer licenses are issued within the county.

4.3 Fisheries

Fishing is available in the many streams and lakes on the Inyo NF. As with game species, the Forest Service manages habitat for fish on the Forest, and the CDFW manages fish populations, mostly through stocking. Stocked fish have included hatchery-raised rainbow, brook, brown, and golden trouts (Forest Service 2013c). CDFW primarily stocks streams, and fish populations in lakes are a result of past stocking or other fish introductions from streams or other sources. Cottonwood Creek was the only stream noted on the Forest that had been stocked as of February 2013, according to the Forest Service (2013c). The source of stocked fish varies and has included the Mount Whitney (Black Rock) fish hatchery, which is no longer operating as a hatchery, and the Hot Creek and Fish Springs hatcheries in Inyo County. The Forest Service recognizes fishing as an important economic factor and plans to continue managing habitat to provide fishing opportunities.

Some issues have arisen with stocking of high alpine lakes because of potential effects on native species diversity, such as native amphibians and fish. Fishing opportunities are expected to continue to be available in lakes across the Forest that are not identified for habitat restoration as part of the CDFW's effort to restore habitat for native amphibians or for other restoration activities once the Sierra Nevada yellow-legged frog and Yosemite toad become listed by the U.S. Fish and Wildlife Service (USFWS). According to the Forest Service (2013c), less than 10 percent of high alpine lakes across the Sierra Nevada will be restored and no longer stocked as part of the CDFW habitat restoration plans. Additional restrictions on stocking may become effective once the frog and toad are listed. Remaining lakes and streams would continue to be managed for fishing, and fishing opportunities would remain similar to current conditions, but with fewer alpine lakes available for fishing.

CDFW and its vendors issue fishing licenses for single or multiple days, the entire year, or lifetime and records information on the number of licenses sold each year (http://www.dfg.ca.gov/licensing/statistics/). In 2011, more than 4,700 licenses were sold to Inyo County residents, most of which were annual licenses (3,157). A total of more than 23,000 licenses were sold in Inyo County to residents and non-residents. In 2012, more than 4,900 licenses were sold to Inyo County residents, which was more than the previous year and included about 3,300 annual licenses. A total of more than 22,000 licenses were sold in Inyo County to residents and non-residents, which was an overall decrease from the previous year. In contrast to hunting licenses, fishing licenses appear to be purchased by Inyo County residents in the county more often than outside the county, and a substantial number of licenses are sold to non-residents in the county.

4.4 Species Diversity

The Forest Service manages for species diversity on the Inyo NF by focusing on federally listed species and species of conservation concern (which are currently being identified and will be listed in the updated LRMP). The diversity of species found on the Forest provides excellent opportunities for wildlife

viewing, birding, wildflower viewing, nature photography, and gathering. These opportunities are popular for day-use visitors and local residents.

Federally listed species are protected under the Endangered Species Act, and the USFWS and National Marine Fisheries Service are responsible for implementing the act and issuing take permits. The USFWS has prepared recovery plans for most federally listed species to provide guidance on the efforts needed to recover the species and allow them to be removed from the list of endangered and threatened species. The Forest Service incorporates guidance from these plans in its LRMPs to manage for species diversity on NFS lands. Examples of federally listed species on the Inyo NF in Inyo County are Owens tui chub, which is only found in the Owens River Valley, and Sierra Nevada bighorn sheep, which is native to the Sierra Nevada. Species that are candidates or proposed for listing include the mountain and Sierra Nevada yellow-legged frogs, Yosemite toad, greater sage-grouse, and whitebark pine. Population trends of these species vary, but are generally declining across the species' ranges.

