

CALIFORNIA'S WILDLIFE

VOLUME II
BIRDS

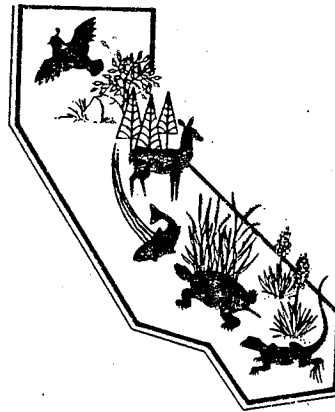
CALIFORNIA'S WILDLIFE

VOLUME II

BIRDS

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California Statewide Wildlife Habitat Relationships System

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME
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B003 Common Loon *Gavia immer*

Family: Gaviidae **Order:** Gaviiformes **Class:** Aves **Date:** June 28, 1983

Management Status: California Species of Special Concern

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

From September to May, fairly common in estuarine and subtidal marine habitats along entire coast, and uncommon on large, deep lakes in valleys and foothills throughout state. Common migrant along coast, including offshore, in November and May. Recorded rarely on large mountain lakes such as Lake Tahoe in April to May and October to December. A few formerly bred in mountain lakes east of Mt. Lassen in Shasta and Lassen cos., in May to July or later, and still may breed there. In summer, rare along northern California coast (Cogswell 1977, McCaskie *et al.* 1979, Garrett and Dunn 1981).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Diet varies; usually about 80% fish, with crustaceans the next largest item. Aquatic plants, including algae, may constitute up to 20% of diet (Palmer 1962). Most fish eaten are not sought by humans. Other foods taken, mostly on breeding grounds, include snails, leeches, frogs, salamanders, aquatic insects, and occasionally aquatic birds. Dives from water surface, sometimes as deep as 61 m (200 ft), and pursues prey underwater, or takes from bottom; rarely dips for food in shallow water.

Cover: Needs at least 18 m (60 ft) of open water for running take-off from water surface (Palmer 1962). Often dives to escape danger, and may remain underwater up to 3 min; deep water provides better cover.

Reproduction: For territory, requires deep freshwater lakes, either large or small, with sufficient food fish. Prefers to nest on small islets, but also uses protected sites on shore; usually less than 1.2 m (4 ft) from water and concealed by rocks or vegetation, but sometimes in open (Palmer 1962, Vermeer 1973). Disturbance by humans and motorboats must be minimal (Terres 1980). Same nest site often used year after year. Will use artificial islands as readily as natural ones (McIntyre and Mathisen 1977).

Water: No additional data found.

Pattern: No additional data found.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: Nearly entire wintering population migrates north to main breeding grounds in northern U.S. and Canada, departing California April to May and arriving again in September to November.

Home Range: While breeding, home range is limited to the territory, except for aerial displays and, in some cases, feeding and resting (Palmer 1962).

Territory: Territory actively defended, especially after young hatch. Territories in Minnesota were 6-8 ha (15-20 ac) in bays of large lakes (n=42), and up to 40 ha (100 ac) on entire small lakes (n=10) (Olson and Marshall 1952). If several territories occur on one lake, each is separated by points, narrows, etc. Territories in Iceland were up to 25 ha (62 ac) (Sjolander and Agren 1972). In winter, along the Virginia coast, individuals defended foraging territories of 4-8 ha (10-20 ac) during the day, and rafted together at night (McIntyre 1978).

Reproduction: Pair bonds often established before arriving on breeding grounds. Arrive in April or May, set up territories and lay eggs mainly May to June (Palmer 1962). Monogamous pairs often nest solitarily. Clutch size 1-3, usually 2, and single-brooded. Incubation averages 29 days. Precocial young are cared for by both parents at least until they can fly, at 12 wk (Palmer 1962). Probably breed first at 2 yr.

Niche: Have been observed chasing black ducks and common mergansers out of nesting territory, and wood ducks appear to avoid common loon territories (Palmer 1962). Mortality is caused by hunters in populated areas, and locally by oil spills. Nest failures sometimes caused by human disturbance, especially by motorboats.

Comments: The common loon should be looked for in its former breeding range in northeastern California. Any individuals found in suitable nesting habitat in the breeding season should be protected from disturbance, and assisted to again breed in California. A California Species of Special Concern (Remsen 1978).

REFERENCES

Bent 1919, Olson and Marshall 1952, Palmer 1962, Sjolander and Agren 1972, Vermeer 1973, Cogswell 1977, McIntyre and Mathisen 1977, McIntyre 1978, Remsen 1978, McCaskie *et al.* 1979, Terres 1980, Garrett and Dunn 1981.

B050 Least Bittern *Ixobrychus exilis*

Family: Ardeidae **Order:** Ciconiiformes **Class:** Aves **Date:** June 28, 1983
Management Status: California Species of Special Concern

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

In southern California, common summer resident (especially April to September), at Salton Sea and Colorado River, in dense emergent wetlands near sources of freshwater, and in desert riparian (saltcedar scrub). Probably nests only in emergent wetlands. Uncommon through winter in some locations; quite rare in deserts and coastal lowlands, but may breed locally (Garrett and Dunn 1981). Rare to uncommon April to September in large, fresh emergent wetlands of cattails and tules in Central Valley, where it nests; and on northeast plateau, where it probably nests (Cogswell 1977, McCaskie *et al.* 1979). Distributional data are scant because of extremely secretive behavior. More studies are needed.

SPECIFIC HABITAT REQUIREMENTS

Feeding: Eats mainly small fishes, aquatic and terrestrial insects, and crayfish; also amphibians, small mammals, and miscellaneous invertebrates. Stalks or stands motionless in shallow water, then quickly strikes at prey, in water or on emergent vegetation; hunts in small openings in dense, emergent vegetation; moves on to new pool after each capture (Palmer 1962); at Salton Sea and Colorado River, also may feed in adjacent thickets of saltcedar. Often feeds on the open-water side of emergent vegetation, using vegetation stalks as stepping-stones (Weller 1961).

Cover: Rests, roosts, and hides in dense, emergent vegetation and, at Salton Sea and Colorado River, in adjacent thickets of saltcedar in desert riparian habitat.

Reproduction: Nests, made of dried and living plants, are built low in tules or cattails, usually above water level. Usually over water 0.3 m (1 ft), or more, deep (Cogswell 1977). Usually near open water, or a small opening in vegetation (Weller 1961).

Water: No additional data found.

Pattern: Uses dense, emergent vegetation for cover and nesting, and feeds in such vegetation, as well as in small openings. Often feeds along the edge of emergent vegetation, on the open-water side.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal or circadian activity. Feeds in daytime, but not known if it feeds at night as does American bittern. Migrates nocturnally (Terres 1980).

Seasonal Movements/Migration: Most of California population migrates south to Mexico for winter (mainly October to March). Part of population in southern California apparently is nonmigratory.

Home Range: Reported nest densities include: 15 nests in 0.8 ha (2 ac) of marsh in Michigan (Wood 1951), 26 nests in 26 ha (65 ac) (Beecher 1942), and 19 nests in an 18 ha (44 ac) marsh in Iowa (Palmer 1962).

Territory: Defends nesting territory, but size unknown.

Reproduction: Based on limited data, apparently arrives on California breeding ground late March to May, lays eggs mid-April to early July. Probably monogamous; nests solitarily, but sometimes in high densities in good habitat. Clutch size usually 4-5, range 2-7 (Weller 1961). Apparently double-brooded, at least in Iowa. Incubation 19-20 days (Weller 1961). Semi-altricial young, tended by both parents, sometimes until 26 days old. Ages at first flight, independence, and first breeding unknown (Palmer 1962).

Niche: Marsh wren has been seen puncturing eggs of this species (Bent 1926). Turtles sometimes eat young (Weller 1961). Populations have declined from marsh drainage, human disturbance, and pesticides (Palmer 1962, Arbib 1979). Because of nocturnal migration at low altitude, frequently killed, or injured, by collisions with obstacles such as TV towers (Terres 1980).

Comments: A California Species of Special Concern (Remsen 1978).

REFERENCES

Bent 1926, Beecher 1942, Wood 1951, Weller 1961, Palmer 1962, Cogswell 1977, Remsen 1978, Arbib 1979, McCaskie *et al.* 1979, Terres 1980, Garrett and Dunn 1981.

B090 Redhead *Aythya americana*

Family: Anatidae Order: Anseriformes Class: Aves
Management Status: Harvest Species Date: July 1, 1983

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

From October to March, the redhead is uncommon to locally common throughout most of California lowlands, foothills, and southern California mountains in lacustrine and estuarine waters. In northeastern California, irregularly uncommon to common at same season, and fairly common to common breeder throughout summer. Also breeds locally in small numbers throughout winter range, particularly in the Central Valley, and fairly commonly at Salton Sea. Nests in fresh emergent wetland bordering open water (Cogswell 1977, McCaskie *et al.* 1979, U.S. Fish and Wildlife Service 1979).

SPECIFIC HABITAT REQUIREMENTS

Feeding: In fall and winter, eats primarily leaves, stems, seeds, and tubers of aquatic plants, mostly submergents, with smaller amounts of aquatic insects. On Manitoba breeding grounds, adult males and females ate more insects and snails than plant foods, and juveniles ate about equal amounts of plants and animals (Bartonek and Hickey 1969a, 1969b). Dives for food, usually in water less than 1.8 m (6 ft) deep (Palmer 1976), and grubs in bottom mud. Also tips up in shallow water, and takes food from surface.

Cover: Rests on open water, often far from shore, but stays in shallow water near protected shorelines during high winds.

Reproduction: The nest is built of marsh plants amidst tall, emergent vegetation with open water nearby. Usually over shallow water, but occasionally on dry ground, or over water as much as 1.3 m (4 ft) deep (Palmer 1976). In northeastern California, most nest sites were in bulrush, usually over 0.9 m (3 ft) tall (Miller and Collins 1954).

Water: No additional data found.

Pattern: For nesting, prefers large lakes with extensive areas of emergent vegetation.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, apparently circadian activity. According to Cornelius (1977), winterers in southeastern Texas commonly fed during the day, although a previous study had found nocturnal feeding more common.

Seasonal Movements/Migration: Breeds in north-eastern California, but in some years many depart September to February. Small numbers breed elsewhere in California, but most winterers migrate to breeding grounds in other western states and Canada.

Home Range: Marked breeding redheads in Montana regularly moved between nesting potholes and nearby potholes where they fed and rested (Lokemoen 1966). For 11 pairs, the distance moved regularly was 46-613 m (150-2010 ft), and averaged 165 m (540 ft). A map in Lokemoen (1966) indicated that broods may have moved at least 457 m (1500 ft) from the nest site to larger, deeper bodies of water.

Territory: Does not defend a territory, but a drake will defend mate when she is approached closely by another drake, or by a pair (Palmer 1976).

Reproduction: Pair-formation occurs in winter and migration. In California, eggs or young have been noted April to August (Cogswell 1977). Monogamous, solitary nester, with strong parasitic tendencies. Some females lay eggs only in their own nest. Most lay about 10 eggs in nests of other birds (mostly ducks), and lay a clutch in their own nest as well. Some females apparently are completely parasitic. Most clutches are 8-10 eggs, but higher averages often are reported because of frequent parasitism by other redheads (and other ducks). Single-brooded; incubation 23-29 days, usually 24. The precocial young are tended by the female only, attaining independence at 3-5 wk, and first flying at 60-65 days. Most first breed as yearlings (Palmer 1976).

Niche: Commonly parasitizes the nests of water birds, including other redheads, 7 other species of ducks, coots, American bitterns, and black terns. Redhead nests occasionally are parasitized by other ducks. One of the main causes of nest desertion is parasitism by other redheads (Bellrose 1976). Other causes of nest failure include predation by skunks, raccoons, crows, magpies, gulls, and flooding. The entire population has been reduced by drought and drainage of breeding wetlands (Cogswell 1977).

REFERENCES

Low 1945, Miller and Collins 1954, Lokemoen 1966, Bartonek and Hickey 1969a, 1969b, Johnsgard 1975b, Palmer 1976, Bellrose 1976, Cogswell 1977, Cornelius 1977, McCaskie *et al.* 1979, U.S. Fish and Wildlife Service 1979, Garrett and Dunn 1981.

B102 Barrow's Goldeneye *Bucephala islandica*

Family: Anatidae Order: Anseriformes Class: Aves

Management Status: California Species of Special Concern, Harvest Species

Date: June 30, 1983

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

A very uncommon winter resident (October to March) along the central California coast, mainly in San Francisco Bay and vicinity, and in Marin and Sonoma cos. It is found locally on estuarine (lagoons and bays) and brackish lacustrine waters. Yocom and Harris (1975) reported only 5 records from northwestern California, south through Mendocino Co. Rare and local inland in winter on lacustrine and riverine waters, and found regularly in southern California only along the Colorado River. Formerly nested in the southern Cascades and the Sierra Nevada south at least to Fresno Co., but no potential breeders reported since before 1940 (Remsen 1978). Breeding status uncertain, because there have been few surveys in California (Cogswell 1977, McCaskie *et al.* 1979, Garrett and Dunn 1981).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Feeds principally on animal foods, mainly mollusks and crustaceans in saltwater, and aquatic insects and crustaceans in freshwater, but also eats fish eggs and young. Also eats algae and the seeds, leaves, and stems of other aquatic plants. Juvenile eats almost entirely aquatic invertebrates, mostly insects. Dives and takes food from bottom, preferring water 0.9-3 m (3-10 ft) deep (Palmer 1976). Also gleans food from submerged plants. At low tide, occasionally feeds in water 8-15 cm (3-6 in) deep by immersing head, but does not tip up (Palmer 1976). Prefers to feed on rocky bottoms, at least on coastal wintering grounds (Palmer 1976).

Cover: At night, rests on sheltered, open water. In daytime, rests in feeding areas, or if very windy, seeks sheltered waters.

Reproduction: Apparently no longer nests in California. Usually nests in a tree or snag cavity, often the deserted nest-hole of a pileated woodpecker or flicker, the latter necessarily being enlarged by decay. Also uses nest boxes and, where tree cavities are unavailable, rock crevices or buildings, or even nests under bushes. Nest is near a lake or quiet river. Prefers moderately alkaline lakes with abundant submerged vegetation and open water, often bordered by dense emergent vegetation (Palmer 1976). In California, nests were beside tree-bordered mountain lakes and large streams (Cogswell 1977).

Water: No additional data found.

Pattern: Found on estuarine and brackish lacustrine waters. For nesting, in California preferred tree cavities near wooded mountain lakes or large streams.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, mostly diurnal activity, but when breeding, sometimes feeds on bright, moonlit nights (Palmer 1976). Incubating female feeds most actively in midmorning and just before sunset (Palmer 1976). Migrates at night, and probably also by day (Palmer 1976).

Seasonal Movements/Migration: The California wintering population migrates to breeding grounds in Oregon, Washington, western Canada, and Alaska, and mostly is absent from April to September.

Home Range: No information found.

Territory: Nesting territory is located on the water area nearest the nest, and is used for copulation and feeding, but the pair often feeds elsewhere as well. In a British Columbia lake with a high breeding density, 38 pairs each occupied 37-55 m (120-180 ft) of shoreline. At lower densities, territories were larger. Defense is mainly by the drake. After eggs hatch, the female defends a brood territory, usually at a different site than the nesting territory, driving off other females and killing, or driving away, their ducklings. Boundaries are poorly defined, and size has not been measured (Palmer 1976).

Reproduction: May no longer breed in California; young formerly were found June to August (Cogswell 1977). Pair formation occurs mostly on wintering grounds. Monogamous, solitary nester; clutch size 4-13, and averaging 9-11. Single-brooded, and incubates for 32-34 days. Precocial young tended by the female only. They are deserted by 6 wk (sometimes much earlier), and attain flight at about 8 wk. Breeds first at 2 yr.

Niche: Drake commonly attacks ducks of other species that enter the breeding territory. Major predators in western North America are great horned owls, bald eagles, and golden eagles (Palmer 1976). Predation on nests is infrequent, but the newly hatched young are sensitive to cold, wet weather (Palmer 1976).

Comments: A California Species of Special Concern. The apparent extirpation of the California breeding population may have resulted from disturbance from fishing, boating, and shooting, and possibly removal of large trees that provided nesting cavities (Remsen 1978).

REFERENCES

Johnsgard 1975b, Yocom and Harris 1975, Palmer 1976, Bellrose 1976, Cogswell 1977, Remsen 1978, McCaskie *et al.* 1979, Garrett and Dunn 1981.

B111 Black-shouldered Kite *Elanus caeruleus*

Family: Accipitridae **Order:** Falconiformes **Class:** Aves
Management Status: California Fully Protected **Date:** February 1, 1982

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Common to uncommon, yearlong resident in coastal and valley lowlands; rarely found away from agricultural areas. Inhabits herbaceous and open stages of most habitats mostly in cismontane California. Has extended range and increased numbers in recent decades.

SPECIFIC HABITAT REQUIREMENTS

Feeding: Preys mostly on voles and other small, diurnal mammals, occasionally on birds, insects, reptiles, and amphibians. Forages in undisturbed, open grasslands, meadows, farmlands and emergent wetlands. Soars, glides, and hovers less than 30 m (100 ft) above ground in search of prey. Slowly descends vertically upon prey with wings held high, and legs extended; rarely dives into tall cover (Thompson 1975).

