

# **Vertebrate Fauna of the San Joaquin Experimental Range, California: an annotated checklist based on 70 years of observations**

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**Kathryn L. Purcell**

**Douglas A. Drynan**

**Kevin M. Mazzocco**



Pacific Southwest Research Station  
U.S. Department of Agriculture - Forest Service

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## Introduction

Established in 1934, the San Joaquin Experimental Range (hereafter SJER) was California's first Experimental Range. Many studies of wildlife species have been carried out at SJER since its inception, and it continues to provide unique opportunities for research and educational activities that create an enhanced understanding of the foothill oak woodland ecosystem of California. In cooperation with individuals and other organizations, the Pacific Southwest Research Station has participated in and encouraged studies of many basic biological subjects. Agencies and institutions that have taken part include the U.S. Fish and Wildlife Service, California Department of Fish and Game, University of California, and California State University, Fresno. As a result of these studies and occasional observations, the wildlife species of SJER have been fairly well documented.

SJER is located on 1,806 ha (4,462 ac) near the center of California in the lower Sierra Nevada foothills of Madera County. Elevations range from 213 to 518 m (700 to 1,700 ft). Winters are mild and moist; summers are hot and dry. Rainfall averages 46.7 cm (18.4 in) per year, with extremes of less than 25 and more than 76 cm (10 and more than 30 in). Most rain falls between October and April. Exposures are generally southwesterly. Soils (Ahwahnee and Visalia series) are of granitic origin and have low water-holding capacity. No permanent streams are found at SJER, although intermittent streams, swales, and springs are numerous. Small drainages typically carry surface flow during the winter months. The watershed drains into Cottonwood Creek, a tributary of the San Joaquin River.

Vegetation is best characterized as annual grass oak-pine woodland. Some areas are typical blue oak (*Quercus douglasii*) woodland, where few to no trees of other species occur, and the understory is relatively open. Elsewhere, the overstory consists of a sparse cover of blue oak, interior live oak (*Quercus wislizenii*), and foothill pine (*Pinus sabiniana*). Shrubs grow as scattered individuals or in denser clumps; species are mainly wedgeleaf ceanothus (*Ceanothus cuneatus*), chaparral whitethorn (*Ceanothus leucodermis*), holly-leaf coffeeberry (*Rhamnus ilicifolia*), hoary coffeeberry (*Rhamnus tomentella cispidata*), and Mariposa manzanita (*Arctostaphylos viscida mariposa*). Annual grasslands form a mosaic across gentle slopes where the overstory is lacking. Non-native annual grass species and non-native forbs have become naturalized and often dominate herbaceous cover. Native perennial grasses, rushes and sedges,

native annual grasses, and native forbs also occur. See Larson et al. (1985) for a checklist of the plants of SJER, including a list of mosses and lichens.

SJER has been grazed by livestock for research and educational purposes since its inception. The property is fenced into 34 Range Units (RU) for purposes of range management (Fig. 1). When SJER was acquired, an ungrazed comparison area was set aside. A 30 ha (76 ac) Research Natural Area (RNA) was formally designated from this ungrazed parcel in 1971. This area is also referred to as RU 80. Additional ungrazed parcels and exclosures of varying sizes also exist.

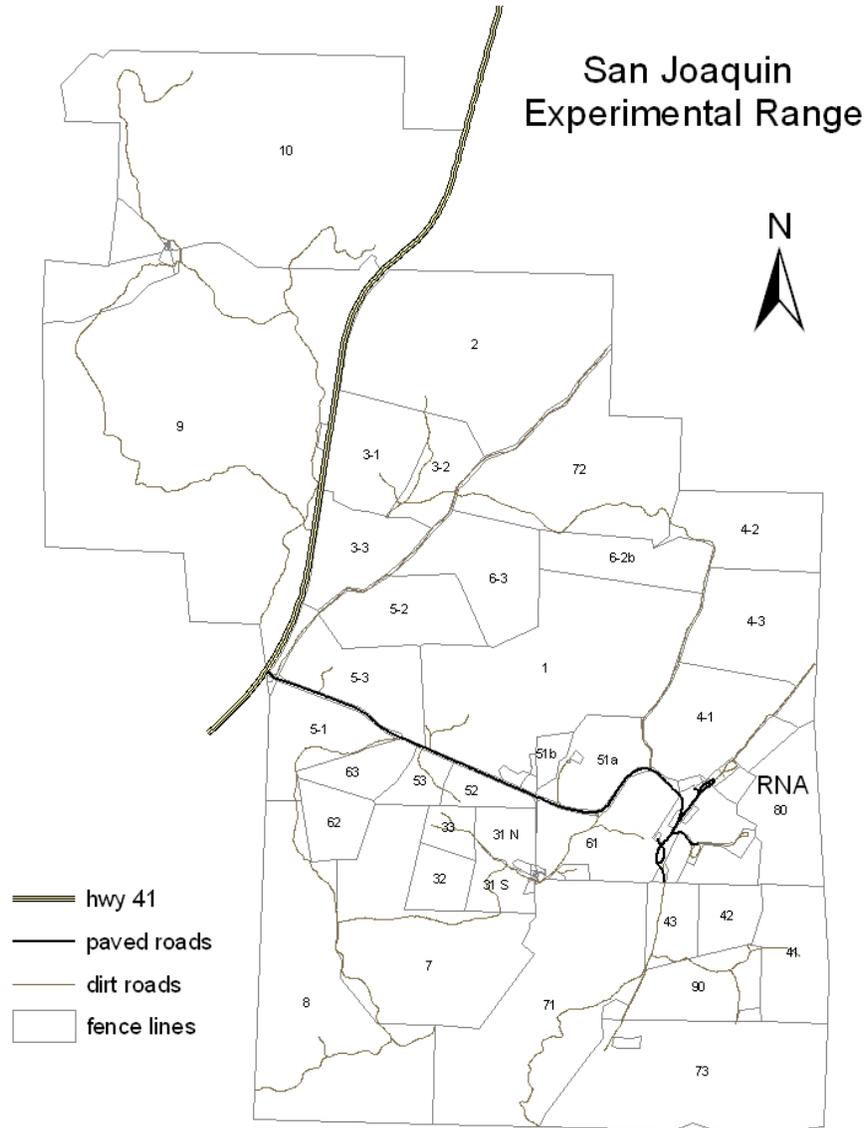


Figure 1. Map of the San Joaquin Experimental Range showing range units and roads. The Research Natural Area (RNA) is RU 80.

The foothill oak woodlands of California are considered to be among the most diverse habitat types in California in terms of wildlife. They are extremely rich in animal species and provide breeding, wintering, and migratory stopover habitat for many wildlife species. This annotated vertebrate checklist provides a list of species observed at SJER with information on abundance for fish, amphibians, reptiles, mammals, and birds. This report updates earlier checklists of vertebrate fauna of SJER (Childs and Howard 1955, Newman and Duncan 1973, Duncan et al. 1985), includes new species records, provides information on legal status, and includes some additional life history information from recent work. Species seen only within the SJER boundary are included in this checklist. Specimens of most common species of birds and mammals are in a collection at SJER.

Scientific names used are in accordance with the following sources: fish – Moyle (2002); amphibians and reptiles – Jennings (2004); mammals – Wilson and Reeder (2005); birds – American Ornithologists' Union (1998, 2000) and Banks et al. (2002, 2003, 2004, 2005).

Authors: Kathryn L. Purcell, Douglas A. Drynan, and Kevin M. Mazzocco

Observers/Contributors: Stanley L. Anderson, Laura B. Arno, Jay R. Bentley, Deborah Bieber, William M. Block, Dawn Breese, Ken M. Burton, Robert F. Buttery, Kat Calderala, Henry E. Childs, Jr., Barbara M. Crouse, Douglas J. Cubanski, Jeffrey N. Davis, Donald A. Duncan, Robert Evans, Brian A. Gibson, Frank Gibson, Ben Glading, Ellen L. Hammond, Keith Hansen, Robert Hansen, Christopher M. Heckscher, Sallie J. Hejl, Walter E. Howard, Patrick Kelly, William Kruse, Zev Labinger, Peter B. Landres, Roman Lopez Forment, Brete Griffin, Steven A. Hawkins, Amy Lind, John C. Lovio, Kathleen A. Milne, William R. Maynard, Neil K. McDougald, Dan A. Nelson, Thomas F. Newman, Barbara R. North, Julia E. Ohanesian, Rodney G. Olsen, Constantino Orduña Trejo, Coleen M. Pidgeon, Jay C. Quast, Kimberly L. Raum, Jack Reppert, Richard J. Reynolds, Lyman V. Ritter, Schitosky, Jeffrey L. Seay, Dan Shaw, Randy Sisk, Frank H. Starkey, Curt D. Steggall, Robert M. Suryan, Robert S. Suydam, Daniel M. Taylor, Jennifer G. Turner, Jared Verner, Kenneth A. Wagnon, Jeffery R. Waters, Stanley E. Westfall, Edward D. Whisler, Arlene Wilkinson, Dan Williams, J. T. Wright.

## FISH (7)

The occurrence of fish at SJER depends on introduction into artificial ponds and reservoirs. In 1973 large-mouth bass, bluegill, red-ear sunfish, Sacramento perch, and mosquito fish were stocked in an experiment designed to provide baseline fish production data from different sized foothill ranch ponds. Preliminary results were reported by Eckman (1974) and Harp (1976). In drought years the reservoirs dry up and no recent fish stocking has occurred. Currently, only mosquito fish occur in a few large concrete water troughs.

### Checklist of Fish

Mosquito Fish (*Gambusia affinis*)  
Large-mouth Bass (*Micropterus salmoides*)  
Hitch (*Lavinia exilicauda*)  
Green Sunfish (*Lepomis cyanellus*)  
Bluegill (*Lepomis macrochirus*)  
Red-ear Sunfish (*Lepomis microlophus*)  
Sacramento Perch (*Archoplites interruptus*)

The following qualitative abundance categories are used for amphibians, reptiles, and mammals in order of decreasing occurrence:

Abundant: easily seen, at least at certain times of year

Common: easily seen in surveys in appropriate habitat and time of year and day

Uncommon: can be found with persistent effort

Rare: difficult to find or extirpated

## AMPHIBIANS (8)

The semi-arid conditions in the foothill belt of California are not suitable for a large or varied amphibian population. The bullfrog, an introduced species found in reservoirs and stockponds, is the most abundant member of this group. The foothill yellow-legged frog (*Rana boylei*) has not been observed at the Range, although it was present at O'Neals, approximately 4 km (2.5 mi) away, in the 1950s.

### Checklist of Amphibians

California Tiger Salamander	Western Toad
California Newt	Pacific Treefrog
Gregarious Slender Salamander	California Red-legged Frog
Western Spadefoot	Bullfrog

California Tiger Salamander (*Ambystoma californiense*).

Rare: Formerly found in limited numbers near the dams in the headquarters area. In February 1952, eggs were found where the horse pasture dam used to be. One or two were seen most years from 1963 through 1985, but it was not recorded in recent surveys (R. Sisk, pers. commun.) and may be extirpated from this location. This species is not observed outside its subterranean refuge sites (small mammal burrows) outside of the wet season. It breeds in ephemeral rain pools. This species is Federally listed as Threatened and is a California Species of Special Concern, listed as protected. It is a California endemic and the most vulnerable of the amphibian species that breed in rain pools. Threats include fish introductions, bullfrogs, and drought (Jennings and Hayes 1994).

California Newt (*Taricha torosa*).

Rare: Occasional reports from the 1930s. Two specimens were taken in the spring of 1952. Several were seen in the spring of 1963. One was reported in the spring of 1986 and 1987, and one in the winter of 1988.

Gregarious Slender Salamander (*Batrachoseps gregarius*).

Uncommon: Found under rocks and logs in the wet season.

Western Spadefoot (*Spea hammondi*).

Uncommon: The spadefoot breeds in vernal pools and intermittent streams in varying numbers depending on weather conditions in early spring. Highly vocal, singing begins in late January. Eggs are laid in March. It is active following relatively warm rains in fall, later winter and early spring, but it may be active following sufficient rainfall any month between October and April. This species is almost completely terrestrial, entering water to breed only. It lives in burrows in loose soil at least 1 m (3.3 ft) deep. Predators include California tiger salamanders, gartersnakes, great blue herons, and raccoons. This species is a California Species of Special Concern, listed as protected. Threats include habitat conversion, fragmentation of rain pools and vernal pool habitat, mosquitofish and bullfrogs (Jennings and Hayes 1994).

