

DRAFT

5/22/02

DRAFT ENVIRONMENTAL ASSESSMENT

Tule Lake National Wildlife Refuge Sump 1B Waterfowl Hunting Area

U.S. Fish and Wildlife Service
Klamath Basin National Wildlife Refuge Complex

National Environmental Policy Act (1969)
Kuchel Act (1964)
National Wildlife Refuge System Administration Act of 1966, as amended
National Wildlife Refuge Recreation Act (1962)
National Wildlife Refuge System Improvement Act (1997)
(Legal Mandates under which Action Will be Carried Out)

Tule Lake National Wildlife Refuge

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EXECUTIVE SUMMARY

The purpose of this Environmental Assessment (EA) is to evaluate the potential impacts of establishing new waterfowl hunting opportunities on Tule Lake National Wildlife Refuge (TLNWR) by providing a controlled waterfowl hunting area on a portion of Sump 1 (B) and adjacent Frey's Island. This EA also evaluates the impacts of the proposed action to determine if those impacts are of a level of significance requiring preparation of an Environmental Impact Statement (EIS). The U.S. Fish and Wildlife Service (Service) believes that the impacts of the proposed action outlined in this EA do not require evaluation in an EIS. The Service believes, consistent with the 1997 National Wildlife Refuge System Improvement Act, that an additional hunting area as outlined in this EA may be provided on TLNWR while still maintaining and improving habitat conditions for waterfowl and other wetland dependent wildlife species. The EA compares and evaluates the environmental and socioeconomic effects of three alternative plans for providing waterfowl hunting opportunities on the refuge.

Hunters and managers recognize that waterfowl hunting opportunities have declined on TLNWR from the "heyday" of the 1950's and 1960's. Waterfowl hunting declines have been attributed to habitat declines in Tule Lake marsh (Sump 1 (A)), changes in waterfowl migration routes and changing crop harvest patterns on the refuges and in the Basin. Recent improvement of waterfowl habitats on Tule Lake NWR with the restoration of Sump 1 (B) and other wetlands projects (4,844 acres) have increased fall duck use on the refuge by 42% over the last 5 years. This increase in fall use is expected to accelerate in the near future as the natural plant succession in restored wetlands makes these habitats more attractive to waterfowl. These habitat improvements have provided an opportunity to restore the quality of the refuge waterfowl hunting program while providing significantly improved habitat for migratory and resident wildlife.

The EA evaluates three alternatives summarized below and shown in the maps in the following sections of this document:

1. Alternative 1 (preferred) would add a new waterfowl hunting area consisting 1,523 acres to (a portion of Sump 1(B) and Frey's Island) to the current hunting program. The area of the refuge open to waterfowl hunting would total 13,725 acres or 35.1 percent of the refuge. Under this Alternative no significant impacts to habitats or wildlife are anticipated although temporary displacement and direct mortality to waterfowl would occur in the hunting area. This alternative is supported by hunting groups but may be controversial among other users and interest groups. This Alternative would provide economic benefits to local communities.

2. In Alternative 2 (No action) the areas of the refuge currently open to waterfowl hunting totaling 12,202 acres or 31.2 percent of the refuge would remain unchanged. Under this alternative no new impacts to wildlife would occur but the quality of waterfowl hunting would continue to decline and the hunting program would become increasingly controversial with the hunting public. This alternative would not be controversial among users groups or individuals

other than hunters.

3. Alternative 3 would add the new hunting area identified in Alternative 1 and reduce the area of Sump 1 (A) hunted resulting in 12,485 acres or 31.9 percent of the refuge open to hunting. Impacts on wildlife would be similar to Alternative 1 with less disturbance and direct mortality to waterfowl on Sump 1 (A) due to the reduced size of this hunting unit. This alternative is not supported by hunting groups and is anticipated to be controversial with these groups and individual hunters if adopted. It would provide economic benefits to local communities; but less so than Alternative 1.

Alternative 1 has been selected as the preferred option because: 1) it would not cause significant impacts to wildlife habitats, endangered species or other wildlife, 2) it would provide the most high quality, wildlife-dependent recreational opportunities of any of the alternatives and 3) it would provide the most economic benefits while being the least controversial of the three alternatives.

Section I: PURPOSE AND NEED FOR ACTION

1.1 Introduction

The U.S. Fish and Wildlife Service (Service) is the responsible agency for administering the 530+ unit National Wildlife Refuge System. The mission of the refuge system is "... to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans." (National Wildlife Refuge System Improvement Act of 1997).

Tule Lake National Wildlife Refuge (TLNWR) is located in extreme Northern California in Modoc and Siskiyou Counties just south and west of the town of Tulelake, California. TLNWR is one of 6 refuges within the Klamath Basin NWR complex. TLNWR lies at an elevation of approximately 4,000 ft, and is 39,117 acres in area, consisting mostly of lands "reclaimed" from under the waters of historic Tule Lake. Topography within lake bottom agricultural and wetland portions of the refuge is flat or nearly so with surrounding lands containing sparsely timbered hills, uplifts, and cinder cones. Relatively small areas of the Refuge lying along the west boundary (Sheepy Ridge) and the Peninsula unit to the east consist of uplands, steep hillsides and rock outcrops.

The Klamath Project (Project), of which TLNWR is a part, was authorized by the Secretary of the Interior in 1905 for the reclamation of certain lands in the Upper Klamath Basin. In the midst of reclamation, TLNWR was created by President Calvin Coolidge on October 4, 1928, via Executive Order Number 4975 and was amended by two subsequent Executive Orders; Number 5945 dated November 4, 1928, and Number 7341 dated April 10, 1936. The Executive Order language states that the lands are to be managed "... as a refuge and breeding ground for wild birds and animals". Although these Orders provided for the conservation of wildlife, the lands also remained subject to reclamation uses. After decades of debate, the future of these Refuges was finally settled with passage of the Kuchel Act in 1964. The Act dedicated the lands to wildlife conservation for the primary purpose of waterfowl management, but with full consideration to optimum agricultural use that is consistent with waterfowl management. The Act permanently placed the lands in governmental ownership.

Legislated refuge purposes for TLNWR have been expanded into a series of refuge objectives which are to:

1. Manage for the conservation, enhancement, and recovery of threatened, endangered, and sensitive species and the natural habitats on which they depend.
2. Conserve and enhance wildlife habitats with an emphasis on high quality production and migration habitat for migratory birds.

3. Protect and restore native habitats and associated populations of wildlife representative of the natural biological diversity of the Klamath Basin.
4. Integrate the maintenance of productive wetland habitats and sustainable agricultural systems consistent with waterfowl management and ensure agricultural practices will conform to the principles of integrated pest management.
5. Provide high quality, wildlife-dependent visitor services with emphasis on environmental education, interpretation, wildlife observation, hunting, and photography opportunities which are compatible with refuge purposes.

Active waterfowl hunting programs have a long history on TLNWR dating to the period prior to refuge establishment in 1928. The refuge has had the reputation for outstanding hunting for both geese (field) and ducks (marsh) until the recent past. Most hunters believe that waterfowl hunting opportunities have declined from the “heyday” of the 1950's and 1960's. Duck hunting declines are generally attributed to habitat declines in Tule Lake marsh (Sump 1 (A)) in terms of poor wildlife food production, siltation and overly dense vegetation. Goose hunting declines in the field areas of the refuge have been variously blamed on “short stopping” of geese before they reach the refuge, changes in migration patterns and recent crop harvest pattern changes on the refuges and in the Basin.

1.2 Why is the action being considered?

Presently, duck hunting on TLNWR occurs primarily on the portion of Sump 1 (A) known as Tule Lake marsh. A decline in waterfowl hunting on TLNWR over the past 30 or more years has been widely noted by both managers and hunters. The trend in declining hunter use and waterfowl harvest is evident in Fig. 1.1. Reasons for declining habitat value and waterfowl use on Sump 1 (A) include stabilization of water levels, siltation in existing marsh habitats and development of overly dense stands of emergent vegetation. Sump 1 (B), a portion of which is the area being considered as a new hunting unit, is currently closed to waterfowl hunting. Sump 1 (B) now provides the type of food, habitat and cover which is lacking in Sump (A) and increased use of this area by waterfowl and other marsh birds has been dramatic. The following sections of this EA evaluate the possibility providing waterfowl hunting on a portion of Sump 1 (B), about 39 percent of this restored wetland, while limiting significant impacts to waterfowl, endangered species and other wildlife and their habitats.

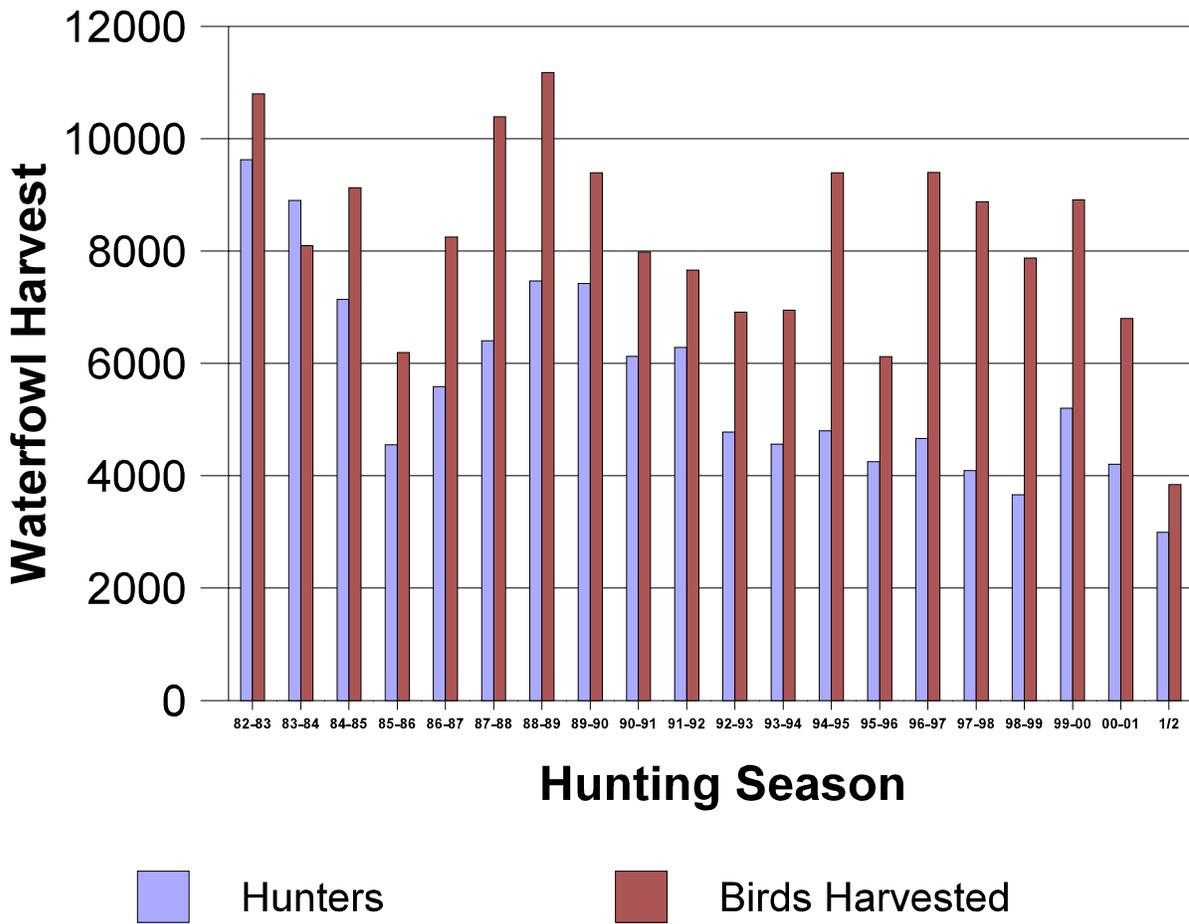
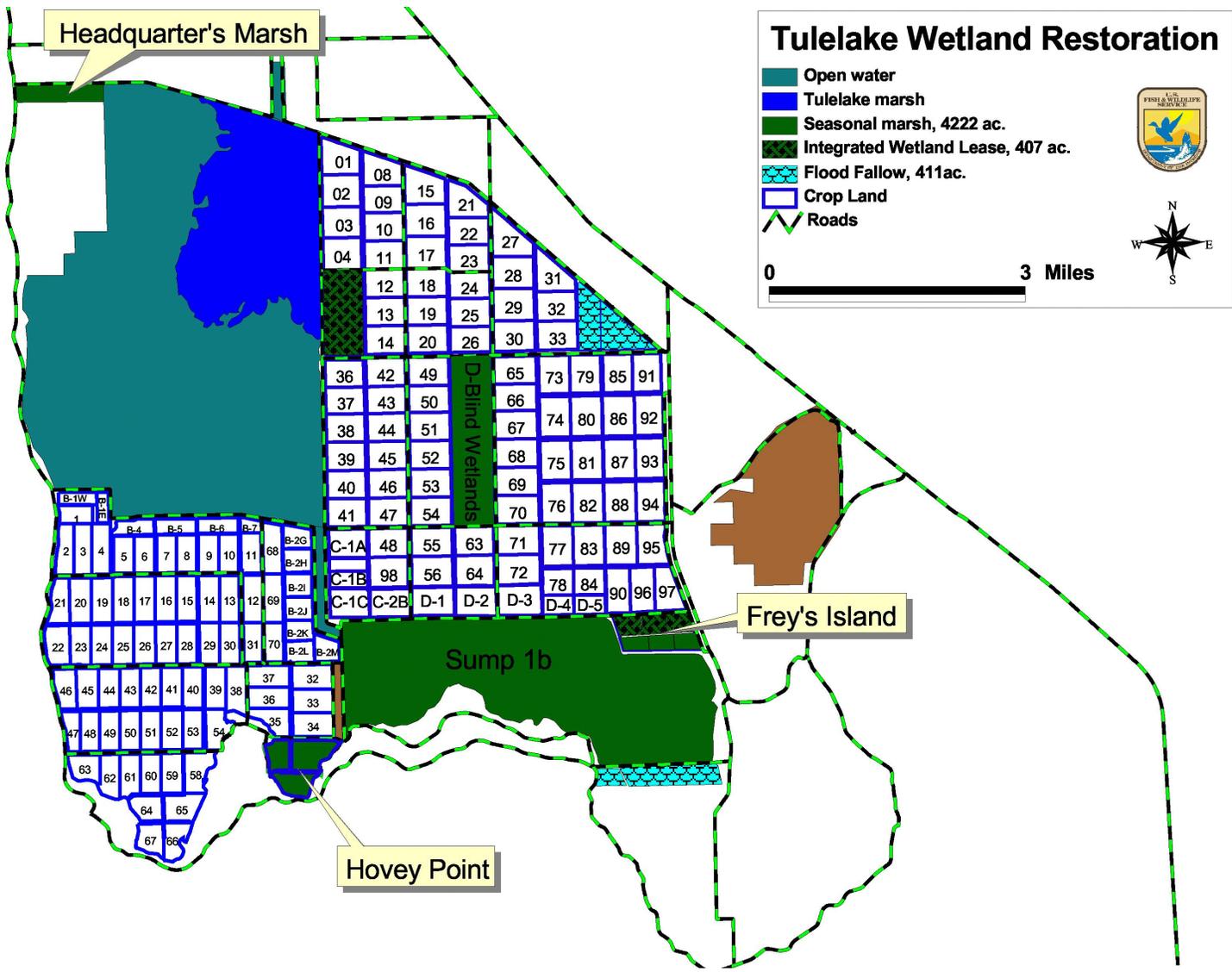


Figure 1.1. Number of hunters and birds harvested during the 1983-2002 waterfowl hunting seasons on Tule Lake National Wildlife Refuge, California.

