



# Klamath Marsh National Wildlife Refuge

*Planning Update #3 / Summer 2007*

## *Thank you for participating*

Gathering the concerns, issues, and management ideas of the Tribes, public, agencies, and other interested parties is a fundamental step in developing a comprehensive management plan for the Klamath Marsh NWR. This process ended March 15, 2007 with over 180 people providing written or oral comments. Thanks to this excellent feedback, the next phase of developing a draft plan has been initiated. There will be a summary of management alternatives in the next planning update. The draft plan will hopefully be available for review in the spring of 2008.

This planning update provides you with a synopsis of scoping comments we received and some ecological history to ponder when evaluating future habitat management options for the Refuge.

Sincerely,  
**Carol Damberg**  
Refuge Manager

## A Changing Marsh Habitat: Examining the Past to Prepare for the Future

Despite its remote nature and seemingly unchanged landscape, Klamath Marsh National Wildlife Refuge has changed significantly over time. What visitors see today for wildlife habitat is very different from what early explorers and Native Americans viewed only a 150 years ago.



*Gathering wocas in Klamath Marsh circa 1923.*

Photo by Edward Curtis

Changes in landscapes may be caused by naturally occurring events, like wildfires, or be the result of human intervention such as grazing or irrigation practices.

What did the Refuge vegetation look like 150 years ago and what factors have influenced vegetative changes? These are important questions to answer as we develop future management alternatives. We need to understand how the wetland habitats functioned historically, what

changes have occurred in the surrounding ecosystem, what we can reasonably change to improve conditions, and what are realistic goals when trying to restore or enhance Refuge lands.

The question of what the KMNWR looked like 150 years ago is not easy to answer and remains somewhat a mystery. However, there are clues in historical writings and maps that help to give us a general concept.

## Please contact us!

Please contact us if you have any questions or need additional information. Also, we would be happy to meet with your group or organization to discuss this project. Direct all inquiries:

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Planning Updates 1 & 2 at  
[www.fws.gov/cno/refuges/planning.html](http://www.fws.gov/cno/refuges/planning.html)

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Early explorers in 1843 described a “savannah, or grassy meadow” on the northwest side of the marsh. Along the western shore was an “extensive meadow or lake of grass, surrounded by timbered mountains.” Photos of the marsh from 1902 and 1923 show extensive areas of wocus (yellow pond lily). An estimated 10,000 acres of continuous wocus covered Klamath Marsh. There are also historic maps from 1892 and 1905. These show extensive areas of marsh, and several lakes, and willow patches in various locations, especially along rivers or springs.

Today, the areas once dominated by wocus or open water are now primarily dominated by dense stands of bulrush and cattail. Willow areas have changed in overall acreage and distribution. Sedge wetland meadows are still abundant, but have likely changed in overall distribution. Much of the old growth ponderosa pine forest has been replaced by lodgepole pine forests.

So what happened between 1850 and 2007 to cause these changes?