Western Toad (*Bufo boreas*).

Common: These toads may be found foraging at night. Eggs were found in February 1952 at the location of the former horse pasture dam.

Pacific Treefrog (*Hyla regilla*).

Common: Found in wet areas throughout the year where it breeds in streams and vernal pools. This species is sometimes referred to as *Pseudacris regilla*. Controversy remains regarding the correct phylogeny, and relationships among this group are not yet completely resolved.

California Red-legged Frog (*Rana draytonii*).

Rare, probably extirpated: One was observed in October 1951. This species is Federally listed as Threatened and a California Species of Special Concern, listed as protected. Historically, it was heavily exploited commercially for food, resulting in severely depleted populations by the turn of the century. Threats include exotic aquatic predators

(bullfrogs, fish), reservoir construction, OHV use, and overgrazing (Jennings and Hayes 1994).

Bullfrog (*Rana catesbeiana*).

Abundant: This introduced species is now thriving in the small stock reservoirs. In 1951, prior to the destruction of the horse pasture dam, 58 individuals were recorded (Cohen and Howard 1958). In the fall of 1984, one pond had approximately 100 adults and thousands of young bullfrogs.

## REPTILES (19)

Reptiles appear well suited to the climate of SJER as indicated by their diversity and numbers. Two lizards, the Gilbert's skink and the western fence lizard, and two snakes, the gophersnake and the western rattlesnake, are the most abundant species. Western pond turtles are found in several of the reservoirs and small ponds.

Exotic, non-established species: A Western Diamondback Rattlesnake (*Crotalus atrox*) was observed on 11 April 2006 in RU 71, on the west side of the canyon. Unwanted pets of this species are sometimes released from captivity in the foothills. Additional observations may provide evidence of a small established population at SJER.

### Checklist of Reptiles

#### TURTLES (1)

Western Pond Turtle

#### LIZARDS (6)

Coast Horned Lizard

Western Fence Lizard

Side-blotched Lizard

Southern Alligator Lizard

Gilbert's Skink

Tiger Whiptail

#### SNAKES (12)

Racer

Night Snake

Ring-necked Snake

Common Kingsnake

California Mountain Kingsnake

Striped Racer

Gophersnake

Long-nosed Snake

Sierra Gartersnake

Giant Gartersnake

Common Gartersnake

Western Rattlesnake

## TURTLES (1)

Western Pond Turtle (*Actinemys marmorata*).

Uncommon but easily found in appropriate habitat when active: The generic name for this species has not been completely resolved. Other names used include *Clemmys*, *Glyptemys*, and *Emys*. Small populations occur in the reservoirs and the horse pasture swale. These populations may have originally been introduced but appear to be viable. This aquatic turtle leaves the aquatic site to reproduce and overwinter. At SJER, they are

typically active from March or April until October or November. They thermoregulate by basking out of the water when water temperatures are low. Basking sites appear to be an important habitat element. They generally mate in late April and the eggs generally hatch in May or June. The female lays 1-13 eggs in a shallow nest (10-12 cm; 3.9-4.7 in deep) in an upland location that may be a considerable distance from the aquatic site (more than 400 m; 1,312 ft but often less). Hatchlings require shallow water with relatively dense submergent or short emergent vegetation. Zooplankton fauna are an important food of hatchlings and young juveniles. They are thought to be long-lived (maximum recorded age is 42 years). This species is a California Species of Special Concern, listed as protected, and current population levels are a fraction of historic levels. Threats include drought, changes in land and water use that have altered their habitat, abusive grazing practices, and exploitation for the pet trade. Recruitment may be a problem as populations show an adult-biased age structure. Management recommendations include fencing the aquatic site to 500 m (1,640 ft) to allow turtle movement and ensure nests are not trampled during incubation. Control of exotic fauna is also recommended. Bullfrogs and bass prey on hatchling and juvenile turtles, and sunfish compete with them for food (Jennings and Hayes 1994).

## **LIZARDS (6)**

Coast Horned Lizard (*Phrynosoma coronatum*).

Rare: Observed in the late 1930s, one was recorded in 1966, and none since. This species is a California Species of Special Concern, listed as protected. Its defensive behavior of remaining motionless until disturbed makes it vulnerable to capture for domestic pets and to being run over by vehicles. Threats include agricultural conversion, urbanization, and roads (Jennings and Hayes 1994).

Western Fence Lizard (*Sceloporus occidentalis*).

Abundant: The first lizard to become active in the spring, generally on warm days in February or March. Found around buildings, rock outcrops, and trees.

Side-blotched Lizard (*Uta stansburiana*).

Common: Found in sandy areas where escape burrows are present.

Southern Alligator Lizard (*Elgaria multicarinata*).

Uncommon: Few observations, but more have been seen in recent years. This species appears to have become more common recently.

Gilbert's Skink (*Eumeces gilberti*).

Abundant: This species and the whiptail lizard have been taken abundantly in drift traps. The skink appears to be most active from April to June in dense vegetation. They are cryptic and not frequently observed but are almost certainly more or less active over most of the warmer months.

Tiger Whiptail (*Aspidoscelis tigris*).

Common: The generic name *Cnemidophorus* is still widely used for this species as well as the common name Western Whiptail. Whiptails are found in sparse vegetation and along roads. They are active during the entire summer.

## SNAKES (12)

Racer (*Coluber constrictor*).

Uncommon: Has been taken occasionally in drift traps in the headquarters area.

Nightsnake (*Hypsiglena torquata*).

Rare: This secretive and nocturnal snake is found under boulders of granite outcrops (Fitch 1949).

Ring-necked Snake (*Diadophis punctatus*).

Rare: A few have been recorded along the swale in the headquarters area. One was collected in February 1961 under rocks in RU 5-1 and one was seen in RU 9 in 1962. One was found in a kitchen sink in the guest barracks in April 1992.

Common Kingsnake (*Lampropeltis getula*).

Uncommon: Found in low numbers at SJER, this species is found in areas with persistent moisture (Fitch 1949). One was found ingesting a rattlesnake and photographed in 1972.

California Mountain Kingsnake (*Lampropeltis zonata*).

Rare: One found dead on road in 1965; live specimen found in RU 5-3 in April 1967.

Striped Racer (*Masticophis lateralis*).

Common: Also referred to as the California Whipsnake. This wary species is associated with chaparral habitat and manzanita and ceanothus thickets. When alarmed, it darts through a shrub to the farthest side and remains motionless (Fitch 1949).

Gophersnake (*Pituophis catenifer*).

Abundant: Widely distributed over SJER, this species prefers habitat with dense vegetation (Fitch 1949). It is perhaps more abundant than the rattlesnake.

Long-nosed Snake (*Rhinocheilus lecontei*).

Rare: This species is secretive and nocturnal. Drift trap records indicate a greater abundance of this snake than was once believed.

Sierra Gartersnake (*Thamnophis couchii*).

Common: Found along streams.

Giant Gartersnake (*Thamnophis gigas*)

Rare: A giant gartersnake was seen in March 1972 in the RU 9 reservoir. This specimen was captured and released in May of 1972. In July 1972, one was observed attempting to swallow a 13 cm (5 in) bluegill, also at the reservoir in RU 9. This species is listed as both Federally and California Threatened.

Common Gartersnake (*Thamnophis sirtalis*).

Common: Limited to moist areas.

Western Rattlesnake (*Crotalus oreganus*).

Common: Rattlesnakes at SJER are inactive in the winter months, wintering underground singly or in small groups (Fitch and Glading 1947). They emerge after the onset of warm weather in March and April when temperatures exceed 21° C (70° F), although timing of emergence varies considerably from year to year (Fitch 1949). When temperatures exceed 32° C (90° F), they are rarely seen during daylight hours and are active from dawn to dusk. They breed in spring almost immediately after emergence and the young are born in September and October (Fitch and Glading 1947). They are fairly sedentary (Fitch 1949). A few individuals made movements greater than 0.6 km (1 mi) from the original capture location, but most adults have small ranges. Based on a 32 ha (80 ac) sampling area, average densities were roughly 0.5 per ha (1.2 per ac) (Fitch 1949). Current densities appear to be much lower and numbers appear to decrease following particularly cold winters.

## MAMMALS (41)

Most of the early wildlife investigations have concerned rodents because these animals occur in great numbers and also because their impact on forage production may have economic significance. More recent investigations have been more broadly focused on the mammal community, but especially mammals caught in pitfall and Sherman traps. Recent information on bats and the larger mammals is especially lacking.

### Checklist of Mammals

Virginia Opossum	American Badger
Black-tailed Jackrabbit	Striped Skunk
Desert Cottontail	Western Spotted Skunk
Ornate Shrew	Raccoon
Broad-footed Mole	Wild Boar
Brazilian Free-tailed Bat	Mule Deer
Western Red Bat	Western Gray Squirrel
Hoary Bat	California Ground Squirrel
Western Pipistrelle	Merriam's Chipmunk
Pallid Bat	Heermann's Kangaroo Rat
California Myotis	California Pocket Mouse
Yuma Myotis	San Joaquin Pocket Mouse
Bobcat	Botta's Pocket Gopher
Cougar	California Vole
Coyote	Common Muskrat
Gray Fox	Big-eared Woodrat
American Black Bear	Southern Grasshopper Mouse
Long-tailed Weasel	Brush Deermouse

North American Deermouse  
Piñon Deermouse  
Western Harvest Mouse  
House Mouse

North American Porcupine

Virginia Opossum (*Didelphis virginiana*).

Common: One was recorded in an owl pellet (Fitch 1947b). First live animal reported on 1 December 1957, second live record on 10 June 1958. Several live animals were seen between 1960 and 1986. Not reported since.

Black-tailed Jackrabbit (*Lepus californicus*).

Rare: Not recorded since 1985.

Desert Cottontail (*Sylvilagus audubonii*).

Abundant: It is widely distributed over SJER, often seen in numbers in the evenings during summer on lawns around headquarters (Fitch 1947a).

Ornate Shrew (*Sorex ornatus*).

Rare: Usually found near streams and swales. One was caught in a drift trap on April 1, 1951. The specimen is located at the University of California, Berkeley, Museum of Vertebrate Zoology. Two were found dead in the headquarters building patio in 1978. One (female) was captured in a pitfall trap on 21 January 1982 in RU 71 at the upper end of the canyon. The specimen is in the Carnegie Museum of Natural History, Pittsburgh, PA. Trap site was in a rocky area, not near water.

Broad-footed Mole (*Scapanus latimanus*).

Rare: Two specimens were taken in gardens at headquarters in March 1953. Five specimens were collected by T. L. Yates in 1977 (specimen at Texas Tech) and one in 1979. Two more were collected on 30 January 1982, were preserved as whole skeletons, and are in the Carnegie Museum of Natural History, Pittsburgh, PA. Moles appear to be fairly common in the headquarters area; surface burrows are apparent as well as permanent burrows 0.3-0.6 m (1-2 ft) deep, but the animal is not often seen. Probably lives deep and under large boulders during dry spells.

Brazilian Free-tailed Bat (*Tadarida brasiliensis*).

Uncommon: A few records in early spring have been obtained while they were night roosting with the pallid bat. One found dead at office in July 1995.

Western Red Bat (*Lasiurus blossevillii*).

Rare: Recorded only in an owl pellet by Fitch (1947b).

Hoary Bat (*Lasiurus cinereus*).

Rare: New species for SJER since the 1985 checklist. One sighting of roosting bat in April 1993 on RNA (RU 80).

Western Pipistrelle (*Pipistrellus hesperus*).

Common: This early evening flyer was first collected in June 1950.

Pallid Bat (*Antrozous pallidus*).

Common: Although it was not recorded at SJER in 1937, the pallid bat is now a common night-roosting bat in the barns and adobe buildings. Observed flying out of holes in a blue oak at dusk. Pallid bats roost in large oaks, rock crevices, and buildings. Roosting habitat is likely limited and should be protected. This species forages on the ground, with Jerusalem crickets a preferred item. Classified as a California Species of Special Concern. Numbers have declined in other parts of California.