Prior to the mid 1990's, wetland habitats on TLNWR consisted of 2 return flow “sumps” (Sumps 1(A) and 1(B)) with no seasonal or restored wetlands on the refuge. In recent years (beginning in 1995) managers have restored 1,520 acres of agricultural lands to wetland habitats. In addition, starting in 2000 a major habitat enhancement project was undertaken to restore the 3,324 acre Sump 1 (B) from an open body of water with little waterfowl value to a productive wetland. Figure 1.2 is a map showing the wetland restoration projects that have been undertaken on TLNWR since the mid 1990's. The management of sump 1B has been altered to a seasonal wetland regime with a spring drawdown of water followed by late summer floodup. In the second year of this management strategy (2001) a late summer floodup combined with germination and growth of productive food plants produced very attractive waterfowl habitat with over 300,000 waterfowl using this area during the fall 2001 migration period (D. Mauser, U.S. Fish and Wildlife Service, pers.comm.). At the same time, significant declines in waterfowl use



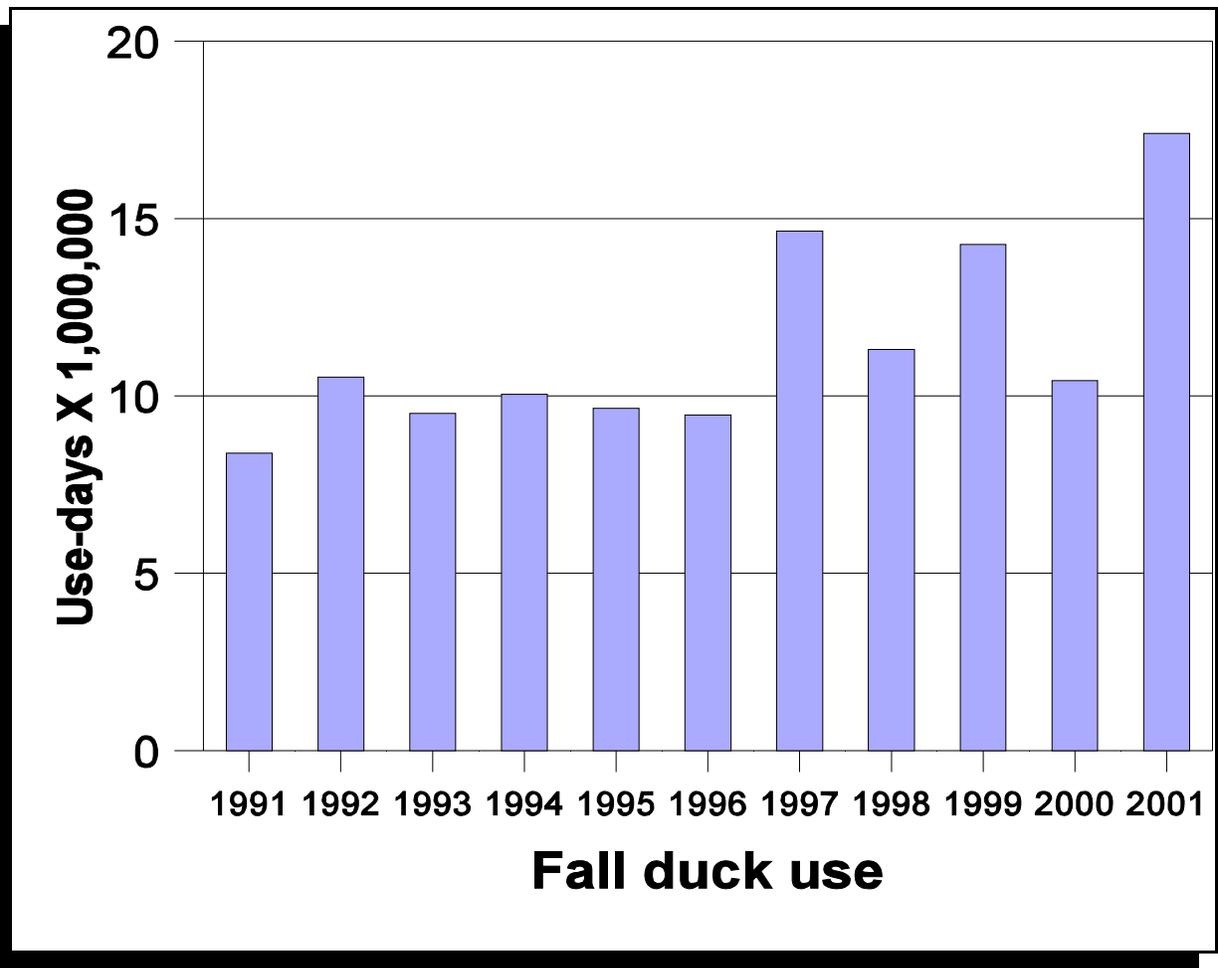


Figure. 1.3. Fall duck use on Tule Lake National Wildlife Refuge, California, 1991 - 2001.

and the number of ducks harvested in nearby Sump 1 (A) were noted during the 2001-02 waterfowl hunting season. These marsh habitat restoration projects have resulted in increases in the number of fall migrant ducks (Fig.1.3) and other marsh birds on the refuge. From 1997-2001, average fall waterfowl use on Tule Lake NWR has increased 42% compared to the 1991-96 period (prior to wetland restoration activities). Restored and enhanced wetland habitats on the Refuge are expected to become increasingly attractive to waterfowl as natural plant succession increases the abundance and diversity of wetland plants in restored and enhanced areas. In addition to current wetland enhancement and restoration projects, additional wetland restoration projects are also planned on the refuge in the year 2003 and beyond.

The Service has recently (since 1995) restored or enhanced 4,844 acres of wetland habitat on TLNWR. Of this total 700 acres are within the existing hunting program, 1,523 acres is proposed to be opened under the preferred alternative in this EA, and 2,621 acres would remain closed to waterfowl to waterfowl hunting. In light these recent improvements of wetland habitats on Tule

Lake NWR, the Service believes consistent with the 1997 National Wildlife Refuge System Improvement Act, that wildlife dependent public recreation (in this case waterfowl hunting) may be improved on TLNWR while continuing to enhance wetland habitats for migratory waterfowl and other marsh wildlife. The purpose of this Environmental Assessment (EA) is to evaluate the environmental and economic effects of providing additional high quality hunting opportunities on TLNWR.

The following items/issues need to be addressed in order to evaluate alternatives:

1. Possible endangered species impacts
2. Impacts on migratory waterfowl and other wetland-dependent species
3. Public recreation
4. Local economies

None of the actions in any of the alternatives described in the following sections of this EA will affect climate, water quality, noise levels, hydrology, esthetics, land use or other environmental factors (excepting those listed above) and are not analyzed in the following sections of this EA.

1.3 How does the action relate to Service objectives?

The U.S. Fish and Wildlife Service is the primary federal agency responsible for management of migratory birds and endangered/threatened species as well as the National Wildlife Refuge System. Standards of compatibility for recreational programs on national wildlife refuges with the primary purposes of the refuge are mandated in the 1962 National Wildlife Refuge Recreation Act and the 1966 National Wildlife Refuge System Administration Act. The 1997 National Wildlife Refuge System Improvement Act specifically recognizes hunting as one of six priority public uses on national wildlife refuges. The proposed action in this Environmental Assessment (EA) is intended to provide high quality, wildlife-dependent recreational (waterfowl hunting) opportunities on TLNWR while still providing for the habitat needs of fall migrant waterfowl and other wildlife species.

1.4 What is the action supposed to accomplish?

1. Provide high quality, wildlife-dependent recreational opportunities which are compatible with refuge purposes related to habitat management and wildlife conservation. Specifically, the proposed action is intended to offset recent declines in the quality and quantity of waterfowl hunting opportunities on TLNWR.
2. Minimize potential impacts on endangered species, migratory birds and other wildlife.
3. Minimize potential impacts on other refuge programs and recreational users.

1.5 Identify the decision to be made by the responsible official.

The Refuge Manager will determine which alternative will enhance waterfowl hunting opportunities on Tule Lake NWR while minimizing environmental impacts as well as impacts to other refuge programs and recreational users.

Section II: ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 ALTERNATIVE 1 - Sump 1(B)/Frey's Island Waterfowl Hunting Area (Preferred)

Under this Alternative, a new waterfowl hunting area of approximately 1,523 acres consisting of the eastern portion of sump 1(B) (1,290 acres) and the adjacent area known as Frey's Island (233 acres) would be designated as seasonally open to waterfowl hunting. The unit would be open 7 days per week and closed to hunting at 1:00 p.m. each day of the season like other hunting units on Tule Lake and Lower Klamath National Wildlife Refuges. Hunters participating in this program would be charged the same fees as other hunters on Tule Lake and Lower Klamath National Wildlife Refuges. The number of hunters using this area would be controlled to provide a high quality hunting experience free from competition from other users. Daily use would be limited to 6 hunting parties on Frey's Island and 10 hunting parties to hunt on Sump 1 (B). To select hunting parties, a drawing would be held the morning of the hunt at the Tule Lake check station. The limitation on party numbers may be adjusted as habitat conditions change within the hunting unit in the future. Hunting parties would be limited to 4 hunters each with a maximum of one party allowed to occupy each of the six cells in the Frey's Island unit. Those hunters not selected would have the option to participate in the Tule Lake spaced-blind drawing or participate in one of the other hunting opportunities available on nearby refuge hunting areas.

Retrieval zones of approximately 200 yards will be in place where marsh hunting areas border the refuge auto tour route. A single boat launch and adjacent parking for vehicles and trailers would be developed at the southwest corner of the Sump 1 (B) hunting area. It is anticipated that pit blinds would be located in the south three wetland cells of Frey's Island. Six small parking areas (1 to 3 cars each) would be designated for hunter use at access points for Frey's Island and walk-in access points along the east side of the Sump 1(B) hunting area if this alternative is adopted. The map depicting hunting areas in Alternative 1 shows both current and proposed areas which would be open to waterfowl hunting totaling 13,725 acres or 35.1 percent of Tule Lake NWR.

2.1.1 To what extent would this alternative satisfy the problems, opportunities, or needs identified in Section I.?

The restoration of Sump 1(B) and other wetland units on TLNWR since 1995 provide the potential to restore high quality waterfowl hunting (particularly marsh duck hunting) which has declined on TLNWR in recent years. Experience on adjacent Lower Klamath NWR indicates that the marsh habitat undergoing restoration provides excellent duck hunting success and experiences. When managed as a permanent wetland with approximately 30-50% emergent vegetation, Sump 1(B) is expected to provide outstanding hunting opportunities. It is expected that 3 cells in the Frey's Island unit will be managed as seasonal or permanent wetlands and three units will be farmed. This management should provide excellent hunting opportunities for both duck and goose hunters. Limits on daily hunter use will prevent overcrowding which has been a periodic concern on Lower Klamath marsh hunting units. This would be the only marsh hunting unit on either Tule Lake or Lower Klamath Refuges in which the number of hunters would be controlled

beyond the opening weekend. Depending on water availability, some or all of the wetland portions of this unit may not be flooded in dry years during the seasonal management phase so the availability of marsh hunting opportunities may be impacted during some hunting seasons.

Under this alternative, the majority of Sump 1(B) (2,034 acres or approximately 61 percent) would remain closed to hunting. Waterfowl displaced from the portion of Sump 1 (B) as a result of hunting activity will be able to feed and rest on the un hunted portions of Sumps 1 (B) and 1 (A). Hunting activities on Sump 1 (B) could also result in improved hunting in traditional duck and goose hunting areas on the refuge as ducks and geese displaced from Sump 1 (B) and Frey's Island may fly over or land in the nearby field and marsh hunting areas.

2.1.2 What are the principal environmental (biophysical) effects associated with implementation of this alternative? (Summarize effects from Section IV)

This alternative will result in temporary displacement of waterfowl from the hunting area during periods of human activity in addition to direct mortality as the result of hunting activity. Most of the temporary disturbance and displacement of waterfowl and other wildlife in the hunting area would result from up to ten parties of hunters accessing the hunting area each day using motorboats. Hunting parties would also be able to access marsh areas within the hunting unit by wading in or using boats without motors but the total number of hunting parties would still be limited to 10 per day. Factors limiting impacts to waterfowl and other wildlife species include:

1. Relatively low number of hunters permitted to use this area would lessen impacts to wildlife within the hunting area.
2. Season and bag limits will regulate hunter take. Waterfowl are managed on a flyway basis and an allowable harvest is determined each year that will not adversely affect the long-term viability of waterfowl populations within the flyway.
3. The daily 1:00 p.m. hunting closure would allow waterfowl and other wildlife to reoccupy the hunting area each day after the hunting activity is over.
4. Nearby resting and feeding areas would be available for use of waterfowl temporarily displaced from the hunting area. The majority of Sump 1 (B) will remain closed to hunting if this alternative is adopted. Other refuge wetlands including a portion of Sump 1 (A), Hovey Point, Headquarters or Discovery marsh and a portion of the "D" blind wetlands will also be closed to hunting and available to displaced waterfowl.
5. Use of the area proposed for hunting by endangered/ threatened species including bald eagles is minimal during the most active period of the waterfowl hunting season and impacts would expected to be negligible as a result. Hunting activity on Sump 1 (B) would provide an additional food resource for bald eagles as wounded and crippled waterfowl are actively scavenged by eagles and other raptors during and after the waterfowl hunting season. The Service will consult on the

proposed action under section 7 of the Endangered Species Act to insure that the proposed action is not likely to adversely affect listed endangered or threatened species.