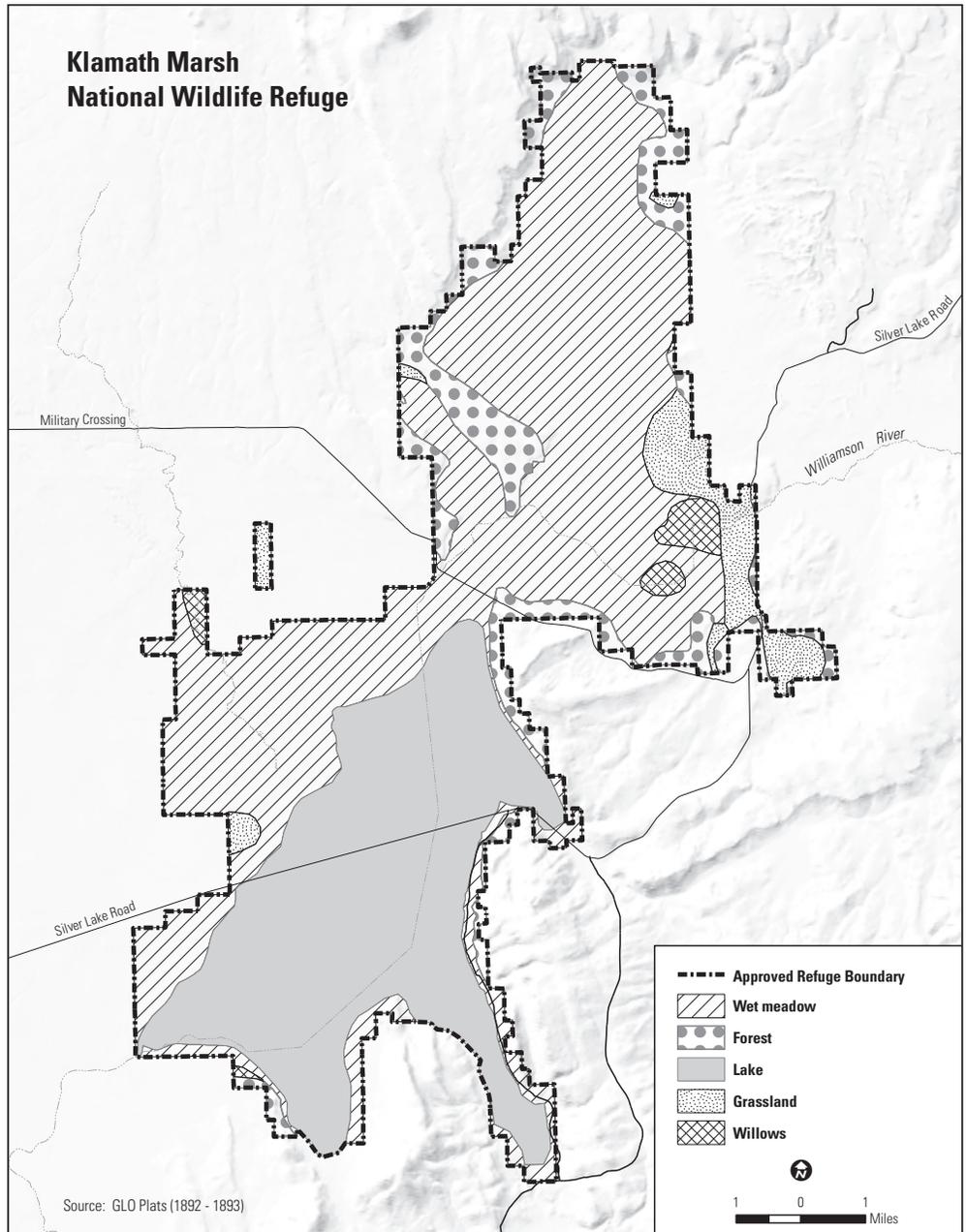
Human intervention on natural ecological processes, increased water demands in the region, and climate change are likely the primary factors responsible for changes in the Refuge’s vegetation.

Channelization of the Williamson River in the early 1900s significantly altered marsh hydrology, allowing ranchers to dry up some 16,000 acres of wetland habitat north of Military Crossing Road. This allowed livestock to graze thousands more acres even during abnormally wet years. The diversions also provided irrigation during dry years. Silver Lake and Military Crossing Roads built in the early 1900s created new barriers to water and sediment flows and thus added to changes in marsh hydrology.

Other major factors that have influenced the Refuge’s vegetation include:

- increases in regional water demands (more wells affecting groundwater and diversions resulting in less water in springs and rivers);
- climate change (warmer and drier),
- fire suppression (reduced fire frequency);
- haying and grazing;
- forest management practices (harvest

## Historic landcover map



- effects on forest composition, sedimentation and spring runoff);
- long term wetland peat accumulation (possibly 1-3 feet over the past 150 years); and
- potential modifications to the Kirk’s Reef lava dam may have changed the overall capability of the marsh system to hold water.