California Myotis (*Myotis californicus*).

Common: Habits are the same as the Yuma myotis.

Yuma Myotis (*Myotis yumanensis*).

Common: Found at night in barns and around adobe buildings.

Bobcat (*Lynx rufus*).

Common: Frequently sighted. Prior to 1960 there was an effort to control this species, although no cattle losses from bobcats have been reported. Numbers have increased since 1960 but probably have now stabilized. This species breeds here. Dens have been located and young kittens have been seen. A bobcat was seen feeding on a small mule deer fawn in 1976; whether the bobcat killed the fawn is not known.

Cougar (*Puma concolor*).

Rare: Several sight records, more in recent years. A few deer kills have been made at SJER by mountain lions.

Coyote (*Canis latrans*).

Common: No control efforts have been made since 1960. Coyotes have been commonly seen and heard in recent years. No cattle have ever been reported killed by coyotes. Calves dying from other causes have been scavenged by coyotes. Coyotes are easily seen during the day and their howling and barking can be heard nearly every night. Fitch (1948b) reported that rodents and rabbits made up 90% of their diet.

Gray Fox (*Urocyon cinereoargenteus*).

Rare: Few foxes have been seen in recent years. Childs and Howard (1955) listed this species as common, but only four sightings were reported in 1971, 1972, and 1973. Five sightings since 1985: April 1987 in RU 9, January 1991 in RU 1, June 1993 in RU 5, June 1995 along entrance road, and March 2000 in RU 4.

American Black Bear (*Ursus americanus*).

Rare: New species for SJER since the 1985 checklist. The single record consists of a forepaw print seen in mud in RU 3-1, March 1987.

Long-tailed Weasel (*Mustela frenata*).

Rare: One was captured in a drift trap in May 1950.

American Badger (*Taxidea taxus*).

Common: Although badgers are not often seen, their diggings indicate they are present. One killed on the entrance road in 1973 was given to the Biology Department of Fresno State University. Two were seen in RU 9 in 1981. Four sightings since 1985: April 1986 in the RNA (RU 80), October 1987 in RU 5, July 1992 in RU 5-3, and March 1993 in the RNA (RU 80).

Striped Skunk (*Mephitis mephitis*).

Uncommon: Prior to 1985, a few individuals were trapped or seen. Two reports since 1985: April 1986 in RU 8, and April 1993 in the RNA (RU 80).

Western Spotted Skunk (*Spilogale gracilis*).

Rare: Known from road kills only. Two were found in 1951-52 and one in July 1986.

Raccoon (*Procyon lotor*).

Rare: Formerly listed as common and widespread over SJER along swales. The only recent sighting was in April 1987 in RU 10.

Wild Boar (*Sus scrofa*).

Common: New species for SJER since the 1985 checklist. Pigs are not commonly seen but sign of their presence is widespread. First pig rooting observed west side of SR 41 in RU 10 in the mid 1980s but not seen east of SR 41 until 2000 in RU 72. Numbers are increasing due to range expansion and high reproductive rate. They are derived from both domestic stock and Eurasian wild boar, which interbreed readily. Oak woodlands are their preferred habitat, but they are closely associated with availability of permanent water. They destroy or degrade habitat, cause soil erosion, compete with native wildlife species for food, consume acorns, act as reservoirs of disease and prey on nests of ground-nesting birds, reptiles, amphibians and mammals. Their rooting can threaten endemic plant populations and enhance the spread of exotic grasses. Control efforts were employed from 2001 through 2003 by USDA Animal Damage Control (ADC) trappers, although only three individuals were removed. Control efforts were reinitiated by USDA ADC in 2006 and are ongoing.

Mule Deer (*Odocoileus hemionus*).

Common: Apparently deer have greatly increased in numbers since 1934. Horn and Fitch (1942) did not mention deer as occurring at SJER. Childs and Howard (1955) estimated the resident population at about a dozen animals, with no apparent migrants. Deer continued to increase during the 1960s and the population is now probably in excess of 100 animals.

Western Gray Squirrel (*Sciurus griseus*).

Uncommon: The gray squirrel is found in association with foothill pines. It is probably exposed to greater predation here than in most parts of its range because of the necessity of moving from tree to tree on the ground.

California Ground Squirrel (*Spermophilus beecheyi*).

Abundant: This species is important ecologically and possibly economically on foothill rangelands. Young ground squirrels are an important component of the spring diet of rattlesnakes and gophersnakes, however in summer and early fall squirrels are too large to be swallowed by most snakes (Fitch 1949).

Merriam's Chipmunk (*Tamias merriami*).

Uncommon: This species seems restricted to rock outcrops where brush or fallen trees are found, although it seems to be rather common in suitable habitat. It may have been more abundant in former years and was more common than the San Joaquin pocket mouse in 1973.

Heermann's Kangaroo Rat (*Dipodomys heermanni*).

Common: At one time very abundant. A change from "perhaps 30 per acre to only one," during the period 1935 through 1946 was reported (Fitch 1948a). In 1972-1973, this species was less abundant than one per acre.

California Pocket Mouse (*Chaetodipus californicus*).

Uncommon: Irregularly captured. One collected on 8 June 1979 (specimen is in the Museum of Southwestern Biology, University of New Mexico). Three captured at the south end of SJER in June 2002.

San Joaquin Pocket Mouse (*Perognathus inornatus*).

Common: It appears to be common where vegetation is sparse. Four captured at the south end of SJER in June 2002.

Botta's Pocket Gopher (*Thomomys bottae*).

Abundant: Howard and Childs (1959) reported, "This species perhaps surpasses the ground squirrel for the title of the most destructive rodent on rangelands, because they occur in much greater numbers." On the other hand, Ratliff and Westfall (1971) reported that gophers are an important soil cultivator and their activities lower surface bulk density of soils, but in ungrazed areas only.

California Vole (*Microtus californicus*).

Uncommon: This vole is restricted to ungrazed areas where it may become abundant. A cyclic peak in abundance was observed in 1951. A study done in 1972 and 1973 reported no captures of this species with intense trapping effort in suitable habitat. One was captured in a pitfall trap in RU 71 on 19 January 1982 (specimen is in the Carnegie Museum). Voles generally are easily caught, especially in pitfall traps.

Common Muskrat (*Ondatra zibethicus*).

Rare: Three were seen on the reservoir in RU 9 in 1971 and two were killed in September 1971. A dead muskrat was seen at the reservoir in July 1972 as well as a live individual. The only recent sighting was in April 1987 at the RU 9 reservoir.

Big-eared Woodrat (*Neotoma macrotis*).

Common: The woodrat is widely found in brush and rock outcrops.

Southern Grasshopper Mouse (*Onychomys torridus*).

Rare: Reported only in association with *Lotus scoparius* in RU 71 in the canyon below headquarters. An attempt to find them in this area in the summer of 1952 was unsuccessful.

Brush Deermouse (*Peromyscus boylei*).

Abundant: Associated with rock outcrops (Quast 1954, Howard 1957, Cockerham 1975).

North American Deermouse (*Peromyscus maniculatus*).

Abundant: This deermouse is found in open grazed pastures away from rocks or brush and is favored by grazing (Quast 1954, Cockerham 1975).

Piñon Deermouse (*Peromyscus truei*).

Abundant: This is the most abundant of the three species of *Peromyscus* found at SJER. Its abundance is positively correlated with the cover of wedgeleaf ceanothus, and it is more abundant in ungrazed areas (Quast 1954).

Western Harvest Mouse (*Reithrodontomys megalotis*).

Uncommon: Found in swales in ungrazed pastures.

House Mouse (*Mus musculus*).

Rare: An occasional individual has been taken in the headquarters area. No observations since 1985.

North American Porcupine (*Erethizon dorsatum*).

Rare: One was reported sometime prior to 1960 and one was found dead on the entrance road in June 1953.

## **BIRDS (198)**

Newman and Duncan (1973) provided a list of the birds recorded at SJER during the first 36 years since its establishment in 1934. Most data represented results of occasional observations by scientists and technicians, combined with a number of collected specimens. This list was updated in 1985 (Duncan et al. 1985) and included results of intensive studies of bird communities in the pine-oak woodlands at SJER that resulted in the addition of many new records. The current revision includes much recent work on bird abundance and life history. An important monitoring effort involving standardized bird censuses initiated by Jared Verner in 1985 has provided much new information on birds at SJER in the spring. Fall and winter field work has been limited, so data during this period are still considered incomplete. Fall surveys were initiated in 2003 to better document migrant species.

The following list is based in part on the record of observed birds at SJER and in part on the larger experience of ornithologists with the avifauna of oak-pine woodlands in the western foothills of the central and southern Sierra Nevada. It is designed to serve as (1) a framework for

assessing the knowledge we have of species' abundance and occurrence throughout the year, (2) a baseline against which future changes in the avifauna may be compared, and (3) a basis for comparison with other areas. For a general account of birds and bird assemblages in oak-pine woodlands see Verner (1980) and Verner and Boss (1980).

The following define abundance categories used:

Abundant – a very numerous species

Common – certain to be seen in suitable habitat

Uncommon – present but not certain to be seen

Occasional – seen only a few times during a season

Rare – seen at intervals of 2 or more years

Irregular – present in some years but not in others, or in numbers that vary markedly from year to year

Casual – nonresident, nonmigrant visitors that occur infrequently and in low numbers, typically as strays from preferred habitats nearby

Accidental – One to a few records at SJER; no regularity

Locally common – certain to be seen in specific habitats with restricted distribution at SJER

Locally uncommon – present but not certain to be seen in habitats with restricted distribution at SJER

Locally rare – seen at intervals of 2 or more years in restricted habitats

NOTE: Abundance designations assume visits to appropriate habitat in the proper season; they allow rough quantitative comparisons only.

The following define seasons of occurrence as used here:

Permanent resident - the species (not necessarily the individual) remains throughout the year and normally breeds at SJER.

Summer resident - the species is present during most or all of the summer period and normally breeds at SJER; some summer residents arrive as early as February; some may remain as late as October.

Winter resident - the species is present during most or all of the winter period only; some winter residents may arrive as early as August; some may remain as late as May.

Migrant - a transient, usually occurring in spring (any period from February to May) and/or fall (any period from the end of July to November).

Whenever sufficient information was available, we included the observed arrival and departure dates of seasonally occurring species, notes on sighting dates, habitat preferences within SJER, and pertinent nesting information. Species marked with an asterisk (\*) are known to nest at SJER. References to research done on individual species at SJER are cited. Nomenclature and the sequence of species in this list follow the American Ornithologists' Union Check-List of North American Birds, 7<sup>th</sup> edition (1998), and incorporates changes made in the 42nd, 43rd, 44th, 45th, and 46<sup>th</sup> supplements (American Ornithologists' Union 2000, Banks et al. 2002, 2003, 2004, 2005) (<http://www.aou.org/checklist/index.php3>).

Exotic, non-established species: A few introduced or escaped farm species are occasionally seen at SJER but are not considered well enough established to be included as part of the avifauna. These include the following:

Chukar (*Alectoris chukar*). One sighting in May 1972 of an individual that was probably a release from a neighboring ranch.

Ring-necked Pheasant (*Phasianus colchicus*). A new species for SJER since the 1985 checklist. Recently, single individuals of this introduced game species have rarely dispersed into SJER in the spring. One spring record each in 1990 (female found dead) and 1991. In 1996, one male was present and vocal from 27 March through 26 April. What was likely the same individual was regularly seen in late fall in the same year until it was presumably depredated.

Common Peafowl (*Pavo cristatus*). Small, feral populations exist in the foothills, but there has been only one sighting at SJER of two adult females seen on 7 July 1971.