6. Loafing sites on Sump 1 (B) would be located on the closed portion of sump 1 (B) (loafing site for pelicans, cormorants, terns and gulls).

7. Impacts to breeding water birds would not occur since the proposed activity takes place after the nesting season.

If this Alternative is implemented, a small boat ramp would be constructed near the southwest corner of Sump 1 (B). The boat launch will be developed in accordance with Section 404 Nationwide Permit Number 36 issued by the U. S. Army Corps of Engineers. Construction of this facility and an adjacent parking area will be on previously disturbed ground.. Boat ramp construction will not reduce wetland acreage on the refuge. Use of the boat ramp will be restricted to waterfowl hunters during the hunting season and for management purposes throughout the year. No significant negative environmental effects to wildlife or habitats are anticipated should this alternative be implemented.

2.1.3 What are the principal socioeconomic effects associated with implementation with this alternative? (Summarize effects from Section IV.)

This alternative, if implemented and fully utilized, is expected to increase hunting opportunities on Tule Lake NWR by as much as 2,000 to 2,500 hunter visits per year. In years when the hunting season length is reduced the number of hunter visits would be lower. Use of Tule Lake marsh by hunters (2001-02 season) was 1,021 hunter visits. Total waterfowl hunter use of all Tule Lake marsh and field hunting units during the 2001-02 season was just under 3,000 hunter visits. Thus, this project has the potential to nearly double the number of waterfowl hunters using Tule Lake NWR which is consistent with the intent of fostering priority wildlife-dependent uses as outlined in the National Wildlife Refuge System Improvement Act. Implementation of this alternative would result in the most economic benefits to the town of Tulelake, California and other nearby small towns of any of the three alternatives. Implementation of this alternative would also likely reduce overcrowding periodically experienced on some marsh hunting units on Lower Klamath NWR.

2.1.4 Would implementation of this alternative likely result in significant controversy? Explain.

Implementation of this alternative is expected to be strongly supported by hunters and hunting organizations. A relatively small portion of the Tule Lake auto tour route is immediately adjacent to the proposed new hunting area. The situation on Lower Klamath Refuge where hunting areas are adjacent to auto tour routes has not resulted in significant controversy but occasionally auto tour route users make negative comments about hunting occurring on the refuge. Retrieval zones buffering hunting areas on Sump 1 (B) from the Tule Lake auto tour route should address safety

concerns and alleviate the potential for significant controversy between these user groups. Some potential for opposition by environmental organizations to increased hunting opportunities on the refuge is possible, but has not been evident in the recent past. A variety of groups and individuals with widely divergent interests are being provided the opportunity to comment on this EA (See Section V). If the proposed action to establish a new hunting area raises significant concerns, those concerns will be addressed in the final EA and Compatibility Determinations for this project.

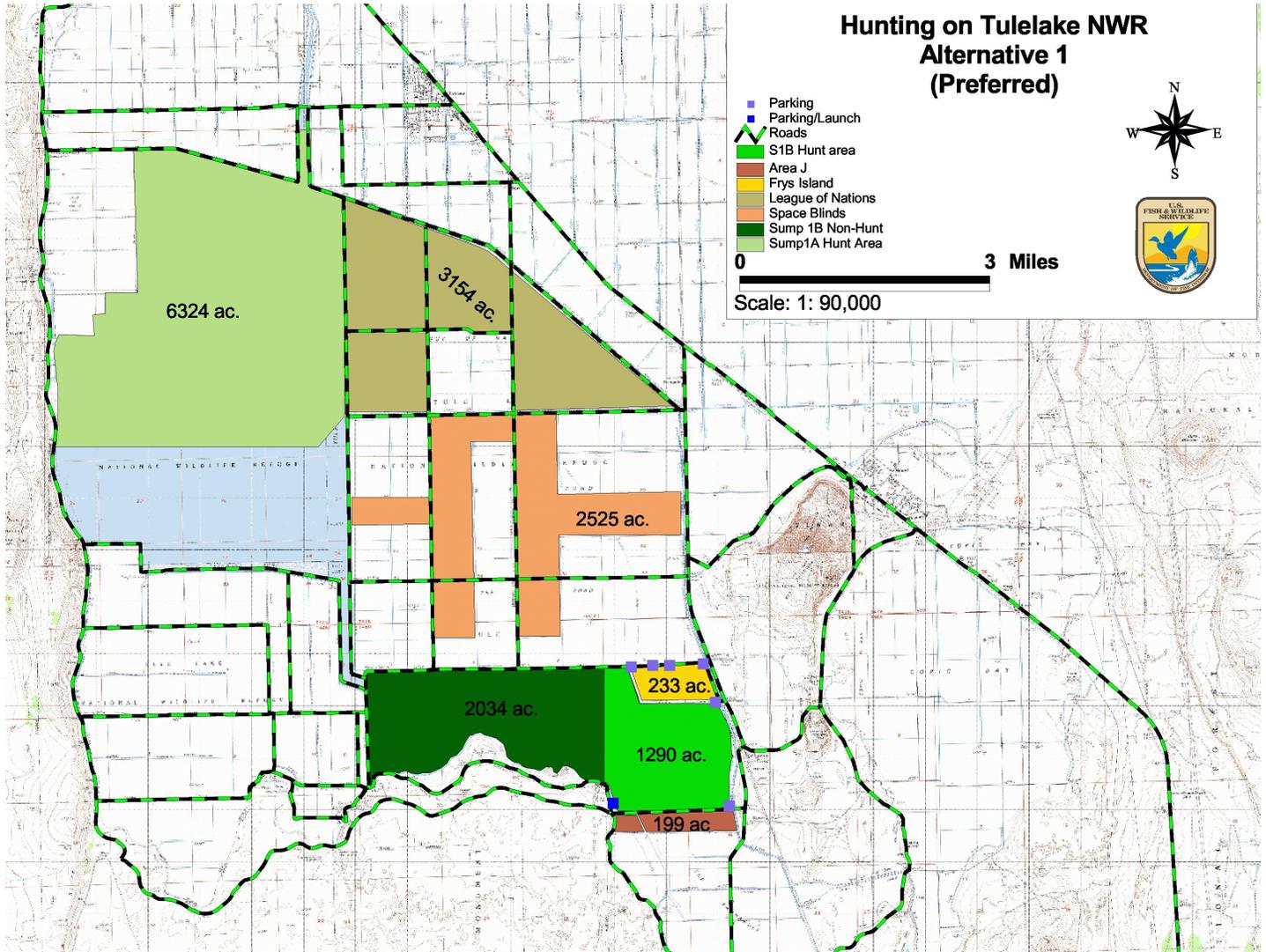
Hunting on Tulelake NWR Alternative 1 (Preferred)



- Parking
- Parking/Launch
- Roads
- S1B Hunt area
- Area J
- Frys Island
- League of Nations
- Space Blinds
- Sump 1B Non-Hunt
- Sump1A Hunt Area

0 3 Miles

Scale: 1: 90,000



ALTERNATIVE 2 - No Action (The Current Hunting Program)

2.2 Under this alternative, Sump 1(B) and Frey's Island would remain closed to waterfowl hunting as they have for the last 30 years. Other hunting areas on the refuge would remain open and unchanged compared to the recent past. The map for Alternative 1 shows the portion of the refuge currently open to waterfowl hunting totaling 12,202 acres or 31.2 percent of the refuge.

2.2.1 To what extent would this alternative satisfy the problems, opportunities, or needs identified in Section I?

Under this alternative the quantity and quality of waterfowl hunting on the refuge would continue the decline experienced in recent years. As habitat conditions improve on Sump 1 (B) with the improvement of marsh vegetation, it is to be expected that duck hunting in particular will decline and hunter use will continue to go down on Sump 1 (A) (Tule Lake marsh) which is the traditional marsh hunting unit on the refuge.

2.2.2 What are the principal environmental (biophysical) effects associated with implementation of this alternative? (Summarize effects from Section IV).

In this alternative Sump 1(B) and Frey's Island would remain closed to waterfowl hunting as they have in the past. Other hunting areas on the refuge would remain open and unchanged compared to the recent past. No change in impacts would occur to threatened or endangered species or other wildlife compared to current management. Waterfowl would not be subject to temporary displacement from the portion of Sump 1 (B) designated as a waterfowl hunting area as identified in Alternatives 1 and 3.

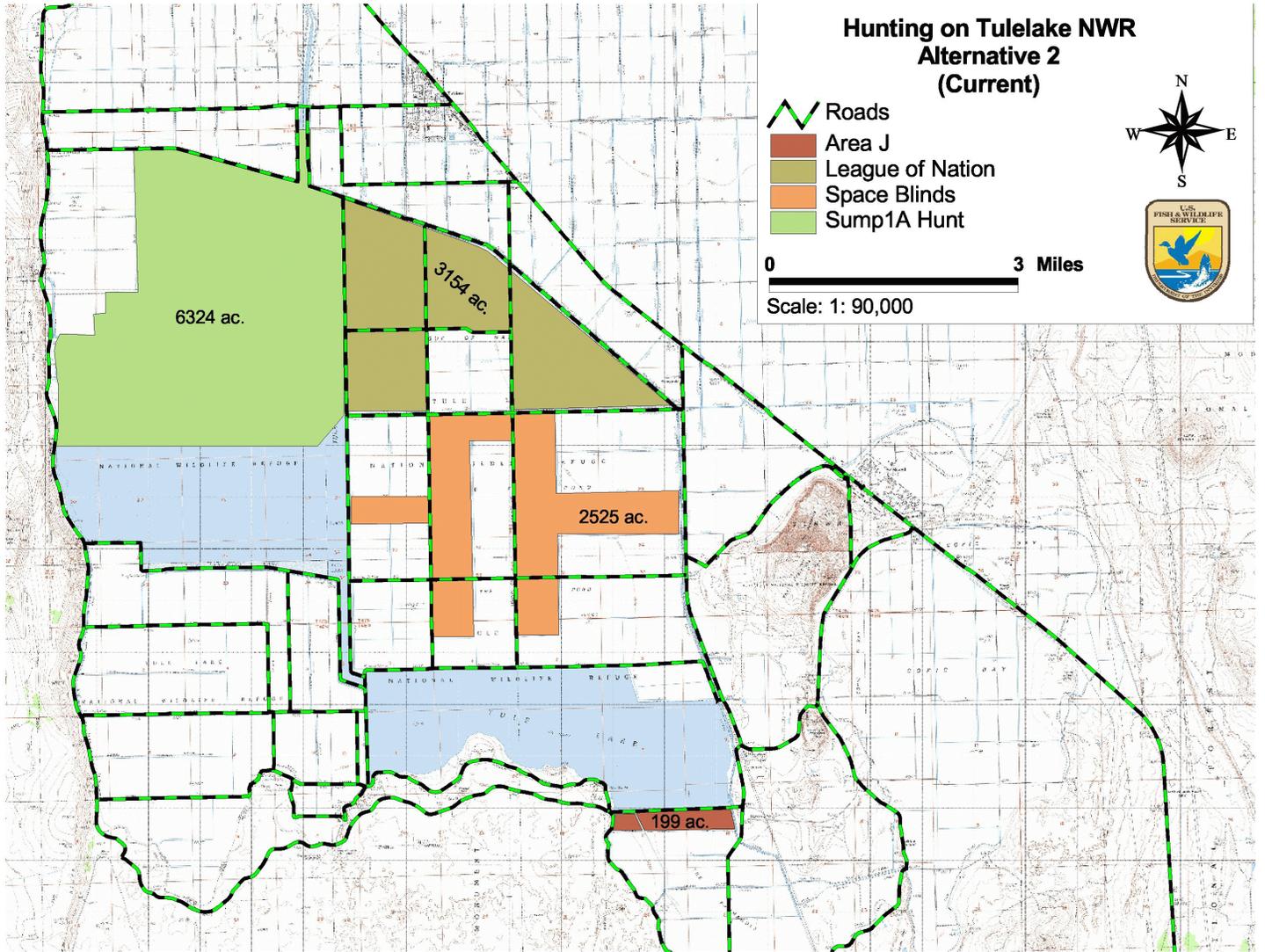
2.2.3 What are the principal socioeconomic effects associated with implementation of this alternative? (Summarize effects from Section IV).

The status quo would result in the continued decline of waterfowl hunting success and use of the refuge resulting in fewer consumptive wildlife users which would be contrary to the intent of fostering the priority public uses identified in the National Wildlife Refuge System Improvement Act. Due to declining hunter numbers, this alternative would provide the fewest economic benefits to local communities of any of the alternatives.

2.2.4 Would implementation of the alternative likely result in significant controversy? Explain.

Hunters and hunting organizations recognize the decline in waterfowl hunting on Tule Lake NWR in recent years. A decision not to open a portion of sump 1(B) to waterfowl hunting would provoke controversy by those who recognize recent improvements in waterfowl habitats and use on the refuge (which have occurred in areas not open to waterfowl hunting) while hunting has continued to decline in areas which have not experienced habitat improvements. Many hunters

anticipate and expect that a portion of Sump 1 (B) will be opened to waterfowl hunting. This, in combination with the apparent negative impact that Sump 1 (B) habitat improvement has had on Tule Lake duck hunting, would make a decision not to open Sump 1 (B) highly controversial among those interested in seeing hunting program improvements on the refuge. Maintaining the current hunting program would not create the possible controversy inherent in opening a new hunting area on the refuge.