Cover: Uses trees with dense canopies for cover. In southern California, also roosts in saltgrass and Bermudagrass.

Reproduction: Makes a nest of loosely piled sticks and twigs and lined with grass, straw, or rootlets. Nest placed near top of dense oak, willow, or other tree stand; usually 6-20 m (20-100 ft) above ground (Dixon *et al.* 1957). Nest located near open foraging area.

Water: Probably meets water requirements from prey.

Pattern: Uses herbaceous lowlands with variable tree growth and dense population of voles (Waian and Stendell 1970). Substantial groves of dense, broad-leaved deciduous trees used for nesting and roosting.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong diurnal, and crepuscular activity.

Seasonal Movements/Migration: Apparently not migratory, but Binford (1979) found some movements in coastal California.

Home Range: Forages from a central perch over areas as large as 3 km² (1.9 mi²) (Warner and Rudd 1975). Seldom hunts more than 0.8 km (0.5 mi) from nest when breeding (Hawbecker 1942).

Territory: Generally not territorial, but nest site may be defended against crows, other hawks, and eagles (Pickwell 1930, Dixon *et al.* 1957). Defended foraging territories of about 0.10 km² (0.04 mi²) in winter from red-tailed hawks and northern harriers (Bammann 1975). Communal roost used in nonbreeding seasons (Waian and Stendell 1970).

Reproduction: Monogamous; breeds from February to October, with peak from May to August. Average clutch 4-5 eggs, range 3-6. Female only incubates, for about 28 days. Young fledge in 35-40 days. During incubation and nestling period, male feeds female, and supplies her with food to feed the young. Usually single-brooded; occasionally 2 broods.

Niche: Preys on rodents that may be harmful to agricultural crops. Nest may be robbed by jays, crows, yellow-billed magpies, raccoons, and opossums. Great horned owls may prey on adults and young.

REFERENCES

Pickwell 1930, Bent 1937, 1938, Hawbecker 1942, Grinnell and Miller 1944, Dixon *et al.* 1957, Grossman and Hamlet 1964, Brown and Amadon 1968, Waian and Stendell 1970, Eisenmann 1971, Bammann 1975, Thompson 1975, Warner and Rudd 1975, Binford 1979.

B113 Bald Eagle *Haliaeetus leucocephalus*

Family: Accipitridae **Order:** Falconiformes **Class:** Aves

Management Status: Federal Endangered, California Endangered, California Fully Protected **Date:** March 4, 1982

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Permanent resident, and uncommon winter migrant, now restricted to breeding mostly in Butte, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity cos. About half of the wintering population is in the Klamath Basin. More common at lower elevations; not found in the high Sierra Nevada. Fairly common as a local winter migrant at a few favored inland waters in southern California. Largest numbers occur at Big Bear Lake, Cachuma Lake, Lake Mathews, Nacimiento Reservoir, San Antonio Reservoir, and along the Colorado River.

SPECIFIC HABITAT REQUIREMENTS

Feeding: Requires large bodies of water, or free-flowing rivers with abundant fish, and adjacent snags or other perches. Swoops from hunting perches, or soaring flight, to pluck fish from water. Will wade into shallow water to pursue fish. Pounces on, or chases, injured or ice-bound water birds. In flooded fields, occasionally pounces on displaced voles, or other small mammals. Groups may feed gregariously, especially on spawning fish. Scavenges dead fish, water birds, and mammals. Open, easily approached hunting perches and feeding areas used most frequently.

Cover: Perches high in large, stoutly limbed trees, on snags or broken-topped trees, or on rocks near water. Roosts communally in winter in dense, sheltered, remote conifer stands. In Klamath National Forest, winter roosts were 16-19 km (10-12 mi) from feeding areas (Spencer 1976b).

Reproduction: Nests in large, old-growth, or dominant live tree with open branchwork, especially ponderosa pine. Nests most frequently in stands with less than 40% canopy, but usually some foliage shading the nest (Call 1978). Often chooses largest tree in a stand on which to build stick platform nest. Nest located 16-61 m (50-200 ft) above ground, usually below tree crown. Species of tree apparently not so important as height and size. Nest usually located near a permanent water source.

Water: In California, 87% of nest sites were within 1.6 km (1 mi) of water.

Pattern: Requires large, old-growth trees or snags in remote, mixed stands near water.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity. Winter feeding usually occurs immediately after dawn and in late afternoon.

Seasonal Movements/Migration: Individuals that breed in California may make only local winter movements in search of food. Winter migrants move from north to south.

Home Range: No data found.

Territory: Breeding territory in Alaska ($n = 14$), varied from 11-45 ha (28-112 ac), and averaged 23 ha (57 ac) (Hensel and Troyer 1964). Breeding territory defended from mating through fledging. Minimum distances between nests were 1 km (0.6 mi) in Alaska, and 17 km (10 mi) in Washington.

Reproduction: Breeds February through July; peak activity March to June. Clutch size usually 2; range 1-3. Incubation usually 34-36 days. Semialtricial young hatch asynchronously (Ehrlich *et al.* 1988). Monogamous, and breeds first at 4-5 yr.

Niche: Highly vulnerable to DDE-induced eggshell thinning. Competes with, and steals prey from osprey. Territories have been abandoned after disturbance from logging, recreational development, and other human activities near nests (Thelander 1973). Usually does not begin nesting if human disturbance is evident.

REFERENCES

Hensel and Troyer 1964, Brown and Amadon 1968, Snow 1973, Thelander 1973, Spencer 1976b, Call 1978, Steenhof 1978, Detrich 1979, Lehman 1979, Ehrlich *et al.* 1988.

B114 Northern Harrier *Circus cyaneus*

Family: Accipitridae Order: Falconiformes Class: Aves

Management Status: California Species of Special Concern Date: February 2, 1982

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Occurs from annual grassland up to lodgepole pine and alpine meadow habitats, as high as 3000 m (10,000 ft). Breeds from sea level to 1700 m (0-5700 ft) in the Central Valley and Sierra Nevada, and up to 800 m (3600 ft) in northeastern California. Frequents meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands; seldom found in wooded areas. Permanent resident of the northeastern plateau and coastal areas; less common resident of the Central Valley. Widespread winter resident and migrant in suitable habitat. California population has decreased in recent decades (Grinnell and Miller 1944, Remsen 1978), but can be locally abundant where suitable habitat remains free of disturbance, especially from intensive agriculture. Breeding population much reduced, especially in southern coastal district. Destruction of wetland habitat, native grassland, and moist meadows, and burning and plowing of nesting areas during early stages of breeding cycle, are major reasons for the decline (Remsen 1978).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Feeds mostly on voles and other small mammals, birds, frogs, small reptiles, crustaceans, insects, and, rarely on fish. Makes low, quartering flights 1-9 m (3-30 ft) above open ground. Dives from flight or hover; rarely perches and pounces on prey.

Cover: Uses tall grasses and forbs in wetland, or at wetland/field border, for cover; roosts on ground.

Reproduction: Nests on ground in shrubby vegetation, usually at marsh edge (Brown and Amadon 1968). Nest built of a large mound of sticks on wet areas, and a smaller cup of grasses on dry sites. Mostly nests in emergent wetland or along rivers or lakes, but may nest in grasslands, grain fields, or on sagebrush flats several miles from water.

Water: No data found on water requirements, but frequents aquatic habitats. Home range usually includes fresh water.

Pattern: Mostly found in flat, or hummocky, open areas of tall, dense grasses, moist or dry shrubs, and edges for nesting, cover, and feeding.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: Some individuals migrate into California; others migrate through to Central America or northern South America.

Home Range: In Utah, 5 breeding home ranges averaged 429 ha (1060 ac), and varied from 363-518 ha (896-1280 ac). In Michigan, individuals flew 1.6 to 8.8 km (1 to 5.5 mi) daily from a communal roost to foraging areas. Daily foraging areas varied from 12-16 ha (30-40 ac) to 259 ha (640 ac) (Craighead and Craighead 1956). Also in Michigan, 15 breeding home ranges averaged 405 ha (1000 ac), and varied from 98-770 ha (243-1920 ac). In Wisconsin, the breeding home range of 1 radio-tagged pair included an area 2 x 4.4 km (1.25 x 2.75 mi), or 890 ha (2200 ac) (Hamerstrom and Wilde 1973).

Territory: In Manitoba, territory extended 28 ha (96 ac) around nests (Hecht 1951). Very defensive of territory; will attack other, more formidable birds of prey, and humans during breeding season.

Reproduction: Breeds April to September, with peak activity June through July. Single-brooded; clutch averages 5 eggs, range 3-12. Female incubates while male provides food. Nestling period lasts about 53 days (Craighead and Craighead 1956). Breeding pair and juveniles may roost communally in late autumn and winter.

Niche: Competes with buteos, especially red-tailed and red-shouldered hawks, for food. Often considered a diurnal counterpart of the short-eared owl. Population may increase with some agricultural practices (e.g., grain crops), provided that cover and nesting habitat is preserved, or enhanced.

Comments: A California Species of Special Concern (Remsen 1978). Formerly called marsh hawk.

REFERENCES

Bent 1937, Grinnell and Miller 1944, Hecht 1951, Craighead and Craighead 1956, Brown and Amadon 1968, Hamerstrom 1969, Hamerstrom and Wilde 1973, Smith and Murphy 1973, Udvardy 1977, Call 1978, Remsen 1978, Harrison 1978, Bertrand and Scott 1979.

B117 Northern Goshawk *Accipiter gentilis*

Family: Accipitridae Order: Falconiformes Class: Aves

Management Status: U.S. Forest Service Sensitive, California Species of Special Concern

Date: February 1, 1982

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Breeds in North Coast Ranges through Sierra Nevada, Klamath, Cascade, and Warner Mts., and possibly in Mt. Piños and San Jacinto, San Bernardino, and White Mts. Remains yearlong in breeding areas as a scarce to uncommon resident. Prefers middle and higher elevations, and mature, dense conifer forests. Casual in winter along coast, throughout foothills, and in northern deserts, where it may be found in pinyon-juniper and low-elevation riparian habitats.

SPECIFIC HABITAT REQUIREMENTS

Feeding: Hunts in wooded areas. Uses snags and dead-topped trees for observation and prey-plucking perches. Feeds mostly on birds, from robin to grouse in size. Small mammals, of squirrel and rabbit size, often taken. Rarely eats carrion and insects. Prey caught in air, on ground, or in vegetation, using fast, searching flight, or rapid dash from a perch.

Cover: Uses mature and old-growth stands of conifer and deciduous habitats.

Reproduction: Usually nests on north slopes, near water, in densest parts of stands, but close to openings (Jackman and Scott 1975). In eastern Oregon, nest usually was located in fork of large, horizontal limb close to trunk, at bottom of live canopy 6-24 m (19-82 ft) above ground. Used large, live trees with mean dbh of 27.4 cm (11 in) (Reynolds *et al.* 1982). Uses old nests, and maintains alternate sites.

Water: Usually is a water source within territory. Young have been reported bathing (Bond 1942, Brown and Amadon 1968).

Pattern: Dense, mature conifer and deciduous forest, interspersed with meadows, other openings, and riparian areas required. Nesting habitat includes north-facing slopes near water.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: Some movement downslope after breeding season, as far as valley foothill hardwood habitat in Sierra Nevada. Migration into lowlands occurs irregularly; probably related to availability of food rather than weather (Mallette and Gould 1978).

Home Range: Home range appears to be same as territory.

Territory: Extremely defensive of nest area. Vociferous; will strike intruders, including humans. Territory estimated to be 1.6 to 39 km² (0.6 to 15 mi²) (Brown and Amadon 1968). Averaged 2.1 km² (0.8 mi²) in Wyoming (Craighead and Craighead 1956). Distances of 2.9 to 5.6 km (1.8 to 3.5 mi) have been reported between nesting pairs.

Reproduction: Begins breeding in April in southern California, and by mid-June in the north. Female lays eggs in 3-day intervals for average clutch of 3 (range 1-5). Female incubates 36-41 days while male provides food. After hatching, female feeds brood 8-10 days, then male helps feed them. Young may leave nest to perch at about 40 days; usually fledged by 45 days. Young begin to hunt by 50 days, and often independent by 70 days.

Niche: Great horned owls, ravens, and crows may prey on young goshawks. May be limited competition for food with other accipiters.

Comments: A California Species of Special Concern (Remsen 1978).

REFERENCES

Bent 1937, Bond 1942, Grinnell and Miller 1944, Craighead and Craighead 1956, Schnell 1958, Brown and Amadon 1968, Jackman and Scott 1975, Reynolds 1975, 1979, Udvardy 1977, Harrison 1978, Mallette and Gould 1978, Remsen 1978, Bertrand and Scott 1979, Jones 1979, Shuster 1980, Reynolds *et al.* 1982.

B124 Ferruginous Hawk *Buteo regalis*

Family: Accipitridae Order: Falconiformes Class: Aves
Management Status: California Species of Special Concern Date: March 1, 1982

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Uncommon winter resident and migrant at lower elevations and open grasslands in the Modoc Plateau, Central Valley, and Coast Ranges. Fairly common winter resident of grasslands and agricultural areas in southwestern California (Garrett and Dunn 1981). Casual in northeast in summer. Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon-juniper habitats.

SPECIFIC HABITAT REQUIREMENTS

Feeding: Searches for prey from low flights over open, treeless areas, and glides to intercept prey on the ground. Also hovers, and hunts from high mound perches. Cooperative hunting and ground pursuit of prey have been observed. Mostly eats lagomorphs, ground squirrels, and mice; also takes birds, reptiles, and amphibians. Population trends may follow lagomorph population cycles.

Cover: Roosts in open areas, usually in a lone tree or utility pole. Tolerant of heat; nest often unshaded.

Reproduction: No breeding records from California. Nests in foothills or prairies; on low cliffs, buttes, cut banks, shrubs, trees, or in other elevated structures, natural or human-made (Bent 1937, Olendorff 1973, Call 1978). Nest tree often isolated, or in transition zone to adjacent community (Smith and Murphy 1973). Sticks up to 2.5 cm (1 in) used to construct nest; dried manure also used (Olendorff 1973, Call 1978).

Water: No data found. Water requirements probably met from prey.

Pattern: Requires large, open tracts of grasslands, sparse shrub, or desert habitats with elevated structures for nesting.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity. In hot weather, often hunts only in early morning and late afternoon.

Seasonal Movements/Migration: Migratory; generally arrives in California in September and departs by mid-April.

Home Range: In South Dakota, home ranges were estimated to be 17-117 km² (7-46 mi²).

Territory: In South Dakota, average territory size was estimated to be 5 km² (1.9 mi²).

Reproduction: Breeds from Oregon into Canada. Egg laying begins in April (Weston 1969, Olendorff 1973). Clutch size 2-6; mostly 4 (Olendorff 1973, Smith and Murphy 1973). Incubates about 28 days. Young fledge at 38-50 days (Olendorff 1973).

Niche: Tends to displace red-tailed and Swainson's hawks. Young may be preyed upon by golden eagles and great horned owls. Competes with the numerous avian and mammal species that prey upon small mammals.

Comments: A California Species of Special Concern.

REFERENCES

Bent 1937, Grinnell and Miller 1944, Brown and Amadon 1968, Weston 1969, Olendorff 1973, Smith and Murphy 1973, Snow 1974a, Call 1978, Garrett and Dunn 1981.

B126 Golden Eagle *Aquila chrysaetos*

Family: Accipitridae **Order:** Falconiformes **Class:** Aves
Management Status: California Fully Protected, California Species of Special Concern
Date: March 4, 1982

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Uncommon permanent resident and migrant throughout California, except center of Central Valley. Perhaps more common in southern California than in north. Ranges from sea level up to 3833 m (0-11,500 ft) (Grinnell and Miller 1944). Habitat typically rolling foothills, mountain areas, sage-juniper flats, desert.

SPECIFIC HABITAT REQUIREMENTS

Feeding: Eats mostly lagomorphs and rodents; also takes other mammals, birds, reptiles, and some carrion. Diet most varied in nonbreeding season. Needs open terrain for hunting; grasslands, deserts, savannahs, and early successional stages of forest and shrub habitats. Soars 30-90 m (98-297 ft) above ground in search of prey, or makes low, quartering flights, often 7-8 m (23-26 ft) above ground. Occasionally searches from a perch and flies directly to prey (Carnie 1954). Sometimes pirates food from other predators. Hunting in pairs apparently common.

Cover: Secluded cliffs with overhanging ledges and large trees used for cover.

Reproduction: Nests on cliffs of all heights and in large trees in open areas. Alternative nest sites are maintained, and old nests are reused. Builds large platform nest, often 3 m (10 ft) across and 1 m (3 ft) high, of sticks, twigs, and greenery. Rugged, open habitats with canyons and escarpments used most frequently for nesting.

Water: No data found. Water needs probably met from prey.

Pattern: Uses rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, and cliffs and rock outcrops.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: Mostly resident, but may move downslope for winter, or upslope after breeding season. Some migrate into California for winter.