#### Checklist of Birds

Greater White-fronted Goose	Canvasback
Snow Goose	Redhead
Canada Goose	Ring-necked Duck
*Wood Duck	Greater Scaup
Gadwall	Bufflehead
American Wigeon	Common Goldeneye
*Mallard	Hooded Merganser
Blue-winged Teal	Common Merganser
Cinnamon Teal	Ruddy Duck
Northern Pintail	Wild Turkey
Green-winged Teal	*California Quail

Common Loon	*Long-eared Owl
Pied-billed Grebe	Lesser Nighthawk
Eared Grebe	Common Poorwill
American White Pelican	Black Swift
Double-crested Cormorant	Vaux's Swift
Least Bittern	White-throated Swift
Great Blue Heron	Black-chinned Hummingbird
Great Egret	*Anna's Hummingbird
Green Heron	Calliope Hummingbird
Black-crowned Night-heron	Rufous Hummingbird
*Turkey Vulture	Belted Kingfisher
California Condor	Lewis's Woodpecker
Osprey	*Acorn Woodpecker
White-tailed Kite	Red-naped Sapsucker
Bald Eagle	Red-breasted Sapsucker
Northern Harrier	*Nuttall's Woodpecker
Sharp-shinned Hawk	Downy Woodpecker
*Cooper's Hawk	*Hairy Woodpecker
Northern Goshawk	*Northern Flicker
Red-shouldered Hawk	Olive-sided Flycatcher
Swainson's Hawk	Western Wood-pewee
*Red-tailed Hawk	Willow Flycatcher
Ferruginous Hawk	Hammond's Flycatcher
Rough-legged Hawk	Gray Flycatcher
*Golden Eagle	Dusky Flycatcher
*American Kestrel	Pacific-slope Flycatcher
Merlin	*Black Phoebe
Prairie Falcon	Say's Phoebe
Virginia Rail	*Ash-throated Flycatcher
American Coot	*Western Kingbird
Sandhill Crane	*Loggerhead Shrike
*Killdeer	Cassin's Vireo
Greater Yellowlegs	*Hutton's Vireo
Solitary Sandpiper	Warbling Vireo
Dunlin	Steller's Jay
Wilson's Snipe	*Western Scrub-Jay
Ring-billed Gull	Yellow-billed Magpie
California Gull	Clark's Nutcracker
Rock Pigeon	American Crow
Band-tailed Pigeon	*Common Raven
*Mourning Dove	Horned Lark
*Greater Roadrunner	Purple Martin
*Barn Owl	*Tree Swallow
*Western Screech-Owl	*Violet-green Swallow
*Great Horned Owl	Northern Rough-winged Swallow
Northern Pygmy-Owl	*Cliff Swallow

\*Barn Swallow  
   Mountain Chickadee  
 \*Oak Titmouse  
 \*Bushtit  
   Red-breasted Nuthatch  
 \*White-breasted Nuthatch  
   Brown Creeper  
 \*Rock Wren  
 \*Canyon Wren  
 \*Bewick's Wren  
 \*House Wren  
   Winter Wren  
   Marsh Wren  
   Golden-crowned Kinglet  
   Ruby-crowned Kinglet  
 \*Blue-gray Gnatcatcher  
 \*Western Bluebird  
   Mountain Bluebird  
   Townsend's Solitaire  
   Swainson's Thrush  
   Hermit Thrush  
 \*American Robin  
   Varied Thrush  
   Wrentit  
   Northern Mockingbird  
   Sage Thrasher  
 \*California Thrasher  
 \*European Starling  
   American Pipit  
   Cedar Waxwing  
 \*Phainopepla  
   Orange-crowned Warbler  
   Northern Parula  
   Nashville Warbler  
   Yellow Warbler  
   Chestnut-sided Warbler  
   Yellow-rumped Warbler  
   Black-throated Gray Warbler  
   Townsend's Warbler  
   Hermit Warbler  
   Northern Waterthrush  
   MacGillivray's Warbler

  Common Yellowthroat  
   Wilson's Warbler  
   Yellow-breasted Chat  
   Western Tanager  
   Green-tailed Towhee  
   Spotted Towhee  
 \*California Towhee  
 \*Rufous-crowned Sparrow  
   Chipping Sparrow  
   Brewer's Sparrow  
   Black-chinned Sparrow  
   Vesper Sparrow  
 \*Lark Sparrow  
   Black-throated Sparrow  
   Savannah Sparrow  
   Grasshopper Sparrow  
   Fox Sparrow  
   Song Sparrow  
   Lincoln's Sparrow  
   White-throated Sparrow  
   White-crowned Sparrow  
   Golden-crowned Sparrow  
   Dark-eyed Junco  
   Black-headed Grosbeak  
   Lazuli Bunting  
 \*Red-winged Blackbird  
 \*Western Meadowlark  
   Yellow-headed Blackbird  
 \*Brewer's Blackbird  
   Great-tailed Grackle  
 \*Brown-headed Cowbird  
 \*Bullock's Oriole  
   Purple Finch  
   Cassin's Finch  
 \*House Finch  
   Red Crossbill  
   Pine Siskin  
 \*Lesser Goldfinch  
 \*Lawrence's Goldfinch  
   American Goldfinch  
   Evening Grosbeak  
 \*House Sparrow

Greater White-fronted Goose (*Anser albifrons*).

Accidental: One record of 35 passing over SJER on 7 December 1951.

Snow Goose (*Chen caerulescens*).

Accidental: A flock of 25 was observed on 12 December 1967. One was seen in flight on 8 February 1982. One flew over the headquarters area on 21 December 1998.

Canada Goose (*Branta canadensis*).

Occasional in fall and spring, casual in winter: Most records are of flocks passing over SJER in flight but occasionally flocks have been seen feeding in open areas. Sightings are from late November to mid March. Flocks range in size from 3 to more than 70 individuals.

\*Wood Duck (*Aix sponsa*).

Locally uncommon spring breeder and accidental fall migrant: Fairly easily seen near reservoirs and streams bordered by tall trees, especially willows, cottonwoods and oaks, in spring. The single fall sighting was on 17 November 2003.

Gadwall (*Anas strepera*).

Accidental winter resident: Recorded at the RU 9 reservoir during the winter of 1970-71.

American Wigeon (*Anas americana*).

Accidental winter resident: Recorded on reservoirs during the winters of 1970 through 1972.

\*Mallard (*Anas platyrhynchos*).

Locally uncommon spring breeder and rare fall migrant and winter resident: Mallards formerly bred near the horse pasture dam area. Pairs have been found nesting along intermittent streams at SJER, but they seldom succeed.

Blue-winged Teal (*Anas discors*).

Accidental: One record of a group of birds at the horse pasture dam on 8 March 1937.

Cinnamon Teal (*Anas cyanoptera*).

Accidental in spring and winter: Sightings in February 1965, winters of 1970 through 1972, and April 1986 at RU 9 reservoir. Not recorded since 1986.

Northern Pintail (*Anas acuta*).

Accidental migrant: New species for SJER since the 1985 checklist. There have been three sightings of birds flying overhead. One was seen over the RNA (RU 80) on 18 April 1986, two were seen over RU 9 on 26 March 1987, and one was seen from RU 4-2 on 29 March 1993.

Green-winged Teal (*Anas crecca*).

Accidental: One winter and one spring record, both on reservoir in RU 9. One was seen on 5 December 1972, one on 8 March 1988.

Canvasback (*Aythya valisineria*).

Accidental in winter: The only records are from February 1975 when several were seen on the reservoirs in RUs 9 and 61.

Redhead (*Aythya americana*).

Accidental in winter: One record prior to 1955 exists when five or six birds were seen on the reservoir in RU 9 in winter. A dozen individuals were seen at the reservoir on 21 January 1979.

Ring-necked Duck (*Aythya collaris*).

Locally rare spring migrant: All sightings have been in March and April. Flocks of up to seven birds were seen in 1952, 'often' in the 1970s and early 1980s, and in 1987 and 1999. Most sightings were on the reservoir in RU 9.

Greater Scaup (*Aythya marila*).

Accidental: A flock of 20 was seen on 24 February 1952. This record may be a misidentification of Lesser Scaup.

Bufflehead (*Bucephala albeola*).

Accidental in winter and spring: A pair was observed passing over SJER in January 1980. Individual birds were seen in March 2000 and February 2001 on the reservoir behind the guest quarters.

Common Goldeneye (*Bucephala clangula*):

Accidental in winter and spring: New species for SJER since the 1985 checklist. Two observations of individual birds were made on 21 February 1995 and on 9 March 2001, both on the reservoir behind the guest quarters.

Hooded Merganser (*Lophodytes cucullatus*).

Locally uncommon winter resident and spring migrant: Fairly regular winter and spring visitor to the RU 9 reservoir and seen less regularly in the reservoir behind the guest quarters.

Common Merganser (*Mergus merganser*).

Accidental in winter and spring: There have been four sightings. A flock of five was seen on 5 February 1952. Three birds were seen on 21 March 1991 flying over RU 4. Two were seen on 28 March 1994 and one was seen on 18 February 2003, both on the RU 9 reservoir.

Ruddy Duck (*Oxyura jamaicensis*).

Accidental in summer: One male was collected on 4 June 1937.

Wild Turkey (*Meleagris gallopavo*).

Rare permanent resident: This exotic species has increased recently. Introduced into nearby area (Raymond) by the California Department of Fish and Game in the late 1960s, it was first observed at SJER on 19 April 1972. It was seen irregularly until 1994, after

which it has been seen every year. Nesting has not been verified, but groups of females with young of the year are regularly seen in summer and fall.

\*California Quail (*Callipepla californica*).

Common permanent resident: Much of the work serving as the basis for quail management in California was done at SJER. Studies on diet reveal that plant material comprises 99.5% of the annual diet, with insects chiefly making up the balance (Glading et al. 1940). Of the plant foods, 72% were seeds and 27% were green plant material, although diet is dependent on weather conditions and the resultant botanical composition (Shields and Duncan 1966). Introduced *Erodium* species were the single most important food item, followed by native clovers (*Trifolium* sp.) and Turkey mullein (*Eremocarpus setigerus*). The latter two species were preferred and used more than their availability would suggest (Glading et al. 1940). Food is not believed to limit quail populations. Quail are dependent on sources of water for drinking and the location of water sources influence quail distribution (Storer et al. 1942). Glading developed the artificial water storage devices for quail known as “gallinaceous guzzlers” at SJER. Nesting occurs from May to mid-August but peaks in mid-May, with late nests less successful (Glading 1938a). One egg is laid every 3-4 days. The female alone incubates (but see Glading 1938b), while the male remains nearby. The incubation period averages 22 days. Average clutch size was 11 eggs and average brood size was 10 young. The ‘ca’ or ‘cow’ call is given by both mated and unmated males (Glading 1938a) but is likely given more frequently by unmated males. Ground squirrels are likely an important nest predator (Emlen and Glading 1938), and quail increased in an area following reduction of ground squirrels by poisoning (Glading 1938a).

Common Loon (*Gavia immer*).

Accidental: New species for SJER since the 1985 checklist. A flock of three was seen flying over RU 1 on 1 May 1990.

Pied-billed Grebe (*Podilymbus podiceps*).

Locally rare winter and spring resident: All sightings are of single individuals on the reservoir in RU 9 except for two sightings over RUs 2 and 72. All sightings are between 29 September and 7 April.

Eared Grebe (*Podiceps nigricollis*).

Accidental: One seen on reservoir in RU 9 on 8 October 1958.

American White Pelican (*Pelecanus erythrorhynchos*).

Accidental: A flock of 40 birds was seen in flight on 30 March 1953. A flock of 25 birds was seen flying overhead on 1 April 2005.

Double-crested Cormorant (*Phalacrocorax auritus*)

Rare spring and fall migrant: New species for SJER since the 1985 checklist. Single individuals or flocks of 5 to 31 birds have been seen flying over in March and April in 1989, 1992, 1993, 1995, 1998, 1999, and 2002.

Least Bittern (*Ixobrychus exilis*).

Accidental: A female was trapped in a drift trap along the headquarters swale in RU 61 and released on 16 April 1950.

Great Blue Heron (*Ardea herodias*).

Locally uncommon: Seen near reservoirs, in the horse pasture swale, or flying overhead in fall, winter, and spring, this species uses reservoirs, ponds and swales when standing water is present. They hunt pocket gophers in dry areas. An individual was seen carrying a long stick (nest material) in April 1987 and a pair nested successfully in a large foothill pine at a pond just south of the SJER boundary in 1984. Nesting remains unconfirmed at SJER.

Great Egret (*Ardea alba*).

Casual in fall, winter, and spring: Great Egrets used to frequent the old horse pasture dam in summer but haven't been recorded in that area since September 1951. There have been three sightings of four birds total since 1951. One flew over RU 9 on 12 March 1992. One remained at the reservoir behind the guest quarters in RU 61 for at least a week in February 1994. Two birds were seen soaring in a thermal with Turkey Vultures over RU 1 on 7 September 2005.