ALTERNATIVE 3 - Sump 1(B) Waterfowl Hunting Area Along with a Size Reduction in the Sump 1(A) Hunting Area.

2.3 Under this alternative the Sump 1(B) and Frey's Island hunting area as outlined in Alternative 1 would be designated for waterfowl hunting with all the provisions outlined in Alternative 1 in force. An area of approximately 1,240 acres at the north end of the current Sump 1 (A) hunting unit would be closed to hunting. The Sump 1 (A) closed area would include all of the area north of the southern boundary of the Tule Lake canoe trail including the Lost River channel to the north boundary of the refuge. The map for Alternative 3 shows the areas which would be open and closed to hunting under this alternative. A total of 12,485 acres or 31.9 percent of the refuge would be open to waterfowl hunting under this alternative.

2.3.1 To what extent would this alternative satisfy the problems, opportunities, or needs identified in Section 1.

Implementation of this Alternative would largely address the problems, opportunities and needs as identified in Alternative 2 for restoration of high quality waterfowl hunting opportunities on Tule Lake NWR. This Alternative would close a portion of Tule Lake marsh which is currently hunted thus eliminating the opportunity for some hunters who traditionally hunt in the northern portion of the Tule Lake marsh (Sump 1 (A)) hunting area. It is uncertain whether establishing a closed zone in a portion of Tule Lake would improve hunting in the remaining Sump 1 (A) hunting area. Due to siltation over the past 30 or more years, many interior locations of Tule Lake marsh previously hunted areas are no longer accessible to hunters thus making the marsh edge the only area that can be hunted most of the season. Hunter organizations contacted to date feel that establishing a closed area in the hunted portion of Sump 1 (A) would be detrimental to overall waterfowl hunting opportunities and needs because it would further reduce the limited area currently accessible to Tule Lake marsh hunters.

2.3.2 What are the principal environmental (biophysical) effects associated with implementation of this alternative? (Summarize effects from Section IV).

This alternative will result in temporary displacement of waterfowl from the Sump 1 (B) hunting area during periods of human activity in addition to direct mortality as the result of hunting activity. The temporary disturbance and displacement of waterfowl and other wildlife in the hunting area would result from up to ten parties of hunters accessing the hunting area each day using motorboats. Hunting parties would also be able to access marsh areas within the hunting unit by wading in or using boats without motors but the total number of hunting parties would still be limited to 10 per day. Factors limiting impacts would be identical to those previously described in Alternative 1. Waterfowl displaced as a result of hunting activity would be able to feed and rest on the non hunted portions of Sump 1 (B), Sump 1 (A) the D blind wetlands as well as Hovey point and Headquarters or Discovery Marsh during hunting periods. Waterfowl would also be able to reoccupy the hunted portion of Sump 1 (B) each day after hunting closed at 1:00 p.m.

Under this alternative a small boat ramp would be constructed near the southwest corner of Sump 1 (B). The boat launch will be developed in accordance with Section 404 Nationwide Permit Number 36 issued by the U. S. Army Corps of Engineers. Construction of this facility and an adjacent parking area will be on previously disturbed ground. Boat ramp construction will not significantly reduce wetland acreage on the refuge. Use of the boat ramp will be restricted to waterfowl hunters during the hunting season and for management purposes throughout the year.

Use of the area proposed for hunting by endangered/ threatened species including bald eagles is minimal during the most active period of the waterfowl hunting season and impacts would be expected to be negligible as a result. Hunting activity on Sump 1 (B) would provide an additional food resource for bald eagles as wounded and crippled waterfowl are actively scavenged by raptors during and after the waterfowl hunting season. The Service will consult on the proposed action under section 7 of the Endangered Species Act to insure that the proposed action is not likely to adversely affect listed endangered or threatened species.

Impacts to waterfowl and other species as a result of opening a portion of sump 1 (B) to hunting should also be offset, to some degree, by designating the north end of sump 1 (A) as a sanctuary free of disturbance resulting from hunting activity. No significant negative environmental effects are anticipated should this alternative be implemented.

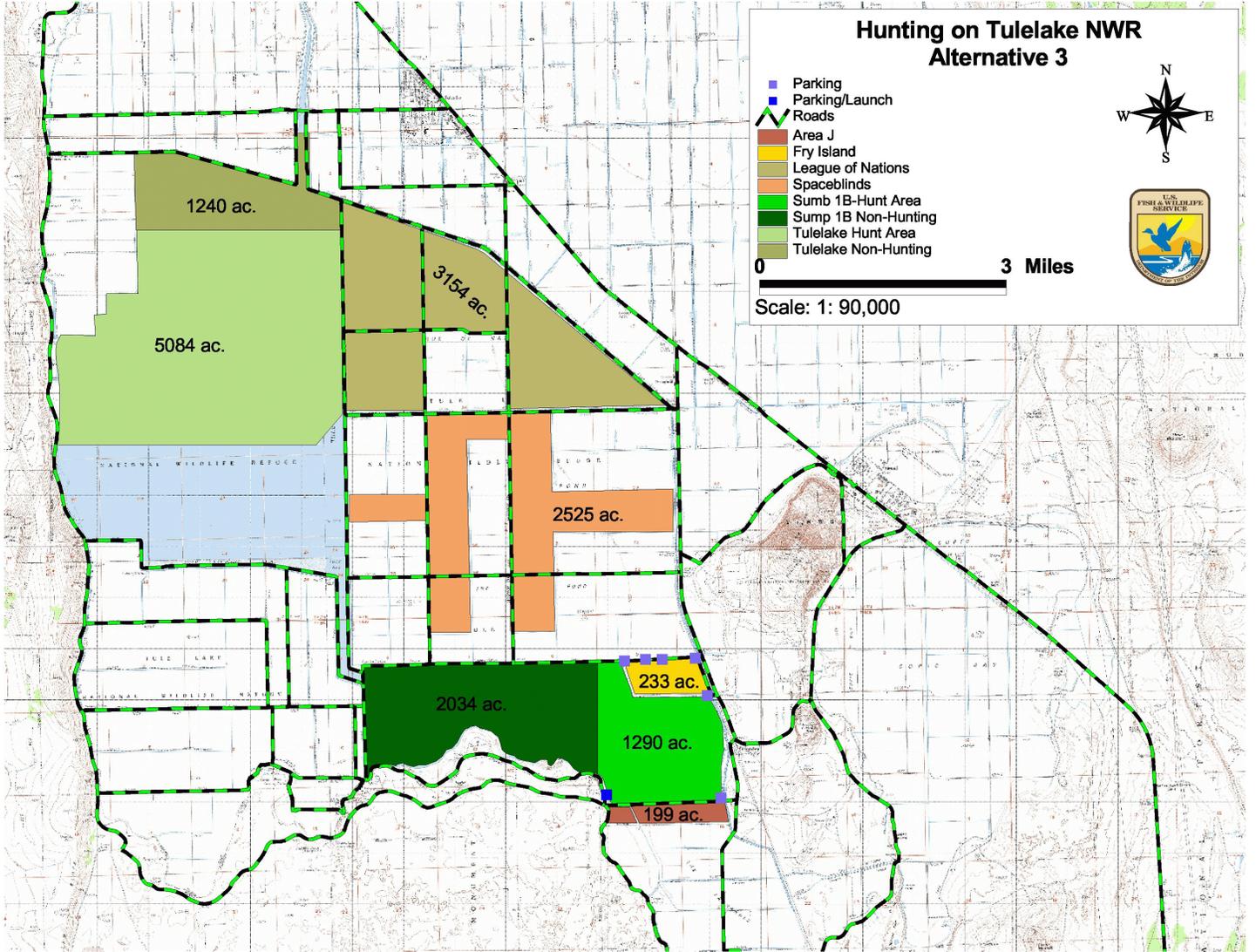
2.3.3 What are the principal socioeconomic effects associated with implementation of this alternative? (Summarize effects from Section IV).

This alternative, if implemented and fully utilized, is expected to cause a net increase of 1,500 to 2,000 hunter visits per year. The current use of Tule Lake marsh by hunters (2001-02 season) was 1,021 hunter visits. Reducing the size of the Sump 1 (A) hunting area would be expected to reduce hunter use on Sump 1 (A) by up to 500 hunter visits per season compared to the previously described Alternatives. Total waterfowl hunter use of all Tule Lake marsh and field hunting units during the 2001-02 season was just under 3,000 hunter visits. Thus, this alternative has the potential to increase the number of waterfowl hunters using Tule Lake NWR, but the increased hunter use and economic benefits to local communities would be less than in Alternative 1. The net increase in hunter use outlined above would be consistent with the intent of fostering wildlife-dependent public uses as called for in the National Wildlife Refuge System Improvement Act but to a lesser extent than in Alternative 1. The effect of closing the north portion of Sump 1 (A) on adjacent marsh hunting areas is uncertain, but it could improve hunting on the remaining open portion of Sump 1 (A) by creating a nearby area free from hunting disturbance.

2.3.4 Would implementation of this alternative likely result in significant controversy?

It is likely that this alternative would be controversial among those hunters who like to use the northern portion of the Sump 1 (A) hunting area and those who are expecting to have a new hunting area opened without a concurrent reduction in other marsh hunting opportunities on the refuge. Hunting organizations that have been contacted to date including the California

Waterfowl Association and the Cal-Ore Wetlands and Waterfowl Council are opposed to closing any portion of the current hunting area on Tule Lake NWR. A relatively small portion of the Tule Lake auto tour route is immediately adjacent to the proposed new hunting area. The situation on Lower Klamath Refuge where hunting areas are adjacent to auto tour routes has not resulted in significant controversy but occasionally auto tour route users make negative comments about hunting occurring on the refuge. Retrieval zones buffering hunting areas on Sump 1 (B) from the Tule Lake auto tour route should address safety concerns and alleviate the potential for significant controversy between these user groups. This alternative could forestall opposition by environmental or anti hunting interests as it would maintain nearly the same acreage open to hunting as is currently the case. Tule Lake and Lower Klamath Refuge hunting programs have not been the subject of controversy by environmental groups in the past. A variety of groups and individuals with widely divergent interests are being provided the opportunity to comment on this EA (See Section V). Comments concerning opening a new area of Tule Lake NWR to waterfowl will be fully addressed in the final EA and Compatibility Determination.



Alternatives/effects matrix.

**Alternative Matrix
ALTERNATIVES**

Decision-Making Criteria	Alternative 1 Sump 1(B) Hunting Area (Preferred Alternative)	Alternative 2 - No Action	Alternative 3 Establish Sump 1 (B) Hunting Area and Reduce Size of Sump 1 (A) Hunt Area
Extent to which problems, needs or opportunities would be satisfied.	Waterfowl hunting will improve due to the establishment of the new Sump 1 (B) hunting area. Displacement of some waterfowl from Sump 1 (B) may cause hunting to improve on other refuge hunting units	Continued declines in waterfowl hunting use and success will occur in current refuge hunting areas due to stagnant habitat conditions in marsh hunting areas and the development of high quality habitat in the non hunted area (Sump 1 (B)).	The overall hunting program will improve due to the establishment of the Sump 1 (B) hunting area. Hunting opportunities will be lost due to closing the northern portion of the hunting area on Tule Lake marsh (Sump 1 (A)).
Principal environmental (biophysical) effects.	Waterfowl will be temporarily displaced from the hunting area on Sump 1 (B). Displaced birds will have adequate habitat on adjacent closed areas on Sumps 1(B) and 1 (A) and other newly created closed area wetlands. Waterfowl will reoccupy hunted areas after 1:00 p.m. No significant impacts are expected to endangered/threatened species. No significant impacts to Pacific Flyway waterfowl populations are expected. In this alternative 35.1 % of refuge would be open to waterfowl hunting.	In this alternative there will be no change in environmental effects compared to the current situation. In this alternative 31.2 percent of the refuge will remain open to waterfowl hunting.	Waterfowl and marsh bird impacts are identical to Alternative 1 except an additional non hunting area for displaced waterfowl will be created in the north portion of Sump 1 (A). No significant impacts are expected to waterfowl and other marsh birds or to endangered or threatened species. In this alternative 31.9 percent of the refuge would be open to waterfowl hunting.

Principal Socio-economic Effects.	Increased use by waterfowl hunters using Tule Lake Refuge is estimated at between 2,000 and 2,500 hunter use days per year with resulting positive impacts on the local economies.	A priority public use (in this case hunting) identified in the National Wildlife Refuge System Improvement Act will not be maintained or enhanced. Continued declines in waterfowl hunting use on Tule Lake NWR will have a negative impact on the local economies.	Increased use by of the Sump 1 (B) hunting area will be partially offset by reduced use of the Sump 1 (A) hunting area resulting in an estimated net increase 1,500 to 2,000 hunter use days.
Degree of Public Controversy.	This alternative is expected to be supported by hunters and hunting groups. Low level controversy may be experienced with some TLNWR auto tour route users if this alternative is adopted. Environmental or anti hunting groups may voice opposition to opening a new waterfowl hunting area on TLNWR.	Continuation of the present hunting program is becoming increasingly controversial within the hunting community due to declined in quality of hunting experiences on the refuge. This action will not be controversial among refuge users other than hunters and any potential conflicts between waterfowl hunters and TLNWR auto tour route users will not occur.	This alternative would likely be opposed by hunters and hunting groups when compared with Alternative 1. Low level conflicts may be experienced with some TLNWR auto tour route users. Closing a nearly equivalent size area in the current Sump 1 (A) hunting area may alleviate concerns that environmental or anti hunting groups may have with Alternative 1.

3.1 Wetland Habitats

Until the mid 1990's, Tule Lake NWR wetlands consisted of 2 return flow sumps totaling about 13,500 acres of primarily open water from 0.5 to 3.5 feet in depth. A 2,500 acre emergent marsh exists in the northeast corner of Sump 1(A). Sedimentation of both Sumps 1(A) and 1(B) have reduced depths; however, depth losses have been greatest in the emergent marsh because of its proximity to the mouth of the Lost River. Open water areas are dominated by stands of sago pondweed with lesser quantities of water milfoil and coontail. The emergent marsh area is primarily hardstem bulrush with lesser quantities of cattail, burreed, and sedge. During the summer months, extensive blankets of green algae often cover extensive areas of open water on the sumps.

