

Appendix D-1

Upstream Environmental Impacts of the Pit 3, 4, & 5 Relicense Process

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By Don Lancaster PhD¹, Lee Fitzhugh PhD², and Marc Horney PhD³.

Background

The basis for this report is to review the impact on the upstream environment by two conditions (minimum instream flows and dry season flood simulation (freshets)) of the Pit 3, 4, & 5 relicense process now being considered by the Federal Energy Regulatory Commission (FERC). Many agencies and individuals have not been able to understand the connection between those conditions and the impact on upstream environment. In 1987, FERC made a decision to change the operation of the power plants by increasing the minimum instream flow of the Pit River #3 & 4 hydroelectric plants operated by Pacific Gas and Electric (PG&E) to 150 cfs to provide a fishery as forage for protection of the bald eagles under the Endanger Species Act (ESA). In that same year, PG&E claimed that their 1920 water rights at Lake Britton were not being met and that they were harmed by upstream junior water rights holders' October to March water storage. Future increase in required instream flows if left unmitigated in the relicense process will force PG&E to replace water lost by these two conditions for their hydroelectric operation by requesting the State Water Resources Control Board (SWRCB) limit storage in upstream reservoirs to only occur when Lake Britton is full and spilling water over the dam.

In 2002, FREC started a relicensing process of the Pit 3, 4, & 5 plants without scoping for upstream impacts. Since the Pit 3 & 4 plants involve U.S. Forest Service (USFS) land, they have the ability to work in the 4E statues of the relicense procedure. This gives USFS an ability to impose requirements on the process. The Forest Service has proposed a minimum instream flow of 450 cfs for Pit 3 & 4 operation. They have also proposed a dry year flood simulation flows (freshet).

The Process

Forest Service and FERC are charged by the National Environmental Policy Act (NEPA) to review all impacts of any proposed action. The Forest Service has requested that the upstream water users assist in developing environmental impact information of these two conditions on the upstream environment. Comments will be accepted on the draft EIS published by FERC between March 21 and May 21. The US Forest Service would like any information developed no later than May 7, 2003. Letters have been written to FERC requesting more time for a judicious decision process. At this time no extension has been granted. The 40-day time frame of the request for this information will limit the scope presented in this report. This report is intended to assist Forest Service in the

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developing the data for compliance with NEPA, and is not to be used as a replacement for that requirement.

Potential Impact on the Pit River Watershed Environment

The impact of increased minimum instream flow requirements from 150 to 450 cfs and the dry year flood simulation proposal as the Forest Service 4E conditions on PG&E for the relicense of the operation of the Pit 3, 4, & 5 hydroelectric facilities will potentially stimulate actions by PG&E that will greatly reduce historic storage of water in upstream reservoirs from Likely, Alturas, Canby, Lookout, Beiber, Little Valley, to Burney. The range of the impact of the higher minimum instream flow is 20,000 to 53,000 acre-feet of storage (PG&E Hydrology Study 2003). The average is about 43,000 acre feet that is based on calculations a 28 year record of flows. This data indicated 31% fewer days that storage could occur by upstream users. The data was only calculated using information on the reservoirs with storage of 2000 acre feet or more. Smaller landowner reservoirs were not considered in this calculation. Although the exact amount of loss can be debated, the fact that an impact of some magnitude occurs is definite.

Higher instream flows and dry season flood simulation will both reduce the days that excess water spills at Lake Britton. Some upstream water rights are presently limited to storage only after water is spilling at Lake Britton, most store any all water that is available in the watershed above their reservoirs. The upstream storage is used for summer irrigation by both districts and individuals on ranches. This storage provides summer flows in the upper Pit River system. As water becomes more limiting, irrigators and districts will be forced to reduce the number of acres irrigated that provides important aquatic habitat in an area dominated by a juniper upland environment. Also reduced water availability will force districts and individuals to increase the efficiency of the delivery of water to the remaining irrigated lands, which will decrease the summer flows in over 100 miles of the Pit River. These conditions could greatly impact water quality of the Pit River. This impact on water quality should be considered in the 401 water quality certification by SWRCB as a part of this relicense procedure. Small tributaries to the Pit River will have some years where the lack of storage will limit the late season flows.

Land Use

Because of the loss of reliability of storage, cropping patterns will change. Crops that require higher investment (alfalfa) will be converted to seasonally irrigated crops (grain or pasture). Other acreage will be converted to dryland grain or allowed to revert to annual dominated grassland (cheatgrass and medusahead). In some cases, the loss of reliable irrigation sources could impact land use by making present agricultural operations no longer viable. This situation could cause further land use conversion to ranchettes and rural residential housing. This could greatly impact open space and further fracture wildlife habitat. The normal water use by irrigated pasture is estimated to be 3-5 acre-feet per acre. If the PG&E range of storage impacted is used, the number of acres impacted could be 5,000 to 13,250.

Recreation

The upstream irrigation districts storage reservoirs (West Valley, Big Sage, & Roberts) and individual ranch storage reservoirs are important recreational components in these mainly desert environment. They provide fishing and hunting opportunities that could be greatly limited with decreased storage opportunities. Also decreased releases and more improved irrigation delivery systems will also limit stream fishing on the Pit River and many of its tributaries. Many ranches depend on this environment to provide additional income to their agricultural operation through fee hunting and fishing recreation. This is also an important part of maintaining open space, as presently, many of the operations have a return on investment for -3 to 4 percent. Thus, the recreational income provided by these unique desert aquatic environments is key to maintaining the viability of the operations.

Wildlife - Terrestrial

The reduction in storage will decrease the acres irrigated and aquatic habitat available to wildlife. University of California, Cooperative Extension Wildlife Enhancement Specialist Dr. Lee Fitzhugh was asked to address the impact on wildlife. Using the California Department of Fish and Game’s (CDF&G) computer databases “California Wildlife Habitat Relationship” (CWHR) the general suitability of habitats for species was be developed on the impacted environments:

(Wet Meadow)

(Pasture, Irrigated Hayfield)

Reservoirs (Lacustrine)

River systems (Riverine)

A species detail report was generated for a single situation, combining all the habitats. It shows each habitat for which the species has a rating, and what that rating is. This report is used to figure out the mechanism by which changes affect animals. It lists the habitat and its importance and the time of year the species is present (See **Appendix 1**). The other report is the 2-condition weighted habitat comparison report of the negatively impacted species (See **Appendix 2**). This report weighed the various habitats according to their approximate or estimated acreage percent before and after the relicense condition (see table below) were imposed.

Land use	% Before	% After
Grass	0	45
Dry grain	0	20
Irrigated grain	0	10
Wet meadow	42	20
Irrigated hay	30	0
Pasture	20	0
Fresh emergent wetland	8	5

The habitat suitability value changes are then weighted according to the weighting value, a surrogate for the area affected. Outputs were limited to those species having a habitat suitability rating of Moderate or High for the habitats were used. Thus, some species may occur in the area, but with low habitat suitability.

Based on the agricultural changes many wetland dependant species will be negatively impacted. The flood irrigated acres provide a seasonal habitat for migratory birds in the spring, and nesting habitat for resident species that nest in shallow water wetlands. Extensive loss of the limited wetlands in this desert environment places further pressure on Pacific flyway species. These wetlands provide a unique environment, as the runoff that enters them is much cleaner than their counterparts in the Central Valley.

In summary, among the terrestrial vertebrates, Dr. Fitzhugh thinks the most influence on listed species from the proposed project will be on:

Greater Sandhill Crane: California threatened. Decline in CWHR is due to loss of irrigated hay and wet meadows for foraging and nesting.

Bald Eagle: Federally threatened and California endangered. The habitat changes anticipated would cause a decline in suitability for this species.

Tricolored Blackbird: Federal Species of Concern

The CWHR reports also indicate many other non-listed species that would be impacted.

Tom Rattcliff, retired USFS Biologist of the Modoc National Forest provided the following comments and questions pertaining to the relicense instream flow condition.

I have reviewed pertinent information regarding impacts to wildlife species in Modoc County pending a proposal to approximately triple in-stream flow requirements in the Pit River. A logical consequence of that proposal is a decrease in irrigation available in the upper watershed. It is also possible that several reservoirs, ie. Big Sage Reservoir and West Valley Reservoir may have less water available. It is important to note that Modoc National Wildlife Refuge is primarily operated via irrigation from the Upper Pit watershed as well.

Certain wildlife species would be directly affected by such a proposal, especially those dependent upon affected habitats for all or significant portions of the life cycle. The habitats with most direct effects appear to be wet meadow; irrigated pasture or hayfield; reservoirs; and riparian / riverine systems.

Species tied directly to these habitats (fish and aquatic resources are not discussed here) include: waterfowl; sandhill cranes; waterbirds such as gulls, terns, grebes, avocets, black-necked stilts; shorebirds such as sandpipers, godwits, curlews and plovers; riparian obligates such as willow flycatchers, red-winged and yellow-headed blackbirds, dippers,

and several of the sapsuckers. This group of birds either nests, stages, migrates through or in some cases uses all of these life stages in wet meadow, irrigated, lakeshore or riparian habitats. Waterfowl use all these areas for all life stages except wintering habitat for example. Sandhill cranes make extensive use of wet meadows and irrigated lands; and almost half of the known sites in northeastern California are on private lands. Recent studies of cranes indicate more than 80% of California's breeding population occurs in Modoc County. Major spring staging areas for waterfowl, cranes, shorebirds and migrating passerine birds occur on irrigated land and wet meadows in Modoc County, both private and public. Recent telemetry studies on pintails indicate extensive use of the habitat types in the county in spring, for example. Moist soil habitats—those found in irrigated land and wet meadows—serve as major staging, foraging and breeding areas for those species listed above.

Islands in lake habitat serve unique nesting needs for colonial nesters such as California gulls—3500 nests on islands in Big Sage Reservoir, for example. Approximately 10,000 Canada geese are produced on islands on Modoc National Forest annually. Modoc National Wildlife refuge produces similar numbers of birds; recently white-faced ibis have been produced on the Forest as well. Forester's terns, Caspian terns and black terns make similar use of these habitats. Many of these species are species of concern. Black terns, for example are rarely found nesting outside northeastern California in the state.

Riparian areas are well known to produce the birds mentioned above, and many riparian areas are recharged via runoff from irrigation. Similarly, ponds and sumps from irrigation are favored sites for nesting, resting, feeding and migration. It should be noted that riparian dependent species, eg willow flycatchers, are tied directly to areas where riparian shrubs occur along streams, meadow edges and riverine corridors. Much recovery of degraded riparian systems has been accomplished within the past decade in Modoc County through cooperative efforts of ranchers, private owners and government specialists. For example, projects on South Fork – Pit River, Main Stem – Pit River, Parker Creek, Turner Creek, Washington Creek and others come to mind. Incumbent in continuing this ongoing recovery work is the ability to effectively manage irrigation on private lands coupled with in-stream and off-stream management activities on private and public lands.

Other wildlife may be less directly affected but still may be impacted. For example numerous bald eagles in Modoc County are within ½ to 1 mile of riverine or lake habitat. Tied directly to the forage base in those habitats, eagles may not be able to produce young if those habitats go dry or have reduced flows insufficient for fish needs.

In summary, it is difficult without additional details to quantify projected changes in wildlife habitat conditions given such a significant change as has been proposed in irrigation and management actions related to the tripling of in-stream flows in the lower Pit River. However, it can be clearly stated that decreased wet meadow, irrigated pasture and hayfield habitat, lacustrine habitat, and riparian / riverine habitat would most likely occur. Further, as noted above, decreased habitat would directly and negatively affect a myriad of dependent wildlife species.

Therefore a series of questions need to be answered regarding the proposal:

- a. Given the 50 - year or longer history of current flows in the lower Pit River, what scientific evidence can be applied to the current increased flow request? What species will benefit from the flow change, and to what degree? What species will be negatively affected and to what degree?
- b. How will increased in-stream flow requirements be allocated to the upper watershed given the greatly unequal flow from the upper Pit versus flows from the Pit below the confluence with Hat Creek, Fall River, etc.?
- c. Given the long history of irrigation application in the upper Pit watershed, and associated vegetative changes accompanying that irrigation, what appropriate mitigation measures have been developed for reversion of those irrigated lands to dry land status, given the obvious dependence of wildlife, fishes and amphibians to the current state?
- d. What considerations, mitigations and management practices have been developed for the wildlife, fishes and amphibians within the lower Pit reaches where the drastic changes in stream flow will occur?
- e. Finally, how will the increased stream flows be applied? In other words, will the lower river be operated in a “normal” flow regime, ie, high spring flows, moderate summer, low fall and winter flows; or will the lower river be put on some other flow regime? Given the highly modified and “unnatural” flows we see in the Pit system due to the dams and diversions of today, it is difficult to determine effects without additional background information.

Wildlife –Aquatic

Since the CWHR list does not address aquatic species, separate information is provided. In 2002, the US Fish and Wildlife Service (USFWS) fishery biologist, Stewart Reid <Stewart_Reid@r1.fws.gov> sampled fish populations in the Pit River system. The drought conditions during 2002, may simulate the conditions that could be present with relicense with higher flow requirements. The 2002 survey found that sites with very limited flow (Site 8 and the Pit River near Kelley Hot Springs), or those which had been essentially drained in the recent past (Site 9), had greatly reduced abundance and diversity of fish.

Modoc Sucker Federal and State Endangered Status

Preliminary genetic results indicate that Modoc sucker genes are present in the Sacramento sucker populations in the South Fork of the Pit River (Sites 10-12) and, in very low frequency, in the mainstem Pit River near Stone Coal Creek (Sites 2-3). These results suggest that there has been introgressive exchange of genes between Modoc and Sacramento suckers at some time in the past in these areas. It is not known whether there are Modoc sucker populations still present in either area. Further field surveys are planned for the 2003 field season.

His 2002 survey can be seen in **Appendix 3**.

University of California Natural Resources Farm Advisor, Marc Horney has graphically illustrated the presence of potential habitat by Geographic Informational Systems (GIS) using the California Natural Diversity databases list of sightings. This provides spatial arrangement of the species and illustrates the dependence on the Pit River watershed and the potential for further fragmentation of the population if impacted by the relicense process. Each map covers species presence in the Pit River watershed drainage and has Modoc and Lassen County lines, with most of the Pit River from Alturas down being marked in blue. **Appendix 4** contains color maps on the following species:

Bald Eagle	<i>Haliaeetus leucocephalus</i>	(Federal Threatened)
		(California Endangered)
Greater Sandhill Crane	<i>Grus Canadensis tabida</i>	(California Threatened)
Pit Roach	<i>Lavinia symmetricus mitrulus</i>	(Federal Species of Concern)
Tricolored blackbird	<i>Agelaius tricolor</i>	(Federal Species of Concern)
White Faced Ibis	<i>Plegadis chihi</i>	(Federal Species of Concern)

Modoc National Wildlife Refuge

Fed by snowmelt from the Warner Mountains, the Pit River creates an oasis for wildlife in the high desert of northeastern California, at the Modoc National Wildlife Refuge. The more than 7,000 acre refuge was established in 1961 to manage and as a high desert oasis to protect migratory waterfowl. One in a chain of National wildlife refuges along the Pacific Flyway extending from Alaska to Mexico; the Modoc National Wildlife Refuge (NWR) is an important resting, nesting and feeding area for migratory birds. Migratory bird production and maintenance is the primary purpose of the refuge. Any reduction in storage capabilities caused by any action taken by PG&E that reduces historic upstream water availability caused by the Pit 3,4,and 5 relicensing, the South Fork Irrigation District (SFID) will increase the efficiency of irrigation delivery in the Pit River, which will greatly decrease the flows. Presently, SFID and PG&E have legal discussions on the difference of opinion on water rights that is based on a reaction to the first 150 cfs instream requirements. Further pressure on SFID will reduce the flows in the Pit that would be surplus and available for habitat in the Modoc National Wildlife Refuge. The Refuge utilizes riparian water from the South Fork of the Pit River to maintain approximately 2000 acres of wetlands, wet meadows, and riparian areas. The refuge is one of the key nesting areas for the state listed greater sandhill crane with 40 - 60 nesting pairs annually. Nearly 500 acres of small grain is produced providing a critical forage supply to the thousands of waterfowl, cranes, and other wildlife that utilize the refuge. This grain also provides mitigation for depredation to adjoining private lands. This same 2000 acres encompasses the majority of the Refuge public hunting area. Hunters from around the state come to the refuge for its waterfowl hunting opportunities providing a significant economic input to local businesses. This could have a negative impact on

many of the important species that inhabit the Pit River portion of the refuge. **Appendix 5** provides a species list of birds that are present on the refuge.

Private Land Survey

Several ranches were asked to contribute in a study of environmental impacts of the two relicense conditions (Instream minimum flows and Dry Year Flood Simulation flows) on upstream agricultural operations. Most declined, as they were concerned about misuse of the data. Many stated that they are proud of the habitat that their operations provided, but after the Klamath experience, were not excited about identifying their operations and endangered species. For that reason, the information will not include any specific location or demographics that would allow them to be identified.

Ranch #1

This ranch estimates that they will loose about 200 acres of irrigated meadow and 175 acres of wetland marsh (CWHR's Fresh Emergent Wetland) with the increased minimum instream flow requirements. The wetland marsh has been identified by two federal agencies as critical aquatic habitat in a desert environment.

Listed species present that would be impacted

**Bald Eagle
Greater Sandhill Crane
Western Snowy Plover
Tricolored blackbird
White Faced Ibis
Bank Swallow
Osprey
American White Pelican
Golden Eagle
Black Tern
Modoc Sucker**

Non listed species

**Grebe
Blue Heron
Egret
Tundra Swan
Trumpeter Swans
Snow Geese
Canada Geese
Green-Winged Teal
Mallard
Northern Pintail
Cinnamon Teal
Gadwall
Widgeon
Prairie Falcon
American Coot
Sandpiper**

Long-Billed Curlew
Dowitcher
Black Tern
Nighthawk
Garter Snake
Northern shoveler
Snipe
Cormorant
Marmot

Ranch #2

This ranch estimates that they will lose about 500 acres of irrigated pasture and 30 acres of wetland marsh (CWHR's Fresh Emergent Wetland) with the increased minimum instream flow requirements.

Listed species present that would be impacted

White faced ibis
Greater Sandhill crane
Bald eagle
Tricolored blackbird
American white pelican

Non listed species

RED-WINGED BLACKBIRD
COMMON SNIPE
YELLOW-HEADED BLACKBIRD
RING-NECKED DUCK
VIRGINIA RAIL
SORA
GARTER SNAKE
WILLET
CALIFORNIA MOUNTAIN KINGSNAKE
WHITE-CROWNED SPARROW
ERMINE
KILLDEER
RACCOON
DARK-EYED JUNCO
WILSON'S PHALAROPE
DUNLIN
LESSER SCAUP
LEAST SANDPIPER
NORTHERN SHRIKE
WESTERN SANDPIPER
LONG-BILLED DOWITCHER
HOUSE WREN
BLACK-NECKED STILT

AMERICAN AVOCET
SPOTTED SANDPIPER
LAZULI BUNTING
HOUSE SPARROW
MARBLED GODWIT
MOUNTAIN POCKET GOPHER
SNOWY EGRET
BLACK-BILLED MAGPIE
LONG-BILLED CURLEW
MOUNTAIN LION
CALIFORNIA MYOTIS
COMMON MERGANSER
RING BILLED GULL
BREWER'S BLACKBIRD
MULE DEER
VESPER SPARROW
WHITE-TAILED JACKRABBIT
CANADA GOOSE
MERLIN
AMERICAN ROBIN
STRIPED SKUNK
GREATER WHITE-FRONTED GOOSE
SNOW GOOSE
ROSS' GOOSE
PURPLE FINCH
LITTLE BROWN MYOTIS
LONG-EARED MYOTIS
BELDING'S GROUND SQUIRREL
WESTERN SMALL-FOOTED MYOTIS
SILVER-HAIRED BAT
ROUGH-LEGGED HAWK
LINCOLN'S SPARROW
PIED-BILLED GREBE
EARED GREBE
AMERICAN BITTERN
BLACK-CROWNED NIGHT HERON
CINNAMON TEAL
RUDDY DUCK
AMERICAN COOT
MARSH WREN
COMMON MUSKRAT
AMERICAN MINK
BLUE-WINGED TEAL
CANVASBACK
WESTERN GREBE
REDHEAD
CLARK'S GREBE

NORTHERN RIVER OTTER
COYOTE
TREE SWALLOW
LONG-TAILED WEASEL
BELTED KINGFISHER
SAVANNAH SPARROW

Ranch #3

This ranch is dependent on excess flow from upstream irrigation districts for flows in the Pit along with off stream storage for irrigation. They presently have a large amount of Wetland Reserve Program (WRP) acres that depend on those flows. A California Waterfowl Association (CWA) Regional Biologist provided this count on the ranch from March 14, 2003.

The total birds present counting waterfowl and shore birds was in excess of 25,000.

The break down of species is as follows:

Swans – 2,500 Snow Geese – 3,000 Ross Geese – 1,400 Specs – 2,600

Canada Geese (includes 200 cacklers) – 1,200.

TOTAL SWANS AND GEESE 10,700

Pintails -4,000 Mallards - 3,000 Widgeon – 2,500 Gadwall – 1,500

OTHER Species of ducks including Cinnamon teal, spoonies, and 200

Ringneck ducks, totaled about 1,500.

TOTAL DUCKS 12,500

In addition to the waterfowl there were about several hundred (300) Sandhill Cranes, 3,000 shore birds, mostly avocets and ibis, that brings the total bird count to 26,500.

The Big Valley portion of the Pit River private lands serves as an important part of the Pacific flyway. Most of the ranches from Lookout to Bieber depend on water storage that could be impacted by the instream flow condition. There are over 3000 acres of WRP in that could be impacted by this decision. Bird counts are taken on a regular basis by USFW and are posted on the web at <http://www.klamathnwr.org/cenfindex.html>. Here are the data for the private lands in Big Valley (excluding the Ash Creek Wildlife Area) personal conversation with Jim Hainline 541. 850.3296.