Green Heron (*Butorides virescens*).

Accidental: Three spring records. One was seen at reservoir in RU 9 on 18 April 1957 and 18 May 1958. One was seen on an intermittent stream in the headquarters horse pasture on 8 April 1993.

Black-crowned Night Heron (*Nycticorax nycticorax*).

Accidental: One was heard calling in flight at night on 7 October 1952.

\*Turkey Vulture (*Cathartes aura*).

Common spring, fall, and summer resident, rare in winter: Large numbers roost in the headquarters area just southwest of the guest quarters and near the reservoir in RU 61. Dates span 24 January to 9 October. Nests have been found in rock outcrops in May 1951, 1977, 1979, and 1992. Migrating flocks of more than 500 birds have roosted overnight during September and October, but spring numbers are never so large. Ritter (1983) reported on nestling growth rates at a nest in a small cave in a rock outcrop in RU 4-3.

California Condor (*Gymnogyps californianus*).

Accidental: A flock of six to nine individuals was seen on 30 August 1950 (Cohen 1951). This species is listed as Endangered both Federally and in California.

Osprey (*Pandion haliaetus*).

Casual in spring and fall: Most observations are of overhead flights but there have been at least three observations of birds perching; one had prey. They have been detected most years since 1985 in spring. Dates of occurrence include 16 March through 24 April in

spring. Two fall sightings: 11 September 1985 in RU 9 and 10 November 1988 in RU 3 along entrance road.

White-tailed Kite (*Elanus leucurus*).

Casual in spring: Single individuals seen in March and/or April in 1978, 1981, 1987, 1991, 1993, 1995, 1997.

Bald Eagle (*Haliaeetus leucocephalus*).

Rare winter resident and accidental spring migrant: Numbers appear to be increasing since the mid-1980s. Appear to be hunting in oak woodlands (seen with prey) or in transit between bodies of water. This species is designated as Federally Threatened and Endangered in California.

Northern Harrier (*Circus cyaneus*).

Casual in fall, winter and spring: Nine records (five since 1985) of 10 birds seen from 28 November to 24 April. Most birds have been seen in flight.

Sharp-shinned Hawk (*Accipiter striatus*).

Rare fall migrant and winter resident, occasional spring migrant: Recorded from 12 September to 26 April.

\*Cooper's Hawk (*Accipiter cooperii*).

Uncommon permanent resident: Numbers augmented in fall and winter by migrants and winter residents. Prey items brought to nests included lizards (whiptails, fence lizards, and skinks), cottontails, California Quail, and smaller birds (Acorn Woodpeckers, California Towhees, and Lark Sparrows) (Fitch et al. 1946a).

Northern Goshawk (*Accipiter gentilis*)

Accidental in spring: New species for SJER since the 1985 checklist. Sightings were in March and April 1992, and March 1999 (eight observations but probably fewer individuals, perhaps only two or three individuals). This species is listed as a Sensitive Species by the Forest Service in Region 5.

\*Red-shouldered Hawk (*Buteo lineatus*)

Locally uncommon permanent resident: New species for SJER since the 1985 checklist. First recorded in 1993 in swale between barracks and adobe house. They have since been a regular breeder in the headquarters area.

Swainson's Hawk (*Buteo swainsoni*).

Accidental in spring: Two records, both of birds in flight. One bird was seen on 16 May 1978, another on 28 March 1990. This species was previously known to breed within 4.6 km (2.9 mi) of SJER. This species is listed as Threatened in California.

\*Red-tailed Hawk (*Buteo jamaicensis*).

Common permanent resident: Common breeder. Adults are permanently paired and jointly defend their territory against conspecifics and eagles. High perches are an

essential part of the territory and foothill pines are favored due to their height and open crowns. Ground squirrels are the principal prey species taken, with pocket gophers, cottontails, and gopher snakes also important (Fitch et al. 1946b).

Ferruginous Hawk (*Buteo regalis*).

Accidental in spring: New species for SJER since the 1985 checklist. There were three sightings in 1998, probably all of the same bird, on 30 March and 24 April.

Rough-legged Hawk (*Buteo lagopus*).

Accidental in spring and fall: Three sightings: 26 September 1951, 20 March 1952, and 12 November 1987 over RU 5-2.

\*Golden Eagle (*Aquila chrysaetos*).

Occasional permanent resident: This species probably nests at SJER most years. It is known to have nested successfully in the spring of 1981, 1985, 1990, 1992, and 1995.

\*American Kestrel (*Falco sparverius*).

Uncommon permanent resident: This species is more common in winter. Several nests have been followed to fledging. A pair has nested in a nest box on the east side of the (former) duplex in the headquarters area since the early 1990s.

Merlin (*Falco columbarius*).

Accidental in spring and fall: First recorded in 1984. Six records exist, four of which were in March. A female (a darker subspecies) was seen along the entrance road on 13 November 1984, a juvenile was seen in RU 9 on 3 November 1987 eating a Dark-eyed Junco, one was seen on 10 March 1988 in RU 72, an adult was seen on 21 March 1990 in RU 5, a female was seen on 28 March 1991 along the entrance road, and a "Taiga" male was seen with a small bird in its talons in RU 7.

Prairie Falcon (*Falco mexicanus*).

Rare in fall and winter, occasional in spring: A total of 21 Prairie Falcons have been recorded (eleven since 1985) extending from 5 October to 27 April.

Virginia Rail (*Rallus limicola*).

Accidental: One specimen was collected in 1937.

American Coot (*Fulica americana*).

Accidental in winter: Recorded in an owl pellet (Fitch 1947b). Seen occasionally on reservoirs in 1970-71 but not recorded since.

Sandhill Crane (*Grus canadensis*).

Accidental in winter, spring and summer: Single birds to small flocks have been seen, usually flying overhead, from 1 November through 6 June in 1982, 1986, 1993, and 1995.

\*Killdeer (*Charadrius vociferus*).

Locally uncommon permanent resident: Forages in wet areas; nests in gravelly areas providing camouflage, often near human habitation.

Greater Yellowlegs (*Tringa melanoleuca*).

Locally rare in spring, accidental in winter: Observed between 15 February through 17 April in 1985, 1987, 1994, 2001, 2002, and 2005. Most sightings were in the headquarters area and the reservoir behind the guest quarters.

Solitary Sandpiper (*Tringa solitaria*).

Accidental in spring: Two sightings. One bird was seen along an intermittent stream in RU 31N, north of the corrals on 19 and 26 April 1985, and one was seen in the boneyard pond on 18 April 1991.

Dunlin (*Calidris alpina*).

Accidental: One sighting in April 1937.

Wilson's Snipe (*Gallinago delicata*).

Accidental in spring and fall: Four spring records (late March to 21 April) and one fall record (23 October 1987).

Ring-billed Gull (*Larus delawarensis*).

Occasional in spring: New species for SJER since the 1985 checklist. Ring-billed Gulls are probably increasing in the area. Recorded in springs of 2001, 2002 and 2003. As large flocks of gulls circling overhead often remain unidentified, this species is probably underreported.

California Gull (*Larus californicus*).

Occasional in spring: Probably increasing. California Gulls were not recorded prior to 1980 but are now seen most years. They were recorded in spring of 1980, 1988, 1989, 1992, 1994, 1995, 1997, 2000, 2001, and 2003. This species may be confused with Ring-billed Gull.

Rock Pigeon (*Columba livia*).

Rare: First recorded in 1978. Single birds to small flocks are seen flying over in spring (28 March to 29 April) in some years. One summer record (7 July 2006).

Band-tailed Pigeon (*Patagioenas fasciata*).

Irregular in fall, winter, spring: Common in some years when acorns are plentiful. Records fall between 9 November and 15 June. Flocks of up to 3000 birds were seen in mid-March 1980.

\*Mourning Dove (*Zenaida macroura*).

Abundant permanent resident: Populations have apparently benefited from construction of reservoirs in the foothills. Their flimsy nests may be found in a tree, on the ground, or in a deserted nest of a scrub-jay or other species. Nests are often reused. This species has low nesting success per attempt but renests repeatedly during its long breeding season.

Based on a sample of 31 nests, average egg-laying date was 7 May, but ranged from 10 April to 4 August. Rarely, nests may be active as late as early September.

\*Greater Roadrunner (*Geococcyx californianus*).

Uncommon permanent resident: More often heard than seen. Two nests have been found: one in 1992 in RU 6-3 and one in 1994 in RU 72. Both nests were successful.

\*Barn-owl (*Tyto alba*).

Uncommon permanent resident: This species, as with some other owls that occur at SJER, is much more common than is apparent from the usual bird observations, because of their nocturnal habits. For example, barn-owls were detected on 18 of 21 owl surveys done in the winter and spring in 1985-1987. The only nest record is from a nest box in RU 9 in 2006, but year-round presence suggests breeding in natural settings as well. Prey species are associated with swales and grassy areas. Major prey items are rodents, with pocket gophers comprising the bulk of its diet (Fitch 1947b).

\*Western Screech-Owl (*Megascops kennicottii*)

Uncommon permanent resident: Begins courting in late winter throughout SJER, especially in more heavily wooded drainages. An adult with three fledglings was seen in 1994 in the RNA (RU 80) but no verified nest records. They were detected on 18 of 21 owl surveys done in the winter and spring in 1985-87.

\*Great Horned Owl (*Bubo virginianus*).

Uncommon permanent resident: Detected on 19 of 21 owl surveys done in the winter and spring in 1985-87. Nests in tree hollows and abandoned raven, raptor, squirrel, and woodrat nests. This species forages fairly commonly during daylight hours. Cottontails and woodrats are its most important prey items (Fitch 1947b).

Northern Pygmy-Owl (*Glaucidium gnoma*).

Locally uncommon resident: Primarily diurnal, it has been detected nearly every year in morning point count surveys. Pygmy-owls prefer more heavily wooded areas with pines.

\*Long-eared Owl (*Asio otus*).

Rare permanent resident: A specimen was taken on 4 March 1937. A brood of 6 fledglings was observed several times in May 1981. Single birds or pairs seen in 1993, 1994, and 2001. Hunts by night in open habitat and roosts by day, generally in dense vegetation. This species has declined in California.

Lesser Nighthawk (*Chordeiles minor*).

Accidental spring and fall migrant: Some confusion exists regarding the species identification for these records. Historically, it was recorded as Common Nighthawk but sighting dates (April, May, and October) pretty much eliminate that species. Lesser Nighthawk is the expected nighthawk at this elevation. No sightings have been recorded since 1973.

Common Poorwill (*Phalaenoptilus nuttallii*).

Occasional winter and spring resident: Seen in most years. All records are from 27 February to 1 May, except for one record in August 1949. Roosts on the ground concealed under grass or brush, next to a log, or in rocky areas.

Black Swift (*Cypseloides niger*).

Accidental in spring and summer: Four records of 1 to 12 birds, from 4 May to 21 June, in 1961, 1986, and 1994.

Vaux's Swift (*Chaetura vauxi*).

Rare spring and fall migrant: Small groups (1-25) can be seen circling overhead in most years. Spring records fall between 1 April and 16 June. Three fall records: 12 September 1978 (1 bird), 7 September 1993 (3 birds), 24 September 2004 (3 birds).

White-throated Swift (*Aeronautes saxatalis*).

Rare winter and spring migrant: Nineteen records of birds flying overhead, from February to May.

Black-chinned Hummingbird (*Archilochus alexandri*).

Accidental in spring and summer: New species for SJER since the 1985 checklist. Most records in April and early May at feeders in headquarters area.

\*Anna's Hummingbird (*Calypte anna*).

Common permanent resident: The most abundant hummingbird at SJER and the only one to breed here. The male performs an aerial display for the female in which he rises above her high into the air and then plummets downward, making an explosive chirp sound at the bottom. The display is often repeated. Based on a sample of 15 nests, average egg-laying date was 9 April, ranging from 6 March to 27 April.

Calliope Hummingbird (*Stellula calliope*).