3.1.1 Seasonally Flooded Wetlands

Seasonally flooded wetlands are a recent (since 1995) addition to TLNWR and are currently expanding in acreage (See Section 3.2). Management of seasonally flooded wetlands requires flooding during the early fall (Sept-Nov) period and dewatering in late spring to early summer by gradually lowering water levels either by draining or by evaporation or a combination of both. The protracted removal of water during the growing season yields a complex mosaic of vegetative communities. Plant diversity is enhanced by uneven bottom contours which are exposed by a declining plane of water. As these "patches" of the bottom are exposed, they warm allowing germination of various plant species. Since these "patches " dry at different times, a specific plant association develops on each and results in a "patchwork" of differing plant communities.

The red goosefoot community in particular produces large numbers of seeds which are utilized by fall migrating mallards, pintails (Pederson and Pederson 1983), and other dabbling ducks. The invertebrate populations that develop on the foliage after flooding are sought by many species of migrating waterfowl (Pederson and Pederson 1983), shorebirds (Helmers 1992), and other marsh birds during spring migration and subsequent breeding season. Aquatic invertebrates in particular are used by young waterfowl (Sugden 1973) and other breeding wetland wildlife species. Table 3.1 lists the commonly occurring wildlife species found in seasonally flooded wetlands on TLNWR.

Smartweed is another important plant produced by seasonal flooding. This plant is found in association with other plant species or in extensive monotypic stands. During the fall, it is readily used by migrating waterfowl for food and cover. It, like other seasonally flooded wetland plants, provides good substrate for aquatic invertebrates.

Table 3.1 Commonly occurring wildlife species in seasonally flooded wetlands of Tule Lake National Wildlife Refuge, California.

<u>Species</u>	<u>Migrants</u>	<u>Breeding</u>
Mallard	*	*
Gadwall	*	*
Northern pintail	*	*
Cinnamon teal		*
Northern shoveler	*	*
Canada goose		*
White-fronted goose	*	
White-faced ibis		*
Black-crowned night heron		*
Snowy egret		*
Great egret		*
American avocet		*
Black-necked stilt		*
Long-billed dowitcher	*	
Greater yellowlegs	*	
Lesser yellowlegs	*	
Western sandpiper	*	
Least sandpiper	*	
Dunlin	*	
Red-winged blackbird		*
Yellow-headed blackbird		*
Long-billed marsh wren		*
Virginia rail	*	*
Sora rail	*	*

3.1.2 Permanently Flooded Wetlands

Permanently flooded wetlands can be found in Sump 1(A) and within the flood fallow program on TLNWR. Permanent wetlands are flooded year-round and are crucial to meeting the refuge goals of waterfowl production and habitat for fall and spring migrant waterfowl. In addition, permanently flooded wetlands meet the habitat needs of several "sensitive" wildlife species. These wetland units contain 2 major plant communities. The emergent community is composed of hardstem bulrush and cattail with minor inclusions of river bulrush. The emergent vegetation provides nesting substrate for many species of waterfowl, wading birds, and passerine birds and acts as cover for resting waterfowl during periods of inclement weather.

The submergent plant community is dominated by sago pondweed with lesser amounts of baby pondweed and coontail. This community is found in open water zones where water depths range from 6 inches to 3 feet.

Sago pondweed is a major food source for migrating canvasbacks which feed almost exclusively on sago tubers during their 3 month stay in the fall. Other species of waterfowl such as the redhead, American wigeon, lesser scaup, mallard, American coot, and tundra swan consume the vegetative parts and seeds of this as well as other submergent plants.

The submergent plant community supports a diverse and productive invertebrate community providing food for many species of migratory waterfowl and other marsh birds. During the summer months, invertebrates are a high protein food which meets requirements of breeding and molting waterfowl, grebes, and most ducklings. Breeding eared and western grebes as well as coots utilize vegetative parts of submergent plants to construct their nests.

Colonial nesting species such as double-crested cormorants, Forster's terns, and eared and western grebes utilize permanent wetland units for nesting. These units provide secure and remote sites required for nesting, and provide an abundant supply of fish, the primary food item for these birds. In addition, white-faced ibis periodically nest in Tule Lake Marsh (Sump 1(A)).

An additional use of permanently flooded wetlands is by molting waterfowl (July-September). Because these birds are flightless during this period, food, water, and cover must be in close proximity. Ducks have been documented to travel over 300 miles from their nesting areas to these marshes to molt. Table 3.4 list the commonly occurring wetland species observed in permanently flooded wetland units on Tule Lake National Wildlife Refuge.

Table 3.2 Commonly occurring wildlife species in permanently flooded wetlands of Tule Lake National Wildlife Refuge, California.

<u>Species</u>	<u>Migrants</u>	<u>Breeding</u>
Mallard	*	*
Gadwall	*	*
Northern pintail	*	
Cinnamon teal	*	*
Green-wing teal	*	
Northern shoveler	*	*
American widgeon	*	
Redhead	*	*
Canvasback	*	
Lesser scaup	*	*
Ring-necked duck	*	*
Ruddy duck	*	*
Eared grebe	*	*
Western grebe	*	*
Pied-billed grebe	*	*
White pelican		*
Double-crested cormorant		*
Great blue heron	*	
Great egret		*
Snowy egret		*
Blk-crowned nt. heron	*	
American bittern	*	*
Tri-colored blackbird		*
Red-winged blackbird		*
Yellow-headed blackbird		*
Marsh wren	*	*
Sandhill crane		*
River otter		*
Muskrat		*

3.2 Wetland Management Programs

In the mid-1990's, to address declining waterfowl and other wildlife populations on TLNWR, the Service initiated, a pilot wetland restoration program on the Refuge. Pilot sites include Hovey Point restored in 1996 (240 acres), Headquarters or Discovery Marsh restored in 1995 (80 acres),

Lot 5 restored in 1998 (90 acres), and Frey's Island restored in 1996 (233 acres). This program had three major purposes including:

1. Provide additional high quality wetland habitats for wildlife.
2. Determine the feasibility and techniques required to implement larger wetland restoration and enhancement efforts.
3. Determine the feasibility of using wetlands within the agricultural lease lands as an Integrated Pest Management (IPM) technique.

During these pilot projects, it was discovered that wetland habitats could be rapidly restored with simple water management efforts, that wildlife use of these newly restored wetlands was disproportionately high compared to the existing Sumps, and that wetland cycles within the farming program reduced soil pests to crops and enhanced soil fertility, thereby reducing the need for pesticides and fertilizers. As a result of these findings, wetland enhancement and restoration activities are currently expanding on the Refuge and now total about 4,844 acres (including the original pilot sites). Additional projects include Sump 1(B) enhanced in 2000 (3,324 acres), D-blind wetlands (about 600 acres), wetland/cropland farm leases, and the flood fallow program shown previously in Figure 1.2. Currently, the Service has contracted with an engineering firm to map the topography of the agricultural lands as well as wetlands on the Refuge. This topographic information will be used in planning future wetland/cropland, flood fallow, and wetland restoration and enhancement activities on TLNWR.

3.2.1. Hovey Point, Frey's Island, and Headquarters Marsh

These wetlands were restored from agricultural lands in the mid 1990s as part of the pilot site program and have been managed primarily as season wetlands since their inception. Restoration of these wetlands was a cooperative venture with the U.S. Bureau of Reclamation, Tule Lake Irrigation District, and Ducks Unlimited. All three wetlands have been closed to waterfowl hunting since their inception. Some experimental agricultural activities have occurred and are planned for the future on Frey's Island.

Despite their small size (4%) relative to the Sump areas, these wetlands have supported a disproportionately high number of waterfowl. A comparative survey conducted in November of 1999 tallied 79,880 total waterfowl on these sites which represented 19.3% of the total waterfowl on the Refuge. By species, 100% of the snow/Ross, 69% of the white-fronted, and 44% of the cackling geese were found on these sites. Of the ducks, 39% of the mallards, 35% of the green-wing teal, and 62% of the pintails were tallied on these 3 sites.

During a similar survey in October of 1998, 57% of all waterfowl on TLNWR were found on Headquarters Field and Frey's Island (Hovey Point was not flooded). On this particular survey, 100% of the mallards, 90% of the green-wing teal, and 53% of the pintails using the Refuge could be found on these 2 sites. The primary reason for the disproportionate use of these sites is that they provide a habitat type (seasonal wetland) that was not present elsewhere on the Refuge.

3.2.2 Sump 1(B) Wetland Enhancement Project (3,324 acres)

This project was developed after the observed results of the pilot site wetlands and was intended to convert Sump 1(B) from an open body of water with few wildlife values to a productive emergent wetland. The basic technique to establish marsh vegetation was through water level manipulation (management as a seasonal marsh). In 1999 infrastructure was built to allow for drainage and reflooding of the area in cooperation with the U.S Bureau of Reclamation and Tule Lake Irrigation District. Funding for the project was provided by Ducks Unlimited, the U.S. Fish and Wildlife Service, and California Department of Fish and Game. The first water removal occurred in the spring and early summer of 2000. Wildlife response to the newly drained site was exceptional with a variety of species noted (Table 3.3.)

Table 3.3 Birds observed during the initial water removal from Sump 1(B), Tule Lake Refuge, 2000.

Species	29 June	18 July
Mallard	13,500	8,560
Gadwall	16,220	7,000
Cinnamon Teal	420	140
Northern Shoveler	60	0
Northern Pintail	380	120
Redhead	20	0
Ruddy Duck	420	360
Lesser Scaup	20	40
American Coot	0	6,800
Canada Goose	280	620
White-faced Ibis	4,960	8,900
Gull sp.	300	520
American White Pelican	350	420
Double-crested Cormorant	850	880
Great Egret	250	850
Snowy Egret	28	40
Great Blue Heron	0	12
Black-crowned Night-Heron	40	0
Caspian Tern	8	120
Forster's Tern	54	88
Eared Grebe	700	200
Western Grebe	1,500	200
American Avocet	168	40
Black-necked Stilt	1,100	620
Killdeer	36	100
Dowitcher sp.	0	1,200
Yellowlegs sp.	20	28
Un. Peeps	<u>0</u>	<u>4,600</u>
Total	41,684	42,458

During the summer of 2000 a relatively sparse stand of wetland vegetation germinated on the exposed mudflat. This was not surprising considering that the area had been continuously flooded for approximately 65 years and the seed bank within the sediments was likely reduced. Although plant response was sparse, the variety of wetland species was encouraging with several species of bulrushes, cattail, sedges, willow, goosefoots, and smartweeds present. These widely scattered plants did, however, set abundant seed that resulted in a robust plant response during the water removal phase in 2001, especially on the eastern 1/3 of the area. In early November of 2001, over 300,000 waterfowl were observed on Sump 1(B). As a result of the habitat that

developed on Sump 1(B) and other wetland restoration sites on TLNWR, fall duck use on the Refuge totaled 17.4 million use days in 2001, more fall ducks use than has been observed on Tule Lake since 1982. After approximately 7 years as a seasonal wetland, it is anticipated that Sump 1 (B) will contain 30-35 emergent vegetation at which time it will be managed as a permanent (year-round flooded) wetland.

3.2.3 D-Blind Wetlands

Similar to the Sump 1(B) Project, development of this 600 acre wetland restoration site also followed the demonstrated successes of the pilot site wetland program. This particular site is located on former agricultural lands and will be managed as a seasonal wetland. Levees and water control structures were constructed in 2000/2001 and the first growing season for this marsh will occur in the summer of 2002.

3.2.4 Flood fallow wetlands

This program was developed as a means of suppressing of soil pests and enhancing soil fertility on agricultural lands on the refuge. The program presently floods 400 acres per year in agricultural areas on a year-round basis, with plans to increase the flooded acreage to 1,000-2,000 acres per year in the near future. These wetlands are typically flooded in the late fall and are extremely attractive to migrant waterfowl and wintering bald eagles and other raptors that feed on the waterfowl as well as small mammals that are displaced during field flooding.

3.2.5 Experimental wetland/cropland agricultural leases

In 2002, the Service and Reclamation issued 2 experimental agricultural leases on TLNWR. Each lease is divided into three lots, two of which are farmed with the third in either seasonal or year-round flooded wetland. Each year the wetland moves to a different lot so that the crop rotation is crop/crop/wetland. This program is intended to both provide enhanced soil fertility and pest control within the agricultural leasing program while providing wetland habitats for wildlife. This program may increase in the future depending on its success.

3.3 Agricultural habitats

3.3.1 Leased agricultural lands

As per the Kuchel Act of 1964, TLNWR contains 15,024 acres which are leased to local farmers under a program administered by the U.S. Bureau of Reclamation (Reclamation) via a 1977 Cooperative Agreement with the U.S. Fish and Wildlife Service (Service). Leasing is by competitive bid and is awarded in 5-year increments with the option to renew each year. Lease revenues are currently deposited in the General Treasury through Reclamation.

Lease lands are comprised of 168 fields ranging from 60-120 acres each. To increase the

efficiency of administration, most of these fields have been consolidated into 92 leases. Primary crops are those specified in the Kuchel Act as grains (barley, oats, and wheat), forage, and soil building crops (alfalfa). In addition, the Kuchel Act (Sec. 4) states: "... except that not more than 25% of the total lease lands may be planted to row crops [currently potatoes and onions]." Barley, wheat, and oats comprise most of the acreage with potatoes the dominant row crop. Areas farmed are those specified in the Kuchel Act including the Southwest Sump (Sump 2) and Frog Pond and League of Nations (Sump 3)). In 2000, row crops comprised 20.5%, grains 70.8%, and soil building crops (alfalfa) 8.7%.

3.3.2 Cooperatively farmed lands

Historically, cooperative farming (administered by the Service) has been conducted on up to 2,500 acres in a narrow strip adjacent to Sumps 1(A) and 1(B). Although these fields were originally designed primarily for waterfowl depredation relief, the combination of earlier maturing varieties of grain and smaller early fall flights of waterfowl have reduced this problem substantially from the historic past. Due to recent conversion of some of this acreage to seasonal wetland, the cooperative farming program has been reduced to approximately 1,500 acres. In the future, it is anticipated that this acreage will be reduced still further as this acreage is converted to wetland habitat. Only small grains (oats, barley, and winter wheat) are grown on these lots and irrigation practices are similar to the Tule Lake NWR lease lands. These lots are awarded at no charge on a lottery basis with the cooperator supplying the costs of production including water and leaving a portion (1/3) of the barley and oats for consumption by waterfowl. Winter wheat is primarily managed as a green forage crop for geese. The cooperative farming program reduces cost to the government of direct planting of small grains and allows Refuge staff to concentrate limited resources in other areas.