April 2&7, 2003 Observer: Jim Hainline

SPECIES ||||| BIG VALLEY ||||| ||||| |||||

COOT				
TUNDRA SWAN				
SNOW/ROSS	8000			
WHITE-FRONT	6100			
CANADA	800			
LESSER CAN.				
CAACKLING CAN.				
MALLARD	260			
GADWALL	100			
WIGEON				
G-W TEAL	300			
B-W/CINN TEAL	80			
SHOVELER	4200			
PINTAIL	400			
WOOD DUCK				
REDHEAD				
CANVASBACK	200			
SCAUP				
RINGNECK				
GOLDENEYE				
BUFFLEHEAD	200			
RUDDY DUCK				
MERGANSER				
SANDHILL CRANE	205			
WHITE PELICAN				
BALD EAGLE	2			
TOTAL GEESE	14900			
TOTAL DUCKS	5740			
TOT.WATERFOWL	20640	21150	78880	720

CALIFORNIA WILDLIFE HABITAT RELATIONSHIPS SYSTEM

4/15/2003

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SPECIES DETAIL REPORT

I=Introduced N=Native 1=Federal Endangered 2=Federal Threatened 3=California Endangered 4=California Threatened 5=California Fully Protected 6=California Protected 7=California Species of Special Concern 8=Federally-Proposed Endangered 9=Federally-Proposed Threatened Candidate 10=Federal Candidate 11=BLM Sensitive 12=USFS Sensitive 13=CDF Sensitive 14=Harvest

Note: Any given status code for a species may apply to the full species or to only one or more of its subspecies.

LOCATIONS, HABITATS AND IMPORTANCE TO...

ID	SPECIES NAME	R	C
SEASON	SPECIAL ELEMENTS		
A003	LONG-TOED SALAMANDER	1 3 5 6	
Yearlong	MODOC		
Yearlong	LASSEN		
Summer	WET MEADOW2D	M M M	
A029	GREAT BASIN SPADEFOOT		
Yearlong	MODOC		
Yearlong	LASSEN		
Yearlong	FRESH EMERGENT WETLAND2M	H L L	
Yearlong	WET MEADOW2D	H L L	
A032	WESTERN TOAD		
Yearlong	MODOC		

Yearlong	LASSEN				
Yearlong	PASTURE1	M	M	M	
Yearlong	FRESH EMERGENT WETLAND2M	M	M	M	
Yearlong	WET MEADOW2D	M	M	M	
Yearlong	ANNUAL GRASS1D	M	M	M	
A039 PACIFIC CHORUS FROG					
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	PASTURE1	M	M	M	
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H	
Yearlong	WET MEADOW2D	H	H	H	
Yearlong	ANNUAL GRASS1D	H	H	H	
A041 SPOTTED FROG 1				6	7 1
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	WET MEADOW2D	M	M	M	
A042 CASCADES FROG 1				6	7
Yearlong	LASSEN				
Yearlong	WET MEADOW2D	L	H	H	
A043 FOOTHILL YELLOW-LEGGED FROG 1				6	7
Yearlong	LASSEN				
Yearlong	WET MEADOW2D		M	M	

A044 MOUNTAIN YELLOW-LEGGED FROG 6 7
1

Yearlong LASSEN

Yearlong FRESH EMERGENT WETLAND2M M M M

Yearlong WET MEADOW2D H H H

A045 NORTHERN LEOPARD FROG 7
1

Yearlong MODOC

Yearlong LASSEN

Yearlong FRESH EMERGENT WETLAND2M M M M

Yearlong WET MEADOW2D M M

Yearlong ANNUAL GRASS1D M L L

A046 BULLFROG
1

Yearlong MODOC

Yearlong LASSEN

Yearlong PASTURE1 M H H

Yearlong FRESH EMERGENT WETLAND2M M H H

Yearlong WET MEADOW2D M M M

Yearlong ANNUAL GRASS1D L H H

B006 PIED-BILLED GREBE

Yearlong MODOC

Yearlong LASSEN

Yearlong FRESH EMERGENT WETLAND2M H H H

B009 EARED GREBE

Yearlong	MODOC			
Yearlong	LASSEN			
Summer	FRESH EMERGENT WETLAND2M	H	H	H
B010 WESTERN GREBE				
Yearlong	MODOC			
Yearlong	LASSEN			
Summer	FRESH EMERGENT WETLAND2M	H	H	L
B049 AMERICAN BITTERN				
Summer	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
B050 LEAST BITTERN				7
Summer	MODOC			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
B051 GREAT BLUE HERON				
1				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1		H	H
Yearlong	DRYLAND GRAIN CROPS1		H	H
Yearlong	IRRIGATED HAYFIELD1			H
Yearlong	FRESH EMERGENT WETLAND2M			H
Yearlong	WET MEADOW2D			H
Yearlong	ANNUAL GRASS1D			H

B052 GREAT EGRET

1

Yearlong	MODOC		
Yearlong	LASSEN		
Yearlong	IRRIGATED GRAIN CROPS1	H	H
Yearlong	DRYLAND GRAIN CROPS1	H	H
Yearlong	IRRIGATED HAYFIELD1	H	H
Yearlong	FRESH EMERGENT WETLAND2M	H	H
Yearlong	WET MEADOW2D	M	M
Yearlong	ANNUAL GRASS1D	H	H

B053 SNOWY EGRET

Summer	MODOC		
Summer	LASSEN		
Yearlong	IRRIGATED GRAIN CROPS1	M	M
Yearlong	IRRIGATED HAYFIELD1	M	M
Yearlong	FRESH EMERGENT WETLAND2M	H	H

B057 CATTLE EGRET

Winter	MODOC		
Winter	LASSEN		
Yearlong	IRRIGATED GRAIN CROPS1	H	H
Yearlong	IRRIGATED HAYFIELD1	H	H
Yearlong	FRESH EMERGENT WETLAND2M	M	M
Yearlong	ANNUAL GRASS1D	H	H

B059 BLACK-CROWNED NIGHT HERON

1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
B062 WHITE-FACED IBIS				7
Summer	MODOC			
Summer	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1		L	M
Yearlong	IRRIGATED HAYFIELD1		L	M
Yearlong	FRESH EMERGENT WETLAND2M	M	M	M
B067 TUNDRA SWAN				
Winter	MODOC			
Winter	LASSEN			
Winter	IRRIGATED GRAIN CROPS1		H	H
Winter	IRRIGATED HAYFIELD1		H	H
Winter	FRESH EMERGENT WETLAND2M		H	H
Winter	WET MEADOW2D		H	H
Winter	ANNUAL GRASS1D		H	H
B070 GREATER WHITE-FRONTED GOOSE				
1				
Winter	MODOC			
Winter	LASSEN			
Winter	IRRIGATED GRAIN CROPS1		H	H
Winter	IRRIGATED HAYFIELD1		H	H
Winter	FRESH EMERGENT WETLAND2M		H	H

Winter	WET MEADOW2D	L	H
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Winter	ANNUAL GRASS1D	L	H
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B071 SNOW GOOSE

1

Winter	MODOC		
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Winter	LASSEN		
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Winter	IRRIGATED GRAIN CROPS1	H	H
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Winter	IRRIGATED HAYFIELD1	H	H
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Winter	FRESH EMERGENT WETLAND2M	H	H
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Winter	WET MEADOW2D	L	H
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Winter	ANNUAL GRASS1D	L	H
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B072 ROSS' GOOSE

1

Winter	MODOC		
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Winter	LASSEN		
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Winter	IRRIGATED GRAIN CROPS1	H	H
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Winter	IRRIGATED HAYFIELD1	H	H
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Winter	FRESH EMERGENT WETLAND2M	M	H
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Winter	WET MEADOW2D	L	H
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Winter	ANNUAL GRASS1D	L	H
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B075 CANADA GOOSE

1

Yearlong	MODOC		
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Yearlong	LASSEN		
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Yearlong	IRRIGATED GRAIN CROPS1	H	H
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Yearlong	IRRIGATED HAYFIELD1	L	H	H
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	L	H	H

B076 WOOD DUCK
1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1		L	H
Yearlong	FRESH EMERGENT WETLAND2M		H	H

B077 GREEN-WINGED TEAL
1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1		L	M
Yearlong	IRRIGATED HAYFIELD1		L	M
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	M	M	H

B079 MALLARD
1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	H	H	H
Yearlong	IRRIGATED HAYFIELD1	H	H	H

Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	H	H	H

B080 NORTHERN PINTAIL
1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	H	H	H
Yearlong	DRYLAND GRAIN CROPS1	H	H	H
Yearlong	IRRIGATED HAYFIELD1	H	H	H
Yearlong	FRESH EMERGENT WETLAND2M	L	H	H
Yearlong	WET MEADOW2D	M	M	H
Yearlong	ANNUAL GRASS1D	M	M	H

B082 BLUE-WINGED TEAL
1

Summer	MODOC			
Summer	LASSEN			
Summer	FRESH EMERGENT WETLAND2M	H	H	M

B083 CINNAMON TEAL
1

Summer	MODOC			
Summer	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H

B084 NORTHERN SHOVELER
1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	M	H	H
Yearlong	ANNUAL GRASS1D	M	H	

B085 GADWALL
1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	M	M	L
Yearlong	DRYLAND GRAIN CROPS1	M	M	L
Yearlong	IRRIGATED HAYFIELD1	M	M	L
Yearlong	FRESH EMERGENT WETLAND2M		H	H
Yearlong	WET MEADOW2D	H	H	L
Yearlong	ANNUAL GRASS1D	H	H	L

B086 EURASIAN WIGEON
1

Winter	MODOC			
Winter	LASSEN			
Winter	FRESH EMERGENT WETLAND2M		M	M
Winter	ANNUAL GRASS1D		M	M

B087 AMERICAN WIGEON
1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	L	H	H

Yearlong	DRYLAND GRAIN CROPS1	L	H	H
Winter	IRRIGATED HAYFIELD1		L	H
Yearlong	FRESH EMERGENT WETLAND2M		H	H
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	H	H	H

B089 CANVASBACK
1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	M

B090 REDHEAD
1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	L

B091 RING-NECKED DUCK
1

Yearlong	MODOC			
Yearlong	LASSEN			
Summer	FRESH EMERGENT WETLAND2M	H	H	H
Summer	WET MEADOW2D	H	H	H

B094 LESSER SCAUP
1

Yearlong	MODOC			
Yearlong	LASSEN			

Yearlong	FRESH EMERGENT WETLAND2M	M	M	
Summer	WET MEADOW2D	H	H	
B104 HOODED MERGANSER				
1				
Winter	MODOC			
Yearlong	LASSEN			
Winter	FRESH EMERGENT WETLAND2M		M	M
B105 COMMON MERGANSER				
1				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M		M	H
Summer	WET MEADOW2D		L	M
B107 RUDDY DUCK				
1				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
B108 TURKEY VULTURE				
Summer	MODOC			
Summer	LASSEN			
Yearlong	DRYLAND GRAIN CROPS1		L	H
Yearlong	IRRIGATED HAYFIELD1		L	H
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	H	H	H

B110 OSPREY					7
1					
Summer	MODOC				
Summer	LASSEN				
Summer	FRESH EMERGENT WETLAND2M				H
B113 BALD EAGLE		2	3	5	
1					
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	FRESH EMERGENT WETLAND2M				M
Yearlong	WET MEADOW2D				M
B114 NORTHERN HARRIER					7
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	IRRIGATED GRAIN CROPS1	H	H	H	
Yearlong	DRYLAND GRAIN CROPS1	H	H	H	
Yearlong	IRRIGATED HAYFIELD1	H	H	H	
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H	
Yearlong	WET MEADOW2D	H	H	H	
Yearlong	ANNUAL GRASS1D	H	H	H	
B115 SHARP-SHINNED HAWK					7
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	WET MEADOW2D				M

Yearlong	ANNUAL GRASS1D				M
B116	COOPER'S HAWK				7
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	IRRIGATED GRAIN CROPS1				H
Yearlong	IRRIGATED HAYFIELD1				H
Yearlong	ANNUAL GRASS1D				M
B121	SWAINSON'S HAWK				4
1					
Summer	MODOC				
Summer	LASSEN				
Summer	PASTURE1	M	M		H
Summer	WET MEADOW2D		L		M
Summer	ANNUAL GRASS1D	M	M		H
B123	RED-TAILED HAWK				
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	PASTURE1	L	L		H
Yearlong	FRESH EMERGENT WETLAND2M		L		H
Yearlong	WET MEADOW2D		L		H
Yearlong	ANNUAL GRASS1D	L	L		H
B124	FERRUGINOUS HAWK				7
					1
Yearlong	MODOC				
Yearlong	LASSEN				

Winter	PASTURE1		H	H	
Winter	WET MEADOW2D		L	M	
Winter	ANNUAL GRASS1D		L	H	
B125 ROUGH-LEGGED HAWK					
Winter	MODOC				
Winter	LASSEN				
Winter	PASTURE1		H	H	
Winter	FRESH EMERGENT WETLAND2M			M	
Winter	WET MEADOW2D		L	H	
Winter	ANNUAL GRASS1D		L	H	
B126 GOLDEN EAGLE			5	7	1
1					
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	PASTURE1	L	L	H	
Yearlong	FRESH EMERGENT WETLAND2M			M	
Yearlong	ANNUAL GRASS1D	L	L	H	
B127 AMERICAN KESTREL					
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	IRRIGATED GRAIN CROPS1		H	H	
Yearlong	DRYLAND GRAIN CROPS1		H	H	
Yearlong	IRRIGATED HAYFIELD1		H	H	
Yearlong	FRESH EMERGENT WETLAND2M		L	M	

Yearlong	ANNUAL GRASS1D	L	L	H
B128 MERLIN				7
Winter	MODOC			
Winter	LASSEN			
Winter	IRRIGATED GRAIN CROPS1		M	H
Winter	IRRIGATED HAYFIELD1		M	H
Winter	FRESH EMERGENT WETLAND2M			M
Winter	WET MEADOW2D			M
Winter	ANNUAL GRASS1D			M
B129 PEREGRINE FALCON 1		3	5	
Yearlong	MODOC			
Yearlong	LASSEN			
Winter	IRRIGATED GRAIN CROPS1		M	M
Winter	IRRIGATED HAYFIELD1		M	M
Yearlong	FRESH EMERGENT WETLAND2M		H	H
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	H	H	H
B131 PRAIRIE FALCON				7
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1		L	M
Yearlong	DRYLAND GRAIN CROPS1		L	M
Yearlong	IRRIGATED HAYFIELD1		L	H

Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	H	H	H
B132 CHUKAR				
1				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	ANNUAL GRASS1D	H	H	H
B133 RING-NECKED PHEASANT				
1				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	H	H	H
Yearlong	DRYLAND GRAIN CROPS1	H	H	H
Yearlong	IRRIGATED HAYFIELD1	H	H	H
Yearlong	FRESH EMERGENT WETLAND2M		H	H
Yearlong	WET MEADOW2D	M	H	H
Yearlong	ANNUAL GRASS1D	H	H	H
B137 SAGE GROUSE				
1				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	WET MEADOW2D	L	H	H
B138 WILD TURKEY				
1				
Yearlong	MODOC			

Yearlong	LASSEN			
Yearlong	DRYLAND GRAIN CROPS1			M
Yearlong	IRRIGATED HAYFIELD1			M
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	H	H	H

B140 CALIFORNIA QUAIL
1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	M	M	H
Yearlong	IRRIGATED HAYFIELD1	M	M	H
Yearlong	WET MEADOW2D	M	M	H
Yearlong	ANNUAL GRASS1D	M	M	H

B145 VIRGINIA RAIL

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
Yearlong	WET MEADOW2D	H	H	H

B146 SORA

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
Yearlong	WET MEADOW2D	H	H	H

B149 AMERICAN COOT

1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	H	H	H
Winter	IRRIGATED HAYFIELD1		H	H
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
Summer	WET MEADOW2D		L	H
Winter	ANNUAL GRASS1D		L	H

B150 SANDHILL CRANE

1

45

Summer	MODOC			
Summer	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	L	M	H
Yearlong	DRYLAND GRAIN CROPS1	L	M	H
Yearlong	IRRIGATED HAYFIELD1	M	M	H
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D		M	M

B151 BLACK-BELLIED PLOVER

Winter	MODOC			
Winter	LASSEN			
Winter	IRRIGATED GRAIN CROPS1		H	H
Winter	IRRIGATED HAYFIELD1		H	H
Winter	ANNUAL GRASS1D		L	M

B158 KILLDEER

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	H	H	H
Yearlong	IRRIGATED HAYFIELD1	H	H	H

B163 BLACK-NECKED STILT

Summer	MODOC			
Summer	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	L	M	H
Yearlong	IRRIGATED HAYFIELD1	L	M	H
Yearlong	FRESH EMERGENT WETLAND2M	L	L	M

B164 AMERICAN AVOCET

Summer	MODOC			
Summer	LASSEN			
Winter	IRRIGATED GRAIN CROPS1	L	M	H
Winter	IRRIGATED HAYFIELD1	L	M	H
Yearlong	FRESH EMERGENT WETLAND2M	L	L	M

B165 GREATER YELLOWLEGS

Winter	MODOC			
Migrant	LASSEN			
Winter	IRRIGATED GRAIN CROPS1		M	M

B166 LESSER YELLOWLEGS

Winter	MODOC			
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Migrant	LASSEN			
Winter	IRRIGATED GRAIN CROPS1		M	M
B168 WILLET				
Summer	MODOC			
Summer	LASSEN			
Winter	IRRIGATED GRAIN CROPS1		M	M
Yearlong	IRRIGATED HAYFIELD1		M	M
Summer	FRESH EMERGENT WETLAND2M		M	M
Summer	WET MEADOW2D	M	M	M
B170 SPOTTED SANDPIPER				
Summer	MODOC			
Summer	LASSEN			
Summer	WET MEADOW2D	M	M	M
B172 WHIMBREL				
Winter	LASSEN			
Winter	IRRIGATED GRAIN CROPS1		H	H
Winter	IRRIGATED HAYFIELD1		H	H
Winter	FRESH EMERGENT WETLAND2M		L	M
Winter	WET MEADOW2D		L	M
Winter	ANNUAL GRASS1D		M	H
B173 LONG-BILLED CURLEW				7
Summer	MODOC			
Summer	LASSEN			

Winter	DRYLAND GRAIN CROPS1		H	H
Yearlong	IRRIGATED HAYFIELD1	H	H	H
Yearlong	FRESH EMERGENT WETLAND2M		H	M
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D		H	H
B176 MARBLED GODWIT				
Summer	MODOC			
Summer	LASSEN			
Winter	IRRIGATED HAYFIELD1		M	M
B183 WESTERN SANDPIPER				
Migrant	MODOC			
Migrant	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1		H	H
Yearlong	IRRIGATED HAYFIELD1		H	H
Yearlong	FRESH EMERGENT WETLAND2M		M	H
B185 LEAST SANDPIPER				
Winter	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1		H	H
Yearlong	IRRIGATED HAYFIELD1		H	H
Yearlong	FRESH EMERGENT WETLAND2M		H	H
B191 DUNLIN				
Winter	MODOC			

Winter	LASSEN			
Winter	IRRIGATED GRAIN CROPS1		M	M
Winter	IRRIGATED HAYFIELD1		H	H
Winter	FRESH EMERGENT WETLAND2M		L	M

B197 LONG-BILLED DOWITCHER

Winter	MODOC			
Winter	LASSEN			
Winter	IRRIGATED GRAIN CROPS1		H	H
Winter	IRRIGATED HAYFIELD1		H	H
Winter	FRESH EMERGENT WETLAND2M		M	H

B199 COMMON SNIPE
1

Yearlong	MODOC			
Yearlong	LASSEN			
Winter	IRRIGATED GRAIN CROPS1		M	M
Winter	IRRIGATED HAYFIELD1		M	M
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
Yearlong	WET MEADOW2D	H	H	H

B200 WILSON'S PHALAROPE

Summer	MODOC			
Summer	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	L	H	H
Yearlong	IRRIGATED HAYFIELD1	L	H	H
Summer	FRESH EMERGENT WETLAND2M	M	H	M

Summer	WET MEADOW2D	M	H	L
Migrant	ANNUAL GRASS1D		M	L
B214 RING-BILLED GULL				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1		H	H
Yearlong	IRRIGATED HAYFIELD1		H	H
Yearlong	FRESH EMERGENT WETLAND2M		H	H
Yearlong	ANNUAL GRASS1D		M	M
B215 CALIFORNIA GULL				
Yearlong	MODOC			7
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1		H	H
Yearlong	IRRIGATED HAYFIELD1		H	H
Yearlong	FRESH EMERGENT WETLAND2M		L	H
Yearlong	ANNUAL GRASS1D		L	M
B216 HERRING GULL				
Winter	MODOC			
Winter	LASSEN			
Winter	IRRIGATED GRAIN CROPS1		M	M
Winter	IRRIGATED HAYFIELD1		M	M
B235 BLACK TERN				
Summer	MODOC			7

Summer	LASSEN			
Summer	IRRIGATED GRAIN CROPS1	H	H	H
Summer	IRRIGATED HAYFIELD1		L	H
Summer	FRESH EMERGENT WETLAND2M	H	H	H
Summer	WET MEADOW2D		L	M

B250 ROCK DOVE

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1			H
Yearlong	DRYLAND GRAIN CROPS1			H
Yearlong	IRRIGATED HAYFIELD1			H
Yearlong	ANNUAL GRASS1D			M

B251 BAND-TAILED PIGEON

1

Summer	MODOC			
Yearlong	LASSEN			
Winter	IRRIGATED GRAIN CROPS1			H
Winter	DRYLAND GRAIN CROPS1			H

B255 MOURNING DOVE

1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1			H
Yearlong	DRYLAND GRAIN CROPS1			H

Yearlong	IRRIGATED HAYFIELD1		H
B262 BARN OWL			
Yearlong	MODOC		
Yearlong	LASSEN		
Yearlong	IRRIGATED GRAIN CROPS1	H	H
Yearlong	DRYLAND GRAIN CROPS1	H	H
Yearlong	FRESH EMERGENT WETLAND2M	L	M
Yearlong	WET MEADOW2D		H
Yearlong	ANNUAL GRASS1D		H
B264 WESTERN SCREECH OWL			
Yearlong	MODOC		
Yearlong	LASSEN		
Yearlong	IRRIGATED GRAIN CROPS1		H
Yearlong	IRRIGATED HAYFIELD1		H
Yearlong	WET MEADOW2D		H
Yearlong	ANNUAL GRASS1D		H
B265 GREAT HORNED OWL			
Yearlong	MODOC		
Yearlong	LASSEN		
Yearlong	IRRIGATED GRAIN CROPS1		H
Yearlong	IRRIGATED HAYFIELD1		H
Yearlong	FRESH EMERGENT WETLAND2M		H
Yearlong	WET MEADOW2D		H

Yearlong	ANNUAL GRASS1D				H
B267 NORTHERN PYGMY OWL					
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	IRRIGATED HAYFIELD1				H
Yearlong	WET MEADOW2D				H
B269 BURROWING OWL					
Summer	MODOC				7
Yearlong	LASSEN				1
Yearlong	PASTURE1	H	H	H	
Yearlong	WET MEADOW2D		M	M	
Yearlong	ANNUAL GRASS1D	M	M	M	
B272 LONG-EARED OWL					
Yearlong	MODOC				7
Yearlong	LASSEN				
Yearlong	PASTURE1				H
Yearlong	WET MEADOW2D				H
Yearlong	ANNUAL GRASS1D				H
B273 SHORT-EARED OWL					
Yearlong	MODOC				7
Yearlong	LASSEN				
Yearlong	IRRIGATED GRAIN CROPS1	L	H	H	
Yearlong	IRRIGATED HAYFIELD1	L	H	H	

Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	H	H	H
B274 NORTHERN SAW-WHET OWL				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	WET MEADOW2D			M
B276 COMMON NIGHTHAWK				
Summer	MODOC			
Summer	LASSEN			
Summer	IRRIGATED GRAIN CROPS1			H
Summer	IRRIGATED HAYFIELD1			H
Summer	FRESH EMERGENT WETLAND2M			H
Summer	WET MEADOW2D			H
Summer	ANNUAL GRASS1D			H
B281 VAUX'S SWIFT				
Summer	MODOC			
Summer	LASSEN			
Summer	WET MEADOW2D			M
B282 WHITE-THROATED SWIFT				
Summer	MODOC			
Summer	LASSEN			
Summer	WET MEADOW2D			M

Summer	ANNUAL GRASS1D		M
B289 CALLIOPE HUMMINGBIRD			
Summer	MODOC		
Summer	LASSEN		
Summer	WET MEADOW2D	L	H
B291 RUFOUS HUMMINGBIRD			
Migrant	MODOC		
Summer	LASSEN		
Migrant	WET MEADOW2D		H
B293 BELTED KINGFISHER			
Yearlong	MODOC		
Yearlong	LASSEN		
Yearlong	FRESH EMERGENT WETLAND2M		M
B294 LEWIS' WOODPECKER			
Yearlong	MODOC		
Yearlong	LASSEN		
Yearlong	WET MEADOW2D		H
Yearlong	ANNUAL GRASS1D		H
B307 NORTHERN FLICKER			
Yearlong	MODOC	3	
Yearlong	LASSEN		
Yearlong	IRRIGATED HAYFIELD1		H
Yearlong	WET MEADOW2D		M

Yearlong	ANNUAL GRASS1D			H
B315 WILLOW FLYCATCHER		1	3	
1				
Summer	MODOC			
Summer	LASSEN			
Summer	WET MEADOW2D		L	H
B321 BLACK PHOEBE				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1		M	M
Yearlong	IRRIGATED HAYFIELD1		M	M
Yearlong	FRESH EMERGENT WETLAND2M		M	H
Yearlong	WET MEADOW2D		L	H
Yearlong	ANNUAL GRASS1D	L	L	M
B323 SAY'S PHOEBE				
Yearlong	MODOC			
Yearlong	LASSEN			
Winter	DRYLAND GRAIN CROPS1		M	M
Winter	IRRIGATED HAYFIELD1		H	H
Winter	ANNUAL GRASS1D		L	H
B333 WESTERN KINGBIRD				
Summer	MODOC			
Summer	LASSEN			
Summer	DRYLAND GRAIN CROPS1			H

Summer	IRRIGATED HAYFIELD1				H
Summer	WET MEADOW2D				M
Summer	ANNUAL GRASS1D				H
B337 HORNEED LARK					7
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	DRYLAND GRAIN CROPS1	H	H		H
Yearlong	IRRIGATED HAYFIELD1			H	H
Yearlong	ANNUAL GRASS1D	M	M		M
B338 PURPLE MARTIN					7
Summer	MODOC				
Summer	LASSEN				
Summer	IRRIGATED HAYFIELD1				H
Summer	FRESH EMERGENT WETLAND2M				H
Summer	WET MEADOW2D				H
Summer	ANNUAL GRASS1D				H
B339 TREE SWALLOW					
Summer	MODOC				
Summer	LASSEN				
Migrant	IRRIGATED GRAIN CROPS1				H
Migrant	IRRIGATED HAYFIELD1				H
Yearlong	FRESH EMERGENT WETLAND2M		H		H
Yearlong	WET MEADOW2D				H

Yearlong ANNUAL GRASS1D H

B340 VIOLET-GREEN SWALLOW

Summer MODOC

Summer LASSEN

Summer IRRIGATED GRAIN CROPS1 M

Summer DRYLAND GRAIN CROPS1 M

Summer IRRIGATED HAYFIELD1 H

Summer FRESH EMERGENT WETLAND2M H

Summer WET MEADOW2D H

Yearlong ANNUAL GRASS1D H

B341 NORTHERN ROUGH-WINGED SWALLOW

Summer MODOC

Summer LASSEN

Summer IRRIGATED GRAIN CROPS1 M

Summer DRYLAND GRAIN CROPS1 M

Summer IRRIGATED HAYFIELD1 H

Summer FRESH EMERGENT WETLAND2M H

Summer WET MEADOW2D H

Summer ANNUAL GRASS1D H

B342 BANK SWALLOW 4

Summer MODOC

Summer LASSEN

Summer IRRIGATED GRAIN CROPS1 H H M

Summer	DRYLAND GRAIN CROPS1			M
Summer	IRRIGATED HAYFIELD1	H	H	M
Migrant	FRESH EMERGENT WETLAND2M			H
Migrant	WET MEADOW2D			M
Summer	ANNUAL GRASS1D	H	H	H

B343 CLIFF SWALLOW

Summer	MODOC			
Summer	LASSEN			
Summer	IRRIGATED GRAIN CROPS1	M	M	M
Summer	DRYLAND GRAIN CROPS1	M	M	M
Summer	IRRIGATED HAYFIELD1	M	M	H
Summer	FRESH EMERGENT WETLAND2M	M	M	H
Summer	WET MEADOW2D	M	M	H
Summer	ANNUAL GRASS1D	M	M	H

B344 BARN SWALLOW

Summer	MODOC			
Summer	LASSEN			
Summer	IRRIGATED GRAIN CROPS1			H
Summer	DRYLAND GRAIN CROPS1			H
Summer	IRRIGATED HAYFIELD1			H
Summer	FRESH EMERGENT WETLAND2M	H	H	H
Summer	WET MEADOW2D	H	H	H
Summer	ANNUAL GRASS1D	H	H	H

B351 BLACK-BILLED MAGPIE

Yearlong	MODOC	
Yearlong	LASSEN	
Yearlong	DRYLAND GRAIN CROPS1	H
Yearlong	IRRIGATED HAYFIELD1	H
Yearlong	WET MEADOW2D	H

B353 AMERICAN CROW

1

Yearlong	MODOC	
Yearlong	LASSEN	
Yearlong	IRRIGATED GRAIN CROPS1	H
Yearlong	DRYLAND GRAIN CROPS1	H
Yearlong	IRRIGATED HAYFIELD1	H
Yearlong	ANNUAL GRASS1D	H

B354 COMMON RAVEN

Yearlong	MODOC	
Yearlong	LASSEN	
Yearlong	DRYLAND GRAIN CROPS1	H
Yearlong	IRRIGATED HAYFIELD1	H
Yearlong	FRESH EMERGENT WETLAND2M	M
Yearlong	WET MEADOW2D	H
Yearlong	ANNUAL GRASS1D	H

B369 HOUSE WREN

Summer	MODOC	
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Summer	LASSEN			
Summer	WET MEADOW2D		H	H
B372 MARSH WREN				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
B380 WESTERN BLUEBIRD				
Yearlong	MODOC			
Yearlong	LASSEN			
Winter	IRRIGATED HAYFIELD1			M
Yearlong	WET MEADOW2D			H
Yearlong	ANNUAL GRASS1D			H
B381 MOUNTAIN BLUEBIRD				
Yearlong	MODOC			
Yearlong	LASSEN			
Winter	IRRIGATED GRAIN CROPS1			M
Winter	DRYLAND GRAIN CROPS1			M
Winter	IRRIGATED HAYFIELD1			H
Summer	WET MEADOW2D			H
B389 AMERICAN ROBIN				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED HAYFIELD1			M

B390 VARIED THRUSH

Winter	MODOC		
Winter	LASSEN		
Winter	WET MEADOW2D	M	M

B393 NORTHERN MOCKINGBIRD

Summer	MODOC		
Yearlong	LASSEN		
Yearlong	IRRIGATED HAYFIELD1		M
Yearlong	ANNUAL GRASS1D		M

B404 AMERICAN PIPIT

Winter	MODOC		
Yearlong	LASSEN		
Winter	DRYLAND GRAIN CROPS1	H	H
Winter	IRRIGATED HAYFIELD1	H	H
Winter	ANNUAL GRASS1D	L	M

B409 NORTHERN SHRIKE

Winter	MODOC		
Winter	LASSEN		
Winter	IRRIGATED GRAIN CROPS1	M	M
Winter	DRYLAND GRAIN CROPS1	M	M
Winter	IRRIGATED HAYFIELD1	M	H
Winter	WET MEADOW2D	M	H

B410 LOGGERHEAD SHRIKE		1	7
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Yearlong	MODOC		
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Yearlong	LASSEN			
Yearlong	DRYLAND GRAIN CROPS1		M	M
Yearlong	IRRIGATED HAYFIELD1		M	M
Yearlong	ANNUAL GRASS1D		H	H
B411 EUROPEAN STARLING				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1			H
Yearlong	DRYLAND GRAIN CROPS1			H
Yearlong	IRRIGATED HAYFIELD1			H
Winter	FRESH EMERGENT WETLAND2M		H	
Yearlong	ANNUAL GRASS1D			M
B435 YELLOW-RUMPED WARBLER				
Summer	MODOC			
Yearlong	LASSEN			
Winter	IRRIGATED HAYFIELD1			M
Winter	ANNUAL GRASS1D			M
B461 COMMON YELLOWTHROAT				
Summer	MODOC			
Summer	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	M	H	H

B477 LAZULI BUNTING

Summer	MODOC			
Summer	LASSEN			
Summer	WET MEADOW2D	M	M	M

B491 BREWER'S SPARROW

Summer	MODOC			
Summer	LASSEN			
Winter	DRYLAND GRAIN CROPS1		M	M
Winter	IRRIGATED HAYFIELD1		M	M
Summer	WET MEADOW2D			M

B494 VESPER SPARROW

Summer	MODOC			
Summer	LASSEN			
Winter	DRYLAND GRAIN CROPS1		M	M
Yearlong	IRRIGATED HAYFIELD1	L	M	M

B495 LARK SPARROW

Summer	MODOC			
Summer	LASSEN			
Yearlong	DRYLAND GRAIN CROPS1	L	M	M
Yearlong	IRRIGATED HAYFIELD1	M	M	M
Yearlong	ANNUAL GRASS1D	H	H	H

B499 SAVANNAH SPARROW

Yearlong	MODOC		3	7
Yearlong	LASSEN			

Yearlong	IRRIGATED HAYFIELD1	M	M	M
Yearlong	PASTURE1	M	M	M
Yearlong	WET MEADOW2D	L	M	M
Yearlong	ANNUAL GRASS1D	H	H	H
B505 SONG SPARROW				7
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
Yearlong	WET MEADOW2D	H	H	H
B506 LINCOLN'S SPARROW				
Summer	MODOC			
Yearlong	LASSEN			
Winter	FRESH EMERGENT WETLAND2M		M	M
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D		M	M
B509 GOLDEN-CROWNED SPARROW				
Winter	MODOC			
Winter	LASSEN			
Winter	IRRIGATED HAYFIELD1			M
B510 WHITE-CROWNED SPARROW				
Yearlong	MODOC			
Yearlong	LASSEN			
Winter	DRYLAND GRAIN CROPS1		M	M

Winter	IRRIGATED HAYFIELD1		M	M	
Yearlong	WET MEADOW2D	M	M	H	
B512 DARK-EYED JUNCO					7
Yearlong	MODOC				
Yearlong	LASSEN				
Summer	IRRIGATED HAYFIELD1		M	M	
Yearlong	WET MEADOW2D				M
B519 RED-WINGED BLACKBIRD					
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	IRRIGATED HAYFIELD1	H	H	H	
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H	
Yearlong	WET MEADOW2D	H	H	H	
Yearlong	ANNUAL GRASS1D				H
B520 TRICOLORED BLACKBIRD					7
					1
Yearlong	MODOC				
Summer	LASSEN				
Yearlong	IRRIGATED GRAIN CROPS1				H
Yearlong	DRYLAND GRAIN CROPS1				H
Yearlong	IRRIGATED HAYFIELD1				H
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H	
Yearlong	WET MEADOW2D	M	M	M	
Yearlong	ANNUAL GRASS1D				H

B521 WESTERN MEADOWLARK

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	M	M	M
Yearlong	DRYLAND GRAIN CROPS1	M	M	M
Yearlong	IRRIGATED HAYFIELD1	H	H	H
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	H	H	H

B522 YELLOW-HEADED BLACKBIRD

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1			M
Yearlong	IRRIGATED HAYFIELD1			M
Yearlong	PASTURE1			M
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
Summer	WET MEADOW2D	H	H	H

B524 BREWER'S BLACKBIRD

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	L	M	H
Yearlong	DRYLAND GRAIN CROPS1	L	M	H
Yearlong	IRRIGATED HAYFIELD1	L	M	H
Yearlong	FRESH EMERGENT WETLAND2M	L	M	M
Yearlong	WET MEADOW2D	H	H	H

Yearlong ANNUAL GRASS1D L M

B528 BROWN-HEADED COWBIRD

Yearlong MODOC

Yearlong LASSEN

Yearlong IRRIGATED GRAIN CROPS1 H

Yearlong DRYLAND GRAIN CROPS1 H

Yearlong IRRIGATED HAYFIELD1 H

Yearlong FRESH EMERGENT WETLAND2M M H L

Yearlong WET MEADOW2D M H L

Yearlong ANNUAL GRASS1D L L H

B536 PURPLE FINCH

Yearlong MODOC

Yearlong LASSEN

Yearlong WET MEADOW2D M

B538 HOUSE FINCH

Yearlong MODOC

Yearlong LASSEN

Yearlong IRRIGATED GRAIN CROPS1 M H

Yearlong DRYLAND GRAIN CROPS1 M H

Yearlong IRRIGATED HAYFIELD1 M H

B542 PINE SISKIN

Yearlong MODOC

Yearlong LASSEN

Winter	IRRIGATED HAYFIELD1		M
Yearlong	WET MEADOW2D		M
Winter	ANNUAL GRASS1D		M
B543 LESSER GOLDFINCH			
Yearlong	MODOC		
Yearlong	LASSEN		
Yearlong	IRRIGATED HAYFIELD1	M	M
Yearlong	WET MEADOW2D		M
Yearlong	ANNUAL GRASS1D		M
B545 AMERICAN GOLDFINCH			
Yearlong	MODOC		
Yearlong	LASSEN		
Yearlong	IRRIGATED HAYFIELD1		M
Yearlong	ANNUAL GRASS1D		M
B547 HOUSE SPARROW			
Yearlong	MODOC		
Yearlong	LASSEN		
Yearlong	IRRIGATED GRAIN CROPS1		M
Yearlong	DRYLAND GRAIN CROPS1		M
Yearlong	IRRIGATED HAYFIELD1	H	H
B548 CLARK'S GREBE			
Yearlong	MODOC		
Yearlong	LASSEN		

Summer	FRESH EMERGENT WETLAND2M	H	H	L
B798 WHITE-THROATED SPARROW				
Winter	MODOC			
Winter	LASSEN			
Winter	IRRIGATED HAYFIELD1			M
B799 HARRIS'S SPARROW				
Winter	MODOC			
Winter	LASSEN			
Winter	IRRIGATED HAYFIELD1			M
M003 VAGRANT SHREW				
				7
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	M	M	M
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	H	H	H
M010 WATER SHREW				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	WET MEADOW2D	M	M	M
M018 BROAD-FOOTED MOLE				
				7
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	M	M	M

Yearlong	DRYLAND GRAIN CROPS1	M	M	M	
Yearlong	IRRIGATED HAYFIELD1	M	M	M	
Yearlong	PASTURE1	H	H	H	
Yearlong	ANNUAL GRASS1D	H	H	H	
M021 LITTLE BROWN MYOTIS					
Yearlong	MODOC				
Yearlong	LASSEN				
Summer	WET MEADOW2D				M
M023 YUMA MYOTIS					
					1
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	PASTURE1				M
Yearlong	WET MEADOW2D				M
Yearlong	ANNUAL GRASS1D				M
M027 LONG-LEGGED MYOTIS					
					1
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	WET MEADOW2D				M
M028 CALIFORNIA MYOTIS					
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	IRRIGATED GRAIN CROPS1				M
Yearlong	DRYLAND GRAIN CROPS1				M

Yearlong	IRRIGATED HAYFIELD1	M
Yearlong	PASTURE1	M
Yearlong	WET MEADOW2D	M
M029 WESTERN SMALL-FOOTED MYOTIS		
Yearlong	MODOC	
Yearlong	LASSEN	
Yearlong	WET MEADOW2D	M
M030 SILVER-HAIRED BAT		
Yearlong	MODOC	
Yearlong	LASSEN	
Yearlong	PASTURE1	M
M031 WESTERN PIPISTRELLE		
Yearlong	MODOC	
Yearlong	LASSEN	
Yearlong	WET MEADOW2D	M
Yearlong	ANNUAL GRASS1D	M
M032 BIG BROWN BAT		
Yearlong	MODOC	
Yearlong	LASSEN	
Yearlong	IRRIGATED GRAIN CROPS1	M
Yearlong	IRRIGATED HAYFIELD1	M
Summer	PASTURE1	M
Summer	FRESH EMERGENT WETLAND2M	M

Summer	WET MEADOW2D	M	
Summer	ANNUAL GRASS1D	H	
M037 TOWNSEND'S BIG-EARED BAT 1		7	1
Yearlong	MODOC		
Yearlong	LASSEN		
Summer	WET MEADOW2D	M	
M038 PALLID BAT 1		7	1
Yearlong	MODOC		
Yearlong	LASSEN		
Yearlong	PASTURE1	H	
Yearlong	ANNUAL GRASS1D	H	
M039 BRAZILIAN FREE-TAILED BAT			
Yearlong	MODOC		
Yearlong	LASSEN		
Yearlong	WET MEADOW2D	M	
Yearlong	ANNUAL GRASS1D	M	
M042 WESTERN MASTIFF BAT		7	1
Yearlong	MODOC		
Yearlong	IRRIGATED GRAIN CROPS1	M	
Yearlong	DRYLAND GRAIN CROPS1	M	
Yearlong	IRRIGATED HAYFIELD1	M	
Yearlong	PASTURE1	H	

Yearlong	FRESH EMERGENT WETLAND2M			H
Yearlong	WET MEADOW2D			H
Yearlong	ANNUAL GRASS1D			H
M043 AMERICAN PIKA				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	WET MEADOW2D	H	H	H
M050 WHITE-TAILED JACKRABBIT				
1				7
Yearlong	MODOC			
Yearlong	LASSEN			
Summer	IRRIGATED GRAIN CROPS1		L	M
Summer	DRYLAND GRAIN CROPS1		L	M
Summer	IRRIGATED HAYFIELD1		L	M
Summer	WET MEADOW2D		L	M
M051 BLACK-TAILED JACKRABBIT				
1				7
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	M	M	H
Yearlong	DRYLAND GRAIN CROPS1	M	M	H
Yearlong	IRRIGATED HAYFIELD1	M	M	H
Yearlong	PASTURE1	M	M	H
Yearlong	WET MEADOW2D		L	M

Yearlong	ANNUAL GRASS1D		L	H
M052	MOUNTAIN BEAVER	1		7
Yearlong	LASSEN			
Yearlong	WET MEADOW2D	H	H	H
M066	YELLOW-BELLIED MARMOT			
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	WET MEADOW2D	M	M	H
M069	TOWNSEND'S GROUND SQUIRREL			
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	L	M	H
Yearlong	DRYLAND GRAIN CROPS1	L	M	H
Yearlong	IRRIGATED HAYFIELD1	L	M	H
M070	BELDING'S GROUND SQUIRREL			
Yearlong	MODOC			
Yearlong	LASSEN			
Summer	IRRIGATED GRAIN CROPS1	L	M	H
Summer	DRYLAND GRAIN CROPS1	M	M	H
Summer	IRRIGATED HAYFIELD1	L	M	H
Summer	PASTURE1			H
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	M	M	M

M072 CALIFORNIA GROUND SQUIRREL

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	M	M	H
Yearlong	DRYLAND GRAIN CROPS1	M	M	H
Yearlong	IRRIGATED HAYFIELD1	M	M	H
Yearlong	PASTURE1	H	H	H
Yearlong	WET MEADOW2D	M	M	M
Yearlong	ANNUAL GRASS1D	H	H	H

M075 GOLDEN-MANTLED GROUND SQUIRREL

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	PASTURE1	M	M	M

M081 BOTTA'S POCKET GOPHER

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	H	H	H
Yearlong	DRYLAND GRAIN CROPS1	H	H	H
Yearlong	IRRIGATED HAYFIELD1	H	H	H
Yearlong	PASTURE1	H	H	H
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	H	H	H

M082 TOWNSEND'S POCKET GOPHER

Yearlong	LASSEN			
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Yearlong	WET MEADOW2D	M	M	M		
Yearlong	ANNUAL GRASS1D	M	M	M		
M083 NORTHERN POCKET GOPHER						
Yearlong	MODOC					
Yearlong	LASSEN					
Yearlong	IRRIGATED GRAIN CROPS1	H	H	H		
Yearlong	DRYLAND GRAIN CROPS1	H	H	H		
Yearlong	IRRIGATED HAYFIELD1	H	H	H		
Yearlong	PASTURE1	H	H	H		
Yearlong	WET MEADOW2D	H	H	H		
Yearlong	ANNUAL GRASS1D	H	H	H		
M085 MOUNTAIN POCKET GOPHER						
Yearlong	MODOC					
Yearlong	LASSEN					
Yearlong	IRRIGATED GRAIN CROPS1	H	H	H		
Yearlong	DRYLAND GRAIN CROPS1	H	H	H		
Yearlong	IRRIGATED HAYFIELD1	H	H	H		
Yearlong	PASTURE1	H	H	H		
Yearlong	WET MEADOW2D	H	H	H		
Yearlong	ANNUAL GRASS1D	M	M	M		
M105 CALIFORNIA KANGAROO RAT					7	1
Yearlong	MODOC					
Yearlong	LASSEN					

Yearlong	ANNUAL GRASS1D	M	M	M	
M107 PANAMINT	KANGAROO RAT				1
Yearlong	LASSEN				
Yearlong	ANNUAL GRASS1D	M	M	M	
M112 AMERICAN	BEAVER				
1					
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	FRESH EMERGENT WETLAND2M	M	M	H	
Yearlong	WET MEADOW2D				H
M113 WESTERN	HARVEST MOUSE				
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	IRRIGATED GRAIN CROPS1	M	H	H	
Yearlong	DRYLAND GRAIN CROPS1	M	H	H	
Yearlong	IRRIGATED HAYFIELD1	M	H	H	
Yearlong	PASTURE1	M	M	M	
Yearlong	FRESH EMERGENT WETLAND2M	M	M	M	
Yearlong	ANNUAL GRASS1D	H	H	H	
M117 DEER	MOUSE				7
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	IRRIGATED GRAIN CROPS1	L	M	M	
Yearlong	DRYLAND GRAIN CROPS1	M	M	M	