Irregular spring and accidental fall migrant: New species for SJER since the 1985 checklist. This species was first seen in March of 1980 on the RNA (RU 80). One was caught in a mist net in spring of 1983 on the RNA. They have been seen most years since 1985. Spring dates span 31 March to 7 May; one fall sighting on 18 September 1985.

Rufous Hummingbird (*Selasphorus rufus*).

Uncommon spring and rare summer/fall migrant: Average recorded spring arrival date is 17 March. Adult males can be distinguished from Anna's Hummingbirds by their buzzy wing whistles. This species is pugnacious at feeders.

Belted Kingfisher (*Ceryle alcyon*).

Locally rare in spring, accidental in fall: Single birds seen in March-April and November, usually at reservoirs but also seen flying through an area. Perhaps less common recently due to loss of introduced fishes in reservoirs.

Lewis's Woodpecker (*Melanerpes lewis*).

Irregular winter resident: Sporadic in occurrence from year to year; absent in some years to quite common in others. Peak years occurred in the winters of 1964-1965, 1998-1999, and 2005-2006. In years of high abundance they appear as early as late August and may remain well into the breeding season (June).

\*Acorn Woodpecker (*Melanerpes formicivorus*).

Abundant permanent resident: Easily observed, the most abundant bird detected in spring point count surveys. They are cooperative breeders, with several females often laying eggs in a communal nest. Initiation of incubation begins as early as 9 March but multiple nesting attempts within a season are common. In years with good acorn crops, the breeding season may last into August. Acorn Woodpecker cavities were deeper, had longer entrances, larger openings, and were found more often in blue oaks compared to Nuttall's Woodpeckers. Acorn Woodpeckers used more blue oaks and snags than Nuttall's Woodpeckers, although use of snags was fairly low (11%) (Purcell 1995). Their practice of storing acorns in granary trees, fence posts, power poles, and buildings in the fall and consuming them in the winter allows them to maintain permanent residence. Numbers can fall dramatically following a poor acorn crop. Acorn Woodpeckers are considered a keystone species in this bird community due to excavation of cavities used by many other wildlife species and the stored acorns that are often utilized by other species (Purcell 1995).

Red-naped Sapsucker (*Sphyrapicus nuchalis*).

Accidental: Three records. One bird was seen on 17 December 1984 in the RNA (RU 80) and presumably the same bird was seen there several times during March 1985. The third sighting was on 8 March 1987 in RU 71.

Red-breasted Sapsucker (*Sphyrapicus ruber*).

Rare in spring, accidental in fall and winter: Recorded from 31 August to 24 April in more heavily wooded areas. These sap-dependant birds migrate downslope to become rare winter residents in the foothills. Horizontal rows of "wells" drilled in the bark of interior live oaks and other hardwood tree species provide evidence of their presence.

\*Nuttall's Woodpecker (*Picoides nuttallii*).

Common permanent resident: Along with the Acorn Woodpecker, this species excavates cavities important to many species for nesting and roosting. Nuttall's Woodpecker nests faced downward to a greater degree than Acorn Woodpecker cavities, a feature believed to deter nest predators. They nest predominantly in live oaks (70%; Purcell 1995). Nuttall's Woodpeckers initiate nesting from 26 March to 11 April, with initiation of egg laying averaging 3 April.

Downy Woodpecker (*Picoides pubescens*).

Rare in summer, fall, and winter, accidental in spring: Although they have been seen in all months of the year (based on 37 records), there have been fewer sightings in spring. Sightings are mostly of single birds, although a pair was seen excavating a cavity in a sycamore tree near the duplex in the headquarters area in October 1985. Probably doesn't breed at SJER. This riparian specialist likely finds SJER marginal habitat. Most sightings

are in headquarters area around deciduous trees and in the dense habitat on the north-facing slope in RU 10.

Hairy Woodpecker (*Picoides villosus*).

Rare in fall, winter, and spring, accidental in summer: Probably a rare breeder. Hairy Woodpeckers occur throughout SJER from 27 October to as late as 21 June. A pair excavated a cavity on the RNA (RU 80) in the spring of 1985; another pair was seen excavating a cavity in April 1987 in RU 73. An adult was seen carrying food in April 1986 and a family group of two adults and one immature was seen in the same vicinity in June of the same year.

\*Northern Flicker (*Colaptes auratus*).

Uncommon in winter and spring, occasional in summer and fall: More numerous in winter. This species is a rare, but probably not very successful, breeder. A "Yellow-shafted Flicker" was seen 1 February 1982, and hybrids of Yellow and Red-shafted flickers were seen on 11 December 1986 and 11 March 1987.

Olive-sided Flycatcher (*Contopus borealis*).

Rare spring and summer migrant: Recorded from 11 April to 6 June, but most sightings are clustered in the third week of April.

Western Wood-pewee (*Contopus sordidulus*).

Rare spring and fall migrant, accidental in summer: Spring records fall between 6 April and 21 May. Average spring arrival date is 18 April, with peak spring migration period the last week of April. The single summer sighting was on 5 July 1994. Fall observations span 9 to 28 September.

Willow Flycatcher (*Empidonax traillii*).

Accidental spring/summer and fall migrant: This is usually a late spring migrant (May to mid-June), although there have been some unusually early sightings at SJER. Seven spring/summer records from 15 April to 9 June. One fall record on 1 September 1986 in willows at the reservoir in RU 9. Field identification of Empidonax flycatchers during migration is difficult because they exhibit subtle color differences, often remain quiet, and occur in atypical habitat. Detailed field notes on plumage characteristics and behavior should be kept to document the occurrence of all Empidonax species. This species is listed as Endangered in California and a Sensitive Species by the Forest Service in Region 5.

Hammond's Flycatcher (*Empidonax hammondi*).

Occasional spring migrant: First recorded in 1937 when three specimens were collected. They have been recorded every year since 1986 from 3 April to 22 May. Average spring arrival date is 8 April, with most sightings in the latter half of April.

Gray Flycatcher (*Empidonax wrightii*).

Occasional spring and accidental fall migrant: Specimens taken 19 and 21 April 1937. They have been recorded most years since 1985 during spring point count surveys from

7-30 April. Average spring arrival date is 12 April. The single fall sighting was on 10 September 1985.

Dusky Flycatcher (*Empidonax oberholseri*).

Uncommon spring and accidental fall migrant: Recorded in spring between 21 March and 22 May. Average spring arrival date is 10 April. Most sightings occur in latter half of April. Two fall records on 11 September 1985 and 29 September 2005.

Pacific-slope Flycatcher (*Empidonax difficilis*).

Occasional spring and accidental fall migrant: First recorded in 1981. They have been observed nearly every year since 1986 from 26 March to 18 May. Average spring arrival date is 6 April, with most records falling in the last two weeks of April. Two summer/fall sightings on 24 August 1986 and 7 October 2004.

\*Black Phoebe (*Sayornis nigricans*).

Locally uncommon permanent resident: Nests in culverts, under eaves of buildings, and on vertical rock surfaces. Black Phoebes are common in appropriate habitat (creeks, ponds, and buildings).

Say's Phoebe (*Sayornis saya*).

Locally uncommon fall/winter and occasional spring resident: Single birds were recorded from 3 September to 28 April. They commonly roost in protected places around the headquarters and forage in open areas throughout SJER.

\*Ash-throated Flycatcher (*Myiarchus cinerascens*).

Abundant spring and summer resident; rare in fall: Recorded from 25 March to 15 September. Average spring arrival date is 3 April. A fairly late nester, Ash-throateds begin egg laying in mid-May, with the average initiation of incubation on 21 May. This species nests in both oak species and uses snags more than other cavity-nesting species. It uses more natural cavities than other species, with 60% of nests in natural cavities (Purcell 1995). Excavated cavities were more often in old Nuttall's Woodpecker cavities than in Acorn Woodpecker cavities. They nest in areas with dense trees and relatively more snags. Nest cavities tended to have large entrance holes compared to other cavity-nesting species, but successful nests had smaller entrances (Purcell 1995).

\*Western Kingbird (*Tyrannus verticalis*).

Locally common spring and summer resident, accidental in fall: Recorded from 19 March to 1 September. An early migrant, this species is a late nester. Kingbirds are found in open areas with low tree density and shrub cover. Average spring arrival date is 22 March but average egg-laying date is 27 May, based on 14 nests. Aggressive toward much larger birds, such as ravens and hawks, and can sometimes be seen pursuing and attacking birds in mid-air.

\*Loggerhead Shrike (*Lanius ludovicianus*).

Occasional permanent resident: Numbers increase in spring and summer. Most individuals migrate south for the winter. This species is most often seen in open habitat,

where it commonly hunts from perches on barbed-wire fences. It appears to be declining rangewide.

Cassin's Vireo (*Vireo cassinii*).

Uncommon spring migrant: Seen every year since 1985. Observations fall between 30 March and 22 May. Average spring arrival date is 4 April.

\*Hutton's Vireo (*Vireo huttoni*).

Locally uncommon permanent resident: This species occurs year-round, although most observations are in spring when they are singing. Some individuals disperse downslope into the San Joaquin Valley after breeding (Small 1994). Prefers dense stands of live oaks and avoids the more open blue oak woodlands.

Warbling Vireo (*Vireo gilvus*).

Uncommon spring and accidental summer/fall migrant: Seen every year since 1985. Spring records fall between 22 February and 22 May. Average spring arrival date is 5 April. Fall records fall between 31 August and 4 October.

Steller's Jay (*Cyanocitta stelleri*).

Irregular winter resident: Observed at least once during most winters, with records falling between 27 October and 4 May.

\*Western Scrub-Jay (*Aphelocoma californica*).

Common permanent resident: Abundant and conspicuous in all areas, this species prefers habitat consisting of a mosaic of grassland, scrub, and woodland vegetation and avoids habitats where tree or shrub density and cover are high and habitats that are too open. All suitable habitat is usually occupied by breeders, which rarely leave their territories. Offspring depart from their natal territories at independence, yet breeders tolerate both offspring and unrelated floaters of all ages on their territories except during May and June. Floaters aggregate in the highest quality habitats, primarily where acorns are abundant. They cache acorns, which are an important part of their diet in late winter and early spring (Carmen 2004). It is a fairly early nester, with egg-laying beginning as early as 2 March and averaging 29 March. This species is probably the most important nest predator of open-cup nesters (Purcell and Verner 1999).

Yellow-billed Magpie (*Pica nuttalli*).

Accidental in spring: New species for SJER since the 1985 checklist. Three sightings of four birds to date (29 April 1988, 7 May 1988, and 14 April 1998) but this species appears to be moving into the foothills. Magpies prefer areas with widely spaced oaks.

Clark's Nutcracker (*Nucifraga columbiana*).

Casual in winter: One bird was observed between 15 September and 28 October 1950 and two birds were seen on 26 March 1991. This species tends to move downslope in unpredictable irruptions that appear to be related to widespread pine seed crop failures (Small 1994).

American Crow (*Corvus brachyrhynchos*).

Occasional in spring, winter, and fall: Sporadic movements in fall, winter, and spring. First recorded in April 1978, it has been seen every year since 1985.

\*Common Raven (*Corvus corax*).

Common permanent resident: Numbers have clearly increased. They were not recorded prior to April 1952 but have been recorded every year since 1965. By 1973 it was considered a permanent resident of medium abundance (Newman and Duncan 1973). It is now a common year-round resident with numerous nesting records. Often reuses old hawk and owl nests, but adds sticks to form a bulky nest.

Horned Lark (*Eremophila alpestris*).

Accidental: Recorded once in a drift trap sometime prior to 1955 and seven observed overhead on 10 November 1980. Not recorded since 1980.

Purple Martin (*Progne subis*).

Accidental during migration: The only sightings include a flock recorded on 22 May 1948, a single bird seen on 17 April 1985, three seen on 18 April 1985, and two males and two females seen on 20 April 2006.

\*Tree Swallow (*Tachycineta bicolor*).

Rare migrant and summer resident: Considered a resident in 1937. It was not recorded between 1951 and 1985. Since then, they have been recorded between 16 February and 23 April in 1985, 1986, 1989, 1999, 2000, 2001, and 2003. This species is probably commonly mistaken for the similar and common Violet-green Swallow. Two recent nesting attempts were documented in 1985 and 1986.

\*Violet-green Swallow (*Tachycineta thalassina*).