The USFWS designates critical habitat for federally listed species as part of its recovery efforts to identify habitat that is important to the species. Federal actions in designated critical habitat may be subject to additional management restrictions or mitigation measures to ensure the habitat quality is maintained for the species. Critical habitat for the Sierra Nevada bighorn sheep has been designated on the Inyo NF, but critical habitat for other federally listed species in the county does not overlap the Forest. The USFWS is proposing to designate critical habitat for the Sierra Nevada yellow-legged frog and Yosemite toad on the Forest in Inyo County (78 Federal Register 24516-24574). The species are proposed for listing, and the critical habitat designation would take place once the species are listed and the final rule is published by the USFWS. For the yellow-legged frog, portions of Subunits 3D and 3E and all of Subunit 3F are in Inyo County. A total of 1,105,400 acres of critical habitat would be designated across the Sierra Nevada. For Yosemite toad, portions of Units 12 and 13 are in Inyo County. A total of 750,926 acres of critical habitat would be designated across the central and southern Sierra Nevada. In addition to the critical habitat designation for these proposed species, recovery plans may be implemented that identify objectives or management guidance to help recover the species, which could also restrict some management activities or reduce recreational opportunities on the Forest (e.g., fishing opportunities in alpine lakes).

In accordance with the 2012 National Forest System Land Management Planning Rule, the Forest Service is required to identify species of conservation concern when it updates the Inyo NF LRMP. These species will become the subject of focused management on the Forest and will likely require additional consideration when evaluating Forest Service actions. The Forest Service has preliminarily identified about 72 species that appear to meet the requirements for species of conservation concern. This list is expected to be refined during the planning process. Not all of the species are found in Inyo County. Species that may be of the most interest to the County include bald eagle, northern goshawk, willow flycatcher, American marten, several bats, and various plants.

5. Opportunities

As the Forest Service updates its Inyo NF LRMP, the County has an opportunity to influence the management and use of biological resources on the Forest to improve its economy through increased or enhanced uses of biological resources. This section outlines potential opportunities that may benefit the County and could be incorporated into the goals and policies of the LRMP.

5.1 Conservation and Protection of Biological Resources

The County has an opportunity to work closely with the Forest Service, other agencies, and private entities to conserve and protect biological resources on the Inyo NF and in the county. The management of biological resources needs to be balanced with the provision of wildlife-dependent recreational uses to sustain the economy of the county. Access is an important aspect of providing recreational opportunities, although it can be a management challenge because of the need to protect resources, such as sensitive habitats or native plant populations. Directing travelers to designated roads and trails and establishing access routes to recreational areas and other destinations regularly used by visitors can help protect biological resources while maintaining access. Additional discussion on access is provided under Section 5.3, Expanding Opportunities for Use of Biological Resources.

Hunting and fishing can help manage game and fish populations, as dictated by the CDFW. These activities may increase as populations increase or become more diverse, which would benefit the County's economy. However, fish may need to be stocked in lakes or streams that do not have self-sustaining populations in order to continue to provide diverse fishing opportunities. Big game populations would also need to continue to be monitored and managed to maintain or increase the populations, which is primarily the responsibility of CDFW. Habitat management by land management agencies can provide for increased game populations, as well. Also, the preservation of special-status species and unique biological resources provides for species diversity, which enhances recreational opportunities. The protection of migratory habitat for birds and native habitats with wildflowers, for example, can enhance bird viewing and wildlife and plant observation opportunities in the county.

Other opportunities are also available to educate the public on the importance of biological resources and the need to protect them for future generations. The County could coordinate with the Forest Service and other agencies that manage land in the county to establish an education program, which may entail preparation and distribution of brochures, posting signs at strategic locations, working with local schools, or establishing interpretive trails. The County and Forest Service also have an opportunity to identify popular use areas on the Forest, determine the need for new recreation areas to avoid overuse of resources in specific areas, and develop new recreation areas with consideration for sensitive biological resources.

5.2 Enhancement of Biological Resources

In addition to the conservation and protection of biological resources, the County has opportunities to coordinate with the Forest Service and other agencies to restore and enhance habitats across the county. Forest Service actions often include fuels treatments, thinning projects, invasive plant treatments, and other activities to improve forest conditions. Fuels treatments in the wildland urban interface protect properties from wildfires, while also reducing the potential for higher intensity fires in adjacent forests.

Prescribed burns and a reduction in fire suppression can also benefit wildlife habitats, particularly for mule deer that forage on new growth following a fire. The Forest also provides an opportunity for mitigation in the form of biological resource enhancement to offset development impacts elsewhere in the County.