3.4 Biological Resources

3.4.1 Endangered/threatened species

3.4.1.1 Shortnose and Lost River sucker

"The Lost river sucker (*Deltistes luxatus*) and shortnose sucker (*Chasmistes brevirostris*) are large, long-lived suckers endemic to the upper Klamath Basin of Oregon and California. Both were originally described by Cope (Coots, 1965) and both have gone through considerable taxonomic revision. The limited distribution of both sucker species, combined with the level of agricultural development and associated water and land use threats within the drainage, make these fishes susceptible to past and present habitat loss and degradation throughout their distribution. Both Lost River and shortnose suckers were federally listed as endangered species on July 18, 1988 (Federal Register 53:27130-27134)" (U.S. Fish and Wildlife Service 1993)."

Additional details on the life history, habitat requirements, and causes of decline of the species can be found in the Lost River and Shortnose Sucker Recovery Plan (U.S. Fish and Wildlife Service 1993).

Research conducted after publication of the Shortnose and Lost River Sucker Recovery Plan indicates that Tule Lake contains an estimated 159 (95% CI = 48-289) shortnose and 105 (95% CI = 25-175) Lost River suckers (Scoppetone and Buettner 1995). Confidence intervals for these estimates are large because of small sample sizes and low rates of recapture. Recruitment rates for the Tule Lake population via spawning below Anderson-Rose Dam are limited with significant larval production occurring only in 1995 (monitoring occurred 1991-99) (M. Buettner, USBR, pers. comm). Entrainment from the irrigation system is likely the largest source of fish for Tule Lake (U.S. Bureau of Reclamation 1998).

Both species of suckers in Tule Lake are in good physical condition relative to fish in Clear Lake and Upper Klamath Lake with Tule Lake fish being generally heavier and exhibiting few if any problems with parasites or lamprey. (Scoppetone and Buettner 1995). Shortnose suckers consume primarily zooplankton (cladocerans) while Lost River sucker's primary food items are chironomids (Scoppetone and Buettner 1995).

In 1993, 6 Lost River and 5 shortnose suckers were radio-marked in the English Channel between Sumps 1(A) and 1(B) and were monitored for 18 months. In May through early October, fish resided near the south end of Sump 1(A) in a relatively deep water near a small area of emergent vegetation (termed the "donut hole"). In late October through March, radio marked fish moved to the NW portion of Sump 1(A) and by April, fish had moved back to the English Channel. In total, 238 locations of radio-marked fish were recorded with 2 locations (<1%) occurring in Sump 1(B), one location of a fish that had died and one fish in the western portion of Sump 1(B) in April of 1995. Additional sucker monitoring of radio-marked suckers and water quality by the Service indicated similar use patterns to those found in earlier studies. This work was done prior to implementation of the Sump 1(B) Wetland Enhancement Project. The Refuge consulted with the Service under Section 7 of the ESA prior to implementation of the Sump 1(B) Project and is currently operating this project in compliance with a Biological Opinion to protect the suckers on TLNWR.

Klamath tui chub and blue chub dominate the fish assemblage on TLNWR and are believed to compete with both species of juvenile sucker. To date, no studies of the ecology of juvenile suckers in Tule Lake has been performed, although it is believed that populations are extremely low. E. Snyder -Conn (USFWS, pers. comm) in collections of native fishes from TLNWR caught only one juvenile sucker while capturing many thousands of tui and blue chub. On June 16, 1999, 635 fish were captured at 3 deep water (>3 ft) sites in Sump 1(B) using trap nets; 449 tui chub, 164, blue chub, 16 fathead minnows, and 6 Sacramento perch. No suckers of either species were captured (U.S. Bureau of Reclamation, unpubl. data). Competition with tui and blue chubs may be one reason for the low population of suckers. Juvenile fish may reach the sumps via the irrigation system as evidenced by the fact that Reclamation routinely captures

juvenile suckers in the “J” Canal system north of the refuge during fall sucker salvage operations (M. Buettner, Klamath Reclamation Project, pers. comm.).

3.4.1.2 Bald Eagle

The bald eagle was federally listed on February 14, 1978 as an endangered species in all of the conterminous United states except Minnesota, Wisconsin, Michigan, Oregon, and Washington, which it was classified as threatened. (U.S. Fish and Wildlife Service 1986). A general description of the ecology and threats to the Pacific population of bald eagles can be found in the Pacific Bald Eagle Recovery Plan (U.S. Fish and Wildlife Service 1986). Because bald eagle populations have rebounded significantly throughout most of North America, the species is currently proposed for removal from the endangered/threatened species list.

The Upper Klamath Basin is nationally known as one of the most heavily used bald eagle wintering areas in North America. Eagles begin arriving in November with peak populations occurring in January and February (500-1,000 birds) (Klamath Basin NWR, unpublished data). Wintering eagles use waterfowl as their primary prey item while in the Basin (Keister et al.1987). Food availability is generally felt to be the single most important habitat component dictating bald eagle use of habitat (U.S. Fish and Wildlife Service 1986). Wintering bald eagle use of the California side of the Basin (including Tule Lake NWR) regularly accounts for approximately 50% of the bald eagles wintering in California (Detrich 1981, 1982).

Keister et al. (1987) determined that Tule Lake NWR was one of the 3 key wintering areas in the Klamath Basin with the other areas being Lower Klamath NWR and Klamath Drainage District lands. Since this study was conducted; however, eagle use of Tule Lake has fallen dramatically largely because of the decline in wintering waterfowl use of the refuge. In addition to wintering eagles, 2-8 breeding pairs forage on Tule Lake and Lower Klamath NWRs during the spring and summer (U.S. Fish and Wildlife Service 1995). Recent improvements in wetland habitat quality (see Section 3.2) have resulted in increased use by both waterfowl and bald eagles. On March 15, 2002, 66 eagles were counted on TLNWR compared to a typical number of 10-25 birds seen (see Table 3.4). In addition to wintering eagles, 2-8 breeding pairs forage on Tule Lake and Lower Klamath NWRs during the spring and summer (U.S. Fish and Wildlife Service 1995).

TABLE 3.4: Peak bald eagle numbers using Tule Lake National Wildlife Refuges, California and Oregon, 1992-2001.

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Tule Lake	75	35	24	37	29	9	35	22	19	66

3.4.2 Waterfowl migration habitat

TLNWR has a long history of use by waterfowl and at one time was considered the premier waterfowl refuge in North America. Seventy to 80% of Pacific Flyway waterfowl are estimated to pass through the Klamath Basin en route wintering areas in the Central Valley of California and Mexico. Historically, TLNWR received the highest use of any refuge in the Klamath Basin with 4.2 million waterfowl recorded during an aerial survey conducted on October 13, 1957. Of this total 3.3 million were pintails. Pintail numbers in the Pacific Flyway have declined precipitously (and other waterfowl species to a lesser degree) since the 1950s and 1960's due to habitat changes in the Canadian and U.S. prairies and, as a result, numbers using the Basin have similarly declined. Despite these changes, however, TLNWR remains an important waterfowl staging area in the Pacific Flyway. TLNWR and adjacent LKNWR are the 2 key waterfowl refuges in the Klamath Basin, regularly supporting over 50% of the total waterfowl in the Basin during the fall migration. Waterfowl travel to the TLNWR from throughout North America with some birds traveling from as far as Siberia. Fall migrant waterfowl arrive in the Basin beginning in late August with pintails and green-wing teal, reach a peak in late October or early November, and most waterfowl depart for the Central Valley wintering areas by early December. Timing of the fall migration is heavily dependent on weather conditions to the north as well as the onset of freezing weather in the Basin. Waterfowl begin returning in February with the peak of spring migration in mid-March. Recent radio telemetry projects with Pintails indicate that the Klamath Basin (including TLNWR) is an extremely important spring staging area. Spring habitat on TLNWR is important to migrant waterfowl because the birds build nutrient reserves for the northward migration and subsequent breeding season.

TLNWR remains one of the most important waterfowl migrational staging areas in the Klamath Basin (see Figure 1.3) and regularly receives most of the Arctic goose use within the Klamath Basin in the fall. Important species and peak populations in the fall migration period of 2001 include white geese (snow and Ross) (14,000), Canada (2,280), and Pacific white-fronted geese (39,500).

Due to a lack of wetland habitat diversity and productivity, waterfowl use of TLNWR has declined significantly (up to the mid 1990's) since passage of the Kuchel Act (Figure 3.1). Although Pacific Flyway waterfowl populations have also declined (see discussion above) it appears that TLNWR is supporting a smaller proportion of the Flyway population than has occurred in the past. Service biologists recognized this problem and began implementation of significant wetland restoration efforts (while remaining within the confines of the Kuchel Act) on the Refuge. Over the last 5 years, waterfowl appear to be responding favorably to these habitat improvements (see Figures 1.3, 3.1 and 3.2). In 2001, total waterfowl use on TLNWR was the highest observed since 1982, despite relatively weak flyway populations. In addition, waterfowl use of TLNWR during the spring of March of 2002 (396,640) was the highest single count recorded since surveys were initiated in the early 1950's. Over 165,000 of these waterfowl were geese.

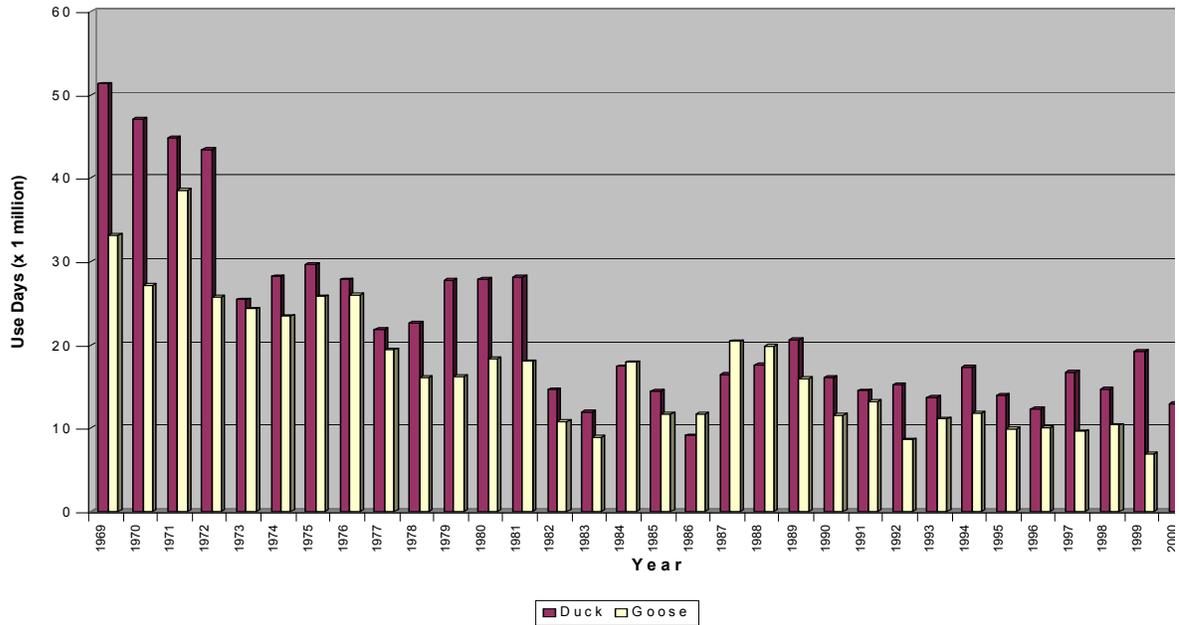


Figure 3.1 Annual duck and goose use-days on Tule Lake NWR, California, 1969-2001

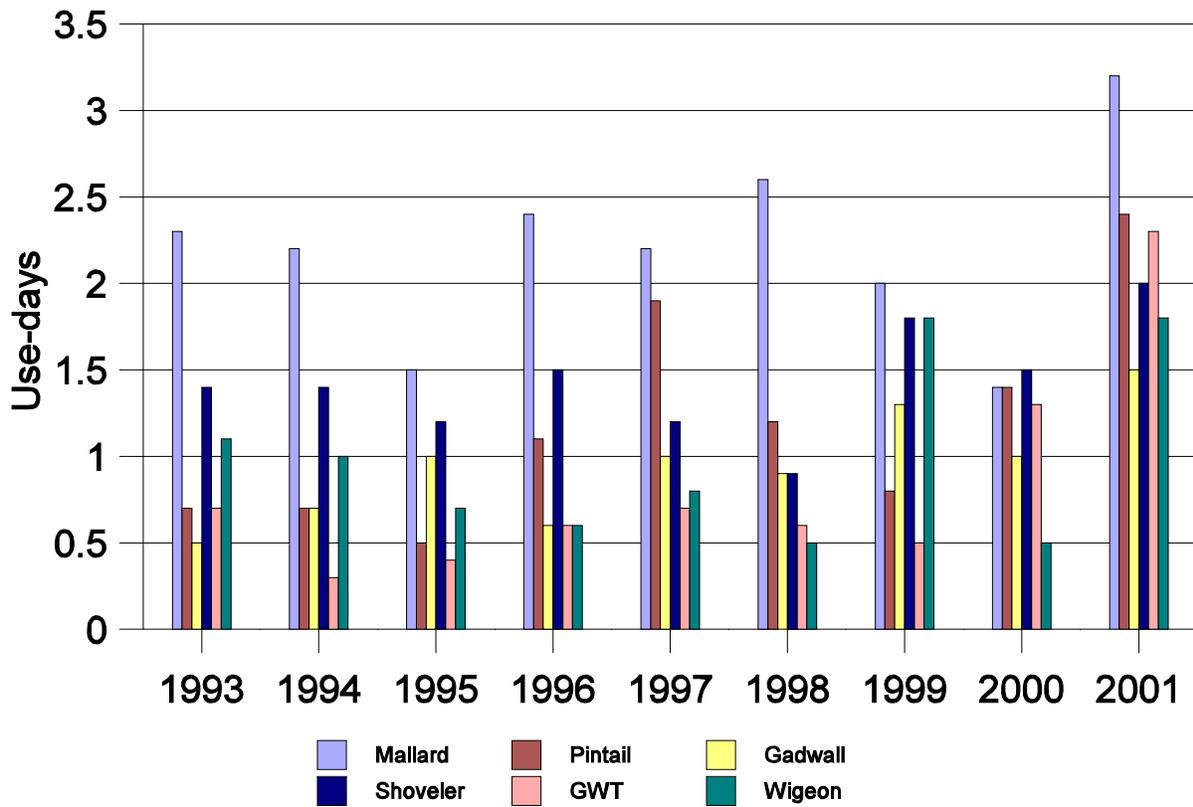


Figure 3.2 Fall dabbling duck use-days on Tule Lake National Wildlife Refuge, California, 1993-2001.