Home Range: Home range probably same as territory. Size of home range related to prey density and availability, and openness of terrain.

Territory: Territory estimated to average 57 km² (22 mi²) in Idaho (Beecham and Kocher 1975), 171-192 km² (66-74 mi²) in Montana (McGahan 1968), 23 km² (9 mi²) in Utah (Smith and Murphy 1973), 93 km² (36 mi²) in southern California (Dixon 1937), and 124 km² (48 mi²) in northern California (Smith and Murphy 1973).

Reproduction: Breeds from late January through August; peak in March through July. Clutch size 1-3, usually 2. Eggs laid early February to mid-May. Incubation 43-45 days (Beebe 1974), and nestling period usually 65-70 days.

Niche: Occasionally preys on domestic calves and lambs. May compete with ferruginous hawks for small mammals, and with California condors for carrion. May desert nest in early incubation if disturbed by humans (Thelander 1974).

Comments: A California Species of Special Concern (Remsen 1978).

REFERENCES

Dixon 1937, Grinnell and Miller 1944, Carnie 1954, McGahan 1968, Smith and Murphy 1973, Beebe 1974, Thelander 1974, Beecham and Kochert 1975, Olendorff 1976, Remsen 1978.

B131 Prairie Falcon *Falco mexicanus*

Family: Falconidae Order: Falconiformes Class: Aves

Management Status: California Species of Special Concern Date: March 4, 1982

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Uncommon permanent resident and migrant that ranges from southeastern deserts northwest along the inner Coast Ranges and Sierra Nevada. Distributed from annual grasslands to alpine meadows, but associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. Not found in northern coastal fog belt, or along the coastline.

SPECIFIC HABITAT REQUIREMENTS

Feeding: Eats mostly small mammals, some small birds, and reptiles. Catches prey in air and on ground in open areas. Dives from a perch with rapid pursuit, or dives from searching flight 15-90 m (50-300 ft) above ground.

Cover: Requires sheltered cliff ledges for cover.

Reproduction: Usually nests in a scrape on a sheltered ledge of a cliff overlooking a large, open area. Sometimes nests on old raven or eagle stick nest on cliff, bluff, or rock outcrop. Aerial courtship display occurs near nest site. Southeast-facing nest site apparently preferred, but height and orientation secondary to nature and character of the ledge.

Water: Denton (1975) reported 76% of eyries had water within 0.4 km (0.25 mi). Reported bathing (Skinner 1983a).

Pattern: Uses open terrain for foraging; nests in open terrain with canyons, cliffs, escarpments, and rock outcrops.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity. Much time spent perching near eyrie. Forages mostly early morning and late afternoon except when feeding nestlings or prey scarce.

Seasonal Movements/Migration: Migrants from north winter in California. Some residents wander upslope in summer and downslope for winter.

Home Range: Home range of a breeding pair was 26 km² (10 mi²) in Wyoming (Craighead and Craighead 1956).

Territory: Territory and home range probably the same. Intensively defends territory. Breeding territory was 5.7 to 6.5 km² (2.2 to 2.5 mi²) in Utah (Smith and Murphy 1973). Active nests have been recorded within 200 m (636 ft) of one another (Enderson 1964, Garrett and Mitchell 1973), in sites where individuals did not confront or see each other regularly. Thus, relative orientation of potential nest site probably more important than actual distance from another potential site.

Reproduction: Breeds from mid-February through mid-September, with peak April to early August. Clutch size 3-6 eggs, average 5. Mean laying date for 280 records 1900-1977 was April 4-11 (Walton 1977). Fledging success over 5 yr for 135 nests averaged 3.2 young, ranging 0-5; 19% of the nests had 5 young (Walton 1977). Young begin to disperse in June and July. May live as long as 13-20 yr (Enderson 1969, Denton 1975).

Niche: Vulnerable to DDE poisoning. Egg and nestling predation occurs at sites accessible to mammal predators, great horned owls, and golden eagles. May compete with red-tailed hawks for food and nest sites, and with great horned owls and ravens for nest sites.

Comments: A California Species of Special Concern (Remsen 1978).

REFERENCES

Skinner 1938a, Craighead and Craighead 1956, Enderson 1964, 1969, Brown and Amadon 1968, Garrett and Mitchell 1973, Smith and Murphy 1973, Snow 1974b, Denton 1975, Walton 1977, Remsen 1978, U.S. Bureau of Land Management 1979.

B143 Black Rail *Laterallus jamaicensis*

Family: Rallidae Order: Gruiformes Class: Aves

Management Status: California Threatened, California Fully Protected Date: March 4, 1982

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Rarely seen, scarce, yearlong resident of saline, brackish, and fresh emergent wetlands in the San Francisco Bay area, Sacramento-San Joaquin Delta, coastal southern California at Morro Bay and a few other locations, the Salton Sea, and lower Colorado River area. Formerly a local resident in coastal wetlands from Santa Barbara Co. to San Diego Co.; still winters there rarely. Significant loss of saltwater and freshwater wetland habitat in recent decades probably has reduced population (Wilbur 1974a). Loss of higher wetland around San Francisco Bay apparently has eliminated breeding in the south bay area (Manolis 1977).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Carnivorous; gleans isopods, insects, and other arthropods from surface of mud and vegetation.

Cover: Occurs most commonly in tidal emergent wetlands dominated by pickleweed, or in brackish marshes supporting bulrushes in association with pickleweed. In freshwater, usually found in bulrushes, cattails, and saltgrass. Usually found in immediate vicinity of tidal sloughs (Manolis 1977). Typically occurs in the high wetland zones near upper limit of tidal flooding, not in low wetland areas with considerable annual and/or daily fluctuations in water levels. Along Colorado River, prefers dense bulrush stands, shallow water, and gently sloping shorelines (Repking and Ohmart 1977). During extreme high tides, may depend on upper wetland zone and adjoining upland or freshwater wetland vegetation for cover.

Reproduction: Nest concealed in dense vegetation, often pickleweed, near upper limits of tidal flooding (Stephens 1909). Builds a deep, loose cup, at ground level or elevated several inches.

Water: No additional information found.

Pattern: Dependent upon upper zones of saline emergent wetlands, especially with pickleweed, and brackish fresh emergent wetlands.

SPECIES LIFE HISTORY

Activity Patterns: No data found, but apparently circadian activity pattern. Most vocalizations heard at night.

Seasonal Movements/Migration: California population apparently resident. Occasionally found away from wetlands in late summer and autumn, suggesting some post-breeding movement (Wilbur 1974a, Ripley 1977). May winter in locations where does not breed (Manolis 1978, Garrett and Dunn 1981).

Home Range: No data found. Repking and Ohmart (1977) reported densities of 1.1 to 1.6/ha (0.4 to 0.6/ac) in spring, and 0.7/ha (0.3/ac) in winter, on the lower Colorado River.

Territory: Little information available; will respond to recorded calls, especially in breeding season.

Reproduction: Nests with eggs reported from 12 March to 4 June (Bent 1926, Wilbur 1974a). Single-brooded. Clutch size in California averaged 6 eggs; range = 3-8 (Dawson 1923, Wilbur 1974a). Reported to abandon nest if disturbed before completing clutch (Huey 1916, Heaton 1937).

Niche: Predators include herons and domestic cats. Occasionally found dead from collisions with powerlines, smokestacks, transmission towers, autos.

REFERENCES

Stephens 1909, Huey 1916, Dawson 1923, Bent 1926, Heaton 1937, Wilbur 1974a, Manolis 1977, 1978, Repking and Ohmart 1977, Ripley 1977, Garrett and Dunn 1981, Ehrlich *et al.* 1988.

B144 Clapper Rail *Rallus longirostris*

Family: Rallidae **Order:** Gruiformes **Class:** Aves

Management Status: *R. l. obsoletus*, Federal Endangered, California Endangered, California Fully Protected; *R. l. levipes*, Federal Endangered, California Endangered, California Fully Protected; *R. l. yumanensis*, Federal Endangered, California Threatened, California Fully Protected **Date:** February 5, 1982

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Locally common yearlong in coastal wetlands and brackish areas around San Francisco, Monterey, and Morro bays (California clapper rail, *R. l. obsoletus*); in coastal saline emergent wetlands along southern California from Santa Barbara Co. to San Diego Co. (light-footed clapper rail, *R. l. levipes*); and April through September in freshwater and brackish emergent wetlands along the Colorado River from Needles southward, and around Salton Sea (Yuma clapper rail, *R. l. yumanensis*).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Forages in higher marsh vegetation, along vegetation and mudflat interface, and along tidal creeks. Gleans, pecks, probes, and scavenges from surface. Along coast, preys on crabs, mussels, clams, snails, insects, spiders, and worms. Also takes mice during high tides, and may scavenge dead fish (Zembal and Massey 1983). On Colorado River and Salton Sea, takes mostly crayfish, some clams, and insects (Ohmart and Smith 1973).

Cover: Prefers emergent wetland dominated by pickleweed and cordgrass, and brackish emergent wetland with these 2 species and bulrush. Along brackish emergent wetland of Colorado River and Salton Sea, frequents mature stands of cattail and bulrush. Requires shallow water and mudflats for foraging, with adjacent higher vegetation for cover during high water.

Reproduction: In saline emergent wetlands, nests mostly in lower zones, where cordgrass is abundant and tidal sloughs are nearby (Harvey 1980, Zembal and Massey 1983). Builds a platform concealed by a canopy of woven cordgrass stems or pickleweed and gumweed. Also uses dead drift vegetation as platform. In fresh or brackish water, builds nest in dense cattail or bulrush.

Water: No additional information found. May not require fresh drinking water.

Pattern: Requires emergent wetlands and tidal sloughs. Occasionally uses ecotone between wetland and adjacent upland vegetation.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, circadian activity. Most vocal nocturnally and crepuscularly.

Seasonal Movements/Migration: Not migratory in coastal wetlands. However, dispersing juveniles recorded in freshwater wetlands in late summer and autumn. Along Colorado River, mostly migrates to western Baja California for winter (Tomlinson and Todd 1973).

Home Range: No information found. In San Francisco Bay area, breeding season density was 0.3 to 1.6/ha (0.1 to 0.6/ac) (Gill 1979). Density in nonbreeding seasons varied from 0.1 to 1.1/ha (0.04 to 0.4/ac) (Gill 1979). In coastal southern California and along the Colorado River, breeding season densities of 0.1 to 2.0/ha (0.04 to 0.8/ac) and 13.9/ha (5.6/ac), respectively, were recorded (Tomlinson and Todd 1973, Jorgensen 1975).

Territory: No information found.

Reproduction: In San Francisco Bay area, breeds mid-March through July, with peaks observed early May and late June (Gill 1973, Harvey 1980). Clutch size averaged 5.3 (range 4-14) in southern California (Jorgensen 1975), and 7.6 in northern California (Harvey 1980). Incubates 18-29 days. Hatching success 38% in San Francisco Bay area (Harvey 1980), and 55-86% in southern California (Zembal and Massey 1983).

Niche: Loss of emergent wetland habitat to filling and diking has contributed to decline in numbers in recent decades. Predation by rats on eggs and young, and by raptors and mammals on adults, has been reported. Very high tides have caused nesting failure (Zucca 1954). Fluctuations in population in northern California may result from low rainfall and decline in abundance of cordgrass for nesting (Gill 1979).

REFERENCES

Zucca 1954, Gill 1973, 1979, Ohmart and Smith 1973, Tomlinson and Todd 1973, Jorgensen 1975, Harvey 1980, Zembal and Massey 1983, U.S. Fish and Wildlife Service 1985.

B150 Sandhill Crane *Grus canadensis*

Family: Gruidae Order: Gruiformes Class: Aves

Management Status: *G. c. tabida* California Threatened, California Fully Protected

Date: April 23, 1984

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Both greater (*G. c. tabida*) and lesser (*G. c. canadensis*) sandhill cranes occur in California. Historically, *G. c. tabida* was a fairly common breeder on northeastern plateau (Grinnell and Miller 1944). Now reduced greatly in numbers, and breeds only in Siskiyou, Modoc and Lassen cos. and in Sierra Valley, Plumas and Sierra cos. (James 1977, Remsen 1978, McCaskie *et al.* 1979). In summer, this race occurs in and near wet meadow, shallow lacustrine, and fresh emergent wetland habitats. It winters primarily in the Sacramento and San Joaquin valleys from Tehama Co. south to Kings Co. (Grinnell and Miller 1944), where it frequents annual and perennial grassland habitats, moist croplands with rice or corn stubble, and open, emergent wetlands. It prefers relatively treeless plains. The migratory, nonbreeding subspecies *G. c. canadensis* winters in similar habitats in the San Joaquin and Imperial valleys (Grinnell and Miller 1944), and to a lesser extent in the Sacramento Valley. In southern California, concentrates on the Carrizo Plain, San Luis Obispo Co., with smaller flocks near Brawley, Imperial Co., and Blythe, Riverside Co. (Garrett and Dunn 1981). The latter 2 flocks may be partly, or largely, *G. c. tabida*, which formerly wintered more commonly in southern California, but which has declined greatly there and throughout its range. Outside of known wintering grounds, extremely rare except that migrates over much of interior California. A few coastal sightings from Marin Co. southward, but no records from offshore islands.

SPECIFIC HABITAT REQUIREMENTS

Feeding: When foraging, prefers open shortgrass plains, grain fields, and open wetlands (Grinnell and Miller 1944). Moist sites commonly used, but also feeds on dry plains far from water. Feeds on grasses, forbs, especially cereal crops (newly planted or harvested); also uses long bill to probe in soil for roots, tubers, seeds, grains, earthworms, and insects. Larger prey, such as mice, small birds, snakes, frogs, and crayfish also are taken. These are ripped into small pieces before being consumed (Terres 1980). Fruits and berries are eaten if available (Eckert and Karalus 1981).

Cover: Roosts at night in flocks standing in moist fields or in shallow water (Terres 1980). Also roosts in expansive, dry grasslands, island sites, and wide sandbars (Johnsgard 1975a, Eckert and Karalus 1981).

Reproduction: Nests in remote portions of extensive wetlands (Cogswell 1977), or sometimes in shortgrass prairies (Eckert and Karalus 1981). On dry sites, nests are scooped-out depressions lined with grasses. More commonly, nests are large mounds of wetland plants, in shallow water. Natural hummocks or muskrat houses often used. Ideal sites are on small islands screened by tall tules, cattails, or shrubs (Harrison 1978).

Water: Avoids saline waters. Requires fresh water for drinking and bathing (Marcot 1979).

Pattern: When nesting, prefers open habitats with shallow lakes and fresh emergent wetlands. In winter, also inhabits

dry grasslands and croplands especially near wetlands (Grinnell and Miller 1944). Prefers treeless habitats where predators can be seen (Cogswell 1977).

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity. Roosts at night and flies to feeding areas in flocks (Terres 1980). Migrates by night and day (Eckert and Karalus 1981).

Seasonal Movements/Migration: Breeding population from north of California passes southward through the state in September and October and northward in March and April, and many individuals spend the winter. Travels in great flocks. Migration is rapid and direct; flies both night and day and stops only for short periods to feed and rest. California breeding population winters chiefly in the Central Valley.

Home Range: In Florida, Nesbitt (1976) recorded 3 home ranges 1 June to 1 August, averaging 460 ha (1137 ac); individuals moved an average of 8.5 km (5.3 mi)/ day within home range. Migrants sometimes range as far as 8 km (5 mi) daily from roost to feed (Walkinshaw 1973).

Territory: Established pair may defend the same territory in successive years, and may use the same nest site (Johnsgard 1975a). At Malheur Refuge in Oregon, Littlefield and Ryder (1968) recorded 8 territories averaging 25 ha (62 ac) and ranging from 1.2 to 68 ha (3-168 ac). In Idaho, Drewien (1974) recorded the average size of 5 territories as 17 ha (42 ac). Walkinshaw (1973) summarized data on 171 territories in 4 states and reported averages in different regions of 16, 42, 53, 65, and 85 ha (40, 103, 132, 161, and 210 ac), with a range of 3.2 to 194 ha (8-480 ac).

Reproduction: Courtship begins in April with elaborate dancing behaviors that often include 50-80 individuals (Eckert and Karalus 1981). Peak breeding May until July, and nesting completed by late August. Monogamous, and may remain paired for life (Johnsgard 1975a). Solitary nester; average clutch size 2, range 1-3 (Harrison 1978). Single-brooded, with an incubation period of about 30 days (Johnsgard 1975a). Young precocial, and parents often separate chicks. If chicks are raised together, antagonism between them may reduce reproductive success to 1 chick per yr (Johnsgard 1975a). Young fly at about 70 days, but remain with adults up to a year (Harrison 1978). Does not breed until 4th yr (Johnsgard 1975a).

Niche: Eats mostly waste cereal; also many insects and rodents (Eckert and Karalus 1981). Particularly sensitive to human disturbance when nesting, especially within a mile of the nest-site. Grazing is detrimental (Marcot 1979).

REFERENCES

Dawson 1923, Grinnell and Miller 1944, Littlefield and Ryder 1968, Walkinshaw 1973, Drewien 1974, Johnsgard 1975a, Nesbitt 1976, Cogswell 1977, James 1977, Harrison 1978, Remsen 1978, Marcot 1979, McCaskie *et al.* 1979, Terres 1980, Garrett and Dunn 1981, Eckert and Karalus 1981, California Department of Fish and Game 1983.