5.3 Expanded Opportunities for Use of Biological Resources

With the conservation, protection, and enhancement of biological resources, recreational and other opportunities associated with the use of biological resources can be expected to expand or be enhanced. Access to recreational areas is critical to providing and enhancing opportunities for visitors to enjoy and use biological resources on the Forest. Key opportunities include hunting, fishing, wildlife and wildflower observations, nature viewing, education and interpretation, and grazing.

5.3.1 Access

In order to expand or enhance recreational opportunities in the county and on the Inyo NF to benefit the County economy, access to some areas may need to be improved, while access to other areas should be maintained or enhanced. Public access roads are needed in areas with resources that are used for recreational purposes, such as trails, campgrounds, wildlife viewing areas, and hunting areas. Existing roads may need to be evaluated to determine if they provide adequate access or if they need to be improved or modified to enhance access. In roadless areas, trails should be provided to allow backcountry hikers the opportunity to enjoy the more pristine settings of the county. The County may also need to improve access to federal lands by improving County-maintained roads. Any improvements to roads can be accomplished with consideration for protecting sensitive biological resources, such as native plant populations or habitat for listed species, by aligning roads around sensitive areas or implementing seasonal closures to avoid disturbance to wildlife species, such as mule deer and bighorn sheep migrating between winter and summer ranges. Regular road maintenance and paving roads can also benefit biological resources by stabilizing the road base and reducing erosion from vehicle use, which can protect water quality of streams near the roads. Off-highway vehicle use is increasing in popularity, and few designated areas exist that allow this use. The County could work with other agencies and private landowners to designate trails or roads for off-highway vehicle use. The designation of a formal off-highway vehicle use area would also help protect biological resources by focusing the use in an area that is less sensitive or already disturbed and reducing the potential for unnecessary and illegal vehicle travel off designated roads.

5.3.2 Hunting

Hunting opportunities are expected to continue to be available in the county, including in hunt units on the Inyo NF. These opportunities are managed by CDFW, which has established take limits and permit restrictions for species allowed to be hunted, and the populations of game species are primarily managed by CDFW. The Forest Service has a responsibility to manage habitat on the Forest and continue to provide hunting opportunities for big game and other game species. The County can coordinate with these agencies to continue to provide hunting opportunities and identify ways to improve habitat and expand populations of game species to further enhance the opportunities, as discussed above. In addition,

the County may have an opportunity to coordinate with private landowners to provide hunting opportunities on private lands, such as for waterfowl or small game.

5.3.3 Fishing

Fishing is expected to continue to be available for visitors to the county in lakes, streams, and ponds on the Inyo NF and other lands. CDFW is expected to continue stocking fish consistent with its current plans, which include some restrictions on stocking to protect native amphibians and fish, and the Forest Service is expected to continue to manage fisheries on the Forest as it has in the past. Increased stocking may be an option in some lakes or streams if they have capacity and would not degrade habitat quality for native species. With some high alpine lakes being closed to fishing to protect native amphibians, improved opportunities, such as through increasing fish diversity or populations, may be an option to enhance fishing opportunities in other areas of the Forest. Popular fishing spots should be prioritized for stocking or improved fishing while other less popular areas may be prioritized for habitat restoration or enhancement to benefit native species. Should stocking by CDFW not be feasible, other opportunities may be available through private partnerships to establish a stocking plan for select lakes or streams. The former fish hatchery facility at Mount Whitney, which is currently managed by the Friends of Mt. Whitney Fish Hatchery, may have an opportunity to become re-established and used to introduce fish into lakes or streams in the county if it can operate again as a hatchery. In addition, the County may have an opportunity to coordinate with private landowners and other agencies to provide fishing opportunities on other lands, where they may not currently be provided.

5.3.4 Nature Tourism and Education/Interpretation

Inyo County will continue to offer diverse recreational opportunities with its diverse ecosystems, seasonal changes, plants, and wildlife. Nature tourism is not expected to decline in the county because of the diverse opportunities, wide range of locations where the opportunities are available, and the relatively inexpensive nature of wildlife or wildflower viewing. These opportunities are also less disturbing to wildlife or damaging to biological resources in general because of their passive nature. For example, visitors can remain in their vehicles on designated routes to view the resources or remain distant from the resource by using designated viewing areas. Another opportunity for visitors to experience nature without disturbing wildlife or traveling to remote areas is the establishment of web-cameras at remote locations where wildlife can be viewed at a visitor center or recreation area via a television screen or monitor. Such cameras are used in a variety of settings, such as in nests of California condors in Big Sur, California and at watering troughs for bighorn sheep in southern Nevada, and can offer unique experiences for visitors to see wildlife in action.