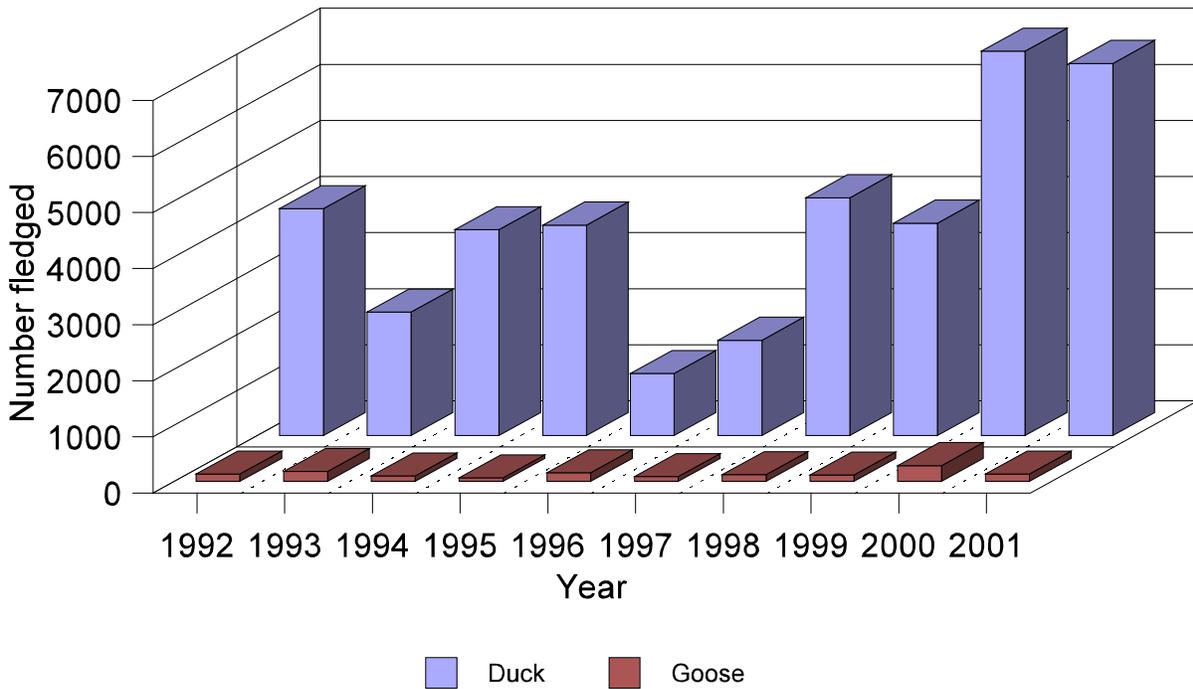


Figure 3.3 Annual production of ducks and geese on Tule Lake National Wildlife Refuge, California, 1992-2001.

3.4.3 Waterfowl Production.-- TLNWR produces an average of 1,000 to 7,000 waterfowl per year (Fig. 3.3). Primary species include mallards, gadwalls, and cinnamon teal. Similar to migrating waterfowl populations, waterfowl production appears to be increasing with wetland creation and enhancement projects on the Refuge. This trend is expected to continue as wetland vegetation continues to develop in these new areas.

3.4.4 Molting waterfowl -- From 50,000-100,000 waterfowl from throughout the intermountain west and California spend the late summer flightless period (July-September) in the security of TLNWR's emergent marshes. In the summer of 2002, radio telemetry studies of molting female mallards on TLNWR indicated a relatively high survival rate in these birds. Upon regaining flight these birds utilized Sump 1(B) exclusively before departing to southern wintering areas in late November. Interestingly, there was very little interchange in radio marked mallards between TLNWR and LKNWR (mallards were also radio-marked on LKNWR).

3.4.5 Other migratory birds -- TLNWR supports many other species of migratory birds, particularly wetland adapted species. Table 3.5 depicts the migratory birds species which utilize the Klamath Basin NWR complex, many of which can be found on TLNWR.

Table 3.5. Wetland related migratory birds occurring within the boundaries of the Klamath Basin National Wildlife Refuge Complex, Oregon and California. Wetlands occupied include open water, emergent marsh, wet meadows, and riparian habitats.

Type of Migratory Bird	Birds
Loons	Pacific Loon, Common Loon
Grebes	Pied-billed grebe, horned grebe, red-necked grebe, eared grebe, Western grebe, Clark's grebe
Pelicans	American white pelican
Cormorants	double-crested cormorant
Bitterns, egrets, herons	American bittern, least bittern, great blue heron, great egret, snowy egret, cattle egret, green heron, black-crowned night-heron
Ibis	white-faced ibis
Swan, geese, ducks	tundra swan, trumpeter swan, greater white-fronted goose, lesser snow goose, Ross's goose, emperor goose, Pacific brant, Great Basin Canada goose, cackling Canada goose, lesser Canada goose, Aleutian Canada goose, wood duck, green-winged teal, mallard, Northern pintail, blue-winged teal, cinnamon teal, Northern shoveler, gadwall, Eurasian wigeon, American wigeon
Osprey, kites, eagles, hawks	canvasback, redhead, ring-necked duck, greater scaup, lesser scaup, old squaw, surf scoter, white-winged scoter, common goldeneye, Barrow's goldeneye, bufflehead, hooded merganser, common merganser, red-breasted merganser, ruddy duck
Rails, coots	osprey, bald eagle, Northern harrier, sharp-shinned hawk, Cooper's hawk, red-tailed hawk, rough-legged hawk, golden eagle, peregrine falcon, prairie falcon
Cranes	yellow rail, Virginia rail, sora rail, American coot
Plovers	greater sandhill crane
Stilts, avocets	black-bellied plover, American golden plover, snowy plover, semipalmated plover, killdeer
Sandpipers, phalaropes	black-necked stilt, American avocet
Gulls, Terns	greater yellowlegs, lesser yellowlegs, solitary sandpiper, willet spotted sandpiper, whimbrel long-billed curlew, marbled godwit, ruddy turnstone, red knot, sanderling, Western sandpiper, least sandpiper, Baird's sandpiper, pectoral sandpiper, dunlin, short-billed dowitcher, long-billed dowitcher, common snipe, Wilson's phalarope, red-necked phalarope
Owls	Franklin's gull, Bonaparte's gull, ring-billed gull, California gull, herring gull, Thayer's gull, glaucous-winged gull, Sabine's gull, Caspian tern, Forster's tern, black tern
Nighthawks, poorwills	short-eared owl
Swifts	common nighthawk, common poorwill
Kingfishers	Vaux's swift, white-throated swift
Flycatchers	belted kingfisher
Swallows, martins	olive-sided flycatcher, Western wood-peewee, willow flycatcher, Hammond's flycatcher, dusky flycatcher, gray flycatcher, cordilleran flycatcher, Say's phoebe, ash-throated flycatcher, Western kingbird, Eastern kingbird
Nuthatches	purple martin, tree swallow, violet-green swallow, Northern rough-winged swallow, bank swallow, barn swallow, cliff swallow
Pipits	red-breasted nuthatch, white-breasted nuthatch, pygmy nuthatch
Warblers, tanagers, sparrows, grosbeaks, buntings, blackbirds	American pipit
	orange-crowned warbler, Nashville warbler, yellow warbler, yellow-rumped warbler, black-throated gray warbler, Townsend's warbler, hermit warbler, Macgillivray's warbler, American redstart, yellow-breasted chat, Western tanager, black-headed grosbeak, lazuli bunting, green-tailed towhee, California towhee, fox sparrow, dark-eyed junco, Lapland longspur, red-winged blackbird, tricolored blackbird, yellow-headed blackbird, Brewer's blackbird, Northern oriole

3.4.6 Colonial nesting waterbirds-- In addition to waterfowl, the sumps of TLNWR support large populations of fish eating birds during the spring and summer months. These 2 bodies of water represent the primary feeding locations for the large pelican breeding colonies at Clear Lake NWR. Sump 1(A) generally supports a population of 1,000-2,000 nesting eared grebes and 20-50 western grebes. In addition, 100-200 nesting Forester’s terns utilize this area in the summer and Sump 1(A) appears to be an important migrational staging area for black terns with up to 5,000 present in the late summer or early fall.

3.5 Recreation

Tule Lake National Wildlife Refuge had an estimated 170,400 visitors in 2001. Both visitor use numbers and characteristics are similar to nearby Lower Klamath NWR. Many visitors combine tours of both refuges starting at the Tule Lake visitor center which is staffed seven days per week. Visitors then typically drive both the Tule Lake and Lower Klamath auto tour routes to observe wildlife. The Refuge visitor center also serves as the starting point for many environmental education activities which may later include a tour of one or both refuges. Public use estimates of various activities occurring on the Refuge in 2001 are itemized below:

Visitor Center	10,700 visits
Outdoor Exhibits	4,350 visits
Auto Tour Route	14,650 visits
Foot Trails	1,350 visits
Photography	850 visits
Wildlife Observation	144,500 visits
Environmental Education	2,150 visits
Waterfowl Hunting	3,000 visits
Pheasant hunting	225 visits
Picnicking	1,400 visits

Interpretation and nature observation account for the vast majority of public use activities on TLNWR with peak use periods in the spring, fall and peak eagle period (February) . Uses in this category include visitor center stops, auto tour route, general wildlife observation, foot trails, outdoor exhibits and photography use. Many visitors participate in two or more of these activities during trips to the refuge. A small sales area in the visitor center has total annual sales of approximately \$20,000. Visitors also have access to the Discovery Marsh across the road from the visitor center and other outdoor exhibits.

TLNWR offers waterfowl hunting programs for goose and duck hunting. Hunting levels have decreased significantly on the refuge over the past thirty years with some of the hunters apparently moving their use to Lower Klamath Refuge. The seasonal marsh habitat which has developed in Sump 1 (B) during the past two years has attracted large numbers of ducks and geese during the fall migration. A direct consequence of this appears to be lower number of waterfowl using Sump 1 (A) and consequently poor duck hunting success experienced on Tule Lake marsh during the past

two season. Table 3.6 shows the trend of duck hunter use and hunting success on Tule Lake marsh (Sump 1 (A)) which is the primary duck hunting location on TLNWR. This table shows a decline in duck hunter success which has been particularly notable in the past two seasons. This decrease in the number of ducks taken has occurred even though the bag limit for ducks increased from 4 to 7 in the mid 1990's which accounts for the higher harvest levels shown in the 1996 through 1998 seasons than in earlier years.

Table 3.6 Duck Hunter Use and Hunting Success on Tule Lake Marsh from the 1992 through 2001 Seasons.

<u>Season</u>	<u>Hunter Use</u>	<u>Ducks Harvested</u>
1992-3	2,137	4,907
1993-4	2,252	5,276
1994-5	1,978	5,380
1995-6	1,971	4,567
1996-7	2,263	7,589
1997-8	2,008	6,940
1998-9	1,472	4,866
1999-0	2,046	6,040
2000-1	1,339	3,256
2001-2	1,021	2,492

A small number of hunters also hunt pheasant on Tule Lake Refuge.

About 2,000 students participate in structured educational activities each year. These experiences may entail use of the visitor center, Discovery or Headquarters Marsh and then include a tour of either the Tule Lake or Lower Klamath auto tour routes.

The U. S. Fish and Wildlife Service, Division of Economics published an analysis of the economic benefits of Tule Lake Refuge based on FY 1995 use figures of approximately 195,500 visits to Tule Lake Refuge. The economic benefits estimated in this report are \$ 488,800 for non-consumptive uses and \$ 212,600 for hunting to the local communities for a total of just over \$ 700,000 per year in local economic benefits (Laughland and Caudill, 1997)

Section IV: ENVIRONMENTAL CONSEQUENCES

4.1 Alternative 1: Sump 1B/Frey's Island Waterfowl Hunting Area (Preferred)

Under Alternative 1, a new waterfowl hunting area of approximately 1,523 acres consisting of the eastern portion of sump 1(B) (1,290 acres) and the adjacent area known as Frey's Island (233 acres) would be designated as seasonally open to waterfowl hunting. The unit would be open 7 days per week and closed to hunting at 1:00 p.m. each day of the season. Daily use would be limited to 6 hunting parties on Frey's Island and 10 hunting parties to hunt on Sump 1 (B). Hunting parties would be limited to 4 hunters each.. Alternative 1 would result in 35.1% of the refuge open to hunting compared to 31.2% for Alternative 2 (No Action) and 31.9% (Alternative 3). A more detailed description and map of Alternative 1 may be found in Section 2

4.1.1 Environmental Effects

4.1.1.1 *Waterfowl and other marsh birds*--Waterfowl will be displaced from the hunt area during the period in which hunters are present, however, this will not preclude waterfowl use of the area. Because of the large quantities of waterfowl food in the hunt area (seeds of seasonal marsh plants) it is expected that waterfowl will rapidly return to the hunted area after the 1:00 p.m. closure. Waterfowl use is expected to be especially high at night which is a typical use pattern in seasonal wetlands both within sanctuary and hunt areas. This pattern is especially evident on adjacent Lower Klamath NWR which has a high proportion of seasonal wetlands within the hunting area. High quality seasonal wetland habitats within non-hunted areas will also be present and will offer abundant food resources to waterfowl. These areas include Hovey Point (240 acres), the southern portion of the D-Blind wetlands (400 acres), Headquarters Marsh (80 acres), and the non-hunted portion of Sump 1(B) (2,034 acres). This large acreage of seasonal wetlands in the hunted and non-hunted areas has not been present on TLNWR until the last several years. In addition to these seasonal marshes, the southern portion of Sump 1(A) (3,140 acres) will remain closed to hunting and will provide additional sanctuary for dabbling ducks as well as key habitats for diving ducks and roosting habitat for fall migrant geese. At a larger scale, implementation of Alternative 1 will not affect Pacific Flyway waterfowl populations. Harvest of this international resource is regulated by the U.S., Canada, and Mexico in cooperation with the western states to perpetuate a sustainable population of waterfowl.