This is not a comprehensive list of factors, but includes the more important changes that must be considered when evaluating future management decisions.

As Refuge staff draft future long term management alternatives, it is important

to understand the complexity of variables that influence the distribution, diversity, and health of Refuge vegetation and its subsequent impacts to wildlife populations. We must consider all these factors in determining the management direction for the next 10-15 years.

Please consider the above information and think about what management options you might invoke to improve the overall health and diversity of Refuge vegetation. Your input regarding management options will help us develop an ecologically sound and successful management direction for the Refuge through our Comprehensive Conservation Plan.

# Comprehensive Conservation Issues

The following is an abridged summary of input from managers, planning team members, agencies, Tribal interests, organizations, and individuals concerning issues to be considered in the future management of Klamath Marsh NWR. The comments will provide a basis for the range of alternatives to be considered in the comprehensive planning process that will guide refuge management for the next 10 to 15 years.

## LANDSCAPE ISSUES

### **Refuge Boundary/Land Acquisition:**

The approved Refuge acquisition boundary encompasses 49,583 acres, of which 40,960 acres have been acquired by the Refuge. Several commenters wanted the boundary to include wetlands north and west of the Refuge, meadows and riparian areas to the east and southwest, and uplands along the peninsula.

Several comments supported coordination and cooperation with neighboring landowners, agencies, and Tribes. Numerous commenters urged the Service to continue to pursue and clarify water right claims that support Refuge goals.

## WILDLIFE AND HABITAT ISSUES

### **Hydrology & Water Management:**

The Williamson River enters Klamath Marsh NWR along its east central boundary. It is then diverted via irrigation channels/ditches to facilitate flooding to create wetlands.

The condition of the Williamson River through the Refuge, status of wetland hydrology, general water quality, and water management practices were major issues identified. Several commenters wanted to examine downstream impacts on water quality and quantity. Many expressed concern about the impacts of water uses and diversions around and upstream of the Refuge, and felt the CCP should identify current water use issues that may be impacting the health of the marsh and river system.

Numerous comments supported restoring the natural hydrology of the marsh, thus restoring and enhancing the Refuge's wetland, riparian, and riverine habitats. Suggestions included:

- identifying barriers and constraints to the historic hydrologic regime;
- protecting/restoring riparian habitats;
- protecting groundwater levels;

- removing irrigation ditches/diversion structures within Refuge boundaries;
- securing water rights necessary to support Refuge management;
- monitoring climate data and water management activities to better understand the impacts of Refuge management on wildlife and plants;
- putting the river back in more natural (sinuous) channel(s); and
- re-connecting the river with its floodplain.

Maintaining sufficient water in Refuge wetlands to support wildlife was a concern. Overall, there was a desire to eliminate barriers and diversions on Williamson River to improve conditions for native fish species, especially trout.

Research was requested on the existence and function of a historic natural dam at Kirk Reef, cumulative impacts to both water quality and quantity, and impacts of future water management operations to adjacent landowners.

### **Invasive Species:**

Invasive plant populations pose a major threat to native plant communities on the Refuge. Current management seeks to minimize invasive species impacts through regular treatment; less than 500 acres of the Refuge is estimated invaded. Primary species of concern include perennial pepperweed, Canada thistle, cheat grass, and reed canary grass.

There was widespread concern regarding control of invasive plants. Commenters requested that control of both invasive plants and animals be addressed in each alternative. It was recommended that the CCP identify prevention and mitigation actions to be taken if new infestations are discovered. Species mentioned included reed canary grass, meadow foxtail, dalmatian toadflax, common mullein, perennial pepperweed, Saint John's wort, Canada thistle, bullfrogs, and brook trout.