Common summer resident: Recorded from 13 February to 18 September. This species is one of the first migrants to return each spring and yet it is a late nester. Average arrival date is 1 March. The range of dates of initiation of egg laying is small, from 7 May to 1 June, averaging 18 May. Late nesting is often found in aerial insectivores due to the abundance of flying insects later in the breeding season when temperatures increase. The late-nesting of Violet-green Swallows may reduce competition with starlings for nest sites. Swallow nests were primarily in excavated cavities in blue oaks. Nest cavities were similar to those of Western Bluebirds and European Starlings. Taken together, these three species had the smallest entrance openings, and the longest entrance lengths. Violet-green Swallow nest cavities tended to face north, which is perhaps an adaptation for late nesting (Purcell 1995).

Northern Rough-winged Swallow (*Stelgidopteryx serripennis*).

Rare migrant: First recorded in 1953 but not again until 1980. While not seen every year, they have been seen in about half of the years since 1985. Dates span 19 March to 4 May. They are most often seen flying over the reservoir in RU 9 with other swallows.

\*Cliff Swallow (*Hirundo pyrrhonota*).

Rare spring and fall migrant and irregular summer resident: Small flocks are seen flying overhead in some springs and, more rarely, a colony will attempt to nest at SJER in the headquarters area. Spring records span 17 March to 15 May. A pair nested successfully on the office building in 1958. In 1992, many nests were constructed on the office, guest quarters, and horse barn, of which 22 actually contained eggs. Laying dates spanned 24 May to 10 June, with nests on each of the three buildings highly synchronous. Nesting success was low (21%), with most nests failing because the eggs failed to hatch or the eggs simply disappeared.

\*Barn Swallow (*Hirundo rustica*).

Occasional spring migrant, accidental fall migrant, and rare summer resident: Earliest spring record is 18 March. Nesting was documented in a culvert in 1952, and another attempt in 1994, also in a culvert, was unsuccessful. Fall sightings at the RU 9 reservoir on 7 and 13 September 2005.

Mountain Chickadee (*Poecile gambeli*).

Accidental in spring: New species for SJER since the 1985 checklist. One bird seen foraging, singing, and calling on 1 March 2000.

\*Oak Titmouse (*Baeolophus inornatus*).

Abundant permanent resident: Defends year-round territories. An early nester, titmice attempt nesting once each spring only. Nest building is generally underway by mid-March with the first egg laid the third week of March, but as early as 2 March. This species nests more often in natural cavities than in excavated cavities and nests in both oak species (Purcell 1995). Excavated nest cavities were more often created by Nuttall's Woodpeckers than Acorn Woodpeckers and nests were in areas with dense trees. Territory density appears to be marginally lower in the ungrazed RNA (Verner et al. 1997).

\*Bushtit (*Psaltriparus minimus*).

Abundant permanent resident: Pairs begin setting up nesting territories in mid- to late January. Nest building has been observed as early as 18 January, although egg laying is usually delayed in early nests. Nest building reaches a peak about mid-March. This species builds a pendulous gourd-shaped nest with an entrance hole on one side near the top. Average egg-laying date was 28 March, but ranged from 11 March to 30 April, based on 57 nests. It enjoys fairly high nesting success at SJER (58%; Purcell 1995), and nest success appears to be even higher in the RNA (RU 80). Territories appear to be abandoned sometime in May or June, with loose flocks of birds wandering around SJER (Wilkinson 1953).

Red-breasted Nuthatch (*Sitta canadensis*).

Rare in spring and accidental in fall: New species for SJER since the 1985 checklist. First recorded in 1987 when a large wave of birds passed through SJER in the spring. They have been seen irregularly since then in spring from 29 March through 10 May. Fall sightings recorded on 30 September and 14 October 2004.

\*White-breasted Nuthatch (*Sitta carolinensis*).

Common permanent resident: This species maintains fairly large year-round feeding territories. It prefers natural cavities in blue oaks for nesting. Nest building begins in early March, followed by egg laying at the end of March and initiation of incubation by the first week in April.

Brown Creeper (*Certhia americana*).

Accidental in fall, rare winter resident, rare in spring: Recorded between 9 November and 22 April, generally seen foraging on foothill pines.

Rock Wren (*Salpinctes obsoletus*).

Locally uncommon permanent resident: This species probably nests in suitable rocky ravines. No definitive nesting record but fairly conclusive evidence exists: In 1986 three fledglings were seen on 24 April. One fledgling was not quite able to fly. Both adults were present. In 1987 a pair was seen exchanging nest material on 18 April but no nest was found. In 1989 a male was seen building a nest in RU 9.

\*Canyon Wren (*Catherpes mexicanus*).

Locally uncommon permanent resident: This species is found nesting in rocky areas, especially the canyon, and in man-made structures.

\*Bewick's Wren (*Thryomanes bewickii*).

Common permanent resident: Nest sites overlap very little with other cavity nesters. They use natural cavities almost exclusively, including use of rodent burrows, and nests are low and shallow with short entrance lengths compared to other species. Average nest initiation date was 3 April, but ranged from 11 March to 14 May, suggesting double brooding. Nest success was the highest and nest predation rates the lowest of 16 species studied at SJER (Purcell 1995). They rarely use nest boxes.

\*House Wren (*Troglodytes aedon*).

Common to uncommon spring and summer resident: Abundance is highly variable from year to year, with low abundance apparently related to multiple years of lower than average rainfall (Verner and Purcell 1999). Spring arrival is mid-March, although arrival dates range from 5 to 28 March. Fall sightings (4) range from 8 to 29 September 2004. Egg laying begins as early as 7 April but averages 25 April. Nests were more often in natural cavities (84%). Excavated cavities tended to be smaller than other species and nests in smaller cavities were more successful (Purcell 1995). This species readily uses nest boxes.

Winter Wren (*Troglodytes troglodytes*).

Accidental: One bird seen on 10 March 1981.

Marsh Wren (*Cistothorus palustris*).

Accidental: One singing male seen from 14 to 21 April 2006 in headquarters swale near eucalyptus trees.

Golden-crowned Kinglet (*Regulus satrapa*).

Rare spring migrant: New species for SJER since the 1985 checklist. First recorded in 1986, with one to three individuals seen in 1987, 1988, 1990, 1995, 2001, and 2005. Dates span 11 March to 26 April.

Ruby-crowned Kinglet (*Regulus calendula*).

Common winter resident, accidental in summer: Recorded between 24 September and 5 June. Common by 6 October.

\*Blue-gray Gnatcatcher (*Poliophtila caerulea*).

Uncommon spring and summer resident, accidental in summer: Recorded from 11 March through 6 October. Average recorded spring arrival date is 20 March. This species is a documented Brown-headed Cowbird host at SJER.

\*Western Bluebird (*Sialia mexicana*).

Common permanent resident: Readily uses nest boxes. Western Bluebirds are more likely than any other cavity-nesting species occurring at SJER to be negatively affected by the increase in abundance of European Starlings. Nest sites used by these two species are quite similar (Purcell 1995) and bluebirds responded aggressively to models of European Starlings placed at their nest sites (Olsen 2001). Competition between starlings and bluebirds for nest sites may be reduced by the addition of nest boxes. Western Bluebird nests were initiated over a wide range of dates and mean initiation dates had the largest variance of all cavity-nesting species. Laying dates spanned 8 March to 19 May. Cavities of Western Bluebirds were among the least variable. They were most often excavated cavities with small entrance holes and long entrance lengths.

Mountain Bluebird (*Sialia currucoides*).

Accidental in winter and spring: Three records consist of six birds seen on 31 December 1951 (one was collected), four birds seen on 25 April 1971, and three birds seen on 7 March 1989.

Townsend's Solitaire (*Myadestes townsendi*).

Accidental spring migrant: Four spring records, all of single birds, on 19 April 1978, 30 April 1985, 20 April 1998, and 15 March 2000.

Swainson's Thrush (*Catharus ustulatus*).

Accidental spring migrant: Seven records falling between 21 March and 31 May, although records before mid-April are likely misidentified Hermit Thrushes. Not seen since 1987.

Hermit Thrush (*Catharus guttatus*).

Occasional fall migrant and winter resident, uncommon spring migrant: This species winters at SJER in low numbers and can sometimes be heard singing in the spring prior to leaving for its breeding grounds. Inclusive dates lie between 28 September and 15 May.

\*American Robin (*Turdus migratorius*).

Uncommon spring and fall migrant and winter resident, rare in summer: Recorded between 14 October and 14 May. A rare breeder, this species has nested occasionally in the headquarters area, near buildings and watered lawns. One nesting record occurred away from human habitation, in RU 7.

Varied Thrush (*Ixoreus naevius*).

Rare in fall and accidental in winter, and spring: Records fall between 21 October and 10 April, with most records occurring from November through January. Diminished food supplies in fall and winter to the north may induce southward movements of birds in some years.

Wrentit (*Chamaea fasciata*).

Rare permanent resident: Mostly recorded in spring when they sing but, as this species is extremely sedentary, we believe they are year-round residents. A specimen was collected on 31 March 1937. They have been recorded nearly every year since 1985 but only one sighting was outside of spring (24 August). Probably breeds but no definite record available. With the absence of true chaparral, wrentits are probably in sub-optimum habitat at SJER. They are found in dense habitat with a well-developed understory, mostly on north-facing slopes.

Northern Mockingbird (*Mimus polyglottos*).

Rare fall and winter resident, occasional in spring: Records range from 7 September to 22 April. As many as 10 individuals have been recorded around headquarters at one time during the winter, but mockingbirds are typically rare over most of SJER. Mockingbirds are associated with human habitation and exotic tree species. SJER mockingbirds are likely wandering birds that leave to breed in the spring and summer.

Sage Thrasher (*Oreoscoptes montanus*).

Accidental fall and spring migrant: New species for SJER since the 1985 checklist. Two records of single birds, one on 1 March 1989 and one on 3 September 1993.

\*California Thrasher (*Toxostoma redivivum*).

Locally uncommon permanent resident: As with the Wrentit, this species finds optimum habitat in extensive stands of true chaparral, so it finds habitat at SJER marginally adequate. Thrashers nest in dense habitat in the RNA (RU 80) and the canyon (RU 71).

\*European Starling (*Sturnus vulgaris*).

Abundant fall, winter, and spring resident, common in summer: First recorded in the late 1960s, by 1970 SJER was home to several nesting pairs, where they nested mainly in power poles around the headquarters buildings. In March of 1974, large flocks (some of more than 1000 birds) were seen feeding in wet swales along the entrance road. Stomach analysis of 21 collected birds revealed that they were feeding almost exclusively on crane fly larvae. By 1985 starlings were a common nesting species on a 30-ha (74-ac) study plot in RU 6 (Waters et al. 1990) where they were not found nesting in 1978. Starlings are now widespread breeders throughout SJER and numbers have stabilized since 1985

(Purcell et al. 2002). Currently, variation in abundance is related to precipitation and temperature patterns, with higher abundance following cool summers and warm, wet winters. They avoid ungrazed pastures (Verner et al. 1997) and areas with deep litter. They presumably respond positively to heavy grazing and mowing. As they forage on arthropods present in moist soils, summer is the time of year when resources are most limiting and in most years they leave SJER in late summer (Purcell et al. 2002). This species is known to be an aggressive competitor for nest cavities and may be a threat to cavity-nesting bird populations in oak woodlands. Starlings use cavities similar in size and shape to those used by Western Bluebirds and Violet-green Swallows (Purcell 1995). Olsen (2001) documented aggressive behavior to a stuffed starling mount at active nests of Acorn Woodpeckers, Ash-throated Flycatchers, Western Bluebirds, and Oak Titmice, providing evidence for nest-site competition between starlings and native cavity nesters at SJER. Egg-laying begins as early as 27 March and pairs may initiate as many as three nesting attempts. The majority of starling nests are old Acorn Woodpecker cavities.

American Pipit (*Anthus rubescens*).

Accidental in spring: Three spring records consist of 9 April 1937 (collected), 30 March 1952, and 29 March 1987. Two fall records on 25 October and 1 November 2004.

Cedar Waxwing (*Bombycilla cedrorum*).

Uncommon fall, winter, and spring resident: Small flocks are regularly recorded, with dates spanning 12 October to 22 May.

\*Phainopepla (*Phainopepla nitens*).

