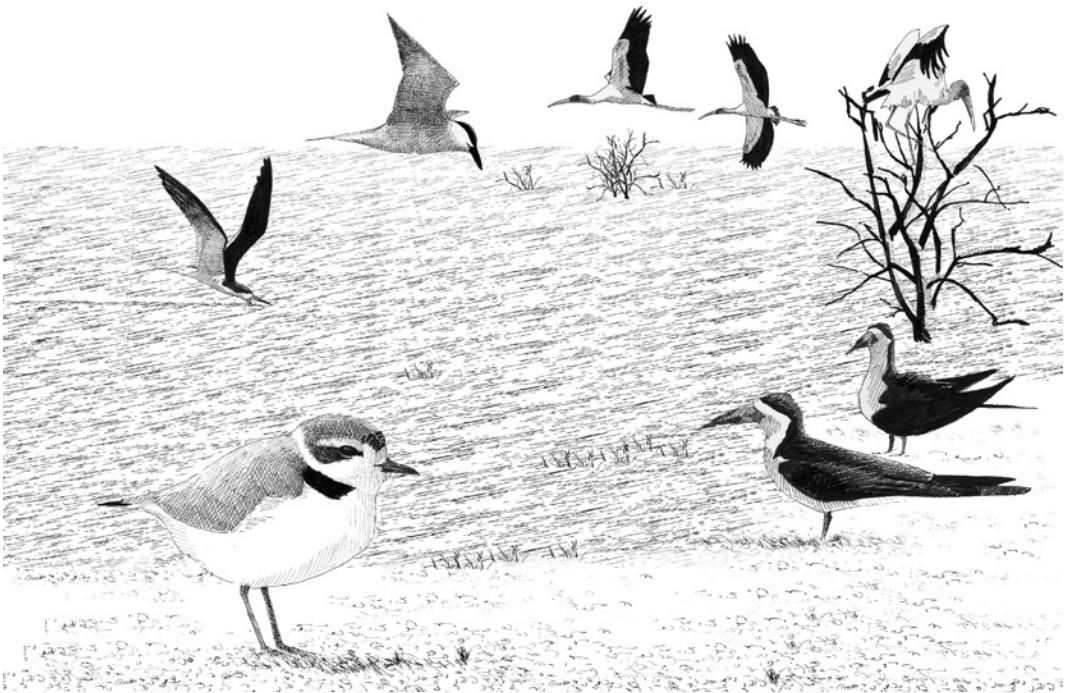


II

SPECIES ACCOUNTS



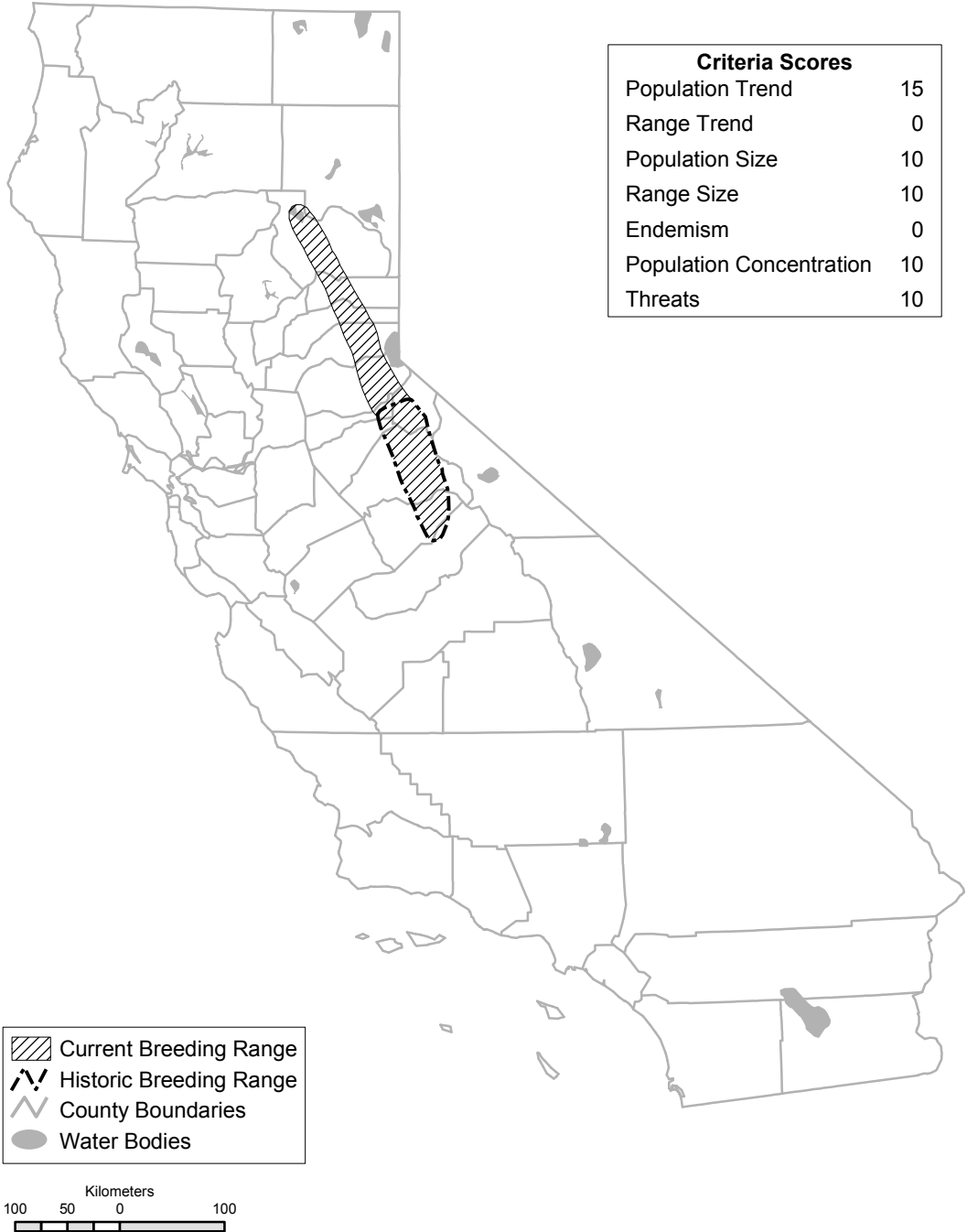
Andy Birch

PDF of Harlequin Duck account from:

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HARLEQUIN DUCK (*Histrionicus histrionicus*)

EDWARD C. BEEDY



Known historic (ca. 1944) and approximate (very sparsely occupied) current breeding range of the Harlequin Duck in California's Sierra Nevada; broader current range very likely represents increased recent coverage rather than a true range expansion. The species was never numerous as a breeder in the state, but numbers have declined greatly to the point of near extirpation. Small numbers, likely mostly originating from breeding areas north of California, occupy a separate winter range (not mapped) along rocky shores and coastal bays the length of the state; regular on the northern and central coast, with numbers declining with decreasing latitude.

SPECIAL CONCERN PRIORITY

Currently considered a Bird Species of Special Concern (breeding), priority 2. Included on both prior special concern lists (Remsen 1978, 3rd priority; CDFG 1992).

BREEDING BIRD SURVEY STATISTICS FOR CALIFORNIA

Data inadequate for trend assessment (Sauer et al. 2005).

GENERAL RANGE AND ABUNDANCE

Two subspecies, Pacific (*H. h. pacificus*) and Atlantic (*H. h. histrionicus*), formerly recognized (Brooks 1915), but morphological evidence does not support this distinction (AOU 1957, Palmer 1976, Robertson and Goudie 1999).