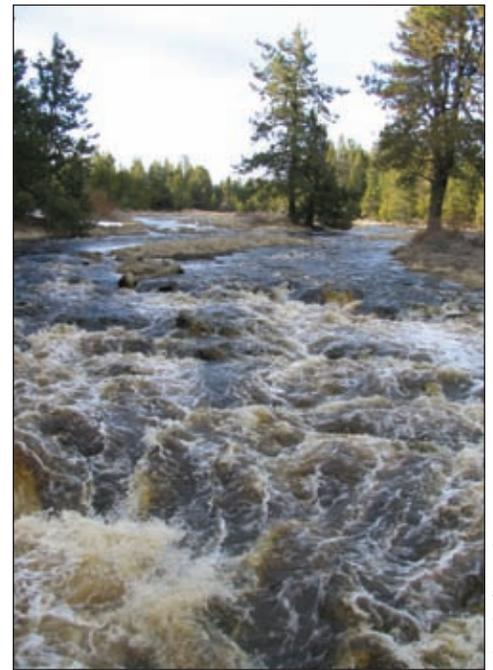


Photo by C. Dauberg

*Williamson River flows over the Kirk Reef area south of Klamath Marsh NWR.*

The use of herbicides or pesticides was a concern for several respondents. The impacts of any management actions using herbicides/pesticides should be evaluated.

### **Endangered, Threatened, Endemic And Sensitive Species:**

Klamath Marsh NWR provides habitat for one federal candidate species (Oregon spotted frog), and numerous State species of special concern.

Several commenters requested that the CCP fully review special status species and the impacts of proposed management actions. Various agencies recommended monitoring any impacts to special status species, along with potential mitigation measures for any resulting negative impacts. The distributions and current conditions of all special status species within the Refuge should be considered in the cumulative impacts evaluation. Special status species mentioned include bald eagle (Federally protected), bull trout (Federally threatened), Oregon spotted frog (Federal candidate), Klamath large scaled sucker (State sensitive), Miller Lake lamprey (State sensitive), yellow rail (State sensitive), Klamath redband trout (State sensitive), and invertebrates.

### **Fishery Management:**

There has been virtually no active management for fishery resources.

Several commenters supported restoring the natural hydrology, including removing barriers, to improve habitat and fish passage. Some supported removing non-native brook trout and reintroducing native fish. Others indicated the need for a comprehensive baseline fishery survey.

### ***Monitoring Fish, Wildlife, and Plant Populations:***

Monitoring and surveys completed on the Refuge since the 1960s include waterfowl, Canada goose nesting pairs, bald eagle nest production, Oregon spotted frog egg mass, yellow rail, sandhill crane, and monitoring of water gauge stations. Sporadic surveys and research have been completed on passerine birds, fish species, grasshoppers, and vegetation. Lack of a full time biologist at the Refuge has limited research and monitoring. We received several comments on this issue.

### ***Meadow Vegetation Management:***

Haying and grazing operations have occurred on lands within the Refuge boundary since the early 1900s. These operations are done by private permittees and regulated via special use permits that designate locations, dates, acreage, and anticipated wildlife benefits.

There were mixed comments regarding the use of haying and grazing. Some fully supported the use of these practices to modify vegetative conditions and others that would like to see them discontinued or minimized. It was important to several groups that haying and grazing be clearly justified as supporting wildlife purposes and that commercial activities be closely monitored. It was suggested that the plan reassess the impacts of grazing and haying operations and that new compatibility determinations be created for these. Several suggested other options, such as burning and native mammal grazing, instead of livestock grazing or haying. The impacts of grazing on water quality, sediment loads, and aquatic plant species diversity were concerns. Compaction of soils by hooves, cow fecal material, introduction of non-native plants, and selective grazing preferences by cows were listed as potential negative impacts. Cattle trespass on Refuge lands was a concern.

Several individuals were concerned about limiting the Refuge's management tools.