B154 Snowy Plover *Charadrius alexandrinus*

Family: Charadriidae Order: Charadriiformes Class: Aves

Management Status: California Species of Special Concern Date: March 26, 1984

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

In fall and winter, common on sandy marine and estuarine shores, uncommon at salt ponds, and rare at the Salton Sea. Nests locally in these same habitats from April through August, but the major nesting habitat now appears to be on salt pond levees (Cogswell 1977). Inland nesting areas occur at the Salton Sea, Mono Lake, and at isolated sites on the shores of alkali lakes in northeastern California, in the Central Valley, and southeastern deserts (Jurek and Leach 1973, Page *et al.* 1979, 1983, Garrett and Dunn 1981).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Gleans insects and amphipods from the dry sand of upper beaches along the coast (Cogswell 1977). Occasionally forages in wet sand for young sand crabs. At salt ponds and alkali lakes, feeds primarily on brine flies.

Cover: Crouches motionless on sandy substrate and relies on camouflage for cover.

Reproduction: Requires a sandy, gravelly or friable soil substrate for nesting. Nests are shallow depressions in the sand or soil, sometimes lined with small pebbles, glass fragments, or gravel. Frequently locates nest near or under objects such as driftwood, rocks, or defoliated bushes. Nests also may be on barren ground with no nearby cover (Bent 1929, Jurek and Leach 1973).

Water: May stand in water for cooling at some of the hotter inland nesting areas.

Pattern: Nests, feeds, and takes cover on sandy or gravelly beaches along the coast, on estuarine salt ponds, alkali lakes, and at the Salton Sea.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: Beginning in July and August, may move from northwest Oregon to as far as Baja California. Remains on wintering grounds from September through March. Smaller numbers remain year-round at the Salton Sea and at salt ponds on San Francisco Bay (Cogswell 1977).

Home Range: During the breeding season, adult generally does not wander far from the nest (Page *et al.* 1977). At Mono Lake, breeding adult feeds at freshwater seeps up to 1.5 km (0.94 mi) away from the nest site (Page *et al.* 1983).

Territory: Nesting density and territorial defense appear to depend on predators. Nesting density was 1 nest/6 ha (15 ac) at Mono Lake, where predatory pressure was high, while density was 20 nests/6 ha (15 ac) at Monterey Bay, where predators were infrequent (Page *et al.* 1983).

Reproduction: Present at nesting sites from April through August. Solitary nester; clutch size 2-6, average = 3 eggs. Incubation, mostly by the male, lasts approximately 24 days. The young are precocial, following the adults to feeding areas within 1 day. The young are agile and able to avoid predators within 2 days after hatching. Fledging age reported as 29-47 days (Ehrlich *et al.* 1988).

Niche: Gulls, ravens, coyotes, and skunks are important predators of adults, eggs, and young at Mono Lake (Page *et al.* 1983). The historical nesting area for snowy plovers, sandy marine beaches, has brought them into constant contact with humans using these areas for recreation. The increase in nesting populations at salt ponds and other inland areas is opportunistic and compensates somewhat for increased human disturbance at the coastal nesting sites (Jurek and Leach 1973, Cogswell 1977).

Comments: A California Species of Special Concern (Remsen 1978).

REFERENCES

Bent 1929, Jurek and Leach 1973, Cogswell 1977, Page *et al.* 1977, 1979, 1983, Remsen 1978, Garrett and Dunn 1981, Ehrlich *et al.* 1988.

B159 Mountain Plover *Charadrius montanus*

Family: Charadriidae Order: Charadriiformes Class: Aves

Management Status: California Species of Special Concern Date: March 4, 1982

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Population declining and very local; occasionally fairly common. Winter resident from September through March. Found on short grasslands and plowed fields of the Central Valley from Sutter and Yuba cos. southward. Also found in foothill valleys west of San Joaquin Valley, and in Imperial Valley. Winters below 1000 m (3200 ft).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Searches on the ground for large insects, especially grasshoppers (Graul 1976a).

Cover: Avoids high and dense cover. Uses open shortgrass plains, plowed fields with little vegetation, and open sagebrush areas.

Reproduction: Does not nest in California. Nests in high-elevation grassland, often blue grama and buffalo grass patches (Graul 1975).

Water: No information found.

Pattern: Frequents open plains with low, herbaceous or scattered shrub vegetation.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: Breeds from northern Montana and North Dakota south in the Great Plains to southeastern New Mexico and Texas. Winters from northern California, southern Arizona, and central Texas south into north-central Mexico (Cogswell 1977).

Home Range: Nests widely spaced within a nesting area. Graul (1975) found 21 nests/ 65 ha (162 ac), with an average distance between nests of 140 m (425 ft). Ranges widely in winter flocks, sometimes of 100, or more.

Territory: Mean territory in prairie grasslands in Colorado was 16 ha (40 ac). May occupy same territory year after year (Graul 1975, 1976b). Defends territory against conspecifics, longspurs, and horned larks in breeding season. Usually not territorial in nonbreeding seasons, but may defend a small, mobile feeding space.

Reproduction: Breeds from late April through June; peak in late May (Bent 1929). Female lays an average clutch of 3 eggs (range = 1-4). In years of abundant food, male may incubate and brood young while female lays another clutch, often tended by another male (Ehrlich *et al.* 1988.)

Niche: Eggs and young preyed upon by ground squirrels, kit foxes, coyotes, badgers, skunks, and snakes; adults are caught by raptors.

Comments: A California Species of Special Concern.

REFERENCES

Bent 1929, Graul 1975, 1976a, 1976b, Graul and Webster 1976, Cogswell 1977, Ehrlich *et al.* 1988.

B173 Long-billed Curlew *Numenius americanus*

Family: Scolopacidae Order: Charadriiformes Class: Aves

Management Status: California Species of Special Concern Date: April 23, 1984

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

An uncommon to fairly common breeder from April to September in wet meadow habitat in northeastern California in Siskiyou, Modoc, and Lassen cos. One recent nesting record for Owens Valley, Inyo Co. (McCaskie 1978). Uncommon to locally very common as a winter visitant from early July to early April along most of the California coast, and in the Central and Imperial valleys, where the largest flocks occur. Preferred winter habitats include large coastal estuaries, upland herbaceous areas, and croplands. On estuaries, feeding occurs mostly on intertidal mudflats. Small numbers of nonbreeders remain on coast in summer, and larger numbers remain in some years in the Central Valley (Cogswell 1977, Page *et al.* 1979, Garrett and Dunn 1981).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Uses long bill to probe deep into substrate, or to grab prey from mud surface, while at times wading in belly-deep water. On Bolinas Lagoon, most important prey were mud crabs (*Hemigrapsus oregonensis*), ghost shrimp (*Callinassa californiensis*) and mud shrimp (*Upogebia pugettensis*). Also took insect pupae, gem clams (*Gemma gemma*), and small estuarine fish (Stenzel *et al.* 1976). Inland, takes insects (adults and larvae), worms, spiders, berries, crayfish, snails, and small crustaceans (Bent 1929). Occasionally takes nestling birds (Timken 1969).

Cover: At coastal estuaries, requires high salt marsh, pastures, salt ponds for roosting during high tide periods.

Reproduction: Breeds on grazed, mixed-grass and shortgrass prairies. Habitats on gravelly soils and gently rolling terrain are favored over others (Stewart 1975). Nest usually located in relatively flat areas with grass cover 10-20 cm (4-8 in) high. The nest is a sparsely-lined depression, often remote from water (Palmer 1967). Nest often placed close to cover such as a grass clump, rock, or soil mound (Johnsgard 1981). In California, nests on elevated interior grasslands and wet meadows, usually adjacent to lakes or marshes (Grinnell and Miller 1944).

Water: No additional data found.

Pattern: Upland shortgrass prairies and wet meadows are used for nesting; coastal estuaries, open grasslands, and croplands are used in winter.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity. Probably feeds at night in estuarine habitats. In winter, makes periodic short flights from intertidal mudflats to high tide roosts, in coordination with the tide cycle.

Seasonal Movements/Migration: Fall migrants begin arriving on central California coast in late June; by mid-April most have left for breeding grounds. Breeders present in northeastern California from April to September. Slightly higher numbers of migrants occur in fall than in the spring migration (Page *et al.* 1979).

Home Range: In eastern Washington, average nesting density was 1 pair/km² (2.5/mi²) (Fitzner 1978). Approximately 40 used Bolinas Lagoon in the nonbreeding season (Page *et al.* 1979). In winter, from 10-14/km² (25-35/mi²) fed on an intertidal mudflat outside of levees at Hayward (Swarth and Cogswell 1981).

Territory: Territory varies with topography and cover, from 20 ha (49 ac) in flat, open habitat to 6-8 ha (15-20 ac) in more diversified habitat (Johnsgard 1981). In Utah, nests were no closer than 460 m (1500 ft) (Forsythe 1970), but in dense populations they may be as close as 250 m (820 ft) (Johnsgard 1981). In favorable habitat, pairs may nest within sight of one another (Palmer 1967). Male defends nest territory.

Reproduction: Breeding season mid-April to September. Generally a solitary nester, but may be loosely colonial in favorable habitats. Mean clutch size 4 eggs; incubation period 27-28 days. Both members of a pair incubate; female mostly during day and male at night. Precocial young cared for by both parents, but female usually leaves when chicks are 2-3 wk old. Fledging period 41-45 days (Johnsgard 1981).

Niche: Currently on Audubon Society's Blue List because of declining numbers, probably caused by agricultural practices (Tate 1981). Proposed as a candidate for Federal Endangered status. Breeding range has retracted considerably in the last 80 yr, but western populations have not decreased as much as those in eastern U.S.

Comments: A California Species of Special Concern.

REFERENCES

Bent 1929, Grinnell and Miller 1944, Palmer 1967, Timken 1969, Forsythe 1970, Stewart 1975, Stenzel *et al.* 1976, Cogswell 1977, Fitzner 1978, McCaskie 1978, Page *et al.* 1979, Swarth and Cogswell 1981, Garrett and Dunn 1981, Johnsgard 1981, Tate 1981.

B227 Caspian Tern *Sterna caspia*

Family: Laridae Order: Charadriiformes Class: Aves Date: March 22, 1984

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Common to very common along the California coast and at scattered locations inland, from April through early August. Nests in dense colonies on sandy estuarine shores, on levees in salt ponds, and on islands in alkali and freshwater lakes (Small 1974, Cogswell 1977). Breeding adult often flies substantial distances to forage in lacustrine, riverine, and fresh and saline emergent wetland habitats (Gill 1976). Nesting colonies are located at south San Francisco Bay, San Diego Bay, and several lakes in Modoc and Lassen cos. (Cogswell 1977, Garrett and Dunn 1981). Small colonies recently reported on Humboldt Bay, San Pablo Bay, and Elkhorn Slough, Monterey Co. (Gill and Mewaldt 1983). An analysis of banding recoveries indicates a shifting from nesting in numerous small colonies associated with freshwater marshes in interior California, to nesting in large colonies on human-created habitats along the coast (Gill and Mewaldt 1983). Large numbers are present at the Salton Sea in the breeding season, but nesting no longer occurs there. This species winters from southern California, where it is locally fairly common, south to Central and South America. Scattered individuals have been noted in winter along the central and northern California coast.

SPECIFIC HABITAT REQUIREMENTS

Feeding: Feeds primarily on small fish in freshwater lakes, estuaries, and salt ponds. Sometimes feeds over the open ocean, near shore (Cogswell 1977). Searches aerially, hovers, and dives just below water surface for prey. Fish as long as 15 cm (6 in) are taken (Cogswell 1977).

Cover: Groups rest on mudflats, boardwalks, lake shores, pilings, small islands, or occasionally on open sand beaches.

Reproduction: Nests in dense colonies on undisturbed islands, levees, or shores. Nests are scraped, unlined depressions in soil near water. Barren, or nearly barren, sites are preferred.

Water: No requirement for fresh water has been reported.

Pattern: For nesting, requires relatively barren, undisturbed islands, levees, or shores, and nearby foraging areas in lakes, estuaries, salt ponds, or emergent wetlands.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, primarily diurnal activity. Nesting colonies are active at night.

Seasonal Movements/Migration: Breeding population disperses widely before migrating south. Arrives at wintering grounds in late September to early October (Bent 1921), returns in late March or April.

Home Range: Although most adults probably forage near the colony, Gill (1976) reported finding tagged trout in nests, which only could have been obtained 29-60 km (18-37 mi) from the colony. The largest colony on San Francisco Bay saltpond dikes held 499 nests in 1954. It declined thereafter, and was abandoned by 1970, by which time 3 other colonies were established.

Territory: Small territories are established around densely grouped nests; territory varied from 1.0 to 1.4 m² (10.8 to 15.3 ft²) in the Great Lakes region (Ludwig 1965).

Reproduction: The breeding season begins in April, peaks May through July, and extends well into August. Average clutch size ranged from 2.8 in the Great Lakes region (Ludwig 1965) to 2.0 in San Francisco Bay (Gill 1973). Incubation period is 20 days (Bent 1921). Both sexes incubate eggs and care for young. Adults continue to feed young for weeks, or months (Cogswell 1977). The semiprecocial young wander widely after 2 wk. First breeding probably occurs in the 3d yr.

Niche: Although Gill (1973) noted the presence of ring-billed gulls, California gulls, and black-crowned night-herons near a large colony of nesting Caspian terns, any attempt at predation by these species was thwarted by colony-wide mobbing of intruders. At one colony, Caspian terns nesting in close proximity to least terns were credited with protecting the least terns by interspecific cooperation in mobbing predators (Anderson and Rigney 1980).

REFERENCES

Bent 1921, Ludwig 1965, Gill 1973, 1976, 1977, Small 1974, Cogswell 1977, Gill and Mewaldt 1979, 1983, Anderson and Rigney 1980, Garrett and Dunn 1981.

B235 Black Tern *Chlidonias niger*

Family: Laridae Order: Charadriiformes Class: Aves Date: March 23, 1984

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Formerly a very common spring and summer visitor to fresh emergent wetlands of California (Grinnell and Miller 1944). Numbers have declined throughout the range, especially in the Central Valley (Cogswell 1977). Currently fairly common migrant and breeder on wetlands of the northeastern plateau area, but absent from some historic nesting localities, such as Lake Tahoe (Cogswell 1977). Despite the presence of apparently suitable habitat in rice farming areas, breeding is questionable in the Central Valley (Gaines 1974). Fairly common in spring and summer at the Salton Sea, but evidence of nesting there is lacking (Garrett and Dunn 1981). Although restricted to freshwater habitats while breeding, can be fairly common on bays, salt ponds, river mouths, and pelagic waters in spring and fall migration (Grinnell and Miller 1944, Cogswell 1977).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Forages by hovering above wet meadows and fresh emergent wetlands. Catches insects in air; also plucks them from water and vegetation surfaces. Eats grasshoppers, dragonflies, moths, flies, beetles, crickets, and other insects (Terres 1980). Also hovers above croplands, then drops to capture adult and larval insects from recently plowed soil. Another foraging technique is plunging to water surface for tadpoles, crayfish, small fish, and small mollusks. Young are fed insects (Cuthbert 1954).

Cover: Often nests in dense wetland vegetation.

Reproduction: Nest is a loose mass of dead plant stems, anchored to standing vegetation or floating on the water surface. On dry ground, a hollow scrape lined with fine plant matter is used, and also takes over abandoned muskrat houses and coot and grebe nests (Bent 1921, Harrison 1978). Dikes in rice fields also may be used where available (Cogswell 1977).

Water: Needs fresh water while breeding, but also frequents salt water in migration (Grinnell and Miller 1944).

Pattern: Uses fresh emergent wetlands, lakes, ponds, moist grasslands, and agricultural fields. In migration, some take coastal routes and forage offshore.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity. Forages in daylight hours with erratic flight and frequent hovering (Bent 1921, Pough 1951).

Seasonal Movements/Migration: Long distance migrant that winters off the coast of northwestern South America. Spring migration takes place in April and May, and fall migration extends from late June through September, but stragglers have been reported in all months in California (Cogswell 1977).

Home Range: No additional data found.

Territory: At Eagle Lake, Gould (1974) recorded nests averaging 8.5 m (28 ft) apart, and ranging 3.7-20 m (12-66 ft) apart, within colonies. In Michigan, Cuthbert (1954) recorded nests 9.1-805 m (30-2640 ft) apart; within colonies, most nests were less than 30.5 m (100 ft) apart. Cuthbert (1954) stated that most food was obtained within "a few hundred yards" of the nest. After the young fledged, "large" feeding territories, containing 3-4 perches for young, were established and defended by both parents and young.

Reproduction: The breeding season extends from May through late August with a peak in June and July. Loosely colonial; Usually 3 eggs in clutch (range 2-4) (Harrison 1978). Single-brooded; incubation is by both sexes, lasting 20-22 days. Young are semiprecocial, and are tended by both parents. Young remain near the nest for about 2 wk, start to fly at 3 wk, and are fully fledged at 4 wk (Harrison 1978).