Yearlong	IRRIGATED HAYFIELD1	L	M	M
Yearlong	PASTURE1	M	M	M
Yearlong	FRESH EMERGENT WETLAND2M	M	M	M
Yearlong	ANNUAL GRASS1D	M	M	M

M120 PINON MOUSE

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	WET MEADOW2D		L	M
Yearlong	ANNUAL GRASS1D	L	L	H

M121 NORTHERN GRASSHOPPER MOUSE

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	WET MEADOW2D	L	M	H
Yearlong	ANNUAL GRASS1D	H	H	H

M128 BUSHY-TAILED WOODRAT

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	WET MEADOW2D	L	L	H
Yearlong	ANNUAL GRASS1D	L	L	M

M133 MONTANE VOLE

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	M	M	M

Yearlong	DRYLAND GRAIN CROPS1	M	M	M
Yearlong	IRRIGATED HAYFIELD1	M	M	M
Yearlong	PASTURE1	M	M	M
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	M	M	M

M136 LONG-TAILED VOLE

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	M	M	H
Yearlong	DRYLAND GRAIN CROPS1	M	M	H
Yearlong	IRRIGATED HAYFIELD1	M	M	H
Yearlong	PASTURE1	M	M	M
Yearlong	FRESH EMERGENT WETLAND2M	M	M	M
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	H	H	H

M139 COMMON MUSKRAT

1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H

M142 HOUSE MOUSE

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	M	M	H

Yearlong	DRYLAND GRAIN CROPS1	M	M	H
Yearlong	IRRIGATED HAYFIELD1	M	M	H
Yearlong	PASTURE1	M	M	M
Yearlong	FRESH EMERGENT WETLAND2M	M	M	M
Yearlong	WET MEADOW2D	M	M	M
Yearlong	ANNUAL GRASS1D	H	H	H

M143 WESTERN JUMPING MOUSE

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	WET MEADOW2D	H	H	H

M145 COMMON PORCUPINE

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M		L	H
Yearlong	WET MEADOW2D		L	H

M146 COYOTE
1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	L	L	M
Yearlong	DRYLAND GRAIN CROPS1	L	L	M
Yearlong	IRRIGATED HAYFIELD1	L	L	M
Yearlong	PASTURE1	L	M	H
Yearlong	FRESH EMERGENT WETLAND2M			M

Yearlong	WET MEADOW2D	L	L	H
Yearlong	ANNUAL GRASS1D	L	L	H
M147 RED FOX 1 1			4	
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	L	L	M
Yearlong	DRYLAND GRAIN CROPS1	L	L	M
Yearlong	IRRIGATED HAYFIELD1	L	L	M
Yearlong	WET MEADOW2D			H
M148 KIT FOX		1	4	
Yearlong	LASSEN			
Yearlong	PASTURE1	M	M	M
Yearlong	ANNUAL GRASS1D	M	M	M
M149 GRAY FOX 1				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1		L	M
Yearlong	DRYLAND GRAIN CROPS1		L	M
Yearlong	IRRIGATED HAYFIELD1		L	M
Yearlong	PASTURE1	L	L	H
Yearlong	FRESH EMERGENT WETLAND2M	L	L	H
Yearlong	WET MEADOW2D	L	L	H
Yearlong	ANNUAL GRASS1D			M

M151 BLACK BEAR

1

Yearlong	MODOC		
Yearlong	LASSEN		
Yearlong	PASTURE1		H
Yearlong	WET MEADOW2D		H
Yearlong	ANNUAL GRASS1D		H

M152 RINGTAIL

5

Yearlong	MODOC		
Yearlong	LASSEN		
Yearlong	WET MEADOW2D		M

M153 RACCOON

1

Yearlong	MODOC		
Yearlong	LASSEN		
Yearlong	IRRIGATED GRAIN CROPS1	L	M
Yearlong	IRRIGATED HAYFIELD1	L	M
Yearlong	PASTURE1		M
Yearlong	FRESH EMERGENT WETLAND2M	L	H
Yearlong	WET MEADOW2D	L	M

M154 AMERICAN MARTEN

7

1

Yearlong	MODOC		
Yearlong	LASSEN		
Yearlong	PASTURE1		M

Yearlong	WET MEADOW2D			H
M156 ERMINE				
1				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	PASTURE1	L	L	M
Yearlong	WET MEADOW2D	L	L	H
M157 LONG-TAILED WEASEL				
1				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	L	L	M
Yearlong	DRYLAND GRAIN CROPS1	L	L	M
Yearlong	IRRIGATED HAYFIELD1	L	L	M
Yearlong	PASTURE1	L	L	M
Yearlong	WET MEADOW2D	M	M	H
Yearlong	ANNUAL GRASS1D	L	L	H
M158 AMERICAN MINK				
1				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
M159 WOLVERINE				
1				
Yearlong	LASSEN			45

Yearlong	WET MEADOW2D			M
M160 AMERICAN BADGER				
1				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	L	L	M
Yearlong	DRYLAND GRAIN CROPS1	L	L	M
Yearlong	IRRIGATED HAYFIELD1	L	L	M
Yearlong	PASTURE1	M	M	M
Yearlong	ANNUAL GRASS1D	H	H	H
M161 WESTERN SPOTTED SKUNK				
1				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1		L	M
Yearlong	DRYLAND GRAIN CROPS1		L	M
Yearlong	IRRIGATED HAYFIELD1		L	M
Yearlong	PASTURE1			M
Yearlong	WET MEADOW2D	L	L	M
Yearlong	ANNUAL GRASS1D	L	L	M
M162 STRIPED SKUNK				
1				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1		L	H

Yearlong	DRYLAND GRAIN CROPS1		L	H	
Yearlong	IRRIGATED HAYFIELD1		L	H	
Yearlong	PASTURE1	L	L	H	
Yearlong	FRESH EMERGENT WETLAND2M	M	M	H	
Yearlong	WET MEADOW2D	M	M	H	
Yearlong	ANNUAL GRASS1D	L	L	H	
M163	NORTHERN RIVER OTTER				7 1
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	FRESH EMERGENT WETLAND2M		M	H	
M165	MOUNTAIN LION				7
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	WET MEADOW2D	L	L	M	
M166	BOBCAT				
1					
Yearlong	MODOC				
Yearlong	LASSEN				
Yearlong	IRRIGATED GRAIN CROPS1			M	
Yearlong	DRYLAND GRAIN CROPS1			M	
Yearlong	IRRIGATED HAYFIELD1			M	
Yearlong	FRESH EMERGENT WETLAND2M	L	L	M	
Yearlong	WET MEADOW2D	L	L	M	
Yearlong	ANNUAL GRASS1D	L	L	M	

M174 FERAL HORSE

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	PASTURE1	H	H	H
Yearlong	WET MEADOW2D	H	H	H
Yearlong	ANNUAL GRASS1D	H	H	H

M175 FERAL ASS

Yearlong	LASSEN			
Yearlong	PASTURE1	M	M	M

M177 ELK
1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1			H
Yearlong	DRYLAND GRAIN CROPS1			H
Yearlong	IRRIGATED HAYFIELD1			H
Yearlong	PASTURE1			H
Yearlong	FRESH EMERGENT WETLAND2M	M	M	H
Yearlong	WET MEADOW2D	M	M	H

M181 MULE DEER
1

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1			M

Yearlong	DRYLAND GRAIN CROPS1			M
Yearlong	IRRIGATED HAYFIELD1			M
Yearlong	PASTURE1	L	L	M
Yearlong	WET MEADOW2D	L	L	M
Yearlong	ANNUAL GRASS1D			M
M182 PRONGHORN				
1				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	PASTURE1	H	H	H
Yearlong	ANNUAL GRASS1D	H	H	H
R004 WESTERN POND TURTLE				
1				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
Yearlong	WET MEADOW2D	M	M	M
Summer	ANNUAL GRASS1D	M	M	M
R051 RACER				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	PASTURE1	M	M	M
Yearlong	FRESH EMERGENT WETLAND2M	M	M	M
Yearlong	WET MEADOW2D	M	M	M

Yearlong	ANNUAL GRASS1D	H	H	H
R057 GOPHER SNAKE				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	DRYLAND GRAIN CROPS1	M	M	M
Yearlong	PASTURE1	H	H	H
Yearlong	WET MEADOW2D	M	M	M
Yearlong	ANNUAL GRASS1D	H	H	H
R058 COMMON KINGSNAKE				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	DRYLAND GRAIN CROPS1	M	M	M
Yearlong	PASTURE1	M	M	M
Yearlong	FRESH EMERGENT WETLAND2M	M	M	M
Yearlong	WET MEADOW2D	M	M	M
Yearlong	ANNUAL GRASS1D	M	M	M
R059 CALIFORNIA MOUNTAIN KINGSNAKE			6	7
1				
Yearlong	LASSEN			
Yearlong	WET MEADOW2D	H	H	H
R060 LONG-NOSED SNAKE				
Yearlong	LASSEN			
Yearlong	ANNUAL GRASS1D	M	M	M
R061 COMMON GARTER SNAKE		1	3	5 6 7

Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	IRRIGATED GRAIN CROPS1	M	M	M
Yearlong	PASTURE1	M	M	M
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
Yearlong	ANNUAL GRASS1D	H	H	H
R062 WESTERN TERRESTRIAL GARTER SNAKE				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
Yearlong	ANNUAL GRASS1D	M	M	M
R063 WESTERN AQUATIC GARTER SNAKE		2	4	
Yearlong	LASSEN			
Yearlong	FRESH EMERGENT WETLAND2M	H	H	H
Yearlong	WET MEADOW2D	H	H	H
R076 WESTERN RATTLESNAKE				
Yearlong	MODOC			
Yearlong	LASSEN			
Yearlong	ANNUAL GRASS1D	M	M	M

Total Number of Species:235

CALIFORNIA WILDLIFE HABITAT RELATIONSHIPS SYSTEM

4/15/2003

Supported by

CALIFORNIA INTERAGENCY WILDLIFE TASK GROUP

and maintained by the

CALIFORNIA DEPARTMENT OF FISH AND GAME

Database Version: 8.0

WEIGHTED HABITAT VALUE COMPARISON REPORT

The results of this report are meant to indicate trends only. The numerical calculations are not intended to represent any generally accepted method of habitat evaluation (e.g. HEP).

Predictions should be validated with field surveys by a professional wildlife biologist.

ID	Species Name	Difference
	Condition 1 Habitat Suitability Values	Condition 1 Sum of Weighted Values
	Condition 2 Habitat Suitability Values	Condition 2 Sum of Weighted Values
B519	RED-WINGED BLACKBIRD	-40.
*10*10	*10	80.0
*10*10	3	39.9
B199	COMMON SNIPE	-33.
*10*10	4	63.2
*10*10	4	29.4
B522	YELLOW-HEADED BLACKBIRD	-33.
2 *10	*102	61.0
*10*10	2	27.2
B091	RING-NECKED DUCK	-25.
*10*10		50.0
*10*10		25.0
B145	VIRGINIA RAIL	-25.
*10*10		50.0
*10*10		25.0

B146 SORA		-25.
*10*10	50.0	
*10*10	25.0	
B505 SONG SPARROW		-25.
*10*10	50.0	
*10*10	25.0	
R063 GARTER SNAKE		-25.
	50.0	
	25.0	
B168 WILLET		-24.
*7 4 4	44.4	
*7 4 4	19.8	
A044 MOUNTAIN YELLOW-LEGGED FROG		-24.
*10*7	47.3	
*10*7	23.3	
M043 AMERICAN PIKA		-22.
*10	42.0	
*10	20.0	
M143 WESTERN JUMPING MOUSE		-22
*10	42.0	
*10	20.0	
R059 CALIFORNIA MOUNTAIN KINGSNAKE		-22.
*10	42.0	
*10	20.0	
B510 WHITE-CROWNED SPARROW		-21.
*8 4	45.5	
*8 4	24.2	

M156	ERMINE		-20.
*4	*6	31.9	
*6		11.0	
B158	KILLDEER		-20.
*10		30.0	
*10		10.0	
M153	RACCOON		19.
2	3 4 3	31.7	
3	4 3	12.1	
B512	DARK-EYED JUNCO		-18.
2	4	22.4	
2		4.40	
B200	WILSON'S PHALAROPE		17.
*7	*8 *8	57.3	
*7	*8 *8 3	39.8	
A042	CASCADES FROG		-17.
*8		32.8	
*8		15.6	
B137	SAGE GROUSE		-17.
*8		32.8	
*8		15.6	
B267	NORTHERN PYGMY OWL		-17.
3	3	23.8	
3		6.60	
M066	YELLOW-BELLIED MARMOT		-16.
*8		32.3	
*8		15.4	

B191 DUNLIN	-16.
3 7	22.7
3 4	6.10
B094 LESSER SCAUP	-16.
*7 *4	31.6
*7 *4	15.6
B185 LEAST SANDPIPER	-15.
7 7	25.5
7 7	10.1
B409 NORTHERN SHRIKE	-15.
6 6	39.6
6 4 4	24.2
B183 WESTERN SANDPIPER	-15.
6 7	24.5
6 7	9.50
B197 LONG-BILLED DOWITCHER	-15.
6 7	24.5
6 7	9.50
B369 HOUSE WREN	-14.
7	28.1
7	13.4
A041 SPOTTED FROG	-14.
*7	27.7
*7	13.2
B163 BLACK-NECKED STILT	-14.
*4 *7	23.3
*4 *7	8.80

B164 AMERICAN AVOCET		-14.
*4 *7	23.3	
*4 *7	8.80	
B170 SPOTTED SANDPIPER		-14.
*7	27.7	
*7	13.2	
B477 LAZULI BUNTING		-14.
*7	27.7	
*7	13.2	
M010 WATER SHREW		-14.
*7	27.7	
*7	13.2	
B235 BLACK TERN		-13.
3 *10 4	35.1	
3 *10 *10	21.6	
B547 HOUSE SPARROW		-13.
7	20.1	
2 2	6.60	
B176 MARBLED GODWIT		-13.
4	13.2	
	0.00	
M075 GOLDEN-MANTLED GROUND SQUIRREL		-13.
*7	13.2	
	0.00	
M085 MOUNTAIN POCKET GOPHER		-12.
*10*10 *10	92.0	
*10*10 *10*7	79.7	

M154 AMERICAN MARTEN	-11.
2 3	18.3
3	6.60
B053 SNOWY EGRET	-11.
*9 4	20.3
*9 4	8.90
M145 COMMON PORCUPINE	-11.
4 4	22.0
4 4	11.0
B351 BLACK-BILLED MAGPIE	-10.
3 3	23.8
3 3	13.2
B381 MOUNTAIN BLUEBIRD	-10.
3 3	23.8
3 2 2	13.2
B173 LONG-BILLED CURLEW	-10.
*106 *10	76.4
*106 7 7	66.4
A043 FOOTHILL YELLOW-LEGGED FROG	-9.7
4	18.5
4	8.80
B289 CALLIOPE HUMMINGBIRD	-9.7
4	18.5
4	8.80
B315 WILLOW FLYCATCHER	-9.7
4	18.5
4	8.80

B390 VARIED THRUSH	-9.7
4	18.5
4	8.80
M165 MOUNTAIN LION	-9.7
*4	18.5
*4	8.80
B491 BREWER'S SPARROW	-9.2
2 4	22.4
2 4	13.2
M028 CALIFORNIA MYOTIS	-9.2
2 2 2	20.2
2 2 2	11.0
B105 COMMON MERGANSER	-8.9
3 6	18.3
3 6	9.40
B216 HERRING GULL	-8.8
4	13.2
4	4.40
B524 BREWER'S BLACKBIRD	-8.7
*10*6 *7	66.2
*10*6 *7 *7 3	57.5
B062 WHITE-FACED IBIS	-8.6
*7 3	15.2
*7 3	6.60
M181 MULE DEER	-8.6
*4 *4 2	33.9
*4 2 2 2	25.3

B150 SANDHILL CRANE	-8.5
*10*10 *8	73.1
*10*10 *7 *7 4	64.6
B543 LESSER GOLDFINCH	-8.1
2 4	22.4
2 2	14.3
B494 VESPER SPARROW	-7.7
*6	16.5
4	8.80
B291 RUFOUS HUMMINGBIRD	-7.3
3	13.9
3	6.60
M050 WHITE-TAILED JACKRABBIT	-7.3
3 3	23.8
3 3 3	16.5
B075 CANADA GOOSE	-6.6
*10*10 *8	73.4
*10*10 7 *8	66.8
B128 MERLIN	-6.6
2 2 6	27.5
2 2 6 2	20.9
B389 AMERICAN ROBIN	-6.6
2	6.60
	0.00
B509 GOLDEN-CROWNED SPARROW	-6.6
2	6.60
	0.00

B798 WHITE-THROATED SPARROW	-6.6
2	6.60
	0.00
B799 HARRIS'S SPARROW	-6.6
2	6.60
	0.00
B113 BALD EAGLE	-5.5
2 2	11.0
2 2	5.50
M133 MONTANE VOLE	-5.5
*7 *10 *7	75.0
*10*7 *7 *7	69.5
M162 STRIPED SKUNK	-5.4
*6 *8 *8 4	62.7
*8 *8 4 4 *6	57.3
B070 GREATER WHITE-FRONTED GOOSE	-5.3
4 7 7	44.0
4 7 7 4	38.7
B071 SNOW GOOSE	-5.3
4 7 7	44.0
4 7 7 4	38.7
B072 ROSS' GOOSE	-4.9
4 6 7	43.0
4 6 7 4	38.1
B274 NORTHERN SAW-WHET OWL	-4.8
2	9.20
2	4.40

B281 VAUX'S SWIFT		-4.8
2	9.20	
2	4.40	
B536 PURPLE FINCH		-4.8
2	9.20	
2	4.40	
M021 LITTLE BROWN MYOTIS		-4.8
2	9.20	
2	4.40	
M027 LONG-LEGGED MYOTIS		-4.8
2	9.20	
2	4.40	
M029 WESTERN SMALL-FOOTED MYOTIS		-4.8
2	9.20	
2	4.40	
M037 TOWNSEND'S BIG-EARED BAT		-4.8
2	9.20	
2	4.40	
M152 RINGTAIL		-4.8
2	9.20	
2	4.40	
M030 SILVER-HAIRED BAT		-4.4
2	4.40	
	0.00	
B125 ROUGH-LEGGED HAWK		-4.0
7 4 2	33.7	
4 2 4	29.7	

B506 LINCOLN'S SPARROW		-3.5
*104	45.5	
*104 4	42.0	
B338 PURPLE MARTIN		-3.2
3 3 3	26.4	
3 3 3	23.2	
B006 PIED-BILLED GREBE		-3.0
*10	8.00	
*10	5.00	
B009 EARED GREBE		-3.0
*10	8.00	
*10	5.00	
B049 AMERICAN BITTERN		-3.0
*10	8.00	
*10	5.00	
B050 LEAST BITTERN		-3.0
*10	8.00	
*10	5.00	
B059 BLACK-CROWNED NIGHT HERON		-3.0
*10		
	8.00	
*10	5.00	
B083 CINNAMON TEAL		-3.0
*10	8.00	
*10	5.00	
B107 RUDDY DUCK		-3.0
*10	8.00	
*10	5.00	

B149 AMERICAN COOT		-3.0
4 *10 7	46.6	
4 *10 *104	43.6	
B372 MARSH WREN		-3.0
*10	8.00	
*10	5.00	
M139 COMMON MUSKRAT		-3.0
*10	8.00	
*10	5.00	
M158 AMERICAN MINK		-3.0
*10	8.00	
*10	5.00	
M051 BLACK-TAILED JACKRABBIT		-2.9
*8 3 *8	52.4	
3 *8 *8 4	49.5	
B082 BLUE-WINGED TEAL		-2.6
*9	7.10	
*9	4.50	
B089 CANVASBACK		-2.6
*9	7.10	
*9	4.50	
B520 TRICOLORED BLACKBIRD		-2.6
*7 *10 3	45.6	
*7 *10 3 3 3	43.0	
B010 WESTERN GREBE		-2.3
*8	6.20	
*8	3.90	

B090 REDHEAD		-2.3
*8	6.20	
*8	3.90	
B548 CLARK'S GREBE		-2.3
*8	6.20	
*8	3.90	
M163 NORTHERN RIVER OTTER		-1.6
6	4.40	
6	2.80	
B542 PINE SISKIN		-1.5
2 2	15.8	
2 2	14.3	
B104 HOODED MERGANSER		-1.3
4	3.50	
4	2.20	
M146 COYOTE		-1.2
*7 *6 2 *4	51.3	
*6 2 *4 *4 *6	50.1	
B339 TREE SWALLOW		-1.0
3 7 3	29.2	
3 7 3 3	28.2	
B110 OSPREY		-0.9
3	2.60	
3	1.70	
B124 FERRUGINOUS HAWK		-0.9
7 3	27.3	
3 4	26.4	

M157 LONG-TAILED WEASEL	-0.9
*4 *8 *4	54.3
*8 *4 *4 *6	53.4
B293 BELTED KINGFISHER	-0.7
2	1.80
2	1.10
B321 BLACK PHOEBE	-0.3
4 6 4	36.1
4 6 4 *4	35.8

How the seral stage values are calculated:

Each preference value is translated from the letter codes H, M, L and blank to numeric codes 1, 0.66, 0.33 and 0 respectively. The preference values for reproduction, feeding, and cover are averaged using the method you selected during the query process (geometric or arithmetic). For display purposes the resulting mean is multiplied by 10 to produce a value between 1 and 10 as the overall rating for the habitat/seral stage combination. When a stage is not rated for a species, it will not be displayed on this report. As a result, the number of stage ratings may not equal the number of stages selected in the query process. An asterisk denotes a reproductive value is included in the habitat/seral stage rating. See the CWHR documentation for further information.