Photo by Dave Mendie

*Canoeing in Wocus Bay is allowed July 1 through Sept. 30.*

### ***Forest Management:***

Over the last century, wildland fire suppression and timber harvest have dramatically altered forest habitats around Klamath Marsh. Extensive timber harvest in the early 1900s reduced old growth forest stages, large diameter trees, and snags. Beginning around 1920 wildfires were actively suppressed. Areas of open, park-like stands of large trees have transitioned into dense, overstocked young stands. Shrub species have largely replaced native grasses and forbs. High fuel loading has increased the risk of stand-replacing wildfires. In addition, high tree densities can cause stress and mortality of remaining old growth ponderosa pines. In the absence of fire, lodgepole pine has encroached into Refuge meadows. Furthermore, conifer encroachment, fire suppression, and past grazing practices have severely limited recruitment of young aspen trees.

We received a number of comments on forest management. Several suggested the Refuge return forest stands to their historic species composition and stand structure with the appropriate fire return interval. A few suggested we manage for diversity of forest habitats and successional stages to benefit particular species of wildlife. Others suggested we include some provision for highly dense stands of conifers. Several folks suggested we prevent lodgepole encroachment into aspen stands. Several others suggested that willow and aspen stands be expanded

where possible. Another stated that we should manage bitterbrush to reduce the wildfire hazard while maintaining sufficient forage for mule deer. It was suggested that the CCP review potential impacts of selective logging. Planting native seed and seedlings for fire rehabilitation and after fuels reduction was urged by several.

### ***Fire Management:***

The Refuge has used prescribed fire since 1991 to enhance wetland and upland vegetation and reduce wildfire fuels.

Several commenters supported the use of prescribed fire to improve and maintain Refuge habitats. Some advocated a much greater use of fire including “managed wildland fire” (allowing wildfires to burn in areas designated for future prescribed burns). Some suggested the CCP thoroughly evaluate the effectiveness and impacts of prescribed burning. Fire management in forested areas should include planting of native seeds and seedlings, if necessary, as part of fire rehabilitation. Some agencies were concerned about impacts of prescribed fires to air and water quality. Prescribed burns should be evaluated for potential impact to sensitive areas, sensitive populations, and air quality protection areas.

### ***Wetland Management:***

Approximately 30,000 acres of wetland and wet meadow habitat occur in the

Refuge. There is a general perception that the condition and health of these habitats have declined for wildlife due to an increase in stands of bulrush and cattails.

There were numerous comments on the encroachment of emergent vegetation into open water areas resulting in a corresponding decrease in many migratory bird species and a significant impact on the subsistence rights of the Klamath Tribe. Possible reasons include: alteration of the natural hydrology, reduced water inputs into the marsh, accretion of peat, and possible lowering of Kirk Reef in the past. Comments overwhelmingly favored increasing the amount of open water and wocus habitat to historic levels (i.e., a hemi-marsh condition). There were several comments regarding current management of marsh vegetation and its effect on wildlife. There were suggestions that management actions include restoring nutrient cycles in wetland and riparian areas, and that the CCP should evaluate the impacts of any management actions on wetlands.

#### **Grasshopper Control:**

Clearwing grasshoppers are a native invertebrate that occurs in portions of Oregon. The species is considered a pest as major outbreaks can cause significant economic impacts to ranchers and farmers. As a native invertebrate, this species provides an important food source for a variety of wildlife species. It also influences vegetative conditions via grazing impacts. Since the 1960s this species has been monitored and/or treated to reduce economic impacts to adjacent private landowners. Egg beds on Refuge lands are currently identified, mapped, and monitored on an annual basis.

Control of grasshopper outbreaks on the Refuge is controversial and scoping comments reflected this. Some would like to see these populations remain untreated while others believe treatment is needed to reduce economic impacts to adjacent landowners. It was requested that the grasshopper control, impacts of current pesticide control measures, and possible long-term solutions to this problem be explored in the CCP. As part of a long term solution, the Refuge was encouraged to acquire and improve lands within the acquisition boundary to reduce egg laying habitat.