Niche: Loss of wetlands in the Central Valley has been mitigated in part by rice farming, which provides potential foraging and nesting sites (Grinnell and Miller 1944). Highly vulnerable to destruction of natural wetlands by drainage, or heavy grazing. Pesticide pollution of many agricultural areas also has been extremely detrimental. Campgrounds and marinas on the shorelines of large lakes and wetlands also may be partially responsible for population decline (Marcot 1979).

REFERENCES

Bent 1921, Grinnell and Miller 1944, Pough 1951, Cuthbert 1954, Gaines 1974, Gould 1974, Cogswell 1977, Harrison 1978, Marcot 1979, Terres 1980, Garrett and Dunn 1981.

B259 Yellow-billed Cuckoo *Coccyzus americanus*

Family: Cuculidae Order: Cuculiformes Class: Aves
Management Status: California Endangered Date: June 30, 1983

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

An uncommon to rare summer resident of valley foothill and desert riparian habitats in scattered locations in California. Along the Colorado River, breeding population on California side estimated at 180 pairs (Gaines 1977a). Perhaps 100, or fewer, additional pairs reside in the Sacramento and Owens valleys; along the South Fork of the Kern River, Kern Co.; along the Santa Ana River, Riverside Co.; and along the Amargosa River, Inyo and San Bernardino cos. Also may nest along San Luis Rey River, San Diego Co. Formerly much more common and widespread throughout lowland California, but numbers drastically reduced by habitat loss (Grinnell and Miller 1944, Gaines 1974b, Garrett and Dunn 1981).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Gleans grasshoppers, cicadas, caterpillars and other larger insects from foliage. Occasionally preys on frogs or lizards, or feeds on fruit (Bent 1940, Preble 1957).

Cover: Densely foliated, deciduous trees and shrubs, especially willows, required for roosting sites.

Reproduction: Nests in dense cover as above; nest is a flimsy, open cup of twigs built on horizontal limb of tree or shrub at height of 0.6 to 7.8 m (2-25 ft).

Water: Restricted when breeding to riverbottoms and other mesic habitats where humidity is high.

Pattern: Inhabits extensive deciduous riparian thickets or forests with dense, low-level or understory foliage, and which abut on slow-moving watercourses, backwaters, or seeps. Willow almost always a dominant

component of the vegetation. In Sacramento Valley, also utilizes adjacent orchards, especially of walnut. Along Colorado River, may inhabit mesquite thickets where willow is absent. Nests typically in sites with at least some willow, dense low-level or understory foliage, high humidity, and wooded foraging spaces in excess of 93 m (300 ft) in width and 10 ha (25 ac) in area (Gaines 1974b, 1977a).

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: Usually arrives from South American wintering areas in June, and departs by late August or early September.

Home Range: No information found.

Territory: No information found.

Reproduction: In California, most eggs laid mid-June to mid-July. Monogamous; clutch averages 3-4 eggs (range 1-5). Both sexes incubate; incubation lasts 9-11 days and hatching is asynchronous. Both sexes care for altricial young. Young may leave nest at 6-9 days (Bent 1940, Hamilton and Hamilton 1965).

Niche: Numbers in California and other western areas have declined markedly in recent decades with destruction of riparian habitats (Laymon and Halterman 1987).

REFERENCES

Jay 1911, Shelton 1911, Hanna 1937, Bent 1940, Grinnell and Miller 1944, Preble 1957, Hamilton and Hamilton 1965, Gaines 1974b, 1977a, Nolan and Thompson 1975, Roberson 1980, Garrett and Dunn 1981, Laymon and Halterman 1987.

California Wildlife Habitat Relationships System
California Department of Fish and Game
California Interagency Wildlife Task Group

BURROWING OWL
Family: STRIGIDAE
B269

Athene cunicularia

Order: STRIGIFORMES Class: AVES

Written by: C. Polite
Reviewed by: L. Kiff
Edited by: L. Kiff
Updated by: CWHR Program Staff, September 1999

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

A yearlong resident of open, dry grassland and desert habitats, and in grass, forb and open shrub stages of pinyon-juniper and ponderosa pine habitats. Formerly common in appropriate habitats throughout the state, excluding the humid northwest coastal forests and high mountains. Numbers markedly reduced in recent decades. Present on the larger offshore islands. Found as high as 1600 m (5300 ft) in Lassen Co.

SPECIFIC HABITAT REQUIREMENTS

Feeding: Eats mostly insects; also small mammals, reptiles, birds, and carrion. Hunts from a perch, hovers, hawks, dives, and hops after prey on ground.

Cover: Uses rodent or other burrow for roosting and nesting cover. Moves perch to thermoregulate; perches in open sunlight in early morning, and moves to shade, or to burrow, when hot (Coulombe 1971).

Reproduction: Usually nests in old burrow of ground squirrel, or other small mammal. May dig own burrow in soft soil. Nest chamber lined with excrement, pellets, debris, grass, feathers; sometimes unlined. Pipes, culverts, and nest boxes used where burrows scarce (Robertson 1929). Burrowing owl nests have also been observed in buildings (Zambrano 1998).

Water: Water requirements not well known; observed to drink in the wild (Coulombe 1971).

Pattern: Frequents open grasslands and shrublands with perches and burrows.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, circadian activity. Hunts day or night; frequently perches or stands at burrow entrance in daytime.

Seasonal Movements/Migration: Individuals in northern parts of the range may winter to the south, as far as Central America (Call 1978), but mostly resident in California. May be some movement downslope in winter, or wandering. Strong site fidelity is suggested (Schultz 1993).

Home Range: Home range at the Oakland Airport varied from 0.04 to 1.6 ha (0.1 to 4 ac), with a mean of 0.8 ha (2 ac) (Thomsen 1971).

Territory: Martin (1973) reported average distance between burrows of 166 m (436 ft), but

that burrow not defended until another burrowing owl came within 10 m (33 ft).

Reproduction: Male gives courtship display and notes in front of burrow. Breeding occurs from March through August, with peak in April and May. Clutch size 2-10, average 5-6 eggs; may increase to the north (Bent 1938). Young emerge from burrow at about 2 wk, and fly by about 4 wk (Zarn 1974a). Martin (1973) reported 95% of the young fledged, and a mean reproductive success of 4.9 young per pair. Semicolonial; probably the most gregarious owl in North America.

Niche: Conversion of grassland to agriculture, other habitat destruction, and poisoning of ground squirrels have contributed to the reduction in numbers in recent decades, which was noted in the 1940s, and earlier (Grinnell and Miller 1944, Zarn 1974a, Remsen 1978). Predators include prairie falcons, red-tailed hawks, Swainson's hawks, ferruginous hawks, northern harriers, golden eagles, foxes, coyotes, and domestic dogs and cats (Martin 1973). Fleas, lice, and feather mites are common ectoparasites. Collisions with autos may be a significant cause of mortality.

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California Wildlife Habitat Relationships System
California Department of Fish and Game
California Interagency Wildlife Task Group

SPOTTED OWL

Strix occidentalis

Family: STRIGIDAE
B270

Order: STRIGIFORMES

Class: AVES

Written by: C. Polite

Reviewed by: L. Kiff

Edited by: L. Kiff

Updated by: CWHR Program Staff, September 1999

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

An uncommon, permanent resident in suitable habitat. In northern California, resides in dense, old-growth, multi-layered mixed conifer, redwood, and Douglas-fir habitats, from sea level up to approximately 2300 m (0-7600 ft). In southern California, nearly always associated with oak and oak-conifer habitats (Garrett and Dunn 1981). Breeding range extends west of the Cascade Range through the North Coast Ranges, the Sierra Nevada, and in more localized areas of the Transverse and Peninsular Ranges. May move downslope in winter along the eastern and western slopes of the Sierra Nevada, and in other areas.

SPECIFIC HABITAT REQUIREMENTS

Feeding: Feeds in forest habitats upon a variety of small mammals, including flying squirrels, woodrats, mice and voles, and a few rabbits. Also eats small birds, bats, and large arthropods. Usually searches from a perch and swoops or pounces on prey in vegetation or on the ground. May cache excess food.

Cover: Uses dense, multi-layered canopy cover for roost seclusion. Roost selection appears to be related closely to thermoregulatory needs; intolerant of high temperatures. Roosts in dense overhead canopy on north-facing slopes in summer. In winter, roosts in oak habitats. In northern regions of the state, daytime roosts averaged 165 m (549 ft) from water; in southern regions, daytime roosts averaged only 51 m (173 ft) from water (Barrows and Barrows 1978).

Reproduction: Usually nests in tree or snag cavity, or in broken top of large tree. Less frequently nests in large mistletoe clump, abandoned raptor or raven nest, in cave or crevice, on cliff or ground (Call 1978). Mature, multi-layered forest stands are required for breeding (Remsen 1978). Nest usually placed 9-55 m (30-180 ft) above the ground.

Water: Probably requires a permanent water source. May reduce heat stress by bathing (Barrows and Barrows 1978, Barrows 1981). Drinks freely in captivity.

Pattern: Requires blocks of 40-240 ha (100-600 ac) of mature forest with permanent water and suitable nesting trees and snags (Forsman 1976). In northern California, apparently prefers narrow, steep-sided canyons with north-facing slopes.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, nocturnal activity (Forsman 1976).

Seasonal Movements/Migration: Not migratory, although some individuals may move downslope in winter.

Home Range: Forsman et al. (1977) found home ranges in mature Douglas-fir/hemlock forests in Oregon of 120-240 ha (300-600 ac), with a mean of 180 ha (450 ac). Gould reported similar home range size in the Sierra Nevada. Individuals spaced 1.6 to 3.2 km (1-2 mi) apart in suitable habitat (Marshall 1942, Gould 1974). Home range size largest during non breeding season (Zabel et al. 1992).

Territory: Gould (1974) found that territory in conifer forests in the Sierra Nevada varied from 40-138 ha (100-340 ac), with a mean of 93 ha (230 ac). Very few observations of territorial behavior reported, in part because of wide spacing of pairs and inconspicuous behavior.

Reproduction: Breeds from early March through June, with peak in April and May. One brood per yr. Clutch size 1-4, usually 2. Female incubates and broods young; male feeds female and young. May not be mature sexually until 3 yr. Pair may use same breeding site for 5-10 yr, but may not breed every yr (Forsman 1976).

Niche: Great horned owls and goshawks are potential predators of young (Forsman 1976). Invading barred owls are known to displace spotted owls from their territories (Hamer 1988). Requires mature forest stands with large trees and snags; very sensitive to habitat destruction and fragmentation (Gould 1974, Forsman 1976). Declared Federal Threatened in June 1990.

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California Wildlife Habitat Relationships System
California Department of Fish and Game
California Interagency Wildlife Task Group

LONG-EARED OWL
Family: STRIGIDAE
B272

Asio otus
Order: STRIGIFORMES

Class: AVES

Written by: C. Polite
Reviewed by: L. Kiff
Edited by: L. Kiff
Updated by: CWHR Program Staff, August 2005

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Uncommon yearlong resident throughout the state except the Central Valley and Southern California deserts where it is an uncommon winter visitor. throughout the state. Riparian habitat required; also uses live oak thickets and other dense stands of trees. Resident populations in the state have been declining since the 1940s, especially in southern California (Grinnell and Miller 1944, Remsen 1978). Shuford and Fitton (1998) suggested populations of *A. otus* are still abundant in the Great Basin regions of California. All reasons for decline not known, but destruction and fragmentation of riparian habitat and live oak groves have been major factors (Remsen 1978). Urban development and agriculture have been the major causes for decline in coastal southern California (Bloom 1994).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Eats mostly voles and other rodents, occasionally birds, including smaller owls, and other vertebrates. Searches for prey in low, gliding flight; pounces on prey on ground. Usually hunts in open areas, occasionally in woodland and forested habitats.

Cover: Riparian or other thickets with small, densely canopied trees required for roosting and nesting.

Reproduction: Uses old crow, magpie, hawk, heron, and squirrel nest in a variety of trees with dense canopy. Nest usually 3-15 m (10-50 ft) above ground, rarely on ground or in tree or snag cavity (Karalus and Eckert 1974). Breeds from valley foothill hardwood up to ponderosa pine habitats.

Water: No additional data found.

Pattern: Frequents dense, riparian and live oak thickets near meadow edges, and nearby woodland and forest habitats. Also found in dense conifer stands at higher elevations.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, nocturnal activity (Marti 1976).

Seasonal Movements/Migration: Apparently makes only local movements in California, although some migration may occur. Often congregates in winter flocks, perhaps including family groups. May be seasonal movement westward from Sierra Nevada foothills in fall. Small (1974) reported irregular wandering of groups in winter.

Home Range: In Wyoming, breeding home range in riparian habitat varied from 34-106 ha (83-262 ac), and averaged 51 ha (134 ac) (Craighead and Craighead 1956).

Territory: Few data found. Apparently does not defend space outside immediate vicinity of nest. Hunting grounds may be shared by adults from different nests (Marks et al. 1994).

Reproduction: Breeding extends from early March to late July. One brood per yr from a clutch of 3-8 eggs, usually 4-5. Eggs usually laid in April and May; incubation 21 -28 days, by female; male feeds. Nestlings fledge in about 50 days or less. Approximately 93% of eggs resulted in fledged young in Wyoming (Craighead and Craiahead 1956). May nest in loose colonies.

Niche: Northern harriers may compete for prey; red-shouldered hawks may compete for nest sites (Wilson 1938). Great horned owls may prey on young.

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B273 Short-eared Owl *Asio flammeus*

Family: Strigidae Order: Strigiformes Class: Aves
Management Status: California Species of Special Concern Date: March 4, 1982

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Formerly a resident locally the length of the state, excluding higher mountains. A widespread winter migrant, found primarily in the Central Valley, in the western Sierra Nevada foothills, and locally in the southern desert region. An uncommon winter migrant in southern California, including the Channel Islands (Garrett and Dunn 1981). Usually found in open areas with few trees, such as annual and perennial grasslands, prairies, dunes, meadows, irrigated lands, and saline and fresh emergent wetlands. Occasionally still breeds in northern California (McCaskie *et al.* 1988). Numbers have declined over most of the range in recent decades because of destruction and fragmentation of grassland and wetland habitats, and grazing (Remsen 1978).

Feeding: Feeds primarily on voles and other small mammals (Bent 1938, Earhart and Johnson 1970). Birds are an important food source in coastal wintering areas, and in nesting season. Also eats reptiles, amphibians, and arthropods. Frequently searches in low, gliding flight 1-6 m (3.3 to 20 ft) above the ground; swoops and pounces; also hunts from a perch. Commonly found in treeless areas using fence posts and small mounds as perches.

Cover: Requires dense vegetation; tall grasses, brush, ditches, and wetlands are used for resting and roosting cover (Grinnell and Miller 1944).

Reproduction: Nests on dry ground in a depression concealed in vegetation, and lined with grasses, forbs, sticks, and feathers; occasionally nests in a burrow.

Water: Has been observed drinking in the wild (Dixon and Bond 1937) and in captivity (Clark 1975), but not known if water is essential.

Pattern: Found in open, treeless areas with elevated sites for perches, and dense vegetation for roosting and nesting.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, circadian activity; mostly crepuscular, at night, and on cloudy days.

Seasonal Movements/Migration: Migrants usually arrive in California in September or October, and leave in April. Concentrates in winter in areas where prey is abundant, and snow cover is scant or absent (Bent 1938).

Home Range: Pitelka *et al.* (1955a) estimated that density on tundra in Alaska varied from 1.2 to 1.5 pair per km² (3-4 per mi²).

Territory: On prairie marshland in Manitoba, breeding territory in 1969 averaged 0.7 km² (0.3 mi²), and varied from 0.2 to 1.0 km² (0.1 to 0.4 mi²) (n = 5) (Clark 1975). In Alaska, Pitelka *et al.* (1955b) reported minimum breeding territory of about 20 ha (50 ac). Territory may vary greatly in response to small mammal density (Clark 1975).

Reproduction: Courtship consists of aerial displays and hooting (Pitelka *et al.* 1955a). Breeds from early March through July (Bent 1938). Clutch size 4-14 eggs, usually 5-7, and higher in years with high prey population. Eggs laid in April and May; incubated by female for 21-28 days. Male brings food to female, which feeds and cares for semialtricial young. Fledging is at 31-36 days (Urner 1923).

Niche: Predators include great horned owls (Hunt 1918, Killpack 1951), golden eagles (McGahan 1968), snowy owls (Murie 1929), and peregrine falcons (Sooter 1942). Small, predatory mammals and large reptiles may prey upon young and eggs. Competitors include northern harriers (Berger 1958), gulls (Fisler 1960), barn owls, and other large owls.

Comments: A California Species of Special Concern (Remsen 1978).

REFERENCES

- Hunt 1918, Urner 1923, Murie 1929, Townsend 1937, Dixon and Bond 1937, Bent 1938, Sooter 1942, Grinnell and Miller 1944, Killpack 1951, Pitelka *et al.* 1955a, 1955b, Johnston 1956, Berger 1958, Fisler 1960, Guiguet 1960, McGahan 1968, Earhart and Johnson 1970, Karalus and Eckert 1974, Clark 1975, Murray 1976, Udvardy 1977, Remsen 1978, Bertrand and Scott 1979, Garrett and Dunn 1981, Ehrlich *et al.* 1988, McCaskie *et al.* 1988.