Uncommon in spring and summer, occasional in fall, accidental in winter: Numbers decline in winter. This species has a complex pattern of seasonal movements. In the western foothills of the Sierra Nevada they are breeders from April to late September. In fall, winter, and early spring they are found in deserts in the southeastern portions of the state where they also breed. Some individuals remain in the foothills all winter. They frequently build their nests in clumps of mistletoe and may be important in mistletoe seed dispersal.

Orange-crowned Warbler (*Vermivora celata*).

Uncommon spring migrant; rare fall migrant: Usually the first warbler to pass through SJER during spring migration. Spring records fall between 24 February and 18 May, with average arrival in mid-March. Fall records span 1 September to 14 October.

Nashville Warbler (*Vermivora ruficapilla*).

Uncommon spring migrant, rare fall migrant: Recorded between 19 March and 18 May in spring and 29 August and 19 October in fall. Average spring arrival date is 7 April.

Northern Parula (*Parula americana*).

Accidental. One record of a singing male on 14 June 2006 near office.

Yellow Warbler (*Dendroica petechia*).

Occasional spring migrant, accidental in late summer, and fall migrant: Spring records fall between 1 April and 26 May. Average spring arrival date is 14 April. Fall records span 23 August to 1 September.

Chestnut-sided Warbler (*Dendroica pennsylvanica*).

Accidental: One documented record of a singing male on 31 May 1981 (Breese 1981).

Yellow-rumped Warbler (*Dendroica coronata*).

Common in fall, abundant in winter and spring: Observed between 16 September and 30 April. Both "Audubon's" and "Myrtle" warblers occur, but the latter subspecies is uncommon.

Black-throated Gray Warbler (*Dendroica nigrescens*).

Uncommon spring migrant, occasional fall migrant: Spring records fall between 19 March and 8 May. Average spring arrival date is 1 April. Fall records span 13 September to 18 October.

Townsend's Warbler (*Dendroica townsendi*).

Occasional spring migrant, accidental fall migrant: Recorded in spring from 31 March to 22 May. Average recorded spring arrival date is 15 April. One fall sighting in RU 2 on 7 September 2005.

Hermit Warbler (*Dendroica occidentalis*).

Occasional spring migrant: Recorded from 27 March to 8 May. Average spring arrival date is 11 April.

Northern Waterthrush (*Seiurus noveboracensis*).

Accidental spring migrant: New species for SJER since the 1985 checklist. One record of a bird seen on 27 April 2005 at edge of reservoir in RU 61.

MacGillivray's Warbler (*Oporornis tolmiei*).

Rare spring migrant, accidental fall migrant: Recorded from 31 March to 17 May. Average spring arrival date is 11 April. One fall sighting recorded on 1 September 1986 in RU 9.

Common Yellowthroat (*Geothlypis trichas*).

Accidental spring and fall migrant: One was collected on 7 April 1952. There have been five spring records since 1985, from 7 to 27 April. One fall record in 1995.

Wilson's Warbler (*Wilsonia pusilla*).

Uncommon spring migrant, accidental summer and fall migrant: Spring records fall between 3 March and 22 May. Average spring arrival date is 7 April. Fall records span 16 August to 27 September.

Yellow-breasted Chat (*Icteria virens*).

Accidental spring migrant: Two records: one collected on 10 May 1937, another seen on 23 April 1990 in the RNA (RU 80).

Western Tanager (*Piranga ludoviciana*).

Occasional spring migrant and accidental summer and fall migrant: Spring records occur from 8 April to 15 May. Average spring arrival date is 22 April. Late summer and fall records occur from 28 July to 1 October.

Green-tailed Towhee (*Pipilo chlorurus*).

Rare spring migrant: The 10 records fall between 7 March and 1 May, but most sightings occurred in late April.

Spotted Towhee (*Pipilo maculatus*).

Common fall, winter, and spring resident: Records fall between 8 September and 9 May. Numbers fluctuate from year to year. In fall, they start arriving in early September and are common by late September.

\*California Towhee (*Pipilo crissalis*).

Common permanent resident: Sedentary and site tenacious. Although this species is more abundant in ungrazed habitat on the RNA compared to grazed habitat, nesting success there is very low. The RNA represents sink habitat for this species and may function as an “ecological trap” (Purcell and Verner 1998). The peak of egg laying is in late April but ranges from 2 April through 23 May. An occasional host of Brown-headed Cowbirds, primarily of late attempts. Western Scrub-jays are the primary nest predator, although the potential suite of predators is diverse, including four rodent and seven bird species (Purcell and Verner 1999).

\*Rufous-crowned Sparrow (*Aimophila ruficeps*).

Locally common permanent resident: Partial to sunny, rocky slopes with scattered shrubs. Usually seen in pairs and probably maintains year-round territories.

Chipping Sparrow (*Spizella passerina*).

Uncommon spring migrant, accidental in summer and fall: Spring records fall between 17 March and 17 May. Average spring arrival date is 8 April. Fall records occur as early as 23 August into October.

Brewer's Sparrow (*Spizella breweri*).

Rare spring migrant: First recorded in 1981, this species has been seen fairly regularly since 1986. Spring records from 5 April into May.

Black-chinned Sparrow (*Spizella atrogularis*)

Accidental in spring: New species for SJER since the 1985 checklist. One recorded on 5 April 1989 in RU 5-2.

Vesper Sparrow (*Pooecetes gramineus*).

Accidental in spring and fall: Spring records span 8 March to 28 April. Fall records occur from 30 September to 12 October. Likely occurs in winter as well, but none have been recorded.

\*Lark Sparrow (*Chondestes grammacus*).

Uncommon permanent resident: Numbers increase in winter when more northern breeders migrate south for the winter. Lark Sparrows are often seen in flocks, even in the breeding season. Nests have been found on the ground, well-concealed in grass, and in trees.

Black-throated Sparrow (*Amphispiza bilineata*).

Accidental in spring: Five spring records from 1 April to 16 May.

Savannah Sparrow (*Passerculus sandwichensis*).

Rare spring migrant, casual in summer, fall, and winter: Most sightings are in spring, from 18 March to 13 May. The single summer sighting was recorded on 6 July 2004. Fall and winter sightings span 8 September to 21 January.

Grasshopper Sparrow (*Ammodramus savannarum*).

Accidental in spring: New species for SJER since the 1985 checklist. One bird was seen on 26 April 2004 in RU 2.

Fox Sparrow (*Passerella iliaca*).

Irregular migrant and winter resident: Records fall between 6 October and 29 April.

Song Sparrow (*Melospiza melodia*).

Accidental in winter and spring: Three records, one in winter (18 January 1987) and two in spring (12 April 1981 and 14 April 1995).

Lincoln's Sparrow (*Melospiza lincolni*).

Rare fall and winter resident, uncommon in spring: Recorded from 8 September to 17 May.

White-throated Sparrow (*Zonotrichia albicollis*).

Accidental: One banded bird seen with a flock of White-crowned Sparrows and Dark-eyed Juncos at feeders in the headquarters area on 3 December 1994.

White-crowned Sparrow (*Zonotrichia leucophrys*).

Common in fall, abundant winter and spring resident: Recorded from 3 September to 7 May. Winter residents are mainly the *gambelii* subspecies but *nuttallii* also occur.

Golden-crowned Sparrow (*Zonotrichia atricapilla*).

Uncommon in fall, common winter and spring resident: Recorded from 10 September to 16 May.

Dark-eyed Junco (*Junco hyemalis*).

Uncommon in fall, common winter and spring resident: Recorded from 3 September to 8 May, they are common by mid-October. The "slate-colored" race is occasionally observed (31 December 1951, 25 November 1986, 31 January 1993, 13 February 1993) and several of the "pink-sided" race were seen with a flock of "oregons" in the winter of 1984-85.

Black-headed Grosbeak (*Pheucticus melanocephalus*).

Uncommon spring migrant; rare late summer and early fall migrant: Spring records fall between 27 March and 22 May, with average first arrival date 5 April. Summer and fall records fall between 18 July and 30 September.

Lazuli Bunting (*Passerina amoena*).

Occasional spring migrant and accidental summer and fall migrant: Most spring sightings occur in the latter half of April but records fall between 19 March and 18 May. On average, first sightings occur on 10 April. Two summer records on 8 June 1986 and 20 June 1978. Two fall records on 1 September 1986 and 7 September 2005.

\*Red-winged Blackbird (*Agelaius phoeniceus*).

Uncommon in spring and summer, rare in fall: Recorded in spring every year since 1985, but numbers are variable. They breed in some years in wet swales. They disperse from SJER with dry summer conditions.

\*Western Meadowlark (*Sturnella neglecta*).

Common winter resident, common in spring, uncommon in summer and fall: Common in winter but nests sparingly in the spring. Little is known about their movements but they disappear from SJER in late summer and early fall, similar to European Starlings, another ground forager.

Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*)

Accidental in spring: New species for SJER since the 1985 checklist. Two Yellow-headed Blackbirds have been seen, one on 25 April 1988 in a horse pasture in the headquarters area, and one on 26 April 1994 in RU 2.

\*Brewer's Blackbird (*Euphagus cyanocephalus*).

Uncommon permanent resident: Marked reduction of numbers in summer. Brewer's Blackbirds formerly nested in the headquarters area.

Great-tailed Grackle (*Quiscalus mexicanus*).

Accidental in spring: New species for SJER since the 1985 checklist. One record on 8 April 1991 in RU 10. This formerly primarily Mexican species, unknown in California prior to 1964, is expanding its range northward and westward.

\*Brown-headed Cowbird (*Molothrus ater*).

Common spring and summer resident: Records of adults fall between 5 March and 8 July. Nest parasitism confirmed for California Towhee and Blue-gray Gnatcatcher, but likely for Hutton's Vireo.

\*Bullock's Oriole (*Icterus bullockii*).

Common spring and summer resident: Recorded from 15 March to 19 August. First spring arrival date averages 21 March. Orioles prefer habitat with large, well-spaced oaks.

Purple Finch (*Carpodacus purpureus*).

Irregular in fall, winter, and spring, accidental in summer: Most records fall between 16 September and 14 May. Varying numbers descend into the foothills for the winter, depending on weather and food conditions in the mountains. Two summer sightings include single birds seen on 8 June 1978 and 17 July 1990.

Cassin's Finch (*Carpodacus cassinii*)

Accidental: New species for SJER since the 1985 checklist. One adult male was seen in RU 9 on 25 March 1986.

\*House Finch (*Carpodacus mexicanus*).

Common permanent resident: This species has likely increased at SJER. It is unusual in that it consumes virtually no insects and feeds its nestlings almost entirely on seeds. House Finches require a source of water. Nests are occasionally found in the underside of Red-tailed Hawk nests. Egg laying peaks in mid-April but first egg dates have been documented from 28 March to 30 May.

Red Crossbill (*Loxia curvirostra*).

Irregular fall, winter, and spring visitor: Recorded in winter of 1984-1985 (29 November to 29 January), 17 December 1987, 29 March 1990, and 3 November 2004. Irruptions are triggered by food shortages, such as the failure of cone crops at higher elevations.

Pine Siskin (*Carduelis pinus*).

Irregular in fall and spring: An irruptive species. Spring records span 16 March to 22 May; fall records from 7 September to 3 November.

\*Lesser Goldfinch (*Carduelis psaltria*).

Common permanent resident: Historically, this species was considered a vagrant (Childs and Howard 1955) or casual (Newman and Duncan 1973) but it is now a common breeding resident. Some birds wander upslope in summer but there are always some present at SJER.

\*Lawrence's Goldfinch (*Carduelis lawrencei*).

Uncommon spring and summer resident, accidental in fall and winter: Most depart for the winter although some may remain in the foothills. Recorded as early as 21 February and stay at least into June. Several detected on fall counts in September through November. Recorded once in winter, on 21 December 1987.

American Goldfinch (*Carduelis tristis*).

Rare spring and accidental fall migrant: Spring sightings fall between 15 March and 30 April. One fall sighting on 1 November 2004.

Evening Grosbeak (*Coccothraustes vespertinus*).

Irregular fall, winter, and spring resident: Records fall between 29 October and 12 April.

\*House Sparrow (*Passer domesticus*).

Locally uncommon permanent resident: Seen in headquarters area.

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