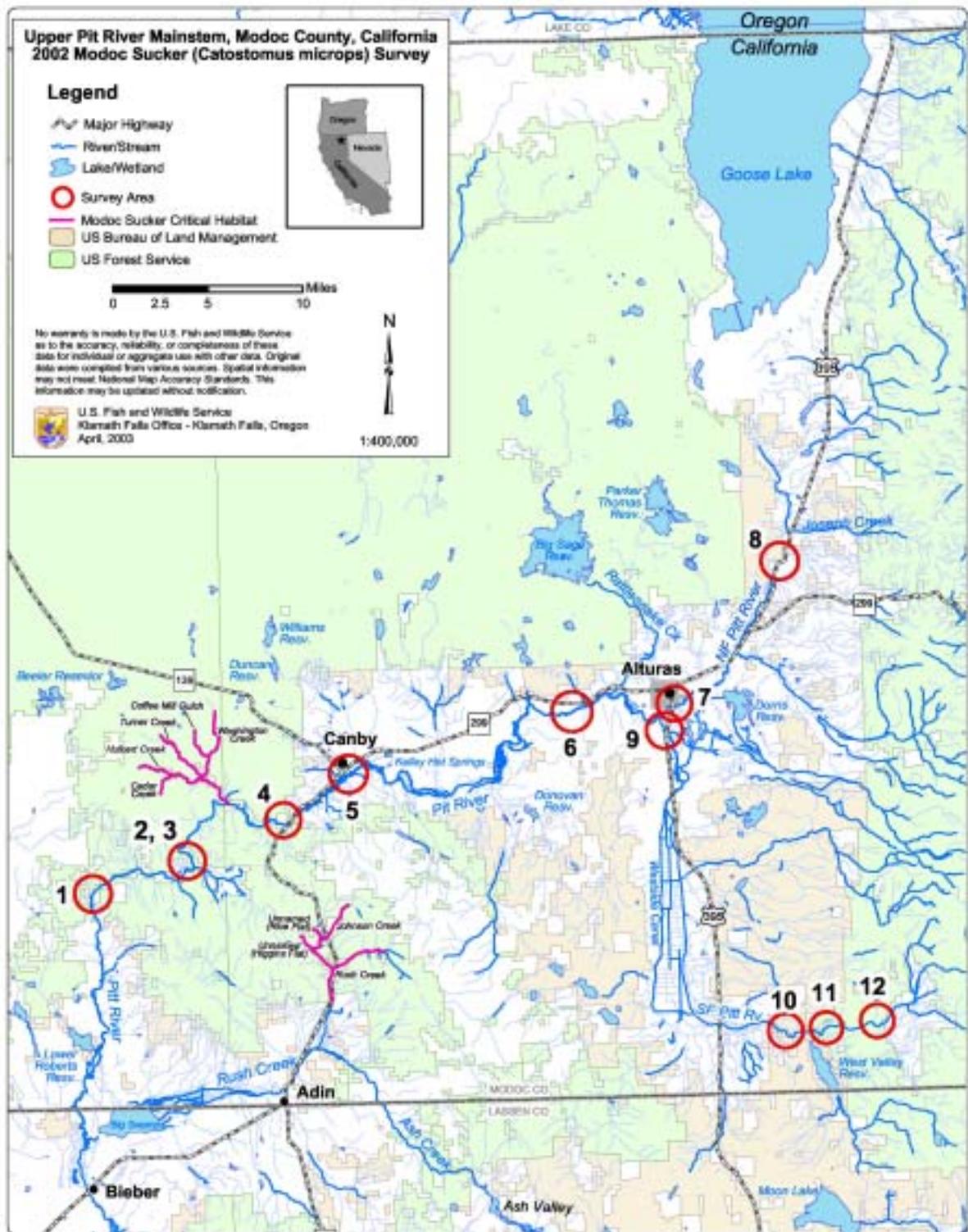
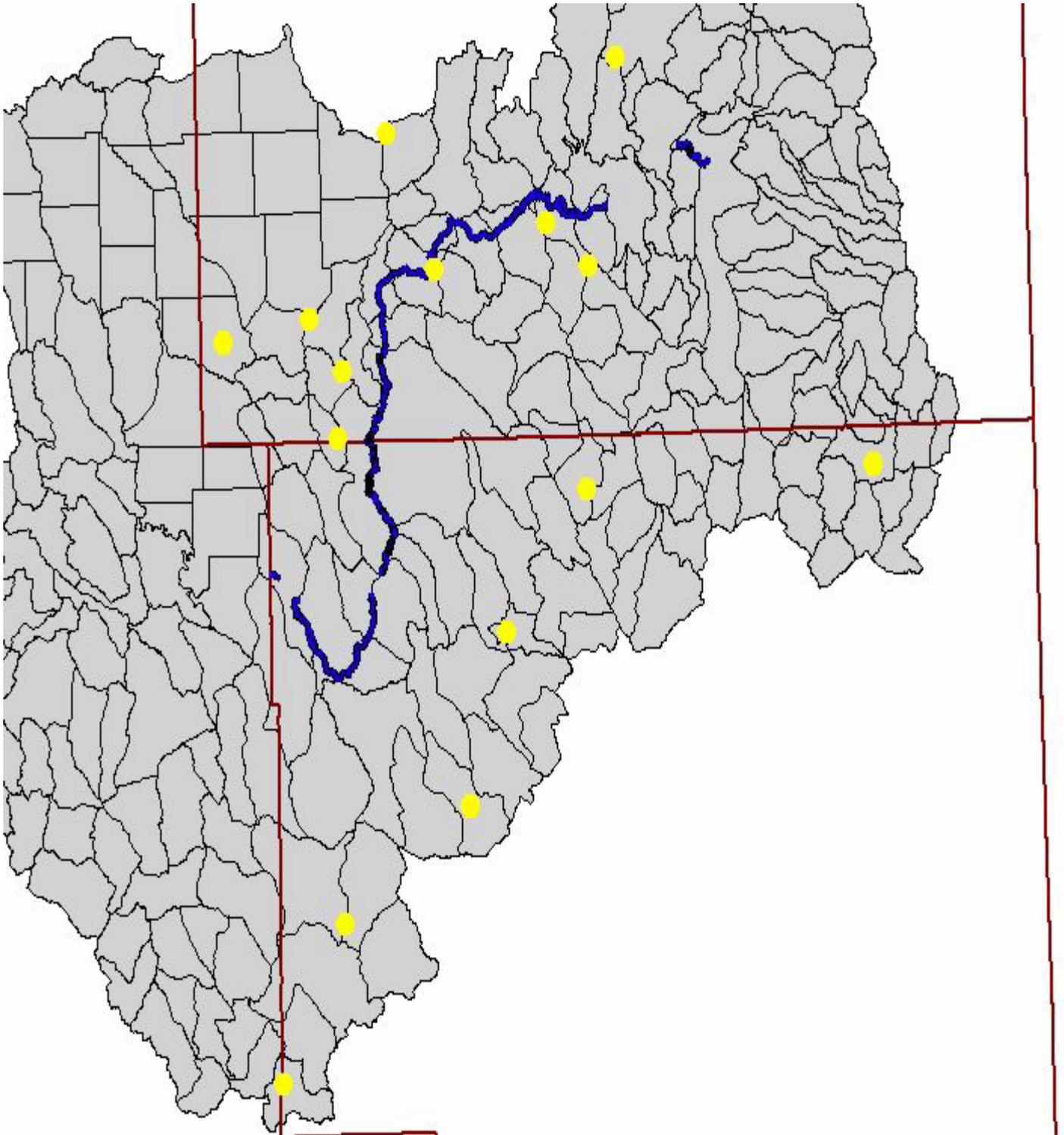


Figure 1. Map of upper Pit River watershed and fish survey sites. Survey sites are numbered.

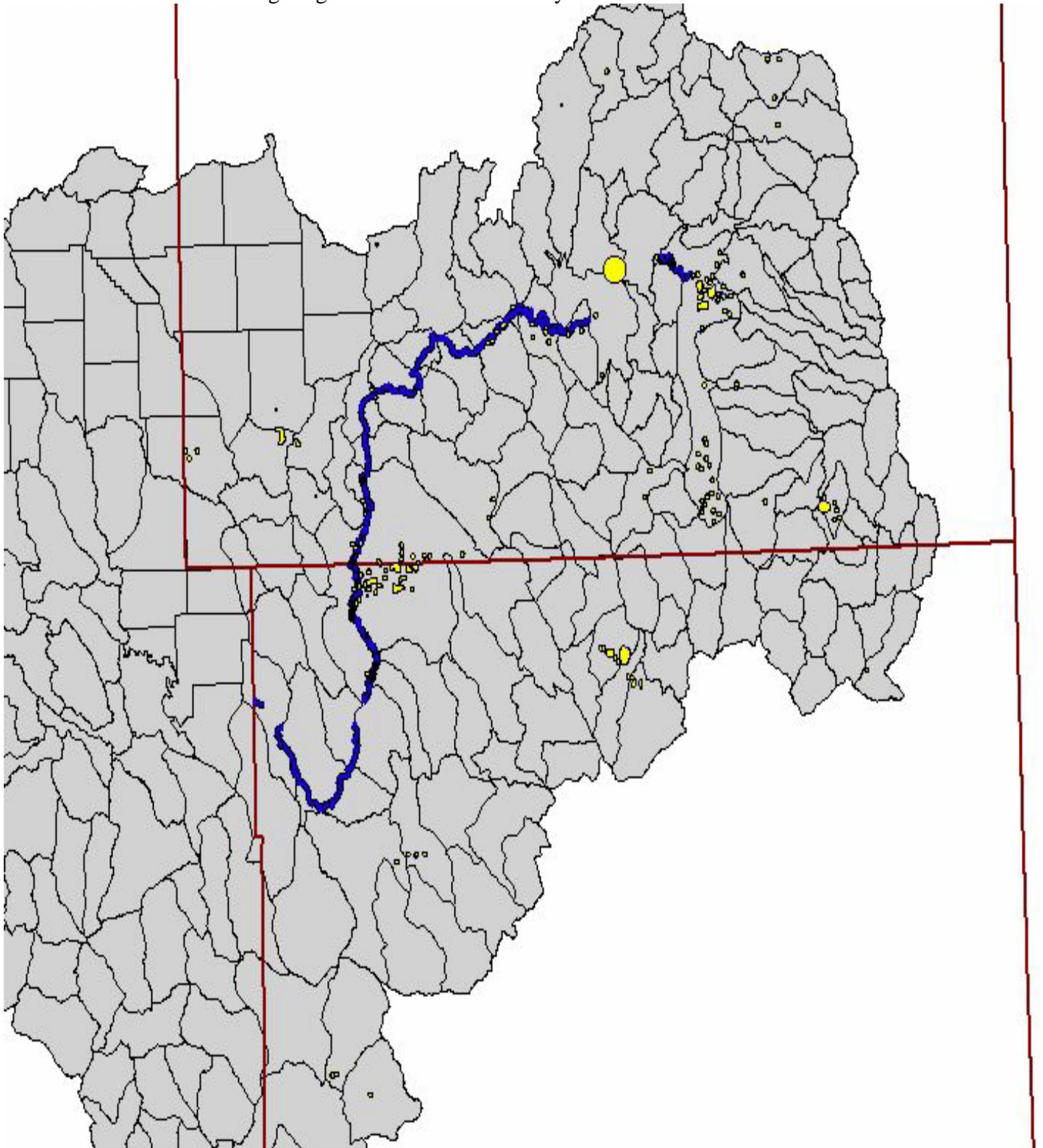
Common Name		SITE:	1	2	3	4	5	6	7	8	9	10	11	12
Petromyzonidae														
Pit brook lamprey	<i>Lampetra lethophaga</i>		X	-	-	-	-	X	-	X	-	X	X	X
Salmonidae														
Redband/rainbow trout	<i>Onchorhynchus mykiss</i>		-	-	-	-	-	-	-	-	-	X	X	-
Brown trout (introduced)	<i>Salmo trutta</i>		-	-	-	-	-	-	-	-	-	X	X	X
Cyprinidae														
Sacramento pikeminnow	<i>Ptychocheilus grandis</i>		X	X	X	X	X	X	X	-	X	X	X	X
Hardhead	<i>Mylopharodon conocephalus</i>		X	X	X	X	X	X	-	-	-	-	-	-
Tui chub	<i>Siphateles thalasinnus</i>		-	-	X	X	X	X	-	-	X	-	X	X
Speckled dace	<i>Rhinichthys osculus</i>		-	-	-	-	-	-	-	X	-	-	-	X
Pit Roach	<i>Lavinia symmetricus</i>		-	-	-	-	-	-	-	-	-	-	-	-
Golden shiner (introduced)	<i>Notemigonus chrysoleucas</i>		-	X	-	-	X	-	-	-	-	-	-	-
Catostomidae														
Sacramento sucker	<i>Catostomus occidentalis</i>		X	X	X	X	X	X	X	-	-	X	X	X
Ictaluridae														
Channel Catfish (introduced)	<i>Ictalurus punctatus</i>		-	-	-	-	-	-	-	-	-	-	-	-
Brown bullhead (introduced)	<i>Ameiurus nebulosus</i>		-	-	-	X	X	-	X	-	X	-	-	-
Centrarchidae														
Sacramento perch (introduced)	<i>Archoplites interruptus</i>		-	-	-	-	-	X	X	-	X	X	-	-
Largemouth bass (introduced)	<i>Micropterus dolomieu</i>		-	-	-	-	-	-	-	-	-	-	-	-
Green sunfish (introduced)	<i>Lepomis cyanellus</i>		X	X		X	X	X	X	-	X	-	-	-
Bluegill (introduced)	<i>Lepomis macrochirus</i>		-	X	-	-	-	X	-	-	-	-	-	-
Cottidae														
Pit sculpin	<i>Cottus pitensis</i>		-	-	-	-	-	-	-	-	-	X	X	X

Appendix 4 - Wildlife Maps

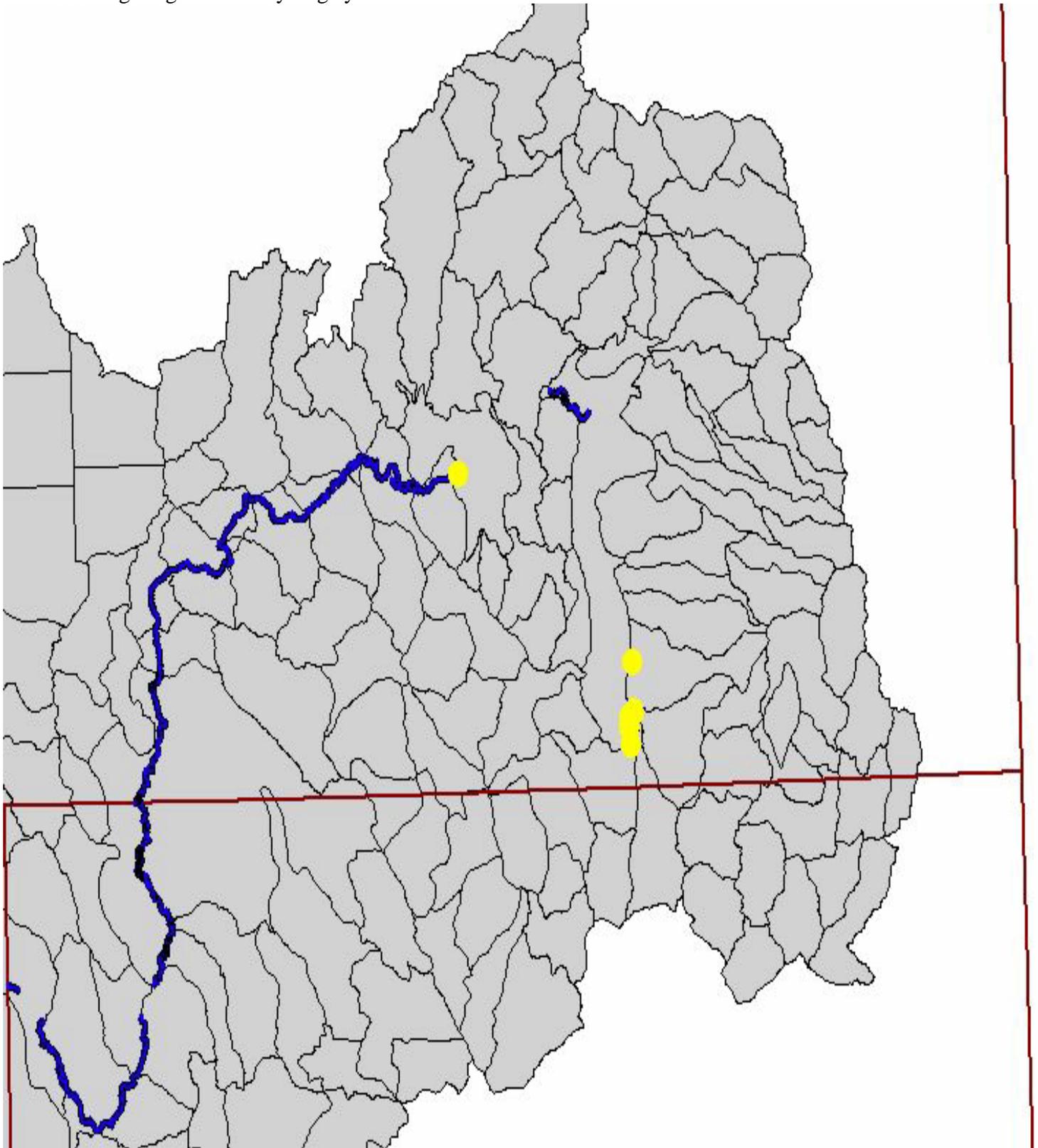
Bald Eagle sightings marked in yellow



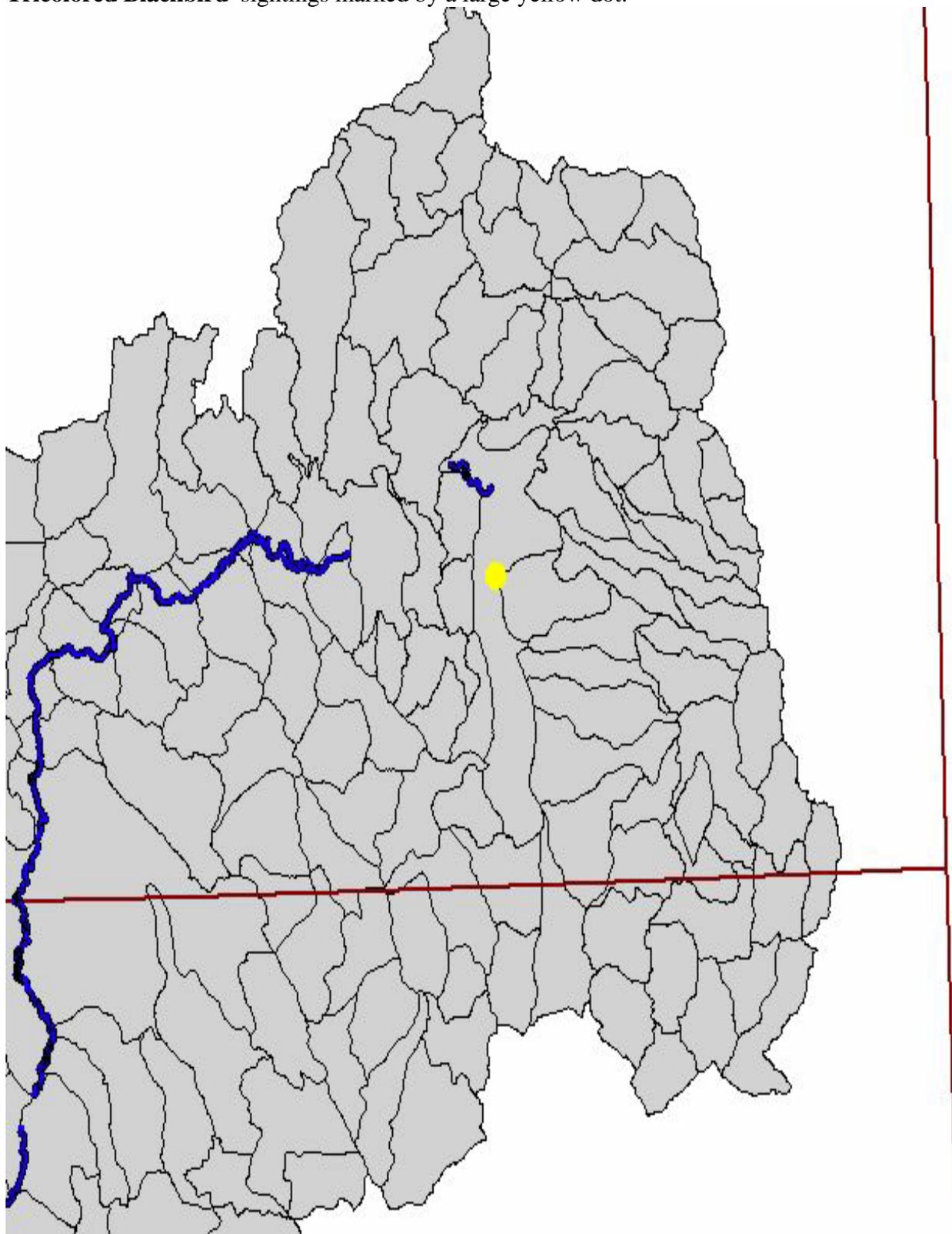
Greater Sandhill Cranes sightings are marked with small yellow.



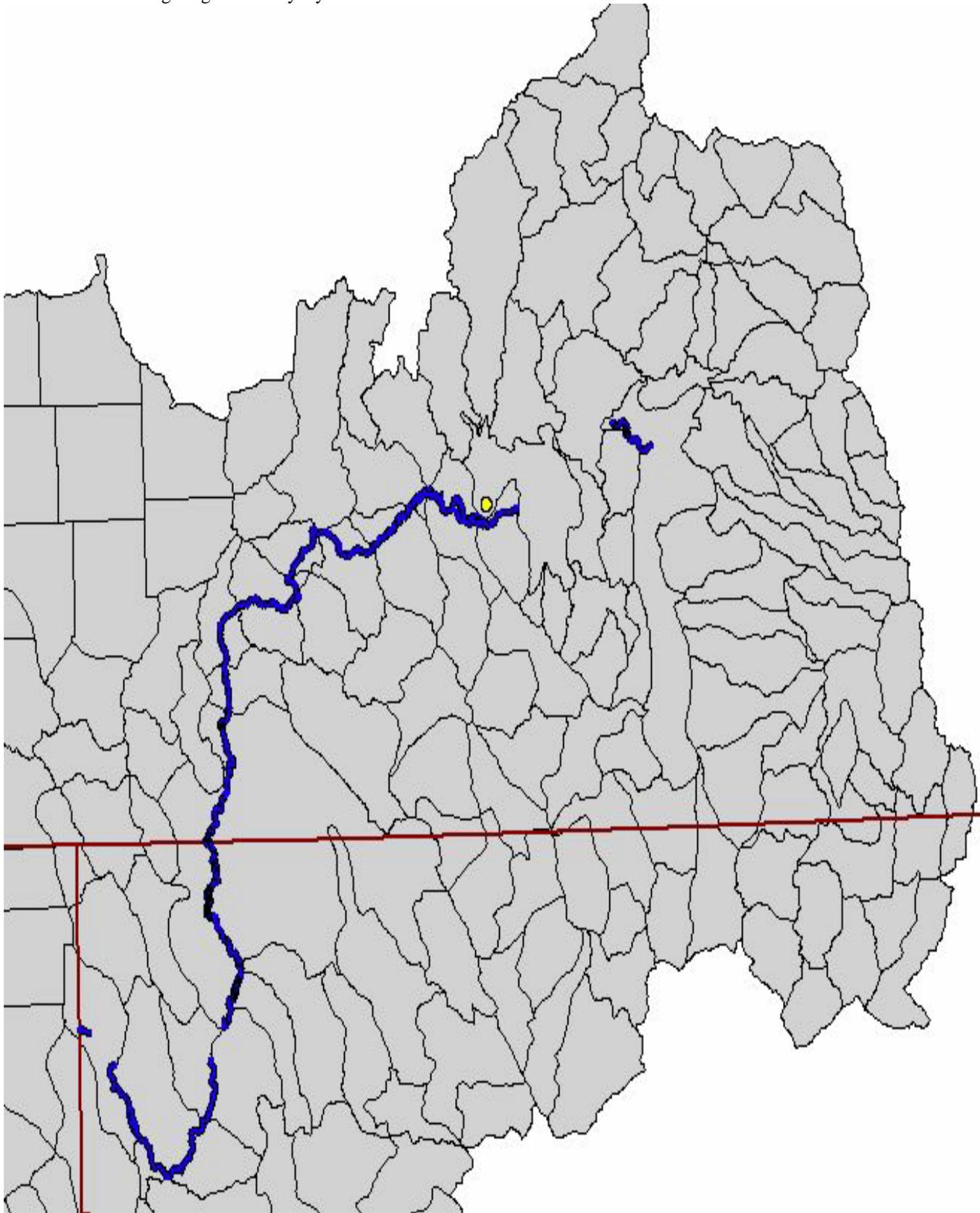
Pit Roach sightings marked by large yellow dots.