B279 Black Swift *Cypseloides niger*

Family: Apodidae Order: Apodiformes Class: Aves

Management Status: California Species of Special Concern Date: October 16, 1984

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Breeds very locally in the Sierra Nevada and Cascade Range, the San Gabriel, San Bernardino, and San Jacinto Mts., and in coastal bluffs and mountains from San Mateo Co. south probably to San Luis Obispo Co. Nests in moist crevice or cave on sea cliffs above the surf, or on cliffs behind, or adjacent to, waterfalls in deep canyons. Forages widely over many habitats. In migration, rare and irregular outside the breeding range; does not winter in the state (Grinnell and Miller 1944, Remsen 1978, McCaskie *et al.* 1979, Garrett and Dunn 1981).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Feeds exclusively on flying insects, captured in sustained, long-distance foraging flights, usually high in the air. Often pursues insects in updrafts associated with cliffs or storm fronts.

Cover: Apparently the only regular resting places are on steep, rocky, often moist, cliffs such as those used for nesting (Bent 1940).

Reproduction: Builds nest in moist location on sea cliff above surf, or on cliff behind, or adjacent to, waterfall in deep canyon. Nest constructed of mud mixed with moss, ferns, seaweed, or other plant materials; located in deep, dark crevice, in cave, or under overhang (Bent 1940). Nests in colony of a few pairs. Nest usually kept moist by mist from the surf or waterfall.

Water: Required at nest, as described above, and possibly at roost, but it is not known whether drinking water is required.

Pattern: If there are suitable nest sites for breeding, will forage over almost any terrain and habitat. Seems to avoid arid regions, however, such as the Great Basin, southern deserts, and Central Valley.

SPECIES LIFE HISTORY

Activity Patterns: Diurnal activity, including in migration. Other swifts undergo periods of torpor in cold weather, when flying insects are scarce (Terres 1980), and black swift may do the same.

Seasonal Movements/Migration: Migrates south for the winter; mostly absent from October through April. Noted rarely and irregularly outside the breeding range, mostly west of the Great Basin and southern deserts.

Home Range: Home range very large (Bent 1940, Grinnell and Miller 1944), but has not been measured.

Territory: Territoriality has not been reported for this species; territory presumably limited to nest site.

Reproduction: Breeding season lasts from early June to late August. Usually nests in small colony. Lays only 1 large egg per yr (Harrison 1978). Incubation lasts 24-27 days. Altricial young leave the nest at about 45 days (Hunter and Baldwin 1962), but nestling period probably highly variable as in other swifts. Young can go without food for long periods (Terres 1980).

Niche: Nests are inaccessible to terrestrial predators and human disturbance, with the exception of rock-climbers, who rarely use these wet cliffs.

Comments: A California Species of Special Concern (Remsen 1978).

REFERENCES

Michael 1927, Bent 1940, Grinnell and Miller 1944, Udvardy 1954, Lack 1956, Knorr 1961, Hunter and Baldwin 1962, Harrison 1978, Remsen 1978, McCaskie *et al.* 1979, 1988, Terres 1980, Garrett and Dunn 1981, Ehrlich *et al.* 1988.

B279 Black Swift *Cypseloides niger*

Family: Apodidae Order: Apodiformes Class: Aves

Management Status: California Species of Special Concern Date: October 16, 1984

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Breeds very locally in the Sierra Nevada and Cascade Range, the San Gabriel, San Bernardino, and San Jacinto Mts., and in coastal bluffs and mountains from San Mateo Co. south probably to San Luis Obispo Co. Nests in moist crevice or cave on sea cliffs above the surf, or on cliffs behind, or adjacent to, waterfalls in deep canyons. Forages widely over many habitats. In migration, rare and irregular outside the breeding range; does not winter in the state (Grinnell and Miller 1944, Remsen 1978, McCaskie *et al.* 1979, Garrett and Dunn 1981).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Feeds exclusively on flying insects, captured in sustained, long-distance foraging flights, usually high in the air. Often pursues insects in updrafts associated with cliffs or storm fronts.

Cover: Apparently the only regular resting places are on steep, rocky, often moist, cliffs such as those used for nesting (Bent 1940).

Reproduction: Builds nest in moist location on sea cliff above surf, or on cliff behind, or adjacent to, waterfall in deep canyon. Nest constructed of mud mixed with moss, ferns, seaweed, or other plant materials; located in deep, dark crevice, in cave, or under overhang (Bent 1940). Nests in colony of a few pairs. Nest usually kept moist by mist from the surf or waterfall.

Water: Required at nest, as described above, and possibly at roost, but it is not known whether drinking water is required.

Pattern: If there are suitable nest sites for breeding, will forage over almost any terrain and habitat. Seems to avoid arid regions, however, such as the Great Basin, southern deserts, and Central Valley.

SPECIES LIFE HISTORY

Activity Patterns: Diurnal activity, including in migration. Other swifts undergo periods of torpor in cold weather, when flying insects are scarce (Terres 1980), and black swift may do the same.

Seasonal Movements/Migration: Migrates south for the winter; mostly absent from October through April. Noted rarely and irregularly outside the breeding range, mostly west of the Great Basin and southern deserts.

Home Range: Home range very large (Bent 1940, Grinnell and Miller 1944), but has not been measured.

Territory: Territoriality has not been reported for this species; territory presumably limited to nest site.

Reproduction: Breeding season lasts from early June to late August. Usually nests in small colony. Lays only 1 large egg per yr (Harrison 1978). Incubation lasts 24-27 days. Altricial young leave the nest at about 45 days (Hunter and Baldwin 1962), but nestling period probably highly variable as in other swifts. Young can go without food for long periods (Terres 1980).

Niche: Nests are inaccessible to terrestrial predators and human disturbance, with the exception of rock-climbers, who rarely use these wet cliffs.

Comments: A California Species of Special Concern (Remsen 1978).

REFERENCES

Michael 1927, Bent 1940, Grinnell and Miller 1944, Urdy 1954, Lack 1956, Knorr 1961, Hunter and Baldwin 1962, Harrison 1978, Remsen 1978, McCaskie *et al.* 1979, 1988, Terres 1980, Garrett and Dunn 1981, Ehrlich *et al.* 1988.

B281 Vaux's Swift *Chaetura vauxi*

Family: Apodidae Order: Apodiformes Class: Aves Date: October 16, 1984

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

A summer resident of northern California. Breeds fairly commonly in the Coast Ranges from Sonoma Co. north, and very locally south to Santa Cruz Co.; in the Sierra Nevada; and possibly in the Cascade Range. Prefers redwood and Douglas-fir habitats with nest-sites in large hollow trees and snags, especially tall, burned-out stubs. Fairly common migrant throughout most of the state in April and May, and August and September. A few winter irregularly in southern coastal lowlands (Grinnell and Miller 1944, McCaskie *et al.* 1979, Garrett and Dunn 1981).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Feeds exclusively on flying insects taken in long, continuous foraging flights. Feeds high in the air over most terrains and habitats; also feeds commonly at lower levels in forest openings, above burns, and especially above rivers (Grinnell and Miller 1944) and lakes (Terres 1980).

Cover: Roosts in hollow trees and snags, and occasionally in chimneys and buildings; often in large flocks (Bent 1940).

Reproduction: Nests in redwood, Douglas-fir, and occasionally other coniferous forests. Nest typically built on the vertical inner wall of a large, hollow tree or snag, especially tall stubs charred by fire (Bent 1940). Enters nesting tree from the top or through cracks in the side, and almost always locates nest near the bottom of a cavity, regardless of the height of the entrance. Occasionally nests in chimneys and buildings.

Water: No data found.

Pattern: The most important habitat requirement appears to be an appropriate nest-site in a large, hollow tree. Forages over most terrains and habitats, often high in the air. Shows an apparent preference for foraging over rivers and lakes.

SPECIES LIFE HISTORY

Activity Patterns: Activity diurnal, including migration. May enter torpor in periods of cold weather, when flying insects are scarce, as some other swifts do (Terres 1980).

Seasonal Movements/Migration: Apparently mostly migrates to wintering grounds in Mexico and Central America, but a few winter irregularly in coastal lowlands of southern California. Fairly common in spring and fall migration throughout the state, though unpredictable in occurrence.

Home Range: No data found.

Territory: Territoriality has not been reported; territory presumably limited to nest site.

Reproduction: Breeds from early May to mid-August. Solitary nesting apparently typical. Clutch size 3-7 eggs, usually 4-5; incubation lasts 18-20 days. Altricial young tended by both parents; leave the nesting tree at about 28 days (Harrison 1978).

Niche: Sometimes heavily parasitized by lice, which can cause considerable mortality (Bent 1940). May roost early on cold days (Ehrlich *et al.* 1988).

REFERENCES

Bent 1940, Grinnell and Miller 1944, Lack 1956, Baldwin and Hunter 1963, Baldwin and Zaczkowski 1963, Harrison 1978, McCaskie *et al.* 1979, Terres 1980, Garrett and Dunn 1981, Ehrlich *et al.* 1988.

B291 Rufous Hummingbird *Selasphorus rufus*

Family: Trochilidae Order: Apodiformes Class: Aves Date: March 23, 1984

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

A common migrant and uncommon summer resident of California. A rare, but probably regular, winter resident in southern California (Garrett and Dunn 1981). A common breeder in Oregon and Washington, and breeding in the Trinity Mts. of Trinity and Humboldt cos. has been confirmed in recent years (McCaskie *et al.* 1979, 1988). Many postbreeders migrate south through the Cascade Range and Sierra Nevada in summer, although spring migration mostly is through the lowlands and foothills (Grinnell and Miller 1944). Found in a wide variety of habitats that provide nectar-producing flowers; uses valley foothill hardwood, valley foothill hardwood-conifer, riparian, and various chaparral habitats in both northward and southward migration; montane riparian, aspen, and high mountain meadows (to tree-line and above) used in southward migration. More common in the southern deserts in southward than in northward migration. On the Channel Islands, a rare spring migrant (Garrett and Dunn 1981). On the Farallon Islands, very rare in spring and uncommon in fall (DeSante and Ainley 1980).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Takes nectar from many species of flowering plants; also eats insects, spiders and tree sap. Hovers while taking nectar and insects, which it gleans from foliage and flowers; also hawks insects from air.

Cover: Trees and shrubs in many habitats provide cover, including lowland riparian, open woodlands, scrub, and chaparral, also mountain meadows extending to and above treeline (Grinnell and Miller 1944).

Reproduction: Breeding areas north of California in coniferous forests (Johnsgard 1983); nest variously placed in berry tangles, shrubs, and conifers. Nest is an open cup, usually on a sloping branch near ground (Harrison 1978). Probably uses similar sites in northwestern California. May rebuild on old nest.

Water: Drinks by hovering over water, or by sitting in shallow water, and dipping bill (Bent 1940). Nectar also a major water source.

Pattern: Uses riparian areas, open woodlands, chaparral, mountain meadows, and other habitats rich in nectar-producing flowers, including gardens and orchards.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: Arrives in February and migrates north through lowlands and foothills until mid-April (south) and early May (north); a few remain in the state. Postbreeder males begin to migrate back through California in late June and early July. This early appearance of males in the Sierra Nevada has led some observers to suspect breeding. Fall migration also takes this species into desert areas. Most individuals are gone by mid-September, but a few regularly overwinter, particularly in southern California.

Home Range: No data on home range found. In British Columbia, Horvath (1964) recorded 7-105 nests per 40 ha (100 ac) in various vegetation types.

Territory: Armitage (1955) reported 5 feeding territories of migrants varying from 3.3-37 m² (36-400 ft²).

Reproduction: Nesting recently confirmed in northwestern mt. ranges. In Oregon, the breeding season extends from late April through July. Perhaps less promiscuous than other North American hummingbirds; males have been observed incubating (Johnsgard 1983). Female sometimes nests close to others in favorable areas. Usually 2 eggs laid; occasionally 1 or 3. No reports of double-brooding found. Incubation period unknown, but probably close to other *Selasphorus* (16-22 days for Allen's hummingbird). Altricial young tended by female until fledging at 22 days. Female performs most nesting duties.

Niche: Merlins sometimes prey on this species (Bent 1940). Owls, other hawks, and weasels are suspected predators. Greatest danger probably unseasonable cold that kill nectar sources and insects. Hummingbirds are important pollinators of specially adapted plants.

REFERENCES

Bent 1940, Grinnell and Miller 1944, Armitage 1955, Horvath 1964, Harrison 1978, McCaskie *et al.* 1979, 1988, DeSante and Ainley 1980, Garrett and Dunn 1981, Johnsgard 1983, Ehrlich *et al.* 1988.

B294 Lewis' Woodpecker *Melanerpes lewis*

Family: Picidae Order: Piciformes Class: Aves Date: February 1, 1982

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

An uncommon, local winter resident occurring in open oak savannahs, broken deciduous, and coniferous habitats. Found along eastern slopes of the Coast Ranges south to San Luis Obispo Co. Also winters in the Central Valley, Modoc Plateau, and the Transverse and other Ranges in southern California. Breeds locally along eastern slopes of the Coast Ranges, and in the Sierra Nevada, Warner Mts., Klamath Mts., and in the Cascade Range.

SPECIFIC HABITAT REQUIREMENTS

Feeding: Forages primarily on insects in spring and summer. In summer, 60% of feeding time was spent hawking insects, 30% foraging on ground and in brush, and 10% gleaning insects from trunks and branches of trees (Bock 1970). In late summer and fall, fruits and berries eaten frequently. Winter food mostly cached acorns, other nuts and seeds, and emerging insects. Caches acorns and other nuts in crevices and holes for use in nonbreeding season.

Cover: Requires open habitats with scattered trees and snags with cavities. Cover provided by cavities and foliage of trees and shrubs.

Reproduction: Excavates nest cavity in snag or dead part of live tree, usually 1.5 to 24 m (5-80 ft) above ground (Bock 1970, Raphael and White 1984). Usually nests in sycamore, cottonwood, oak, or conifer. May nest near other pairs.

Water: No data found.

Pattern: Suitable habitat includes open, deciduous and conifer habitats with brushy understory, and scattered snags and live trees for nesting and perching (Bock 1970). Uses logged and burned areas. Prefers oaks and acorns in winter.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: Tends to wander in fall. Distance travelled depends on proximity of suitable habitat and acorn and other nut supplies. May form nomadic flocks in late summer and fall; moves into orchards, or moves higher in mountains (Bock 1970). Mountain populations usually move to lower areas for winter.

Home Range: No data found.

Territory: Nesting territory for a pair was 6 ha (15 ac); probably represented immediate vicinity of nest and feeding area (Bock 1970). Defends acorn and nut stores in fall and winter from conspecifics, acorn woodpecker, and other woodpeckers.

Reproduction: Breeds from early May through July, with peak in late May and early June. Clutch size 4-9, usually 6-7. Incubation probably 13-14 days; fledging occurs at 28-34 days. Male incubates and broods at night; pair alternate in daytime. Pair bond may be permanent.

Niche: Loss of habitat and nest sites to land cultivation and development has reduced breeding population in northern California (Bock 1970). Competition with acorn woodpeckers for stored mast has been reported (Bock 1970).

REFERENCES

Bent 1939, Grinnell and Miller 1944, Bock 1970, Jackman and Scott, 1975, Raphael and White 1984, Ehrlich *et al.* 1988.

B309 Olive-sided Flycatcher *Contopus borealis*

Family: Tyrannidae Order: Passeriformes Class: Aves Date: November 30, 1983

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Uncommon to common, summer resident in a wide variety of forest and woodland habitats below 2800 m (9000 ft) throughout California exclusive of the deserts, the Central Valley, and other lowland valleys and basins. Preferred nesting habitats include mixed conifer, montane hardwood-conifer, Douglas-fir, redwood, red fir, and lodgepole pine. Uncommon transient in wooded habitats from sea level to subalpine throughout California, including the Channel Islands (Grinnell and Miller 1944, Garrett and Dunn 1981).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Sallies out for flying insects over forest canopy or adjacent meadows, clearings, or shrub-covered slopes in wide-ranging flights from high, conspicuous perches. Favors honey bees (Bent 1942).

Cover: Requires large, tall trees, usually conifers, for nesting and roosting sites; also lofty perches, typically the dead tips or uppermost branches of the tallest trees in vicinity, for singing posts and hunting perches.

Reproduction: Nest an open cup of grasses, mosses, lichens, rootlets, pine needles; usually placed in a conifer 2-20 m (5-70 ft) above ground, well out on a horizontal limb (Bent 1942).

Water: No specific information found, but nest usually close to water source.

Pattern: Most numerous in montane conifer forests where tall trees overlook canyons, meadows, lakes or other open terrain. Extent and density of forest habitat less important than the amount of air space that can be scanned from its highest perches (Grinnell and Miller 1944, Gaines 1977b).

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: Arrives from South American wintering areas mid-April (southern California) to early May (northern California). Transients still moving north in early June. Departs breeding areas in August; most have left the state by early October. Accidental in winter in southern California (Grinnell and Miller 1944, Garrett and Dunn 1981).