New opportunities for visitors to enjoy nature may become available as habitats are enhanced and restored to more closely resemble historic conditions (e.g., with reduced fire suppression or by removing and controlling invasive species). The establishment of new viewing areas or scenic routes would expand nature tourism opportunities with minimal disturbance to biological resources. Other ways of expanding or enhancing nature tourism include disseminating information on the resources in the county and on the Forest to a wider audience, including places outside of the county, to encourage people to get outdoors and visit nature; expanding education and interpretation of biological resources; and enhancing access to make it easier for people to visit the Forest and enjoy nature. Topics that could be integrated into an

education and interpretation program include invasive species concerns and prevention/eradication techniques (e.g., quagga mussels, non-native plants), benefits of fire to wildlife and the natural regeneration of habitats, benefits of using local firewood, and seasonal changes in vegetation that generate inspiring views of the county.

Opportunities are available for the County to coordinate with other agencies to improve habitat management and benefit the diversity of recreational opportunities available on the Inyo NF and in the county, as discussed above. In addition, the County may consider contributing additional resources to expand the education and interpretation program available on the Forest, such as at the Ancient Bristlecone Pine Forest Visitor Center and other information centers; improve inspections for non-native species, such as quagga mussels on watercraft; expand information provided at the Eastern California Museum; and provide sponsorships for wildlife-dependent recreational uses. Partnerships with local environmental groups and private landowners can also help enhance wildlife-dependent recreational opportunities.

5.3.5 Agriculture

Agriculture, particularly grazing, is an important use of private lands in the county. Grazing can also benefit wildlife habitat by reducing understory vegetation and controlling invasive plants. The continuation of current grazing activities will help maintain the county's agricultural economy, and opportunities may be available to enhance or expand grazing into new areas or in formerly used areas to use grazing as a management tool.

5.3.6 Other Uses

The County may also have opportunities to enhance or expand other uses on the Inyo NF or in the county. Timber production is not a major use in the county, but it can contribute to the local economy and may be an option to assist the Forest Service with forest thinning projects or removal of downed trees, such as from the major wind storm in 2011. A minor use of timber is wood cutting for fires, which may be another option to remove downed trees. The use of water and other natural resources for energy and water supply are also not major uses on the Inyo NF, but waters from the Forest are significant components of downstream use, and the County's economy is partially dependent on this water supply. Opportunities may be available to establish new energy sources using renewable resources or to establish a new water source for meeting water demands in parts of the county with less water. These uses would need to be coordinated between the County and other agencies and would need to be compatible with the land management plans.

6. Constraints

Management and use of biological resources could be constrained by a number of factors. Some of the key issues are discussed above under "Issues and Trends" and include man-made influences, disease, natural hazards, and habitat modifications and changes. This section outlines potential constraints to management and use of biological resources on the Inyo NF and in the county.

6.1 Permitting/Regulatory Constraints

Projects or activities on the Inyo NF require authorization from the Forest Service. Proposed projects require environmental evaluations in compliance with the National Environmental Policy Act and need to demonstrate compliance with the National Forest Management Act, as updated, and the Inyo NF LRMP. To demonstrate compliance, minimization or avoidance measures may be necessary and could restrict certain aspects of a proposed project. Possible restrictions could include a need to protect specific habitat for a special-status species or to implement a limited operating period to avoid disturbance during a species' sensitive period (e.g., breeding, nesting). Some activities may be authorized with a condition of restoring or offsetting project impacts.