Tricolored Blackbird sightings marked by a large yellow dot.



White Faced Ibis sighting marked by a yellow dot.



BIRDS OF MODOC NWR **ANNOTATED CHECK LIST**

INTRODUCTION

Modoc National Wildlife Refuge (NWR), established in 1960, is located three miles southeast of Alturas, California in Modoc County. The refuge is one of a chain of refuges along the Pacific Flyway that extends from Canada to Mexico. The primary purpose of the refuge is waterfowl production and maintenance. The lands which make up the refuge were purchased with funds collected through sales of Migratory Bird Hunting and Conservation Stamps.

Modoc NWR consists of 7,021 acres surrounding the confluence of the north and south forks of the Pit River. Lying at an elevation of 4,365 feet, the refuge is situated on the western edge of the Great Basin, with the Warner Mountain range on the east and the Adin Mountain range on the west. Several different habitat types are represented at Modoc NWR including: marshlands, ponds, farmland and irrigated meadows, sagebrush upland, and riparian areas. This habitat diversity supports a wide range of wildlife.

Bird populations vary greatly in abundance and diversity according to the season. Large concentrations of waterfowl visit the refuge during the spring and fall migrations, with a portion of these remaining through the breeding season. The best opportunities to observe the greatest diversity of bird life at Modoc NWR is during May and September. Visitors are encouraged to contact the refuge headquarters for up to date information on current wildlife viewing opportunities.

A total of 246 bird species have been observed on Modoc NWR, including 22 accidental species. At least 77 species have been documented as nesting on the refuge and 17 more are suspected nesters. Of all the species listed, two are classified as Endangered and 37 are 'Sensitive Species' or 'Species of Special Concern'. The latter categories are species which are classified by the U.S. Fish and Wildlife Service (USFWS) and/or the California Department of Fish and Game (CDFG) as species which could become federally listed as Endangered or Threatened in the foreseeable future without active management and/or removal of threats.

The following list includes species which have been observed by refuge personnel and other observers since the establishment of Modoc NWR in 1960. The list should not be considered final, and continued observations will add to its accuracy.

All observations are appreciated and encouraged, and should be reported to refuge headquarters as soon as possible.

Names in this checklist are in accordance with the Seventh American Ornithologists' Union Checklist of North American Birds (1998).

This annotated checklist has been prepared in order to offer concise information on all bird species found on Modoc NWR. Over twenty years of census data and observations made by qualified refuge personnel and/or birders was compiled within this checklist. This check list was last updated in September of 2001.

The following is a list of individuals who are thanked for their efforts in providing sighting records and documentation for this checklist.

Bloom, Clark - Modoc NWR Refuge Manager, 1974-1992.
Bloom, Lois - Modoc NWR Refuge Volunteer, 1974-1992.
Butcher, Larry - Modoc NWR Biological Technician 2001.
Dudley, Sue - Modoc NWR Biological Technician 1978.
French, Blair - Modoc NWR Biological Technician 1988.
Hardt, David - Modoc NWR Asst. Refuge Manager 1988-1992.
Johnson, Richard - Professor of Ornithology, Washington State University.
Kelso, Sue - Modoc NWR Biological Technician 1979.
Kislingbury, Craig - Modoc NWR Biological Technician 1980-1982.
Langham, Jeri - Professor, Sacramento State University.
Larochelle, Larry - Modoc NWR Refuge Manager 1967-1970.
LaVoie, Amy - Modoc NWR Office Automation 2000-2001.
Laymon, Steve - Ornithologist, Redding, CA.
Markley, Chester - Modoc NWR Refuge Manager 1963-1966.
McCarthy, Clint - Wildlife Biologist, Modoc National Forest, 1988-19??.
McGonigal, Diane - Modoc NWR Refuge Volunteer 1985.
McLaury, Eldon - Sheldon-Hart Mt. Refuges, Asst. Project Leader 1974-1978.
Melanson, Tom - Modoc NWR Asst. Refuge Manager, 1983-1988.
Moore, Bob - Taxidermist/Amateur Ornithologist, Alturas, CA.
Radke, Marcia - Modoc NWR Refuge Volunteer 1983-1987.
Radke, Bill - Modoc NWR Biological Technician 1983, Refuge Assistant 1984-1987.
Ronnie Ryno - Modoc NWR Assistant Manager 1992-1999
Shoneman, Chris - Modoc Refuge Manager (Detail) September 2001.
Steele, Paul - Modoc NWR Refuge Manager 1960-1963.
Studinske, George - Wildlife Biologist, Modoc National Forest 1974-Present.
Tomaszewski, Alan - Biological Technician 1999, Refuge Volunteer 2000-2001.
Voget, Ken - Sheldon-Hart Mt. Refuges, Asst. Project Leader 1978-1989.
Walcott, Patty - Modoc NWR Wildlife Biologist 1999 to Present
Yeates, Rick - Modoc NWR Biological Technician 1982.

SEASON OF OCCURRENCE

SPRING: March, April, May

SUMMER: June, July, August

FALL: September, October, November

WINTER: December, January, February

STATUS

PERMANENT RESIDENT: Species that remain on the refuge throughout the year.

SUMMER RESIDENT: Species that remain on the refuge during the summer months.

WINTER RESIDENT: Species that occur on the refuge during the winter months.

MIGRANT: Species that occur on the refuge during migration periods, may remain on the refuge for short periods of time.

VAGRANT: Species that occur on the refuge irregularly. Refuge is not within species normal range.

RELATIVE ABUNDANCE

COMMON: Easily found in the proper habitats during the appropriate seasons.

UNCOMMON: Found in low densities throughout the proper habitats during the appropriate seasons.

OCCASIONAL: May or may not be found with difficulty in the proper habitats during the appropriate seasons.

RARE: Not to be expected annually, occurrence is unpredictable.

ACCIDENTAL: Out of its normal range or habitat. Fewer than three total records on the refuge.

LOONS

Common Loon (*Gavia immer*) Rare migrant and winter resident. Listed as a Sensitive Species by the USFWS, and as a Species of Special Concern by the CDFG. Observations of this species occur about every third year. This species uses the Pit River channel and deep ponds on the refuge. Tule Lake NWR, about 70 miles northwest of Modoc NWR, reports this species as uncommon to rare year round. One common loon was observed on Teal Pond in a mixed group of waterfowl in January 1984 (Bloom, 1984). A hunter collected an individual in winter plumage in the South Hunt Area in November 1985 (Bloom, 11/19/85).

GREBES

Horned Grebe (*Podiceps auritus*) Rare migrant. This is the least common grebe present on the refuge and has only been observed on rare occasions. It utilizes the larger ponds on Modoc NWR for short periods of time during migration. Does not nest on the refuge.

Eared Grebe (*Podiceps nigricollis*) Common summer resident. This species appears to be increasing in number as a nesting bird on the refuge. During the summer of 1983, 55 nests were located on Goose Pond and four on Teal Pond. The species nests in loose colonies, and uses mats of aquatic vegetation nest material. All nests were located in about three feet of water. When disturbed, this species does not dive, but rather swims to a safe distance.

Pied-billed Grebe (*Podilymbus podiceps*) Common permanent resident. This species is a regular nester throughout the marsh areas and pond margins on the refuge. Nests have been located on Teal Pond, Wigeon Pond, Goose Pond, Duck Pond, and the Highline Canal. Nests are constructed of matted aquatic vegetation, and are not colonial. The most common grebe present on the refuge. This species has been absent during the winter months over the past 3 years.

Clark's Grebe (*Aechmophorus clarkii*) Common summer resident. This grebe has always been present on the refuge, but was not recognized as a distinct species until the 1985 meeting of the American Ornithologists' Union. Field work by Dr. Ratti of Washington State University at Goose Lake and Modoc NWR indicate that this species may be more common than western grebes in this area. This grebe may commonly be observed on Dorris Reservoir and all large ponds. Nesting has been documented at Dorris Reservoir when eighteen nests were located in 1986 (Radke, 6/1/86).

Western Grebe (*Aechmophorus occidentalis*) Common summer resident. This is the largest grebe on the refuge and is common at Dorris Reservoir. It also utilizes the larger ponds on Modoc NWR, as well as the Pit River. Three nests were documented on Goose Pond in 1986 (Radke 6/3/86).

PELICANS

American White Pelican (*Pelecanus erythrorhynchos*) Common migrant and summer resident. This species is widespread on the refuge with flocks of up to 100 birds that are commonly observed fishing on refuge waters. It has been seen along the Pit River, Teal Pond, Lower Duck Pond, Wigeon Pond, Goose Pond, and along the Highline Canal. Birds occasionally utilize Dorris Reservoir. Although adults in breeding condition are regularly observed during the spring and summer, there is no known nesting by this species on Modoc NWR. This bird is classified as a Sensitive Species by the USFWS and a Species of Special Concern by the CDFG.

CORMORANTS

Double-crested Cormorant (*Phalacrocorax auritus*) Common migrant and summer resident. Classified as a Species of Special Concern by the CDFG. Numbers of these birds appear to be increasing on the refuge. They utilize the Pit River and many of the larger ponds, especially Goose Pond. Lack of suitable habitat probably prevents this species from nesting on the refuge.

BITTERN, HERONS, EGRETS

Least Bittern (*Ixobrychus exilis*) Accidental. Listed as a Species of Special Concern by the CDFG. Two documented sightings of this species have occurred on the refuge. Bloom observed this bird in 1974 during the breeding season in suitable nesting habitat. Lavoie and Schoneman observed a bird at Deer Pond near the Hamilton tract in September 2001.

American Bittern (*Botaurus lentiginosus*) Uncommon summer resident. Population levels appear to be stable. This species is widespread on the refuge, utilizing bulrush and cattail marsh areas. Nests have never been located but locally hatched birds have been observed. Refuge personnel observed immature birds along the Pit River in January 1984 (Bloom & Radke, 1984) and a fledgling along Dorris canal in June 2000 (Walcott, 2000).

Black-crowned Night-Heron (*Nycticorax nycticorax*) Uncommon migrant and summer resident. Observed on all suitable areas of the refuge including Dorris Reservoir where several birds have been observed through the summers of 1982, 1983, 1984 (Moore). Fledgling birds have been documented since 1976 (Bloom, Dudley, Radke). In 1986 a thorough search of the bulrush stands in Teal Pond revealed the nesting area. Twelve black-crowned night-heron nests were located with 18 partially feathered young birds (Radke 1986).

Green Heron (*Butorides virescens*) Uncommon migrant and summer resident. First observed on the refuge in September 1975 (Bloom). Observations have occurred nearly every year since. Although nesting has not been documented on the refuge it probably does occur on at least an

irregular basis. A dead juvenile was found in the Pine Creek field during the summer of 1982 (Yeates). A standing mount is included in the refuge collection.

Cattle Egret (*Bubulcus ibis*) Accidental migrant. This species was first documented on the refuge in November 1977 (Bloom). Subsequent observations have occurred in 1979 and 1980. There have been no additional observations since 1980.

Snowy Egret (*Egretta thula*) Occasional migrant and summer resident. Irregular numbers of these birds utilize the ponds and marshy areas of the refuge. Observations have occurred every year. Large numbers of these birds are present during the fall, especially on Teal Pond, a favorite roosting site. There is no known nesting by this species on the refuge.

Great Egret (*Ardea alba*) Uncommon migrant and summer resident. Irregular numbers of these birds use widespread areas of the refuge. They are most common during the fall when groups of up to 70 birds may be present for short periods of time utilizing Teal Pond as a roosting area. 75 to 100 birds spent the summer on the refuge in 2001 and were seen roosting in the trees at the sub-headquarters in groups of 40 to 50 birds (Walcott & Tomaszewski). Nesting was documented for this species in the bulrush stands in Teal Pond (Bloom 1987).

Great Blue Heron (*Ardea herodias*) Common permanent resident. Irregular numbers of these birds utilize the marshy areas of the refuge. Population numbers appear to be stable, but are usually lower during the winter. Winter residents suffer a high mortality rate, especially during severe winters when all ponds are frozen. During these times of stress, feeding territories are vigorously defended as witnessed by Bloom and Melanson in January 1985 when two individuals were observed in a fight to the death. Although these birds are present on the refuge during the breeding season, no nesting has been documented.

IBISES

White-faced Ibis (*Plegadis chihi*) Occasional migrant and summer resident. Considered a Sensitive Species by the USFWS and as a Species of Special Concern by the CDFG. Until 1985, this species was infrequently observed on the refuge. One bird was sighted near South Dam in September 1981 (Kislingbury). Another bird was observed on Duck Pond in May 1982 (Yeates). There is no known nesting by this species on the refuge, although rookeries are known to exist at Honey Lake, Malheur NWR, and Lower Klamath NWR. Occurrence of this species on the refuge has increased steadily in the past 10 years. In July of 1986, a flock of 35 birds was observed flying about Teal Pond and eventually roosted there for the night (Bloom 1986). Groups of ibis have been observed on the refuge through the summers of 1985, 1986, and 1987. In 1988, the number of ibis utilizing the refuge increased to a high of 125 birds in May and June and in 2000 and 2001 the number of ibis on the refuge throughout the summer averaged 60 to 70 birds with a high of 157 in August 2001.

WATERFOWL

Tundra Swan (*Cygnus columbianus*) Common migrant and winter resident. This species generally uses the refuge ponds as resting and feeding areas during migration, when over 300 swans may be present for short periods. An occasional crippled or inexperienced bird may be observed on the refuge during the summer. A neck collared adult observed on the refuge in December 1986 indicates that some of Modoc NWR's winter visitors travel from as far away as Kotzebue, Alaska. One bird was observed to spend 2 entire years (1999 and 2000) on the refuge after it appeared to be ill or injured for several days.

Trumpeter Swan (*Cygnus buccinator*) Accidental or rare migrant. There is only one confirmed observation of this species on the refuge since 1975. However, difficulty in identification, especially of juveniles, leads to the possibility that this swan could be an occasional migrant. This fact becomes apparent when reviewing documentation in 1964 and 1966 by Chester Markley, who was very familiar with trumpeter swans. Markley observed seven individuals in 1964 and two in 1966 during the spring migrations.

Greater White-fronted Goose (*Anser albifrons*) Common migrant, occasional winter resident. A few individuals are taken each year by hunters, but densities on the refuge peak before and after hunting season. The largest numbers are observed in the Sharkey Field and the Goose Pond peninsula, where resting birds can be seen during the spring. The larger Tule white-fronted goose is occasionally present on the refuge as evidenced by observations of neck-collared individuals.

Snow Goose (*Chen caerulescens*) Uncommon migrant and winter resident. Limited numbers of these geese use the refuge as a stopover during fall migration and few birds are taken each year by hunters. In the spring, large flocks occasionally use Dorris Reservoir for a resting area. Use of the refuge and surrounding areas has dropped dramatically since the mid 1960's. Current snow goose numbers are limited to less than 100 individuals. Upwards of 7500 individuals were observed in the Sharkey Field in March 1964 (Markley).

Ross' Goose (*Chen rossii*) Occasional migrant and winter resident. Rarely observed, but probably on the refuge every year mixed with flocks of snow geese. In a ten year period (1974-1984), a total of 17 Ross' geese have been taken by hunters on the refuge. A representative specimen (MDC001) is included in the refuge collection.

Canada Goose (*Branta canadensis*) Common permanent resident. An abundant nesting species on the refuge, preferring the islands and peninsulas around the larger ponds. Atypical nesting sites, such as juniper and cottonwood trees, are occasionally observed. The average yearly production is 1250 individuals. A smaller subspecies, the cackling Canada goose, is a common migrant and prefers the open water of Dorris Reservoir when not feeding. As with snow geese, use of the refuge and surrounding areas by cacklers has dramatically dropped. Currently, cacklers number 1000 or less. Upwards of 10,500 cacklers were observed at Dorris Reservoir during the 1960's (Markley, 1964). A suspected Aleutian Canada goose was taken by a hunter in 1975. A standing mount (MDC002) of the Great Basin race is included in the refuge collection. A representative specimen of the Aleutian race (MDC024) was given to the refuge by

Research Biologist Paul Springer.

Wood Duck (*Aix sponsa*) Occasional migrant and summer resident. Observations of this species generally occur in the fall but pairs have been sighted in June and July (Tomaszewski 2001). A few are taken each year by hunters. Nest boxes placed on the refuge have never been used by wood ducks.

Mallard (*Anas platyrhynchos*) Common permanent resident. One of the most common ducks on the refuge. A widespread nester over the entire refuge, nests have even been documented on islands in Dorris Reservoir. Annual production (10 year average) is 1000 individuals per year. An atypical drake was captured in a duck trap in September 1986 (Bloom). This individual was believed to be hybridized with a pintail, and was retained for the refuge collection.

Gadwall (*Anas strepera*) Common permanent resident. This species is a regular nester in medium height cover. It has been found nesting in upland sagebrush habitats. One of the waterfowl species with the highest production on the refuge, averaging 730 individuals per year.

Green-winged Teal (*Anas crecca*) Uncommon migrant, rare summer and winter resident. Nesting was documented during the nest drag studies in 1978 and 1979. Annual average production is about 40 individuals. No production has been documented since 1981. A standing pair (MDC007 & 008) is included in the refuge collection.

American Wigeon (*Anas americana*) Common permanent resident. This species nests on the refuge every year in limited numbers. Annual production is about 230 individuals. The largest concentrations of this species occur during the fall migration.

Eurasian Wigeon (*Anas penelope*) Rare migrant. Occasionally flocks with American Wigeon. Hunters took a single individual in 1981, 1983, and 1984. A standing mount (MDC020) is included in the refuge collection. Two drakes were seen on 395 Pond for 3 weeks in July of 2000 (Walcott).

Northern Pintail (*Anas acuta*) Common summer resident, uncommon winter resident. This bird is most often observed in large numbers during migration. Documented nests and observed broods seem to indicate that this species may not be as common as pair counts would indicate. In addition to nesting in thick grass, this species also utilizes dense stands of green mustard and cheat grass. Annual production for ten years averaged 275 individuals.

Northern Shoveler (*Anas clypeata*) Uncommon migrant and summer resident. Nesting birds utilize short to medium height vegetation. Several nests have been documented on the refuge. Least common in winter, this bird is most often observed during migration. Average yearly production is about 245 individuals. While conducting pair counts in 1986, an adult female albino shoveler was observed in the Pit River (Bloom 1986). This individual nested successfully and was observed with a normal colored brood of seven in July 1986. A study skin (MOD013) is included in the refuge collection.

Blue-winged Teal (*Anas discors*) Uncommon migrant and summer resident. This species

densities have increased somewhat on the refuge. Nesting has not been documented on the refuge due to the fact that hens are indistinguishable from cinnamon teal hens. The presence of blue-winged teal drakes during the breeding season would indicate that this species does utilize the refuge as a nesting area on an infrequent basis.

Garganey (*Anas querquedula*) Accidental/vagrant. A single drake with distinctive plumage was first observed with a group of cinnamon teal in the Goose Pond borrow ditch in March 1985 (Melanson 3/10/85). After the initial sighting it was observed several times by other members of the refuge staff. The individual was photographed by Radke to provide absolute documentation.

Cinnamon Teal (*Anas cyanoptera*) Common migrant and summer resident. The most common teal species on the refuge. Production has averaged 1540 individuals per year. A standing pair (MDC011 & 012) are included in the refuge collection.

Canvasback (*Aythya valisineria*) Uncommon permanent resident. Although nesting has been documented, it probably does not occur in every year. Deep water bulrush and cattail stands are preferred habitats. Production peaks occurred in 1977 and 1979 with 60 individuals produced. A study mount (MDC0010) is included in the refuge collection.

Redhead (*Aythya americana*) Common permanent resident. This species nests on the refuge in greater densities than any other diving duck species. Large numbers utilize ditches in Sharkey Field as nest sites (Yeates). Annual production is about 300 individuals, although the number of nesting pairs has declined in recent years along with production. A standing mount (MDC009) is included in the refuge collection.

Ring-necked Duck (*Aythya collaris*) Uncommon migrant and winter resident. Irregular numbers of this species utilize the refuge ponds. The largest concentrations occur during the spring migration. Although this species is occasionally observed during breeding pair counts taken in May, there is no evidence of nesting by this species on the refuge.

Greater Scaup (*Aythya marila*) Rare migrant and winter resident. Larger than the more common lesser scaup, this species has been observed irregularly on the refuge.

Lesser Scaup (*Aythya affinis*) Common migrant, uncommon summer and winter resident. Irregular numbers of this species nest on the refuge. Often found in mixed flocks with ring-necked ducks. The largest concentrations occur during the spring migration.

White-winged Scoter (*Melanitta fusca*) Occasional migrant, rare winter resident. Normally observed only during migration. One individual was taken by a hunter in October 1978. It is now included in the refuge collection (MDC014).

Harlequin Duck (*Histrionicus histrionicus*) Accidental/Vagrant. Listed by the CDFG as a Species of Special Concern. A single drake, in breeding plumage, was observed on Teal Pond during March 1975 (Bloom). This is the only known record of this species on the refuge.