Under Alternative 1 a large core area of sanctuary will remain in the south central area of the refuge. This core area will contain large quantities of agricultural foods (grains and potatoes) and native foods from seasonal and permanent wetlands as well as sufficient space for waterfowl to move from roosting to feeding areas without disturbance. Use of the refuge by spring migrant waterfowl and other marsh birds as well as waterbird production will be unaffected since the hunt season ends well before spring migrants return from southern wintering areas. Disturbance of non-hunted wildlife species that will be present in the fall will be minimized by the restrictive hunt period (1:00 pm closure), the limited numbers of hunters allowed in the area, and the availability of adjacent high quality wetland habitats. Because the proposed hunt area in Sump 1(B) is

topographically higher than the non-hunted area in Sump 1(B), most of the non-hunted area will be flooded prior to the hunted area. This will ensure that adequate sanctuary is provided prior to hunting in Sump 1(B).

The Service believes that ongoing wetland restoration and enhancement activities on the Refuge will continue to increase waterfowl and other marsh birds use, particularly as current wetland projects (hunted and non-hunted) develop improved wetland plant communities. As such, the Service believes that implementation of this alternative will not materially affect the Refuge's ability to meet its primary purpose of waterfowl management as stipulated by the Kuchel Act of 1964. Continued monitoring of wildlife populations, as has occurred over the last 50+ years will continue and will allow the Service to determine if this assumption is correct.

4.1.1.2 *Endangered/threatened species*—Wintering bald eagles begin arriving at TLNWR beginning in late November, a time when ice is generally beginning to cover marsh units on the Refuge. Ice cover on the Refuge forces most of the fall migrant waterfowl to leave for southern wintering areas. As such, hunter numbers decline sharply during the late November period. Thus the potential for interaction between hunters and eagles is minimized. Typically, eagle numbers on TLNWR peak after the hunting season in late January or early February. To date no known incidents of shooting of bald eagles on the Refuge has ever occurred.. To protect the Refuge's biological resources including bald eagles, the Service maintains a highly visible law enforcement presence during the hunting season and would expand this effort to include implementation of Alternative 1. Because a certain portion of the waterfowl harvest is unretrievable and bald eagles are scavengers, an additional waterfowl hunting program would provide additional food resources for wintering eagles. Wintering bald eagle use was historically highest in the 1970's (300-500 eagles) when hunter use and waterfowl use of the Refuge was higher than at present. Because recent wetland enhancement and restoration is expanding waterfowl use of TLNWR, the Service believes that eagle use will also increase substantially over the next decade. Hunting as proposed under Alternative 1 is not expected to affect use of the Refuge by wintering eagles.

Implementation of Alternative 1 is not expected to impact either species of sucker on TLNWR. The proposed hunt area on Frey's Island is not occupied by suckers and the proposed hunt area on Sump 1(B) occupies the shallowest water in this area. Over 90% of the proposed hunt area is less than 1.0 feet in depth. The deep water trough through the center of Sump 1(B), which may be occupied by the fish, lies within the non-hunted portion of Sump 1(B). In addition, if suckers were present in Sump 1(B), water quality conditions (October-January) would be generally favorable to the fish (lower temperatures and higher dissolved oxygen). Thus, if fish were disturbed by boating activities associated with hunting, temporary displacement of the fish should not cause undue stress. Overall, management of Sump 1(B) will be consistent with a Biological Opinion dated December 10, 1999. (A copy of this Opinion is available from Refuge Headquarters). The Service will consult under Section 7 of the Endangered Species Act to ensure that the proposed action does not affect listed species (in this case the Lost River and shortnose sucker and the bald eagle).

4.1.2 Socio-economic Effects

This alternative, if implemented and fully utilized, is expected to increase hunting opportunities on Tule Lake NWR by 2,000 to 2,500 hunter visits per year. Use of Tule Lake marsh by hunters during the 2001-02 season was 1,021 hunter visits. Total waterfowl hunter use of all Tule Lake marsh and field hunting units during the 2001-02 season was just under 3,000 hunter visits. Thus, this project has the potential to almost double the number of waterfowl hunters using Tule Lake NWR restoring use to levels experienced prior to recent declines in waterfowl hunter use on the refuge. This proposal for a controlled waterfowl hunting experience would provide hunters the option to avoid the potential of crowded situations in nearby popular marsh hunting areas and could relieve the possibility of crowding in hunting areas which has occurred periodically in some marsh hunting areas on Lower Klamath NWR.

Laughlin and Caudill (1997) estimated that hunting on Tule Lake Refuge generated \$ 212,600 in economic benefits in 1995 dollars. Given the number of hunter use days reported that year (4,979), this translates into a local economic benefit of almost \$ 50 per hunter visit. With the projected increase in hunter numbers in this alternative, it is expected that \$ 100,000 to \$ 125,000 in local economic benefits would be generated if this alternative is implemented.

4.1.3 Public Controversy

Implementation of this alternative is expected to be strongly supported by hunters and hunting organizations. Opening a portion of Sump 1 (B) to hunting would likely not be favored by some users who come to the refuge to observe and photograph wildlife since it may cause disturbance and direct mortality to wildlife in an area visible from the Tule Lake auto tour route. The situation on Lower Klamath Refuge where hunting areas are adjacent to auto tour routes has not resulted in significant controversy. Retrieval zone buffering hunting areas from the Tule Lake auto tour route from hunting activities should address safety concerns and alleviate some of the potential for controversy between tour route users and waterfowl hunters. Potential for opposition by environmental organizations or anti hunting groups and individuals to increased hunting opportunities on the refuge is possible but has not been evident in the recent past. If there is opposition to the proposed Sump 1 (B) hunting area it should be evident in comments received after distribution of this draft and will be considered in the final EA and Compatibility Determination prepared for this project.

4.2 Alternative 2: No Action (The Current Hunting Program)

Under this alternative, Sump 1(B) and Frey's Island would remain closed to waterfowl hunting. Other hunting areas on the refuge would remain open and unchanged compared to the recent past.

4.2.1. Environmental Effects

The portion of the refuge currently open to waterfowl hunting totaling 12,202 acres or 31.2 percent of the refuge would remain unchanged. No impacts would occur to threatened or endangered species or other wildlife compared to current management. Waterfowl would not be subject to temporary displacement from the portion of Sump 1 (B) designated as a waterfowl hunting area as identified in Alternatives 1 and 3. Restoration of Sump 1 (B) would continue with the progressive establishment of emergent vegetation replacing what was previously a large expanse of open water. Disturbance and direct impacts to wildlife using Sump 1(B) would be less than Alternative 1.

4.2.2 Socio-economic Effects

The status quo management of Sump 1 (B) (closed to waterfowl hunting) will result in the continued declining trend in waterfowl hunting success and use of the refuge resulting in fewer consumptive wildlife users which will have continued negative impacts to businesses in the local communities.

4.2.3 Public Controversy

Present management of the Tule Lake NWR hunting program is becoming increasingly controversial with hunters due to declining hunting success. A decision not to open a portion of Sump 1(B) to waterfowl hunting would likely intensify this controversy by those who advocate improved marsh hunting opportunities on the refuge. As previously discussed, recent habitat improvements in Sump 1 (B) have caused a noted decline in duck hunting success on the Tule Lake marsh hunting area as waterfowl have shown a preference for feeding and resting on Sump 1 (B) and, consequently fewer ducks use the hunted and non hunted portions of Sump 1 (A). Maintaining Sump 1 (B) closed to hunting would likely be favored by users who come to the refuge to observe and photograph wildlife since it would keep this activity which may cause disturbance and direct mortality to wildlife away from an area visible from the Tule Lake auto tour route.

4. Alternative 3: Sump 1B Waterfowl Hunting Area Along with a Size Reduction in the Sump 1 (A) Hunting Area

Under this alternative the Sump 1(B) and Frey's Island hunting area as outlined in Alternative 1 would be designated for waterfowl hunting with all the provisions outlined in Alternative 1 in force. An area of approximately 1,240 acres at the north end of the current Sump 1 (A) hunting unit would be closed to hunting.

4.3.1 Environmental Effects

4.3.1.1 *Waterfowl*--A total of 12,485 acres or 31.9 percent of the refuge would be open to waterfowl hunting under this alternative. This is a slightly larger area open to hunting than Alternative 2 (No Action) (31.2 %) but less than Alternative 1 (35.1%). Environmental effects of opening a portion of Sump 1(B) and Frey's Island to hunting would be similar to Alternative 1 except that additional non-hunted acreage at the north end of Sump 1(A) would be available to waterfowl displaced by hunting the new area. The additional non-hunted area in Sump 1(A) would primarily provide habitat for feeding diving ducks and loafing/roosting geese and dabbling ducks. Since this area is a permanent wetland, additional seasonal marsh food resources (seeds and aquatic invertebrates) important to dabbling ducks would not be available. Prior to the hunting season, the north portion of Sump 1(A) is primarily used by mallards and white-fronted geese. Presumably, these would be the primary species that would continue to use the area during the hunting season provided it were closed. Because of the dense stands of emergent vegetation in this area, sora and Virginia rails and American bitterns are the typical non-waterfowl marsh bird species utilizing this area. Although this area would provide additional sanctuary habitat, it would probably hold fewer birds than would the non-hunted seasonal wetlands (Hovey Point, D-Blind wetlands, Headquarters Marsh, and Sump 1(B)).

Overall, while this Alternative may provide slightly fewer impacts to waterfowl and other marsh birds, the difference in environmental impacts between Alternative 1 and Alternative 3 are slight. This occurs for 2 reasons; first there is only a 3.2% difference in land area open to hunting between these Alternatives, and second, there is no difference in the percentage of seasonal wetlands that exist in the closed zone under both alternatives. In general, seasonal wetlands are the most attractive habitat to most species of fall migrant waterfowl on TLNWR, primarily because of the high seed and aquatic invertebrate densities common in seasonal wetlands.

4.3.1.2 *Endangered/threatened species*--Potential effects to wintering bald eagles would be identical to that described under Alternative 1 except slightly more non-hunted waterfowl sanctuary would be available at the north end of Sump 1(A). Although this Alternative would provide slightly more waterfowl sanctuary area for foraging eagles, the Service believes existing habitat in non-hunted seasonal wetlands (Hovey Point, Headquarters Marsh, D-Blind Wetlands, and Sump 1(B) are more than adequate for present and anticipated future increases in eagle numbers using the Refuge. Potential impacts to the Lost River and shortnose sucker are identical to those described under Alternative 2.

4.3.2 Socio-economic Effects

This alternative if implemented and fully utilized, is expected to cause a net increase of 1,500 to 2,000 hunter visits per year. The current use of Tule Lake marsh by hunters (2001-02 season) was 1,021 hunter visits. Reducing the size of the Sump 1 (A) hunting area would be expected to reduce hunter use by up to 500 hunter visits per season. Total waterfowl hunter use of all Tule Lake marsh and field hunting units during the 2001-02 season was just under 3,000 hunter visits. Thus, this alternative has the potential to significantly increase the number of waterfowl hunters using Tule Lake NWR; but less so than Alternative 1. Implementation of this alternative could also lessen periodic crowding of some marsh hunting units on Lower Klamath NWR but to a lesser extent than under Alternative 1. It is possible that creating a no hunting zone in the north portion of Tule lake marsh would improve hunting in the areas to the south which will remain open to hunting.

Using the local economic benefit figures describe in Alternative 1, it is anticipated that implementation of Alternative 3 would result in an increased benefit of \$ 75,000 to \$100,000 to the local economies.

4.3.3 Public Controversy

It is likely that this alternative would be controversial among those hunters who like to use the northern portion of the Sump 1 (A) hunting area and those who are expecting to have a new hunting area opened without a concurrent reduction in another marsh hunting opportunities on the refuge. This alternative could forestall some potential for opposition by environmental or anti hunting interests as it would maintain nearly the same acreage open to hunting as is currently the case.

SECTION V: CONSULTATION AND COORDINATION WITH OTHERS

The following list of individuals and organizations have been provided a copy of the draft Environmental Assessment and corresponding Compatibility Determination. A press release has also been sent to area media outlets announcing the availability of these documents. The public will have a thirty day comment period in which to provide input which will be considered in development of the final EA and CD.

Senator Barbara Boxer, California	The Klamath Basin Water Users Assn.
Senator Diane Feinstein, California	National Wildlife Federation
Congressman Wally Herger, California	National Wildlife Refuge Association
Congressman Mike Thompson, California	Tule Lake Growers Assoc.
Congressman George Miller, California	Northwest Environmental Defense Center
Senator Gordon Smith, Oregon	North Coast Environmental Center
Senator Ron Wyden, Oregon	Wildlife Management Institute
Congressman Greg Walden, Oregon	Tule Lake Irrigation District
Congressman Peter DeFazio	
Klamath Tribes	California Waterfowl Association
	Cal-Ore Wetlands and Waterfowl Council
Siskiyou County Game and Fish Commission	Ducks Unlimited
Klamath County Commissioners	Klamath Forest Alliance
Siskiyou County Commissioners	Tule Lake Irrigation District
Modoc County Land Use Committee	National Audubon Society- Washington & California
	Klamath Basin, Portland, Sacramento and Washington Audubon Society offices
U. S. Bureau of Reclamation, Klamath Falls Office	Oregon Natural Resources Council
U. S. Fish and Wildlife Service, Klamath Falls, Sacramento, Portland and Washington offices	The Wilderness Society
U. S. Forest Service, Doublehead Ranger District	Defenders of Wildlife
National Park Service, Lava Beds National Monument	The Nature Conservancy - Portland
California Department of Fish and Game - Sacramento and Redding Offices	Klamath Falls Herald and News
Oregon Department of Fish and Wildlife- Klamath Falls Office	Lost River Star

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