## **WILDLIFE-DEPENDENT RECREATION ISSUES**

#### **Visitation:**

Klamath Marsh NWR currently receives an estimated 2,000 to 4,000 visits per year. Nearly all visits involve wildlife-dependent recreation with the great majority focusing on wildlife observation and photography. The Refuge also hosts relatively small numbers of waterfowl hunters, anglers, and visitors for educational and interpretive services.

Several commenters expressed a strong desire to preserve the remote nature and feel of Refuge recreational experiences. Others felt the CCP should consider methods of encouraging more people to visit the Refuge. Proposals to increase public use should evaluate impacts on wildlife. Several commenters felt that wildlife, cultural resources, and Tribal uses should have first priority on the Refuge.

#### **Hunting & Fishing:**

The area of Klamath Marsh Refuge south of Silverlake Highway is open to waterfowl, coot, and snipe hunting. Walk-in hunting and motorless boats are permitted in some areas. Waterfowl hunting varies greatly from year to year depending on the extent of water in the marshes. Portions of Klamath Marsh NWR are open to fishing, however, fishing opportunities on the Refuge are minimal due to habitat limitations. The Tribes have subsistence hunting, fishing, and gathering rights throughout the Refuge and surrounding area.

Oregon Fish & Wildlife comments noted additional opportunities for waterfowl, big game hunting, and sport fishing. They suggested the CCP explore options to maintain wildlife at optimum levels while enhancing public enjoyment of wildlife. Several commenters believed hunting should not be allowed because the Refuge is an “inviolate sanctuary” for migratory birds and this seeming inconsistency should be resolved in the planning process. Others felt that species and habitat preservation should be taken into account before other uses, including hunting, are implemented. Tribal commenters expressed a concern that existing and proposed hunting, fishing, and other programs be carefully evaluated and allowed only if they don’t

interfere with traditional Tribal uses on Klamath Marsh and surrounding areas.

#### **Wildlife Observation and Photography:**

The refuge has good wildlife observation and photography opportunities. Wildlife observation is the primary public use activity on the Refuge. Developed viewing sites consist of small gravel pull-offs, one overlook site, and a canoe area.

Most commenters wanted to maintain the uncrowded nature of Refuge recreational opportunities. Some suggested that any



Photo by C. Dammberg

*Bird watching is a popular activity at the Marsh.*

proposal to increase public use should evaluate impacts on wildlife, with wildlife given first priority. Some favored non-consumptive uses over consumptive recreation (hunting and fishing). Suggestions included:

- evaluate options for better trails
- provide additional opportunities for wildlife compatible uses including nature study, bicycling, canoeing, horseback riding and hiking (restricted to roads).
- consider more pullouts for wildlife observation along Silverlake Road
- provide a small visitor center
- evaluate the potential for photo blinds
- consider developing a birding trail and or motorized vehicle route with maps
- limit motorized public use

#### **Interpretation and Environmental Education:**

Current interpretive resources at the Refuge consist of panels at headquarters, Forest Service Road 690, and Wocus Bay overlook. The printed Klamath Basin NWR brochure and web page also interpret resources and issues. The Refuge responds to requests for

environmental education programs on a case-by-case basis.

There were numerous suggestions for improving interpretive and educational services. Tribal members felt the Service should provide information about Tribal treaty rights to avoid potential conflicts. Another commenter suggested the Refuge have its own brochure explaining regulations complete with a detailed road and boundary map. Interpretive and educational materials should focus on the uniqueness of Klamath Marsh.

### **LAW ENFORCEMENT & RELATED VEHICLE ACCESS ISSUES**

An on-site law enforcement officer has been stationed on the Refuge from 1990 to present. Additional USFWS support is available from the Klamath Basin Complex and Region. The Oregon State Police actively enforce regulations in and around the Refuge. The Tribes also have a law enforcement officer who enforces Tribal law within and around the Refuge.