Barrow's Goldeneye (*Bucephala islandica*) Rare migrant, occasional winter resident. Listed by the CDFG as a Species of Special Concern. This species is rarely observed. One was

observed in November 1981 in the 395 Ponds (Kislingbury). Six others were observed in the Pit River in February 1982 (Bloom).

Common Goldeneye (*Bucephala clangula*) Uncommon migrant, common winter resident. The largest concentrations of this species occur during spring migration. They have been observed in the Pit River and on the larger ponds.

Bufflehead (*Bucephala albeola*) Common migrant and winter resident. The largest concentrations of this species occur during spring migration. Despite the presence of a few individuals each year during the breeding pair count, no known nesting has occurred on the refuge.

Common Merganser (*Mergus merganser*) Common migrant and winter resident. The largest concentrations of this species occur during the spring migration. This is the most commonly observed merganser species on the refuge.

Hooded Merganser (*Lophodytes cucullatus*) Uncommon migrant and winter resident. A limited number of individuals utilize the Pit River and larger ponds on the refuge. Several have been observed on Upper Duck Pond. They have also been observed using Pine Creek during the winter of 1983 (Radke).

Ruddy Duck (*Oxyura jamaicensis*) Common summer resident, rare winter resident. Limited numbers of these diving ducks nest on the refuge, preferring dense bulrush or cattails over deep water. Annual production averages about 160 birds.

VULTURES

Turkey Vulture (*Cathartes aura*) Uncommon migrant and summer resident. First arrivals usually appear in the last week of March or the first week of April. Frequently observed soaring over the refuge, or perched on a post. About 40 were observed over the headquarters during early summer 1983. Several have been observed at Dorris Reservoir during the summer months. Large numbers (30-40) have been observed passing over Dorris Reservoir during the fall.

KITES, EAGLES, HAWKS

Osprey (*Pandion haliaetus*) Rare migrant and summer resident. Listed by the CDFG as a Species of Special Concern. Two recorded sightings in September 1978 and May 1982, both at Dorris Reservoir, indicate that this bird is a rare species on the refuge. Another individual was observed in April/May 1985 at the hot springs near headquarters. A pair was observed at Dorris Reservoir during the breeding season in 1988 and another individual was observed at the entrance road in 2001.

White-tailed Kite (*Elanus leucurus*) Rare vagrant. Several sightings have been made by refuge personnel since September 1979. Most typically a bird of the central valley of California,

there is some recent evidence of range expansion. Tule Lake NWR, 70 miles northwest of Modoc NWR, has had occasional sightings of this species. Sightings on Modoc NWR include an individual along Pine Creek in July 1984, an individual in the Woods Field in December 1984 and another individual in the Hamilton Tract in July of 2000.

Northern Harrier (*Circus cyaneus*) Common summer resident, uncommon winter resident. Listed by the CDFG as a Species of Special Concern. This species is among the most abundant raptors on the refuge. Preferred nesting areas on the refuge include the Woods Field and the drier portions of the Bull, Teal, Front, Bailey and Pine Creek Fields. Northern harriers have been observed predating killdeer and their nests. An adult female study skin (MDC044) is included in the refuge collection.

Golden Eagle (*Aquila chrysaetos*) Uncommon permanent resident. Listed by the CDFG as a Species of Special Concern. These large raptors have been observed hunting on the refuge during every month of the year. There is no known or suspected nesting on the refuge. A mount of an adult is included in the refuge collection.

Bald Eagle (*Haliaeetus leucocephalus*) Common winter resident, occasional migrant. Listed by the USFWS as Threatened. Up to six individuals may utilize areas of the refuge during the winter months, where they primarily feed on waterfowl. In January 1985, an adult with a patagial tag was observed on the refuge. This individual was banded at Glacier National Park in 1976. In November 2001, four adults and two juveniles were observed in the area of Teal Pond and Front Field. A standing mount (MDC004) is included in the refuge collection.

Sharp-shinned Hawk (*Accipiter striatus*) Occasional summer resident, rare winter resident. Listed by the CDFG as a Species of Special Concern. These small accipiters are only infrequently observed on the refuge. Documented observations indicate that this species only uses the refuge for short periods of time. During the winter of 1984-85, sightings of adult individuals were made along Pine Creek and near headquarters. A second year male was captured in a mist net at sub-headquarters in September 1987 and an adult was seen on a Christmas Bird count in December 2000.

Cooper's Hawk (*Accipiter cooperii*) Uncommon summer resident, occasional winter resident. Listed by the CDFG as a Species of Special Concern. Suspected of nesting on the refuge. A pair was observed carrying nest material along upper Pine Creek during the summer of 1980 (Kislingbury). This species has been observed hunting over widespread areas of the refuge. An adult male was observed taking a flycatcher at sub-headquarters in September 1982 (Bloom). A juvenile was observed pursuing a northern flicker. They flew into a mist net and both escaped before the banders could retrieve them (Walcott & Tomaszewski, 2001). A pair and a fledged young were seen along Pine Creek from July to September in 2001 (Butcher). A representative female (MDC059) is included in the refuge collection. This specimen was collected by R.E. Moore after flying into a window near Dorris Reservoir.

Northern Goshawk (*Accipiter gentilis*) Rare winter vagrant. Listed by the CDFG as a Species of Special Concern. This species has been observed at Dorris Reservoir, the hot springs near headquarters, and along the Pit River. These birds are probably visitors from the nearby Warner

Mountains, and are only observed once or twice a year during extreme cold weather.

Red-shouldered Hawk (*Buteo lineatus*) Rare/Vagrant. Sightings seem to be on the increase. One sighting occurred at sub-headquarters in September 1976 (Laymon). This individual was utilizing a stand of cottonwood trees. A second observation was made at sub-headquarters in January 1986 (Langham). This individual was photographed and observed by the entire professional staff. This individual remained in the area and was observed periodically until October 1986. Other sightings occurred in February 1988 (Bloom), August 1999 and August and September of 2000. The individual in 2000 was observed almost daily for 2 months near Deer Pond and the Hamilton Tract. A pair of hawks were observed on August 2, 2001 at the sub-headquarters. These birds were seen periodically at the headquarters and along Pine Creek for 2 months.

Red-tailed Hawk (*Buteo jamaicensis*) Common summer resident, uncommon winter resident. One of the most common hawks observed on the refuge. This species has nested at various locations on the refuge including: the cottonwoods at sub-headquarters, the willows at the Ebbe pump house, the hot springs, the juniper tree at the borrow pit (South Hunt Area), and at the Hamilton trailer. A representative study skin (MDC018) is included in the refuge collection. This specimen was collected as road kill on 9/10/81 by Kislingbury.

Swainson's Hawk (*Buteo swainsoni*) Occasional migrant and uncommon summer resident. Listed by the USFWS as a Sensitive Species and by the CDFG as a Threatened Species. This medium-sized buteo has been observed over most of the refuge including the sagebrush uplands, ponds, wet meadows and riparian areas. There have been two documented nesting attempts by this species, both of which occurred in 1961 (Steel). This hawk was considered to be a common summer resident at that time. This species was documented as being noticeably less common by 1963 and no nesting attempts have been known to occur since then. A pair was observed near the entrance road in the summer of 2000 and 2001. A juvenile appeared with them after 2 month absence in August of 2001 (Tomaszewski). It appeared to be the offspring of this pair. It is not know where they nested.

Rough-legged Hawk (*Buteo lagopus*) Uncommon migrant, common winter resident. Large numbers of this species utilize the refuge during the winter and spring, when they are perhaps the most common large raptor. Light-phase individuals outnumber dark-phase individuals by a ratio of 10:1. The numbers of wintering birds is directly correlated to the severity of the winter.

Ferruginous Hawk (*Buteo regalis*) Rare winter resident and migrant. One individual was observed for several days in January 1972, March 1974, and April 1975. Other sighting were at Dorris Reservoir in October 1983 (Moore) and a juvenile in October 1999 (Walcott). These birds apparently utilize the refuge for short periods of time during the winter months.

FALCONS

American Kestrel (*Falco sparverius*) Uncommon summer resident, uncommon winter resident. The most common falcon on the refuge, this species has been observed on the refuge during

every month of the year. It nests in cavities at subheadquarters and probably at other locations as well. Several individuals have been captured in mist nets. Two representative study skins are included in the refuge collection. MDC041 was collected as a road kill along Co. Road 115 by maintenance worker R. Russell on 7/20/83. MDC054 was brought to the refuge on 4/23/84 by an Alturas resident.

Merlin (*Falco columbarius*) Rare migrant and winter resident, occasional summer resident. Listed by the CDFG as a Species of Special Concern. Observations include one flying near Teal Pond in April 1977, one over the Ebbe Fields and one utilizing the Godfrey Tract (Yeates 1982). A second year male was captured in mist nets along Pine Creek in January 1984. An adult was observed feeding on a quail at the Hamilton trailer in October 1999 (Walcott & Tomaszewski). A representative study skin (MDC053) is included in the refuge collection. This specimen was found near Tulelake NWR in December 1981.

Prairie Falcon (*Falco mexicanus*) Uncommon migrant and summer/winter resident. Listed by the CDFG as a Species of Special Concern. Individuals have been observed over several areas of the refuge, including the Godfrey Unit, the South Hunt Area, Ebbe Fields, Front Field, Pine Creek Field, and along the entrance road during every month of the year. There is no known or suspected nesting on the refuge.

Peregrine Falcon (*Falco peregrinus*) Rare migrant, summer and winter resident. Listed by the CDFG as an Endangered Species. This falcon has been observed on the refuge about once every other year. Documented observations have occurred near or over refuge ponds including sightings that occurred in January 1985, when an individual was sighted on three separate occasions (Bloom & Bloom). During the winters of 1967-1969, two female “duck hawks” spent December and January utilizing the headquarters area as a hunting and roosting area (Larochelle). The most recent sightings were in September of 1999 where a peregrine and prairie falcon were seen in close proximity (Tomaszewski) and in September of 2001 near the visitor kiosk (Schoneman & LaVoie).

GALLINACEOUS BIRDS

Chukar (*Alectoris chukar*) Accidental/Vagrant. One observation was made in April 1987 along the canal separating Pine Creek Field and Front Field. This individual was probably an escapee from a nearby ranch that raises gamebirds. Recent information has revealed that there is an active chukar population within two miles of the refuge which could be the source of an occasional chukar which has strayed onto the refuge. A series of observations in the spring of 1988 were made by refuge personnel. Subsequent investigation revealed that a neighbor had released 30 adults in February, hence the rash of sightings.

Ring-necked Pheasant (*Phasianus colchicus*) Common permanent resident. Widespread on the refuge, this species appears to be increasing in population and is a prolific nester throughout the refuge.

Sage Grouse (*Centrocercus urophasianus*) Rare permanent resident. Listed by the CDFG as a Species of Special Concern. This species has only been rarely observed on the refuge. Since the

founding of the refuge, there have only been six observations. These sightings include a small flock on the east side of Dorris Reservoir and a family group in the Pine Creek Field (Steel 1961), ten at Dorris Reservoir in 1962, and one on the Godfrey Tract in 1963. Eleven years later, two were observed on the Godfrey Tract (Bloom 1974). Another sighting occurred in May 1977 and the last observation occurred in June 1978 when two were observed in the Godfrey Tract while dragging for duck nests (Bloom and Dudley, 1978). It is strongly suspected that this species has been extirpated from the refuge in the last five years.

California Quail (*Callipepla californica*) Uncommon permanent resident. Irregular numbers of these birds have been observed at subheadquarters, Dorris Reservoir and along Pine Creek. Both production and survival have been increasing in the past few years.

RAILS AND CRANES

Virginia Rail (*Rallus limicola*) Common summer resident. Although large numbers of these birds utilize the refuge marsh lands, they are rarely observed due to their secretive nature. This species is known to nest on the refuge, and several broods have been observed during the summer months. Suspected nesting areas include pond margins at all permanent ponds on the refuge.

Sora (*Porzana carolina*) Common summer resident, rare winter resident. Due to its secretive habits, this species is heard more often than seen. This species is found throughout the refuge, including all pond areas and the riparian habitat along Pine Creek. No active nests have been located, however abandoned sora nests have been found on Teal Pond near the hot springs. Fledglings have been observed on the refuge. Three specimens are included in the refuge collection. MDC058, an emaciated specimen was located in December 1984. MDC017 and MDC032 were collected as road kill in August 1981 and May 1983 respectively.

American Coot (*Fulica americana*) Common summer resident, occasional winter resident. Widespread throughout the refuge in suitable habitat, it nests on almost all of the refuge ponds. An albino American coot was observed on the south 395 Pond on 2/26/88 by Bloom and Melanson.

Sandhill Crane (*Grus canadensis*) Common spring, summer and fall resident. Listed by the USFWS as a Sensitive Species and as a Threatened Species by the CDFG. The refuge serves as an important breeding area where more than forty pairs nest each year. During early fall, thousands of cranes migrate over the refuge on their way to the Central Valley of California. Power lines have been documented as one of the greatest mortality factors of cranes at this refuge. A standing mount (MDC025) is included in the refuge collection.

PLOVERS

Black-bellied Plover (*Pluvialis squatarola*) Rare migrant. Irregular numbers of this species have been observed on the refuge. The first documented sighting occurred at Dorris Reservoir in

April 1979 (Bloom and Kelso). This species has only been observed infrequently since then. A sighting occurred in May 1983 when about 20 were observed feeding at the north end of the Matney Fields, and in April 1988 when three were observed feeding in the mud flats at Dorris Reservoir.

Snowy Plover (*Charadrius alexandrinus*) Rare summer resident. Listed by the USFWS as a Threatened Species and as a Sensitive Species by the CDFG. Limited numbers of this bird have been observed on the refuge, especially during early summer. Although suspected of nesting at least infrequently on the refuge, no egg laying has been documented. The closest documented nesting by this species occurs in Surprise Valley, twenty five miles northeast of the refuge.

Semipalmated Plover (*Charadrius semipalmatus*) Rare migrant. This species has been observed only during migration. Individuals were first observed in September 1976 (Laymon). Recent observations occurred in May 1985 when up to 25 individuals were sighted feeding in mud flats around Duck Pond (Melanson and Radke), and again in 1987 when 20 individuals were observed feeding on the Goose Pond mud flats. Another seven were observed feeding on the Railroad Pond mud flats in May 1988 (Bloom).

Killdeer (*Charadrius vociferus*) Spring and fall migrant, common summer resident. The most common plover on the refuge, and one of the most common breeding shorebirds. This species tends to use gravel roads, road margins, and parking areas for nest sites. Observations by refuge staff have shown that killdeer are occasionally predated by northern harriers. Several killdeer have been captured and banded. A representative specimen (MDC057) is included in the refuge collection. This specimen was collected as road kill in May 1984.

STILTS AND AVOCETS

American Avocet (*Recurvirostra americana*) Common summer resident, spring and fall migrant. Widespread on the refuge during the spring, wherever there is shallow water or mud flats. This species nests at various areas on the refuge, including areas along the Highline Canal, 395 Ponds, and the Pit River. In June 1983, three islands in Teal Pond were host to active avocet nests and in 2000 the islands of the south 395 pond included 2 nests.

Black-necked Stilt (*Himantopus mexicanus*) Uncommon summer resident, spring and fall migrant. Low numbers of this species nest on the refuge, preferring mud flats and areas along the Pit River and 395 Ponds. In June 1983, a pair was located nesting on one of the man-made islands in Teal Pond. Island nesting in Teal Pond was documented again in July 1987 during a marsh/waterbird nesting survey (Bloom). A nest was located on a small island in Lower Duck pond in July 2000.

SHOREBIRDS

Willet (*Catoptrophorus semipalmatus*) Common summer resident, spring and fall migrant.

Commonly observed feeding in the shallows during spring and early summer. This species utilizes short grass areas for nesting sites. The crested wheatgrass seeding in the Railroad Field is a preferred area. Nesting has also been documented in the South Hunt Area, the farm units, and in the areas adjacent to the main entrance road.

Greater Yellowlegs (*Tringa melanoleuca*) Common migrant, uncommon summer resident. Large numbers of this species are especially evident during the spring migration. Nesting by this species has not been documented.

Lesser Yellowlegs (*Tringa flavipes*) Occasional migrant, rare summer resident. First documented in 1974, when a group of 50 was observed feeding in the shallows of Goose Pond (Bloom). This species has been only infrequently sighted in recent years.

Solitary Sandpiper (*Tringa solitaria*) Occasional migrant, rare summer resident. Seen only on an irregular basis, this species has been observed at Dorris Reservoir and along the Pit River during low water stages.

Spotted Sandpiper (*Actitis macularia*) Uncommon summer resident. This species has been observed along the Pit River, where it nests in limited numbers. Hatching year individuals have been captured and banded in July. A representative specimen (MDC042) is included in the refuge collection. This specimen was collected as a mist net mortality on 7/22/83.

Long-billed Curlew (*Numenius americanus*) Uncommon spring and fall migrant, uncommon summer resident. The refuge serves as an important breeding area for this species. Up to ten pairs have nested in the farm units and nearby saltgrass flats. This species has been observed on the refuge as late as the first week in November.

Marbled Godwit (*Limosa fedoa*) Rare migrant. Irregular numbers of this species use the refuge as a stopover during migration. A large flock of over 100 was observed feeding at Dorris Reservoir in April 1979. An individual was observed feeding along the edge of the 395 Pond in May 1986. The most recent observation occurred in April 1988 when 45 were sighted feeding in a recently burned area at Goose Pond (Bloom).

Dunlin (*Calidris alpina*) Occasional migrant, rare summer resident. An irregular visitor to the refuge, most commonly observed during the spring when it utilizes pond margins as feeding areas during migration. Several individuals in breeding plumage were observed at Dorris Reservoir feeding with a group of least sandpipers in April 1988 (Bloom). Over 100 were observed feeding at Goose Pond in April 2001 (Walcott).

Western Sandpiper (*Calidris mauri*) Uncommon summer resident, Uncommon migrant. Irregular numbers of this species use the mud flats along the Pit River as foraging areas. Although this species is present during the breeding season, no nesting has been documented.

Least Sandpiper (*Calidris minutilla*) Uncommon migrant, occasional summer resident. This species' densities fluctuate greatly depending on water flow in the Pit River. During periods of low water, they take full advantage of the exposed mud flats as foraging areas. This species has been captured in mist nest placed along the river in summer.

Long-billed Dowitcher (*Limnodromus scolopaceus*) Common migrant, uncommon summer resident. Large numbers have been observed along the Pit River and ponds during migration periods. There is no known or suspected nesting by this species on the refuge.

Common Snipe (*Gallinago gallinago*) Common summer resident, occasional winter resident. Commonly observed along dikes, pond margins and in irrigated meadows. This species breeds over a wide range of the refuge. A standing mount (MDC006) is included in the refuge collection.

Wilson's Phalarope (*Phalaropus tricolor*) Common migrant and summer resident. Widespread and easily observed on many of the refuge ponds. Nesting by this species has been documented on all of the wet meadow units of the refuge. A representative specimen (MDC040) is included in the refuge collection.

Red-necked Phalarope (*Phalaropus lobatus*) Rare migrant. Although this is primarily a coastal species, it is occasionally observed on the refuge, especially during the spring migration.

GULLS AND TERNS

Franklin's Gull (*Larus pipixcan*): Accidental. The only documentation of this species occurred on 5/24/88 when a flock of 32 birds in breeding plumage was observed flying the length of Teal Pond heading southwest towards the Pit River. These birds appeared to be on a foraging and/or pioneering foray. The flight was witnessed by E.C. Bloom and T.J. Melanson.

Bonaparte's Gull (*Larus philadelphia*): Occasional migrant. The only black-headed gull known to use the refuge prior to 1988. This species has been observed at Dorris Reservoir, Teal Pond, and Goose Pond for short periods of time during migration. Recent observations include eight of these birds which were feeding on mud flats at Dorris Reservoir in April 1988 (E.C. Bloom - 4/22/88) and 65 birds at Dorris Reservoir on May 5, 1999 (Ryno).

Ring-billed Gull (*Larus delawarensis*): Common summer resident. Probably the most common gull found on the refuge. This species has caused some depredation problems on goose nests each spring. Although this gull is present throughout the summer, no nesting has been documented. One ring-billed gull was observed taking a class I gosling and after some difficulty, swallowed the gosling whole (Walcott - 05/23/01).

California Gull (*Larus californicus*): Common summer resident. The CDFG lists this bird as a Species of Special Concern. Large numbers of these gulls utilize the refuge, mainly as a loafing area. Although present during the entire summer, no nesting has been documented for this species. In June 1987, a California gull was observed to take three class I gadwall ducklings in a five minute time period from the middle 395 pond. The gull was successful in three of ten attacks and swallowed the ducklings in mid-air (E.C. Bloom - 06/13/87).

Caspian Tern (*Sterna caspia*): Common summer resident. This is the largest tern occurring on

Modoc NWR. This species has been observed at Dorris Reservoir in large numbers, and in lesser numbers at Goose Pond, Teal Pond, and along the Pit River. Although present during the entire summer, this bird has not been documented as nesting on the refuge.

Forster's Tern (*Sterna forsteri*): Common summer resident. This is the most abundant tern on the refuge. It has been observed at Dorris Reservoir and many of the refuge ponds. There is documented nesting by this species on Modoc NWR. This fact was verified in July 1986, during an intensive marsh/waterbird nesting survey that revealed several Forster's tern nests in Teal Pond (W.R. Radke - 07/10/86).

Black Tern (*Chlidonius niger*): Uncommon summer resident. In general, this species utilizes the larger ponds on the refuge, especially Goose Pond where birds have been observed resting on floating mats of vegetation. Nesting by this tern has been documented on Modoc NWR in July 1986 during an intensive marsh/waterbird nesting survey, revealing several black tern nests on Teal Pond (W.R. Radke - 07/10/86).

DOVES

Rock Dove (*Columba livia*) Occasional resident. Not normally observed on the refuge, this species is sometimes common on nearby farms and ranches. No nesting has been documented on Modoc NWR.

Mourning Dove (*Zenaida macroura*) Common summer resident, rare winter resident. Widespread on the refuge, individuals have been banded at sub-headquarters and along Pine Creek. The entire refuge is used for nesting including treeless areas where they nest on the ground. Riparian areas are favorite roosting sites.

CUCKOOS

Yellow-billed Cuckoo (*Coccyzus americanus*) Rare migrant and summer resident. Listed as a Sensitive Species by the USFWS and as an Endangered Species by the CDFG. This species has been observed in the cottonwoods at headquarters and subheadquarters. Recent observations include a pair of cuckoos along Pine Creek and several July sightings of a territorial male at sub-headquarters (Bloom). Nesting was not verified, but suitable habitat, along with an outbreak of webworms would indicate that a nesting attempt was a strong possibility.