Other permitting requirements may also be imposed on projects or activities if they could adversely affect a federally or state-listed species, sensitive habitat, or waters of the United States. These impacts could trigger the need for an incidental take permit or consultation with the USFWS (Endangered Species Act) or CDFW (California Endangered Species Act), a Section 404 Clean Water Act permit from the U.S. Army Corps of Engineers, a Section 401 Clean Water Act water quality certification from the Lahontan Regional Water Quality Control Board, or a Lake or Streambed Alteration Agreement with the CDFW (Section 1602 of the Fish and Game Code). All of these permits will likely impose additional mitigation measures. An additional level of complexity arises for projects on federal lands or with other federal approvals that are proposed in designated critical habitat for a federally listed species. These projects may be subject to more stringent requirements to protect the habitat and the species.

Some specific concerns relating to the regulatory environment include the increasing number of species afforded special status, such as those being proposed for federal listing and the new species of conservation concern being identified by the Forest Service; the new proposed designations of critical habitat in the county for Yosemite toad and Sierra Nevada yellow-legged frog; and the ongoing modifications to management plans that may restrict certain types of activities. The expanded management requirements for special-status species on the Inyo NF could result in new habitat protections or management actions that may restrict certain types of recreational uses. One example is the designation of Sierra Nevada yellow-legged frog critical habitat in areas where fishing has been available in the past; fish may no longer be stocked in high alpine lakes, preventing this use. Other concerns may arise in areas where wildflower viewing is popular if recreational uses are restricted because of the need to protect habitat or individuals of plants identified as species of conservation concern. This could result in the designation of formal trails to prevent cross-country hiking in order to ensure compatibility of the uses. Alternatively, some trails may be removed and restored to native conditions to restrict access to some areas, which could decrease the overall number of trails.

6.2 Man-Made Influences

As populations grow in nearby urban areas, such as Los Angeles, use of National Forests and other natural areas is expected to increase. With this increase in use, the protection of biological resources becomes a concern, and greater restrictions may be placed on protecting habitat and species on the Inyo NF. Fewer areas may remain pristine with little human influence, and species and habitat diversity could be threatened by overuse of the lands. Access to natural areas may become restricted to protect the resources, which could reduce the ability of the public to recreate and benefit from the opportunities

available on the public lands. Restrictions to some areas could also result in increased use in other areas, which in turn could cause wildlife populations to move away from heavily used areas and could lead to damage to native plants from trampling and other activities. These activities could affect management of the Forest and priorities for the Forest Service when planning projects and identifying compatible uses.

Other man-made influences that may continue to threaten biological resources and affect use of the Forest include increased air pollution from the Central Valley and southern California as populations grow, new development or other projects that involve construction and removal of native habitats, introduction of invasive species (plants and aquatic invertebrates) that can threaten native species, and introduction or transmittal of diseases that can be transferred between humans and wildlife (e.g., white-nose bat syndrome). These issues can lead to increased management requirements to protect species and their habitat, which may in turn restrict or reduce opportunities for recreation and other uses of the resources on the Forest. Any reductions in use could affect the County economy because of its reliance on tourism.

6.3 Natural Hazards and Influences

Natural hazards are difficult to predict and can lead to devastating consequences on biological resources. A major fire, for example, can substantially alter habitat types and shift species diversity in the affected area. Past management has emphasized fire suppression, which, in many areas, has resulted in increased intensity wildfires. Prescribed burns and other fuels treatments have been increasing as management strategies on National Forests. These activities can generally benefit biological resources; however, they also restrict access for recreational uses in the treated areas for a short time. If prescribed burns get out of control, they can lead to more damage than intended. Other hazards, such as major wind storms, floods, landslides, and earthquakes, can also affect biological resources and lead to a change in habitat and species diversity on the Forest. Substantial changes to the Forest can affect recreation, as well, by altering uses and possibly reducing visitor experience, leading to a decline in uses.

Climate change is an ongoing concern that is the subject of much research and management. At the Forest level, the Forest Service can monitor trends and adapt management direction to respond to local changes in the environment influenced by climate change, but the effects of climate change are otherwise considered an outside influence. As discussed in the Forest Service topic papers, climate change has the potential to shift habitat types at higher elevations and could threaten many species dependent on specific habitat requirements.