Several issues were raised related to law enforcement concerns and motorized access. Several commented that the large size, extensive road access, limited law enforcement presence, and remote nature of the Refuge make effective law enforcement difficult to impossible. Refuge staff should gate or eliminate some roads to protect wildlife and cultural resources. Other law enforcement issues to be addressed include poaching and illegal coyote shooting.

### **OTHER RECREATIONAL ISSUES**

Non-wildlife dependent recreational activities do not require the presence of wildlife to enjoy a specific activity (e.g., snowshoeing and cross-country skiing).

Two comments stated that additional visitor activities (e.g., bicycling, horseback riding, and hiking) could be beneficial to the Refuge if restricted to existing roads. One person suggested camping in support of wildlife observation.

There were a number of comments regarding road management and vehicle access on the Refuge. Commenters wanted the CCP to evaluate the amount of Refuge closed to foot access, impacts of vehicle access and roads, impacts on



*Environmental Education tours provided by Refuge staff help the public understand Refuge management and biology. Photo by Oregon Wild*

wildlife and cultural resources, impacts of current and proposed roads, and criteria for road closures. Many favored limiting roads to those necessary for Refuge purposes, limiting motorized public use to the extent possible, and closing roads if they facilitate illegal hunting or cultural resource damage. A few commenters felt the Refuge should develop and maintain public access to wildlife resources where practical and compatible with the primary purposes of the Refuge.

### **CULTURAL RESOURCE ISSUES**

Klamath Marsh Refuge is recognized as extremely important to the Klamath Tribes both spiritually and culturally. Current cultural resource protection measures include fencing, interpretative panels to educate visitors about the importance of the area to the Klamath Tribes, law enforcement patrols, and reducing roads in sensitive areas.

It was suggested that the Refuge develop a protection, monitoring, and patrol plan for archaeological sites and resources.

### **ADMINISTRATION AND OPERATION ISSUES**

Klamath Marsh NWR staff located on the Refuge include a Refuge manager and maintenance worker. Additional assistance for administrative, public use, biological monitoring, maintenance, and fire programs is provided by the Klamath Basin NWR Complex Office in Tulelake, CA. Year-round Refuge housing is limited. Volunteers are welcome if staff are available to provide supervision.

Multiple comments encouraged the Refuge to address the volunteer program. Concerns were raised regarding funding for the Refuge. Numerous commenters

identified the need for a full time biologist and additional support for maintenance operations. Long-term management of Refuge lands was a concern and several believe that lands within the Refuge system should always remain under the management of the U.S. Fish and Wildlife Service.

### **TRIBAL ISSUES**

It has been recognized by the Courts that the Klamath Tribes have subsistence hunting and gathering rights within the boundary of their former reservation lands, which includes the entire Klamath Marsh NWR. The U.S. Fish and Wildlife Service is committed to working with the Tribes on a government-to-government basis, and also to developing the best possible CCP with regards to Tribal concerns and issues.

It was a concern of several, both Tribal and non-tribal, that the CCP recognize the unique status of the Klamath Tribes concerning subsistence hunting and gathering rights in addition to their long-standing cultural and spiritual ties to the Marsh. Several comments also indicated that the Klamath Tribes should be consulted on a government-to-government level to address proposed management actions within the CCP. There was concern by the Tribes regarding the primary purposes for which the Refuge should manage the land. Managing for the subsistence needs of the Tribes via maintaining healthy populations of fish, wildlife, and wocus was emphasized. The 15-year time period of the CCP was a concern for some. They requested that if CCP projects negatively impact Tribal subsistence rights or cultural resources that it be modified to moderate such negative impacts. Multiple commenters expressed concern about the Tribe's ability to hunt and gather resources during a majority of the year and techniques involved with hunting. Several commenters urged that Tribal members not harvest game using spotlights at night or harvest does during the critical carrying, fawning/calving, and young-rearing periods. Several wanted to know what the Tribes are allowed to do on Refuge lands and requested that information be contained in the CCP.

—read the full summary at <http://www.fws.gov/cno/refuges/planning.html>