Home Range: In breeding season, probably equal to territory. In Sierra Nevada eastside pine forest, Bock and Lynch (1970) estimated home range to be 45 ha (111 ac).

Territory: In Virginia, Johnston (1971) found a mean territory of 8 ha (20 ac).

Reproduction: Monogamous; peak of egg-laying in June. Clutch averages 3 eggs (range 3-4); probably single-brooded. Incubation about 14 days. Both sexes care for altricial young. Fledging occurs at 15-19 days (Bent 1942, Harrison 1978).

Niche: Detailed life history information apparently lacking.

REFERENCES

Bent 1942, Grinnell and Miller 1944, Bock and Lynch 1970, Johnston 1971, Gaines 1977b, Harrison 1978, Garrett and Dunn 1981.

B315 Willow Flycatcher *Empidonax traillii*

Family: Tyrannidae **Order:** Passeriformes **Class:** Aves

Management Status: California Species of Special Concern, U.S. Forest Service Sensitive

Date: July 21, 1983

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

A rare to locally uncommon, summer resident in wet meadow and montane riparian habitats at 600-2500 m (2000-8000 ft) in the Sierra Nevada and Cascade Range. Most often occurs in broad, open river valleys or large mountain meadows with lush growth of shrubby willows (Serena 1982). May still nest elsewhere in lowland California, as in San Diego Co., but definite records are lacking. Common spring (mid-May to early June) and fall (mid-August to early September) migrant at lower elevations, primarily in riparian habitats throughout the state exclusive of the North Coast (Grinnell and Miller 1944, Gaines 1977a, 1977b, Remsen 1978, McCaskie *et al.* 1979, Garrett and Dunn 1981).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Makes short sallies for flying insects from exposed perches in willow thickets or from low perches in adjacent meadows. Occasionally eats berries and seeds (Bent 1942).

Cover: Dense willow thickets are required for nesting and roosting. Low, exposed branches are used for singing posts and hunting perches. In the Sierra Nevada, consistently absent from otherwise apparently suitable areas where the lower branches of willows had been browsed heavily by livestock (Serena 1982).

Reproduction: Open, cup nest is placed in an upright fork of willow or other shrub, or occasionally on a horizontal limb, at height of 0.5 to 3.0 m (1.5 to 10 ft) (Stein 1963).

Water: No specific information found, but nesting site usually near languid stream, standing water, or seep.

Pattern: Most numerous where extensive thickets of low, dense willows edge on wet meadows, ponds, or backwaters.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: Arrives from Central and South American wintering grounds in May and June. Departs in August; transients noted through mid-September.

Home Range: In breeding season, probably equal to territory. Density estimates range from 9.2 pairs per 40 ha (100 ac) in eastern Washington scrub habitat (King 1955), to 60.7 individuals per 40 ha (100 ac) in Michigan scrub habitat (Berger 1957).

Territory: In Michigan, Walkinshaw (1966) found average territory of 0.7 ha (1.7 ac), range 0.3 to 1.2 ha (0.8 to 2.9 ac).

Reproduction: Monogamous; peak egg laying in June. Incubation 12-13 days. Clutch averages 3-4 eggs; probably single-brooded. Both sexes care for altricial young. Fledging age 13-14 days (Stein 1963).

Niche: Frequently parasitized by brown-headed cowbird. Formerly bred commonly in willow thickets throughout most of lowland and montane California (Grinnell and Miller 1944), but numbers have declined drastically in recent decades because of cowbird parasitism and habitat destruction (Gaines 1977a, Remsen 1978, Serena 1982). Heavy grazing of willows by livestock apparently reduces numbers (Ehrlich *et al.* 1988).

Comments: A California Species of Special Concern (Remsen 1978). Formerly known as Traill's flycatcher (Grinnell and Miller 1944). *Empidonax* flycatchers are very difficult to identify in the field.

REFERENCES

- Bent 1942, Grinnell and Miller 1944, Aldrich 1953, Berger and Parmelee 1952, King 1955, Berger 1957, Stein 1963, Walkinshaw 1966, Holcomb 1972, Gaines 1977a, 1977b, Remsen 1978, McCaskie *et al.* 1979, Garrett and Dunn 1981, Serena 1982, Ehrlich *et al.* 1988.

B338 Purple Martin *Progne subis*

Family: Hirundinidae Order: Passeriformes Class: Aves

Management Status: California Species of Special Concern Date: June 27, 1983

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

An uncommon to rare, local summer resident in a variety of wooded, low-elevation habitats throughout the state; a rare migrant in spring and fall, absent in winter. Uses valley foothill and montane hardwood, valley foothill and montane hardwood-conifer, and riparian habitats. Also occurs in coniferous habitats, including closed-cone pine-cypress, ponderosa pine, Douglas-fir, and redwood. In the south, now only a rare and local breeder on the coast and in interior mountain ranges, with few breeding localities (Garrett and Dunn 1981). Absent from higher desert regions except as a rare migrant. In the north, an uncommon to rare local breeder on the coast and inland (McCaskie *et al.* 1979). Absent from higher slopes of the Sierra Nevada. Breeding range extends east to Modoc and Lassen cos. (Airola 1980). Inhabits open forests, woodlands, and riparian areas in breeding season. Found in a variety of open habitats during migration, including grassland, wet meadow, and fresh emergent wetland, usually near water.

SPECIFIC HABITAT REQUIREMENTS

Feeding: Hawks insects on long, gliding flights 30-60 m (100-200 ft) above the ground (Airola 1980). Occasionally forages on the ground for ants and other insects (Bent 1942).

Cover: Woodlands and low-elevation coniferous forest of Douglas-fir, ponderosa pine, and Monterey pine provide cover. Often nests in tall, old trees near a body of water. Also nests occasionally in residential areas.

Reproduction: Nests in old woodpecker cavity mostly, sometimes in human-made structure; in nesting box, under bridge, in culvert. Nest often located in a tall, old, isolated tree or snag in open forest or woodland (Dawson 1923). Not as likely to use nest box in California as in the eastern U.S.

Water: Drinks and bathes on the wing (Ehrlich *et al.* 1988).

Pattern: Frequents old-growth, multi-layered, open forest and woodland with snags in breeding season. Forages over riparian areas, forest, and woodland. Found in a variety of open habitats in migration.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: Arrives from South America in late March. Numbers during migration and through the summer remain small. Departs by late September.

Home Range: No data found.

Territory: In Montana, nest hole entrance was defended, and male defended female away from nest (Allen and Nice 1952).

Reproduction: Nests from April into August, with peak activity in June. Pair nests colonially or singly, depending on nest site availability. Lays 3-8 eggs; average 4-5. May raise 2 broods some years. Altricial young tended by both parents, and leave nest at 24-31 days (Harrison 1978).

Niche: Eggs and adults perhaps not often preyed upon.

Comments: A California Species of Special Concern (Remsen 1978). Numbers have declined markedly in recent decades because of loss of riparian habitat, removal of snags, and competition for nest cavities from European starlings and house sparrows. Eliminated from much of its previous range in California (Remsen 1978).

REFERENCES

Dawson 1923, Bent 1942, Allen and Nice 1952, Harrison 1978, Remsen 1978, McCaskie *et al.* 1979, Airola 1980, DeSante and Ainley 1980, Garrett and Dunn 1981, Ehrlich *et al.* 1988.

B342 Bank Swallow *Riparia riparia*

Family: Hirundinidae Order: Passeriformes Class: Aves
Management Status: California Threatened Date: June 27, 1983

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

A migrant found primarily in riparian and other lowland habitats in California west of the deserts. A spring and fall migrant in the interior, less common on coast; an uncommon and very local summer resident. Casual in southern California in winter; a few winter records along central coast to San Mateo Co. (McCaskie *et al.* 1988). In summer, restricted to riparian areas with vertical cliffs and banks with fine-textured or sandy soil, into which it digs nesting holes. In migration, flocks with other swallows over many open habitats. Range in California estimated to be reduced 50% since 1900 (California Department of Fish and Game 1989). Formerly more common as breeder in California. Now, only a few colonies remain within the state. Perhaps 75% of the current breeding population in California concentrate along banks of Central Valley streams. About 50-60 colonies remain along the upper Sacramento River where it meanders still in a mostly natural state. Other colonies persist along the central coast north to San Francisco Bay, and in the Honey Lake and Lower Klamath Lake areas (Remsen 1978, California Department of Fish and Game 1989).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Forages by hawking insects during long, gliding flights. Feeds predominantly over open riparian areas, but also over brushland, grassland, and cropland.

Cover: Uses holes dug in cliffs and river banks for cover.

Reproduction: Usually a colonial breeder. Requires fine-textured or sandy banks or cliffs to dig nesting hole. Nest almost always near water, and lined with grasses and other plant material. Burrows are 2.5 to 5.5 cm (1 to 2.2 in) wide and up to 140 cm (54 in) deep. A small chamber at end of burrow contains the nest.

Water: No information on drinking needs found; riparian areas used almost exclusively as nesting sites.

Pattern: Requires vertical banks and cliffs with fine-textured or sandy soils near streams, rivers, ponds, lakes, and the ocean for nesting. Feeds primarily over riparian areas during breeding season and over grassland, brushland, and cropland during migration.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: Arrives in California from South America in early April and numbers peak in early May. Numbers fall off in summer as migrants pass through, and as the few remaining colonies form. Numbers increase again in fall migration; mostly gone from the state by mid-September. There are few winter records for California.

Home Range: Bent (1942) and Grinnell and Miller (1944) indicated that the foraging radius from the nest is not large.

Territory: In Wisconsin, Petersen (1955) reported that territory centered at burrow entrances, which were no closer than 15-20 cm (6-8 in) apart. In Michigan and Massachusetts, the nest burrow was defended. Male guarded female from other males, remaining within 1 m (3 ft) of mate during foraging (Beecher and Beecher 1979).

Reproduction: Breeds from early May through July, with peak activity from mid-May to mid-June. Pair usually nests colonially; sometimes solitarily or near a few other nests (Hoogland and Sherman 1976). Clutch usually 4-5; range 3-8. Two broods in 1 season have been reported (Stoner 1936). Incubation 12-16 days, by both sexes. Altricial young tended by both adults; leave nest at 18-24 days, breed at 1 yr (Harrison 1978).

Niche: Eggs and adults preyed upon by rats, skunks, house cats, snakes, and some raptors. Nest sites sometimes taken by house sparrows (Bent 1942). Smallest swallow in North America.

Comments: Channelization and stabilization of banks of nesting rivers, and other destruction and disturbance of nesting areas, are major factors causing the marked decline in numbers in recent decades (California Department of Fish and Game 1989). Designated California Threatened in March 1989.

REFERENCES

Stoner 1936, Bent 1942, Grinnell and Miller 1944, Peterson 1955, Hoogland and Sherman 1976, Harrison 1978, Remsen 1978, Beecher and Beecher 1979, McCaskie *et al.* 1979, 1988, Garrett and Dunn 1981, California Department of Fish and Game 1989.

B410 Loggerhead Shrike *Lanius ludovicianus*

Family: Laniidae Order: Passeriformes Class: Aves
Management Status: *L. l. mearnsi*, Federal Endangered Date: September 22, 1983

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

A common resident and winter visitor in lowlands and foothills throughout California. Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Highest density occurs in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats. In the Great Basin, from Inyo Co. north, population declines markedly from November through March. Rare on coastal slope north of Mendocino Co., occurring only in winter. Occurs only rarely in heavily urbanized areas, but often found in open cropland. Sometimes uses edges of denser habitats (Grinnell and Miller 1944, McCaskie *et al.* 1979, Garrett and Dunn 1981).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Eats mostly large insects; also takes small birds, mammals, amphibians, reptiles, fish, carrion, and various other invertebrates. Searches for prey from a perch at least 0.6 m (2 ft) above ground (Grinnell and Miller 1944), often much higher. Usually flies directly to prey on ground or in a shrub; sometimes hovers. Frequently skewers prey on thorn, sharp twig, wire barb, or forces it into a crotch to feed on or to cache for feeding later. Sometimes hawks aerial insects.

Cover: Often uses shrub or small tree (Bent 1950).

Reproduction: Builds nest on stable branch in densely-foliaged shrub or tree, usually well-concealed (Miller 1931, Bent 1950). Nest height 0.4 to 15 m (1.3 to 50 ft) above ground, occasionally higher (Harrison 1978). Nearly all of 77 nests found by Porter *et al.* (1975) in Colorado were below 4.5 m (15 ft).

Water: Not reported drinking in desert areas, although often seen near water (Miller and Stebbins 1964, Smyth and Coulombe 1971). Drinks and bathes in captivity (Miller 1931, Bent 1950), although captives can live on a meat diet without water (Bartholomew and Cade 1963).

Pattern: Frequents open habitats with sparse shrubs and trees, other suitable perches, bare ground, and low or sparse herbaceous cover.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: A large portion of population in Great Basin, south to Inyo Co., departs for winter. In areas of residence, winter numbers augmented

by visitors from north, and species is even more widespread than when breeding.

Home Range: Apparently same as territory. According to Bent (1950), forages within territory year-round.

Territory: Ten territories in open shrubland in Contra Costa and Kern cos. averaged 7.6 ha (18.7 ac), and varied from 4.5 to 16 ha (11-40 ac) (Miller 1931). A central or "headquarters" area within each territory, containing lookout perches, feeding areas, and a roost site, was defended vigorously. Territory defended by solitary individuals through nonbreeding season. Breeding territory usually a winter territory of parents. Smith (1973) also observed territory defended aggressively year-round. In Colorado, 77 nests were at least 400 m (1300 ft) apart, and territory was much smaller in diameter (Porter *et al.* 1975).

Reproduction: In California, lays eggs from March into May, and young become independent in July or August. A monogamous, solitary nester; clutch size 4-8 (Porter *et al.* 1975). May be double-brooded, (Harrison 1978), but among 77 nests in Colorado, Porter *et al.* (1975) found no second broods. Incubation lasts 14-15 days. Altricial young tended by both parents and leave nest at 18-19 days. Young may be driven off parents' territory 2-3 mo later (Miller 1931). Probably breeds first at 1 yr (Harrison 1978).

Niche: In Idaho sagebrush, substantially reduced density of nesting passerines by harassing and preying on adults and nestlings (Reynolds 1979). In southern Illinois, where population had declined, Anderson and Duzan (1978) found a correlation between DDE contamination and eggshell thinning, but no decline in nesting success; DDE may have reduced survival. Morrison (1979) found no evidence of eggshell thinning in California or Florida. Largest source of nest failure in Colorado was predation, probably by magpies (Porter *et al.* 1975).

Comments: Although populations have declined elsewhere, they have remained fairly stable in the Pacific states (Morrison 1981). *L. l. mearnsi*, the San Clemente loggerhead shrike, is Federal Endangered (California Department of Fish and Game 1989).

REFERENCES

Miller 1931, Grinnell and Miller 1944, Bent 1950, Bartholomew and Dawson 1953, Bartholomew and Cade 1963, Miller and Stebbins 1964, Smyth and Coulombe 1971, Smith 1973, Porter *et al.* 1975, Anderson and Duzan 1978, Harrison 1978, McCaskie *et al.* 1979, Morrison 1979, 1981, Reynolds 1979, Garrett and Dunn 1981, California Department of Fish and Game 1989.

B430 Yellow Warbler *Dendroica petechia*

Family: Emberizidae Order: Passeriformes Class: Aves

Management Status: California Species of Special Concern Date: July 6, 1983

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

An uncommon to common, summer resident in the north; locally common in the south. Rare but regular in winter in the south. Breeds in riparian woodlands from coastal and desert lowlands up to 2500 m (8000 ft) in Sierra Nevada. Also breeds in montane chaparral, and in open ponderosa pine and mixed conifer habitats with substantial amounts of brush. Numbers of breeding pairs have declined dramatically in recent decades in many lowland areas (southern coast, Colorado River, San Joaquin and Sacramento valleys). Now rare to uncommon in many lowland areas where formerly common (McCaskie *et al.* 1979, Garrett and Dunn 1981). A common migrant on Channel and Farallon Islands in spring and fall (DeSante and Ainley 1980, Garrett and Dunn 1981).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Mostly eats insects and spiders. Gleans and hovers in upper canopy of deciduous trees and shrubs. Occasionally hawks insects from air, or eats berries (Bent 1953, Ehrlich *et al.* 1988).

Cover: Usually found in riparian deciduous habitats in summer: cottonwoods, willows, alders, and other small trees and shrubs typical of low, open-canopy riparian woodland. Also breeds in montane shrubbery in open conifer forests; perhaps a recent phenomenon (Gaines 1977b). In migration, visits woodland, forest, and shrub habitats.

Reproduction: Nest is an open cup placed 0.6 to 5 m (2-16 ft) above ground in a deciduous sapling or shrub. Territory often includes tall trees for singing and foraging and a heavy brush understory for nesting (Ficken and Ficken 1966).

Water: Recorded drinking regularly at a desert waterhole (Smyth and Coulombe 1971).

Pattern: Frequents open to medium-density woodlands and forests with a heavy brush understory in breeding season. In migration, found in a variety of sparse to dense woodland and forest habitats.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity. Nocturnal migrant.