OWLS

Barn Owl (*Tyto alba*): Uncommon permanent resident. Rarely observed, but widespread on the refuge. In an effort to enhance production by this species on the refuge, several nest boxes were placed in suitable habitat in 1986. This program has proved to be beneficial for barn owls, as they have utilized these nest boxes successfully. A box placed outside of the grain bin contained six eggs and two chicks in March 1987 (W.R. Radke - 3/11/87). Another nesting pair was

documented in the same box in 2000 and successfully fledged 3 young (Walcott). A representative study skin (MDCO48) is included in the refuge collection. This specimen was collected as a road kill along County Road 115 by Maintenance Worker R. Russell (9/13/83).

Short-eared Owl (*Asio flammeus*): Uncommon summer resident, occasional winter resident. The CDFG lists this species as a Species of Special Concern-second priority. This used to be the most common breeding owl on the refuge. Meadows removed from spring grazing appear to be the most preferred areas for nesting and hunting on the refuge. A nest with 4 chicks was observed in the Woods Field in June 2001 (Butcher). A representative study skin is included in the refuge collection. This bird was collected as a fence mortality near Teal Pond by R. Yeates on 09/23/82.

Long-eared Owl (*Asio otus*): Occasional permanent resident. The CDFG lists this species as a Species of Special Concern-second priority. This species is rarely observed, but appears to use primarily the riparian areas of the refuge. Birds have been mist netted along Pine Creek in 1983 and 1985. Nesting by this species has not been documented on Modoc NWR. In the summer of 1983, two hand-raised juveniles were released in the headquarters area.

Great Horned Owl (*Bubo virginianus*): Common permanent resident. One of the most common owls on the refuge, it utilizes riparian areas and large cottonwood/willow groves. On Modoc NWR, it has evicted red-tailed hawks and taken over their nests. This species has nested in the willow tree at the hot springs, the cottonwood tree at the north end of sub-headquarters, the cottonwoods at the Hamilton trailer and in the willow tree at the Ebbe pumphouse. In addition, fledgling birds with adults were observed along Pine Creek and may be nesting in the riparian area there. Documented incubation has occurred as early as mid February, it is not uncommon to see an incubating adult covered with snow.

Great Gray Owl (*Strix nebulosa*) Accidental/Vagrant. Listed as a Sensitive Species by the USFWS, and as an Endangered Species by the CDFG. Two individuals have been observed by refuge personnel; one in the trees at the hot springs in June 1978 (Dudley), and the other at headquarters in October 1981 (Bloom). Apparently, both individuals were visitors from the nearby Warner Mountains.

Burrowing Owl (*Athene cunicularia*): Rare summer resident. The CDFG lists this species as a Species of Special Concern-second priority. This owl has experienced a decline as a breeding bird on Modoc NWR. Nesting birds have been documented in the South Hunt Area, and at the south end of Goose Pond. In 1983, four underground nest box structures were habitat for this species. A bird was sighted along the entrance road in April 2000 (LaVoie). Two study skins are included in the refuge collection. MDCO15 was collected as a road kill along County Road 115 on 04/01/80 by C. Kislingbury. MDCO16 was also collected by C Kislingbury as a road kill on 08/01/81.

NIGHTJARS

Common Nighthawk (*Chordeiles minor*) Common summer resident. Large numbers have

been observed feeding over the ponds on the refuge. Although no nesting has been documented, it is strongly suspected. The closest documented nesting occurred at the Alturas airport near the railroad tracks. The nest contained two young (Moore, 1974). Several young birds have been banded on the refuge. A representative study skin is included in the refuge collection. This specimen was collected as a fence mortality near Teal Pond by Yeates on 9/23/82.

SWIFTS

Black Swift (*Cypseloides niger*): Accidental/Vagrant. A lone black swift was observed hunting along Pine Creek (E.C. Bloom) in September 1986. This bird probably strayed down from the Warner Mountains during/after a recent stormy period.

Vaux's Swift (*Chaetura vauxi*): Rare summer resident. This species occasionally wanders from its preferred habitat in the nearby Warner Mountains. The only documented sightings of this bird have been at Dorris Reservoir (S.A. Layman), and along the South Fork of the Pit River (E.C. Bloom and T.J. Melanson). This species is known or suspected to nest on the refuge. Recent observations include three birds on 05/04/88, a first arrival date (E.C. Bloom).

HUMMINGBIRDS

Black-chinned Hummingbird (*Archilochus alexandri*): Rare migrant and summer resident. These birds are rarely observed, and are not believed to nest on the refuge. They appear to prefer riparian areas, but have also been observed in the area around headquarters. A single bird was captured in a mist net at Subheadquarters in August 1986 (E.C. Bloom - 08/09/86).

Calliope Hummingbird (*Stellula calliope*): Occasional summer resident. This bird utilizes the Subheadquarters area and has been observed in the headquarters area. Although not verified, this bird is suspected of nesting on Modoc NWR at least on an irregular basis.

Rufous Hummingbird (*Selasphorus rufus*): Occasional spring and fall migrant, rare summer resident. This bird has occasionally been observed while utilizing the refuge for short periods of time. However, records kept by R.E. Moore indicate that this is the most common hummingbird summering and possibly breeding in this area. One bird was captured in a mist net during August 1983, two in May 1984 and three in the summer/fall 1985 (E.C. Bloom).

KINGFISHERS

Belted Kingfisher (*Ceryle alcyon*) Uncommon summer resident, occasional winter resident. This species utilizes riparian areas and ponds. Although not verified, this species may nest along the Pit River. A representative study skin (MDC019) is included in the refuge collection. This specimen was collected as road kill by Kislingbury on 10/13/81.

WOODPECKERS

Lewis's Woodpecker (*Melanerpes lewis*): Occasional migrant and winter resident. This bird has only occasionally been observed at both the subheadquarters and headquarters. The CDFG classifies this bird as a Species of Special Concern while the USFWS considers it to be a Sensitive Species. The most recent observation occurred on 09/22/99 at the Hamilton trailer, and on 11/20/00 at the headquarter residence.

Northern Flicker (*Colaptes auratus*): Common permanent resident. The most common woodpecker on the refuge especially in the fall when large numbers of juveniles are present. This species has been captured in mist nets at subheadquarters, along Pine Creek and at the headquarters. Of the three recognized races, only the red-shafted form normally occurs on the refuge. A rare sighting of the yellow-shafted race occurred on 11/01/84 along the Highline Canal (T.J. Melanson), while an adult was captured in a mist net at subheadquarters on 10/05/85 by E.C. Bloom. This bird was photographed, banded, and released. Representative study skins of both races (MDCO43 and MDCO55) are included in the refuge collection.

Red-breasted Sapsucker (*Sphyrapicus ruber*): Occasional fall migrant. Has been observed utilizing riparian areas on the refuge. One individual was mist netted and photographed at subheadquarters in September 1983 (M.F. Radke). A second bird was captured in a mist net on 09/21/85 by W.R. Radke. There is no known nesting by this species on the refuge.

Yellow-bellied Sapsucker (*Sphyrapicus varius*): Rare fall migrant which may be classified as vagrant. This bird utilized the cottonwood/willow groves on the refuge. An atypical adult was captured in a mist net at subheadquarters on 10/05/85. This bird was photographed, banded, and released.

Red-naped Sapsucker (*Sphyrapicus nuchalis*): Rare fall migrant. One adult was captured in a mist net at subheadquarters on 10/26/87 (E.C. Bloom). Because of the confusion in distinguishing this species from the closely related red-breasted sapsucker, the true status of occurrence by this species on the refuge is unknown.

Downy Woodpecker (*Picoides pubescens*) Uncommon summer resident. Frequents riparian areas along Pine Creek and subheadquarters. Most commonly observed during the spring, when pairs have been observed investigating nest cavities at subheadquarters. Although undocumented, this species probably nests on the refuge at least occasionally. Several individuals have been captured in mist nets placed in riparian areas throughout the refuge.

Hairy Woodpecker (*Picoides villosus*) Occasional migrant and summer resident. Seldom observed, but is known to occur in riparian areas along Pine Creek and at subheadquarters, where two individuals were captured in mist nets, one in 1983 and one in 1984. No nesting has been documented, but this species is suspected of nesting on the refuge at least occasionally.

FLYCATCHERS

Olive-sided Flycatcher (*Contopus cooperi*) Rare migrant or summer visitor. This species has only been documented as a visitor to the refuge, and might be more commonly observed in the nearby Warner Mountains. An adult individual was captured in a mist net at subheadquarters in September 1985. A spring capture occurred in June 1988 at subheadquarters.

Western Wood-Pewee (*Contopus sordidulus*) Uncommon migrant, rare summer resident. This species has been observed utilizing the riparian areas along Pine Creek. It has also been captured yearly at subheadquarters during mist netting operations from 1982-1987.

Willow Flycatcher (*Empidonax traillii*) Spring and fall migrant, uncommon summer resident. Listed as a Sensitive Species by the USFWS and as an Endangered Species by the CDFG. This species is commonly captured in mist nets during the fall migration. Although the habitat appears favorable, only one successful nesting attempt has been documented on the refuge. In 1986 one juvenile was fledged from a nest at subheadquarters. The nest was constructed in a lilac bush about six feet off the ground along Pine Creek. Three years of banding data show that this Sensitive Species makes up 57 percent of the total flycatchers which utilize Modoc NWR.

Hammond's Flycatcher (*Empidonax hammondi*) Occasional spring and fall migrant, rare summer resident. Several individuals have been captured in mist nets in riparian areas along Pine Creek and subheadquarters. No nesting attempts have been documented for this species on the refuge.

Gray Flycatcher (*Empidonax wrightii*) Occasional summer resident. This species utilizes the sagebrush areas of the refuge where they are suspected of nesting. A few individuals have been captured in mist nets during June 1983 in the uplands south of the 395 Ponds, and in August/September 1985 at subheadquarters.

Dusky Flycatcher (*Empidonax oberholseri*) Occasional spring and fall migrant. The majority of individuals observed or captured have been in May. There is no known or suspected nesting by this species on the refuge.

Cordilleran Flycatcher (*Empidonax occidentalis*) Occasional migrant and summer resident. Migrants utilize the riparian areas of the refuge. Several individuals have been captured in mist nets in August and September since 1982. No nesting has been documented.

Say's Phoebe (*Sayornis saya*) Uncommon migrant, rare summer resident. This species is most commonly observed during the spring and are the first flycatchers to arrive during spring migration. Arrival dates for this species have been documented as early as mid-February (Bloom). This species appears to utilize the refuge only for short periods of time during migration.

Ash-throated Flycatcher (*Myiarchus cinerascens*) Uncommon migrant and summer resident. This species has been observed in the sagebrush/juniper communities and riparian areas of the refuge, where it is suspected of nesting. This species is a cavity nester and may have a problem competing with European starlings for available nest cavities. In 1984 a pair successfully nested in a nest box immediately adjacent to Dorris Reservoir.

Western Kingbird (*Tyrannus verticalis*) Common summer resident. This species has been observed at several areas on the refuge, including subheadquarters, headquarters, the South Hunt Area, around Flournoy Pond, and at the Ebbe Fields. Nesting has been documented for this species on the refuge.

Eastern Kingbird (*Tyrannus tyrannus*) Rare summer resident. This species is rarely observed, however it appears to prefer riparian areas which intersect open country. Best areas to look are in riparian areas. Nesting has not been documented.

SHRIKES

Loggerhead Shrike (*Lanius ludovicianus*) Occasional permanent resident. Listed as a Sensitive Species by the USFWS. This is the most commonly observed shrike on the refuge. It occurs throughout the summer in limited numbers but is not a verified nester. This species utilizes open country, riparian areas, and juniper woodlands. In January 1985 an adult was captured in a finch trap after attempting to take a finch (Bloom).

Northern Shrike (*Lanius excubitor*) Uncommon winter resident. This species sporadically occurs during the winter months on the refuge. Only young birds are normally observed. Recent observations occurred near the Ebbe tract in 1983 (Radke & Radke), and near the headquarters in January 1985 (Bloom). An adult was captured in a bal-chatri trap in February 1985. A second adult and a juvenile were captured in mist nets along Pine Creek in November 1985 (Bloom & Radke).

VIREOS

Hutton's Vireo (*Vireo huttoni*) Accidental/Vagrant. This species has been observed along riparian areas during migration. Several individuals were captured in mist nets along Pine Creek during May 1984.

Cassin's Vireo (*Vireo cassinii*) Occasional migrant. Utilizes the riparian areas along Pine Creek and subheadquarters. This species is more common in the nearby Warner Mountains and only occasionally visits the refuge. An adult bird was captured in a mist net at subheadquarters on 08/08/85 (Radke). This bird was banded, photographed and released. In addition, this bird was recaptured twice during August indicating that this species may be more than an occasional migrant. Additional individuals have been captured at subheadquarters in the fall of 1987.

Warbling Vireo (*Vireo gilvus*) Uncommon migrant and summer resident. Limited numbers of this species utilize the riparian areas of the refuge. Individuals have been captured in mist nets at subheadquarters and along Pine Creek during the spring, summer and early fall. No nesting birds have been documented on the refuge.

JAYS, MAGPIES, CROWS

Steller's Jay (*Cyanocitta stelleri*) Occasional vagrant. This species occasionally utilizes the refuge for short periods of time when it strays from the nearby Warner Mountains, where it is a common resident. The most recent observations occurred in 1999 and 2000.

Western Scrub Jay (*Aphelocoma californica*) Occasional permanent resident. Found primarily in and around riparian areas and in juniper/sagebrush areas such as the Godfrey Tract and Dorris Reservoir. Occasional observations, especially during the fall, have occurred in the headquarters area. This species is not known to nest on the refuge.

Pinyon Jay (*Gymnorhinus cyanocephalus*) Accidental/Vagrant. A group of five pinyon jays was observed at Dorris Reservoir by Moore on 10/05/86. The group was observed moving through juniper trees in a typical jay fashion. There are no other sightings of this species in this area.

Black-billed Magpie (*Pica pica*) Common permanent resident. This species is widespread on the refuge but may be somewhat irregular in numbers. The largest concentrations occur during the fall when hatch year individuals are dispersing. This species is known to nest on the refuge.

American Crow (*Corvus brachyrhynchos*) Occasional summer resident. Irregular numbers of this species are occasionally present on the refuge. There is no documented nesting by this species on the refuge, but hatch year individuals have been observed in August. A representative study skin (MDC049) is included in the refuge collection. This specimen was collected along Pine Creek in 1983.

Common Raven (*Corvus corax*) Uncommon permanent resident. Small numbers of this species utilize the refuge as a foraging area. Individuals have been documented predated the nests of several waterfowl species, as well as those of sandhill cranes and northern harriers. There is no known nesting by this species on the refuge.

LARKS

Horned Lark (*Eremophila alpestris*) Common migrant, uncommon summer and winter resident. This species occurs sporadically on the refuge and is usually observed in large flocks. During the summer, low numbers of birds utilize the South Hunt Area, where they may nest. They are most commonly observed following snowstorms in the winter and spring.

SWALLOWS

Tree Swallow (*Tachycineta bicolor*) Common summer resident. Largest numbers of these swallows are present during the spring. This species is a cavity nester and has utilized net boxes and natural cavities along the Pine Creek riparian corridor and at subheadquarters. This species is commonly captured in mist nets at subheadquarters. A representative study skin (MDC030) is included in the refuge collection.

Violet-green Swallow (*Tachycineta thalassina*) Common migrant, uncommon summer resident. This species has been observed over most of the refuge, especially during the spring and fall at the peak of migration. Upwards of 500 violet-green swallows spent the night in the office garage in an attempt to stay warm when caught by an early fall storm.

Bank Swallow (*Riparia riparia*) Common migrant, uncommon summer resident. Listed as a Threatened Species by the CDFG. During the spring this species has been observed scattered over much of the refuge where they feed on flying insects. In the summer they seem restricted to areas along the Pit River where they nest in limited numbers.

Cliff Swallow (*Petrochelidon pyrrhonota*) Common summer resident. One of the most commonly observed swallows present along the Pit River during the summer. This species is known to nest under many of the bridges on the refuge. Several have been captured in mist nets at Sharkey Dam, one of the largest nesting colonies.

Northern Rough-winged Swallow (*Stelgidopteryx serripennis*) Uncommon migrant, occasional summer resident. Best observed during the spring when large numbers may be seen feeding over refuge ponds. Nesting has not been documented on the refuge.

Barn Swallow (*Hirundo rustica*) Common summer resident. This is one of the most commonly observed swallows on the refuge. A prolific nester, it utilizes all structures on the refuge to construct its mud nests. One pair will produce several broods each year, and it is not uncommon to have active nesting occurring in mid-late August. A representative study skin (MDC039) is included in the refuge collection.

CHICKADEES, TITMICE

Juniper Titmouse (*Baeolophus griseus*) Occasional or rare winter resident. This species was first observed at Dorris Reservoir in December 1984. Subsequent observations indicate that this is probably a common winter resident.

Black-capped Chickadee (*Poecile atricapillus*) Occasional winter resident. This species is listed as a Species of Special Concern by the CDFG. This species has only been observed on the Dorris Reservoir unit in juniper woodlands. Several individuals were observed in January 1984.

Mountain Chickadee (*Poecile gambeli*) Common migrant, rare summer and winter resident. This species is especially evident in the fall, when large numbers of migrating individuals utilize the subheadquarters area.

Bushtit (*Psaltriparus minimus*) Occasional or rare winter resident. This species was first observed at Dorris Reservoir in December 1984.

CREEPERS, NUTHATCHES

Brown Creeper (*Certhia americana*)

Red-breasted Nuthatch (*Sitta canadensis*)

WRENS

House Wren (*Troglodytes aedon*)

Winter Wren (*Troglodytes troglodytes*)

Bewick's Wren (*Thryomanes bewickii*)

Rock Wren (*Salpinctes obsoletus*)

Marsh Wren (*Cistothorus palustris*)

KINGLETS, BLUEBIRDS, THRUSHES

Golden-crowned Kinglet (*Regulus satrapa*)

Ruby-crowned Kinglet (*Regulus calendula*)

Blue-gray Gnatcatcher (*Polioptera caerulea*)

Western Bluebird (*Sialia mexicana*)

Mountain Bluebird (*Sialia currucoides*)

Townsend's Solitaire (*Myadestes townsendi*)

Swainson's Thrush (*Catharus ustulatus*)

Hermit Thrush (*Catharus guttatus*)

Varied Thrush (*Ixoreus naevius*)

American Robin (*Turdus migratorius*)

THRASHERS

Northern Mockingbird (*Mimus polyglottus*)

Sage Thrasher (*Oreoscoptes montanus*)

STARLINGS

European Starling (*Sternus vulgaris*) Common summer resident, uncommon winter resident. Widespread on the refuge, but especially abundant at subheadquarters and any other place it can find a suitable nesting cavity. Due to its aggressive and belligerent nature, it is a very serious competitor with native cavity nesting birds. This problem is growing at an alarming rate and will probably have to be controlled in the future. A representative study skin (MDC0210) is included in the refuge collection. Specimen collected by E.C. Bloom on 3/28/82.

PIPITS

American Pipit (*Anthus rubescens*)

WAXWINGS

Bohemian Waxwing (*Bombycilla garrulus*)

Cedar Waxwing (*Bombycilla cedrorum*)

WOOD-WARBLERS

Tennessee Warbler (*Vermivora peregrina*)

Orange-crowned Warbler (*Vermivora celata*)

Nashville Warbler (*Vermivora ruficapilla*)

Magnolia Warbler (*Dendroica magnolia*)

Yellow-rumped Warbler (*Dendroica coronata*)

Black-and-white Warbler (*Mniotilta varia*)

Black-throated Gray Warbler (*Dendroica nigrescens*)

Townsend's Warbler (*Dendroica townsendi*)

Hermit Warbler (*Dendroica occidentalis*)

Blackpoll Warbler (*Dendroica striata*)

Yellow Warbler (*Dendroica petechia*)

MacGillivray's Warbler (*Oporornis tolmiei*)

Wilson's Warbler (*Wilsonia pusilla*)

Ovenbird (*Seiurus aurocapillus*)

Northern Waterthrush (*Seiurus noveboracensis*)

Common Yellowthroat (*Geothlypis trichas*)

Yellow-breasted Chat (*Icteria virens*)

TANAGERS

Western Tanager (*Piranga ludoviciana*)

SPARROWS

Green-tailed Towhee (*Pipilo chlorurus*)

California Towhee (*Pipilo crissalis*)

Spotted Towhee (*Pipilo maculatus*)

American Tree Sparrow (*Spizella arborea*)

Chipping Sparrow (*Spizella passerina*)

Brewer's Sparrow (*Spizella breweri*)

Lark Sparrow (*Chondestes grammacus*)

Sage Sparrow (*Amphispiza belli*)

Fox Sparrow (*Passerella iliaca*)

Savannah Sparrow (*Passerculus sandwichensis*)

Lincoln's Sparrow (*Melospiza lincolnii*)

Song Sparrow (*Melospiza melodia*)

Vesper Sparrow (*Pooecetes gramineus*)

Swamp Sparrow (*Melospiza georgiana*)

White-throated Sparrow (*Zonotrichia albicollis*)

White-crowned Sparrow (*Zonotrichia leucophrys*)

Golden-crowned Sparrow (*Zonotrichia atricapilla*)

Dark-eyed Junco (*Junco hyemalis*)

Chestnut-collared Longspur (*Calcarius ornatus*)

GROSBEAKS, BUNTINGS

Black-headed Grosbeak (*Pheucticus ludovicianus*)

Lazuli Bunting (*Passerina amoena*)

BLACKBIRDS, ORIOLES

Bobolink (*Dilochonyx oryzivorus*)

Western Meadowlark (*Sturnella neglecta*)

Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*)

Red-winged Blackbird (*Agelaius phoeniceus*)

Tricolored Blackbird (*Agelaius tricolor*)

Common Grackle (*Quiscalus quiscula*)

Brewer's Blackbird (*Euphagus cyanocephalus*)

Brown-headed Cowbird (*Molothrus ater*)

Bullock's Oriole (*Icterus bullockii*)

Scott's Oriole (*Icterus parisorum*)

FINCHES

Gray-crowned Rosy Finch (*Leucosticte tephrocotis*)

Purple Finch (*Carpodacus purpureus*)

House Finch (*Carpodacus mexicanus*)

Pine Siskin (*Carduelis pinus*)

American Goldfinch (*Carduelis tristis*)

Lesser Goldfinch (*Carduelis psaltria*)

Common Redpoll (*Carduelis flammea*)

Evening Grosbeak (*Coccothraustes vespertinus*)

WEAVER FINCHES

House Sparrow (*Passer domesticus*) Common permanent resident. Large numbers are evident around the refuge headquarters area. It builds its nests in bird boxes, cavities, trees, buildings and any other place it can find. This species population appears to be increasing at a dramatic rate and may require some control in the future.