Other natural influences include the spread of invasive plants, introduction or spread of disease from animal vectors, and natural changes in habitat types and species populations. Natural fluctuations in species populations, such as mule deer and other game species, occur on an annual basis in response to environmental conditions. These fluctuations may not necessarily mean that a species is at risk of declining, but they could have inadvertent effects on associated uses of the species (e.g., hunting levels would decline if populations decline). Invasive plants threaten native plant populations and overall habitat diversity and are often difficult to control. Likewise, disease transmitted by animals and insects (e.g., mosquitoes with West Nile virus, rodents with hantavirus, ticks with Lyme disease) is difficult to manage and control, but can be monitored to track issues and identify management strategies to control outbreaks. The Forest Service may identify management actions to protect species and their habitats on

the Forest in order to reduce adverse impacts from natural hazards and influences, which could restrict access or other uses of the Forest by the public.

7. Forest Service Planning

7.1 Inyo National Forest LRMP Update/Revision

The Forest Service is in the process of updating the Inyo NF LRMP. To date, this process has included gathering background information on the resources that need to be managed on the Forest. The Forest Service has prepared a Science Synthesis and a Bioregional Assessment to discuss regional trends of biological and other resources across the Sierra Nevada. These reports were used to guide the topics addressed in Inyo NF topic papers. Three of the topic papers focus on biological resources:

- Chapter 1: Terrestrial, Aquatic, and Riparian Ecosystems
- Chapter 5: At-Risk Species
- Chapter 8: Multiple Uses

Chapter 1 focuses on the current conditions and trends of terrestrial, aquatic, and riparian ecosystems across the Inyo NF. It presents details on each of the diverse ecosystems found on the Forest based on mapping and inventory efforts. Chapter 5 discusses the current conditions and trends of at-risk species, which include federally listed species and species of conservation concern. It identifies those species that would be subject to management requirements on the Forest, including the proposed species of conservation concern. Chapter 8 describes the various uses of biological resources on the Forest and discusses the conditions and trends of the uses. It focuses on hunting, fishing, nature watching, and native plant collection.

After the Forest Service has reviewed available information, it is expected to prepare an updated LRMP that will be available for public review and comment. Opportunities will be available for the County to submit comments to the Forest Service and provide input on the management guidance throughout the planning process.

7.2 Critique

The Forest Service has solicited comments on its topic papers and other published documents during the initial steps of the planning process. North State Resources, Inc. (NSR) reviewed the three topic papers listed above and submitted a technical memorandum on August 16, 2013, to the County to provide comments on the At-Risk Species, with a focus on the species identified as potential species of conservation concern. The focus of that topic paper is on those species that would be subject to specific management direction on the Forest. Such management direction may apply to 24 aquatic and terrestrial wildlife species and more than 50 plant species and could restrict activities on the Forest or require additional mitigation measures for activities that may affect the species or their habitat once the updated LRMP is implemented. NSR evaluated the information presented by the Forest Service to verify if that information justified listing species as species of conservation concern using the criteria identified in the topic paper. Most of the plant species appeared to satisfy the criteria; however, only a few of the wildlife

species were demonstrated to meet the criteria. NSR provided comments on the species that did not appear to meet the criteria and identified where additional information would need to be presented in order to justify listing the species as species of conservation concern. In summary, the Forest Service should conduct more research or provide more evidence to support its new list of species of conservation concern and any updated management direction for those species in the updated LRMP.

The other two topic papers presented background information on biological and related resources, but did not present potential management guidance or direction that might affect the County. Additional comments may be warranted when the Forest Service publishes its proposed management direction in the updated LRMP. At this time, the Forest Service has not distributed information on its proposed management guidance for the Inyo NF, which will be important to the County to review and provide comments on.

8. Conclusion

Inyo County has an excellent opportunity to participate in the Inyo NF LRMP update/revision and incorporate appropriate goals and policies of its own General Plan. Opportunities are available to protect, conserve, and enhance biological resources on the Inyo NF and in the county, which will also enhance recreational opportunities. Opportunities may also be available to improve access to areas of the Forest for recreation, expand or enhance other uses of natural resources, and offer ways to continue uses in a compatible manner. Constraints that may arise with regard to management and use of biological resources relate to ongoing and evolving permitting and regulatory requirements, compatibility of human uses with protection and management of biological resources, and natural hazards and influences that can be detrimental to biological resources.

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