Seasonal Movements/Migration: Usually arrives in California in April, and mostly gone by October. Apparently there is a postbreeding, upslope movement mostly to middle elevations (Beedy 1975); scarce at elevations above 2500 m (8000 ft) (Gaines 1977b). Small numbers regularly overwinter in southern California lowlands (Garrett and Dunn 1981).

Home Range: Home range recorded as less than 0.2 ha (0.5 ac) in New York (Ficken and Ficken 1966), and 0.16 ha (0.4 ac) in Iowa (Kendeigh 1941a). Kendeigh observed individuals regularly moving up to 488 m (1600 ft) to a willow-marsh edge to feed.

Territory: Territory varied from 0.03 ha (0.08 ac) on small islands in Minnesota (Beer *et al.* 1956), to 0.36 ha (0.9 ac) in a swamp thicket in Illinois.

Reproduction: Breeds from mid-April into early August with peak activity in June. Pair breeds solitarily. Lays 3-6 eggs (usually 4 or 5); incubated by female for 11 days. Altricial young tended by both parents until fledging at 9-12 days (Harrison 1978). Young breed the following year.

Niche: Subject to predation by small mammals, accipiters, corvids, and snakes. Brood parasitism by brown-headed cowbirds is heavy and apparently has been a major cause of the drastic decline in numbers in lowland localities in recent decades (Bent 1953, Garrett and Dunn 1981, Remsen 1978). Parasitism occurred in 9 of 25 nests or family groups in the Sierra Nevada where cowbirds were common (Rothstein *et al.* 1980, Verner and Ritter 1983, Airola 1986).

Comments: A California Species of Special Concern (Remsen 1978).

REFERENCES

Kendeigh 1941a, Bent 1953, Beer *et al.* 1956, Ficken and Ficken 1966, Smyth and Coulombe 1971, Beedy 1975, Gaines 1977b, Harrison 1978, Remsen 1978, McCaskie *et al.* 1979, DeSante and Ainley 1980, Rothstein *et al.* 1980, Garrett and Dunn 1981, Verner and Ritter 1983, Airola 1986, Ehrlich *et al.* 1988.

B467 Yellow-breasted Chat *Icteria virens*

Family: Emberizidae Order: Passeriformes Class: Aves
Management Status: California Species of Special Concern Date: June 30, 1983

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

An uncommon summer resident and migrant in coastal California and in foothills of the Sierra Nevada. Found up to about 1450 m (4800 ft) in valley foothill riparian, and up to 2050 m (6500 ft) east of the Sierra Nevada in desert riparian habitats (Gaines 1977b, DeSante and Ainley 1980, Garrett and Dunn 1981). Uncommon along coast of northern California and occurs only locally south of Mendocino Co. (McCaskie *et al.* 1979). In southern California, breeds locally on the coast and very locally inland (Garrett and Dunn 1981). In migration, may be found in lower elevations of mountains in riparian habitat (McCaskie *et al.* 1979). Numbers much reduced in recent decades (Remsen 1978).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Eats insects and spiders; also berries and other fruits. Mostly gleans from foliage of shrubs and low trees.

Cover: Requires riparian thickets of willow and other brushy tangles near watercourses for cover.

Reproduction: Nest usually 0.6 to 2.4 m (2–8 ft) above ground in dense shrubs along a stream or river.

Water: Bathing recorded by Kinsey (1934).

Pattern: Frequents dense, brushy thickets and tangles near water, and thick understory in riparian woodland.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity. Nocturnal migrant.

Seasonal Movements/Migration: Usually arrives in April and departs by late September for wintering

grounds in Mexico and Guatemala. May wander upslope postbreeding (Gaines 1977b). There are a few late fall and winter records, mostly from southern California. Migrants sometimes pass through lower elevations in mountains.

Home Range: Dennis (1958) reported that home range in summer was larger than territory, but gave no sizes. Gaines (1974a) reported 10 per 40 ha (100 ac) in a Sacramento Valley riparian area.

Territory: Thompson and Nolan (1973) reported 28 territories averaging 1.3 ha (3.1 ac) in an abandoned Indiana field. Brewer (1955) reported territory averaging 0.12 ha (0.3 ac), and varying from 0.04 to 0.28 ha (0.1 to 0.7 ac), in an Illinois swamp thicket. Dennis (1958) reported territory varying from 0.5 to 1.0 ha (1.25 to 2.5 ac) in abandoned fields and fence rows in Virginia.

Reproduction: Breeds from early May into early August with peak activity in June. Monogamous, although pairs may nest near one another (Ehrlich *et al.* 1988). Lays 3–6 eggs, usually 3 or 4. Incubation 11–15 days; chicks apparently fledge in 8–11 days. Altricial young tended by both parents until fledging (Harrison 1978).

Niche: Subject to occasional predation by accipiters, small mammals, and snakes. Loss and degradation of riparian habitat have caused a marked decline in the breeding population in recent decades in California. Parasitism by brown-headed cowbirds also has contributed to the decline (Gaines 1974a, Remsen 1978).

Comments: A California Species of Special Concern (Remsen 1978).

REFERENCES

Kinsey 1934, Brewer 1955, Dennis 1958, Thompson and Nolan 1973, Gaines 1974a, 1977b, Harrison 1978, Remsen 1978, McCaskie *et al.* 1979, DeSante and Ainley 1980, Garrett and Dunn 1981, Ehrlich *et al.* 1988.

B497 Sage Sparrow *Amphispiza belli*

Family: Emberizidae Order: Passeriformes Class: Aves

Management Status: *A. b. clementeae*, Federal Threatened Date: September 29, 1983

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

A common to uncommon resident and summer visitor. In summer, uncommon to common east of Cascade Range and Sierra Nevada, in foothills bounding Central Valley, and in Transverse, Peninsular, and coastal ranges from Trinity Co. south to Mexican border. Not migratory in many areas, but mostly withdraws from higher elevations and northern Great Basin in winter and moves to southern deserts. Frequents low, fairly dense stands of shrubs. In transmontane California, occupies sagebrush, alkali desert scrub, desert scrub, and similar habitats. In cismontane California, frequents chaparral dominated by chamise, and coastal scrub dominated by sage. Most common from western edge of Owens Valley, Inyo Co., south through southern Sierra Nevada and western edge of Mojave Desert to desert slopes of Transverse Ranges. On coastal slopes, mostly absent north of Sonoma Co., and uncommon and local to the south. Occurs only locally at montane elevations, mostly in southern California. The resident race, *A. b. clementeae*, on San Clemente Island, is classified as Federal Threatened (Grinnell and Miller 1944, McCaskie *et al.* 1979, Garrett and Dunn 1981).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Feeds mostly on insects, spiders, and seeds while breeding, and mostly on seeds in winter; also takes green foliage. Feeds mostly by gleaning from ground and low foliage of shrubs; rarely flycatches.

Cover: Seeks cover in fairly dense stands in chaparral and scrub habitats in breeding season. Depending on locality, frequents *Artemisia*, *Atriplex*, *Purshia*, *Adenostoma*. Uses more arid, open shrub habitats in winter.

Reproduction: Nest is a cup of dry twigs and herb stems; lined with shreds of bark and grass and containing an inner lining of finer bark fiber, grass, fur, hairs, wool tufts, feathers (Harrison 1978). Nest located on ground beneath a shrub; or in a shrub usually 0.15 to 0.45 m (6–18 in) above ground, but up to 1 m (39 in).

Water: Apparently drinks regularly (Bent 1968, Smyth and Coulombe 1971). Captives could not survive exclusively on seeds unless supplemented with succulent foods. When water was available, captives drank an average 49% (range 12–99%) of body weight daily. May meet a portion of water needs from invertebrate foods (Moldenhauer and Wiens 1970).

Pattern: Breeds in fairly dense chaparral and desert scrub habitats and forages on ground beneath and between shrubs. Winter habitat is similar in structure to breeding habitat, but may be more open.

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: Migratory populations east of Cascade Range and Sierra Nevada mostly arrive in April and depart by September; many apparently move to southeastern deserts to winter. A few remain to winter in Great Basin each year. Winter visitors to southeastern deserts mostly arrive in October and depart by March. Some upslope movement postbreeding occurs in Sierra Nevada, often by small flocks of young.

Home Range: No information found. In Oregon, Gashwiler (1977) recorded 24–33 pairs per 40 ha (100 ac). In Nevada, Gustafson (1975) recorded 30 males per 40 ha (100 ac). Weston and Johnston (1980) reported density varying from 27–85 individuals per 40 ha (100 ac) in sagebrush habitat in Mono Co.

Territory: In Tehama Co., territories were “about 50 yards apart” (Bent 1968).

Reproduction: Breeds from late March to mid-August with a peak in May and June. Clutch size 3–5, usually 3 or 4. Incubation 13–16 days; altricial young fledge in 9–11 days (Harrison 1978, Ehrlich *et al.* 1988).

Niche: In Nevada, Bond (1940) observed predation by great horned owls. Populations of sage sparrow in cismontane California known formerly as Bell's sparrow (Grinnell and Miller 1944).

Comments: Federal Threatened San Clemente sage sparrow, resident on San Clemente Island, endures habitat destruction by feral goats.

REFERENCES

Bond 1940, Grinnell and Miller 1944, Bent 1968, Moldenhauer and Wiens 1970, Smyth and Coulombe 1971, Gustafson 1975, Gashwiler 1977, Harrison 1978, McCaskie *et al.* 1979, Weston and Johnston 1980, Garrett and Dunn 1981, Ehrlich *et al.* 1988.

B520 Tricolored Blackbird *Agelaius tricolor*

Family: Emberizidae Order: Passeriformes Class: Aves

Management Status: A California Species of Special Concern Date: December 20, 1983

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Mostly a resident in California. Common locally throughout Central Valley and in coastal districts from Sonoma Co. south. Breeds near fresh water, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, tall herbs. Feeds in grassland and cropland habitats. A summer resident in northeastern California, occurring regularly only at Tule Lake, but has bred some years as far south as Honey Lake. In southern deserts, found regularly only at Antelope Valley, Los Angeles Co. In winter, becomes more widespread along central coast and San Francisco Bay area (Grinnell and Miller 1944, McCaskie *et al.* 1979, Garrett and Dunn 1981). Numbers appear to be declining in California (DeHaven *et al.* 1975).

SPECIFIC HABITAT REQUIREMENTS

Feeding: In California studies summarized by Skorupa *et al.* (1980), animal matter, mostly insects and spiders, made up 86–91% of nestling and fledgling diet, and 28–96% of adult diet in spring and summer. Insect consumption in Sacramento Valley reached a peak of 39% in summer (Crane and DeHaven 1978). Seeds and cultivated grains, such as rice and oats, are other major foods, composing most of fall and winter diet. Forages on ground in croplands, grassy fields, flooded land, and along edges of ponds.

Cover: Seeks cover in emergent wetland vegetation, especially cattails and tules; also in trees and shrubs. Roosts in large flocks in emergent wetland or in trees (Terres 1980).

Reproduction: Usually nests in dense cattails or tules; also nests in thickets of willow, blackberry, wild rose, tall herbs. Nest usually located a few ft over, or near, fresh water; also may be hidden on ground among low vegetation. Builds nest of mud and plant materials. Highly colonial; nesting area must be large enough to support a minimum colony of about 50 pairs (Grinnell and Miller 1944).

Water: Nest located over or near fresh water, especially in emergent wetland. Drinking water probably required, at least when seeds and grains are major foods.

Pattern: Frequents fresh emergent wetlands. Nest may be located up to 6.4 km (4 mi) from foraging areas (Orians 1961).

SPECIES LIFE HISTORY

Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: Not migratory over most of range, but leaves northeastern California in fall and winter, presumably migrating south. Flocks become nomadic in fall seeking food. In winter, flocks become more widespread from Marin to Santa Cruz cos. and in Sacramento River Delta.

Home Range: Breeders in Colusa and Yuba cos. traveled as far as 6.4 km (4 mi) from nest to feed; in each of 2 colonies, members foraged over more than 78 km² (30 mi²) (Orians 1961).

Territory: Breeding territory, which includes only vicinity of nest, usually about 3.3 m² (35 ft²), or less, in dense vegetation, but may be larger in less suitable cover (Orians 1961).

Reproduction: Usual breeding season mid-April into late July. Orians (1960) also reported active breeding in October and November in Sacramento Valley. Polygynous; each male may have several mates nesting in his small territory. A colony varies in size from a minimum of about 50 nests (Grinnell and Miller 1944) to over 20,000 in an area of 4 ha (10 ac), or less (DeHaven *et al.* 1975). Colonies were even larger in former decades. Apparently has highest nesting density of any blackbird in North America (Ehrlich *et al.* 1988). Clutch size usually 3 or 4 eggs, range 2–6; may raise 2 broods per yr (Terres 1980). Incubation lasts about 11 days; altricial young tended by female or by both parents. Young leave nest at about 13 days. Probably breeds first at 1 yr (Harrison 1978).

Niche: Highly gregarious in all seasons. Dense breeding colonies vulnerable to massive nest destruction by mammalian and avian predators, including Swainson's hawks (Bent 1958).

Comments: A California Species of Special Concern.

REFERENCES

- Neff 1937, Lack and Emlen 1939, Grinnell and Miller 1944, Bent 1958, Orians 1960, 1961, Collier 1968, Payne 1969, DeHaven *et al.* 1975, Crane and DeHaven 1978, Harrison 1978, McCaskie *et al.* 1979, Skorupa *et al.* 1980, Terres 1980, Garrett and Dunn 1981, Ehrlich *et al.* 1988.

B544 Lawrence's Goldfinch *Carduelis lawrencei*

Family: Fringillidae Order: Passeriformes Class: Aves Date: June 28, 1983

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Highly erratic and localized in occurrence. Rather common along western edge of southern deserts, fairly common but erratic from year to year in Santa Clara Co. (Kaiser 1976) and on coastal slope from Monterey Co. south, and uncommon in foothills surrounding Central Valley. Present mostly from April through September. Breeds in open oak or other arid woodland and chaparral, near water. Rarely breeds along immediate coast. Typical habitats include valley foothill hardwood, valley foothill hardwood-conifer, and, in southern California, desert riparian, palm oasis, pinyon-juniper, and lower montane habitats. Nearby herbaceous habitats often used for feeding. Winters erratically in southern coastal lowlands and Colorado River Valley; can be common locally. Small numbers also winter in northern California (Grinnell and Miller 1944, McCaskie *et al.* 1979, Garrett and Dunn 1981).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Eats mostly seeds; also a few insects. Favored seeds include pigweed, fiddleneck, starthistle, and chamise (Martin *et al.* 1961). Feeds on forbs and shrubs, plucking seeds from plants. Also gleans seeds from ground.

Cover: Uses trees and shrubs for nesting, resting, escape, and other cover. Perches on fences and transmission wires.

Reproduction: Builds nest in dense foliage of a tree or shrub. Prefers to nest in an oak; also uses cypress or planting of deodar cedar (Grinnell and Miller 1944), riparian thicket, other species (Garrett and Dunn 1981). Most often nests near water in open, arid woodland (Garrett and Dunn 1981), but also uses chaparral.

Water: Apparently requires drinking water (Grinnell and Miller 1944, Linsdale 1950); often bathes (Linsdale 1950, Coutlee 1968b).

Pattern: Requires open woodland or shrubland, a nearby source of water, and forb and shrub seeds.

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Activity Patterns: Yearlong, diurnal activity.

Seasonal Movements/Migration: Most individuals that breed in California winter in other southwestern states and in northern Mexico, and are absent from September to March. Moderate numbers winter erratically in southern coastal lowlands and Colorado River Valley, but few remain in northern California.

Home Range: In Monterey Co., ranged up to 0.8 km (0.5 mi) from nest to feed or drink (Linsdale 1957).

Territory: Diameter of territory around nest was 18–22 m (60–72 ft) (Linsdale 1950) and 11 m (36 ft) (Linsdale 1957) in Monterey Co., and 10–15 m (33–50 ft) elsewhere in California (Coutlee 1968a). Occasionally nests colonially: Hanna (in Bent 1968) reported "a dozen" nests in a small juniper, and Dawson (1923) recorded 10 nests in 2 adjacent trees.

Reproduction: Breeding season begins in late March or early April. A monogamous breeder; nests singly or near several other pairs. Lays 3–6 eggs per clutch, usually 4 or 5. Incubation lasts 12–13 days (Coutlee 1966). Altricial young tended by both parents and leave nest at about 11 days. Probably breeds first at 1 yr (Harrison 1978).

Niche: Apparently some competition for nest sites between lesser and Lawrence's goldfinches (Coutlee 1966). Closely associated with oaks. Occurs in flocks throughout year, sometimes with other seedeaters; other goldfinches, house finches, juncos, lark sparrows. Attracted to salt (Ehrlich *et al.* 1988).

REFERENCES

Dawson 1923, Grinnell and Miller 1944, Linsdale 1950, 1957, Martin *et al.* 1961, Coutlee 1966, 1968a, 1968b, Bent 1968, Kaiser 1976, Harrison 1978, McCaskie *et al.* 1979, Garrett and Dunn 1981, Ehrlich *et al.* 1988.