In western North America, breeds in western Alaska, northern Yukon, northern British Columbia, southern Alberta, interior Washington, eastern Oregon, central Idaho, western Wyoming, the western Sierra Nevada, and southwestern Colorado (at least formerly). In eastern North America, breeds from southern Baffin Island south to central Quebec, eastern Labrador, and possibly Newfoundland. Also breeds in Greenland, Iceland, eastern Siberia, and northern Mongolia (Johnsgard 1978, Bellrose 1980, AOU 1998). In western North America, winters in coastal waters from the Aleutian Islands and coastal Alaska south to California and (very rarely) the Gulf of California, Mexico (Howell and Webb 1995, Robertson and Goudie 1999).

No rangewide estimates are available for the North American breeding or wintering populations, but the Pacific is much larger than the Atlantic wintering population (Madge and Burn 1988, Robertson and Goudie 1999). The majority of the continental population is associated with the Aleutian Islands, where 600,000 to one million individuals have been estimated in spring and fall (Bellrose 1980). Numbers of these ducks wintering along the Pacific coast may have declined from historic levels (Robertson and Goudie 1999).

SEASONAL STATUS IN CALIFORNIA

Occurs year round in California but in two separate seasonal roles: summer resident and breeder (at least historically) in the Sierra Nevada (Apr–Sep), winter resident on the coast (Oct–Mar). Breeding occurs from mid-April through early September in

British Columbia (Robertson and Goudie 1999) but is reported to extend from only May through August in California (Cogswell 1977). Individuals wintering on the California coast are primarily from northern breeding populations, and a few nonbreeding individuals can remain in coastal areas through the summer (Grinnell et al. 1918, Grinnell and Storer 1924, Brown 1988).

HISTORIC RANGE AND ABUNDANCE IN CALIFORNIA

Historically, Harlequin Ducks nested along rivers on the west slope of the central Sierra Nevada (see map), and birds of uncertain breeding origin wintered on the coast (Grinnell and Miller 1944). Grinnell and Miller considered these ducks to be “uncommon” in the state and their aggregate numbers probably “small.” Harlequin Ducks formerly nested along secluded portions of the Stanislaus and Tuolumne rivers and their tributaries, where “many” hens with young broods were found “from about 4000 feet [1220 m] upward.” However, they were “becoming rare in their former haunts along the Stanislaus River because of fishermen, who shoot the birds on sight” (Belding in Grinnell et al. 1918). Other documented historic nesting localities in the central Sierra were Griswold Creek (a tributary to the Stanislaus River), South Fork of the Tuolumne River, and Cherry River (Creek) in upper Tuolumne basin (7500 ft. [2286 m]), Tuolumne County; along the South Fork Merced River near Wawona (5640 ft [1719 m], 30 Mar 1922), and along the Merced River in Yosemite Valley (4000 ft [1219 m], 28 Jul 1920), Mariposa County; and Lake Ediza (9300 ft [2835 m], in 1925) in the headwaters of the San Joaquin River, Madera County (Grinnell et al. 1918, Michael and Michael 1922, Grinnell and Storer 1924, Grinnell and Miller 1944). Nesting was eliminated or much reduced in the Yosemite region early in the 20th century, as there were no sightings of Harlequin Ducks there after 1927, except for a lone fall record on the South Fork Merced River on 20 October 1940 (Gaines 1992).

The largest wintering numbers in California were off Point St. George, Del Norte County, where historical accounts suggested that up to “hundreds” may have occurred (Brown 1998). Wintering birds were also reported at Humboldt Bay, Humboldt County; Bodega Bay, Sonoma County; Point Reyes, Tomales Bay, and Tomales Point, Marin County; San Francisco Bay, various counties; Point Pinos and Point Carmel, Monterey County; Piedras Blancas, San Luis Obispo County;

and coastal Santa Barbara County (Grinnell et al. 1918). The very few inland records between the coast and Sierra Nevada (Sterling 2006) suggest that most birds fly nonstop between their wintering and breeding grounds (Grinnell and Miller 1944).

RECENT RANGE AND ABUNDANCE IN CALIFORNIA

Despite their regular occurrence along California's north coast in winter, Harlequin Ducks currently are observed very infrequently within their historic breeding range in the western Sierra Nevada. They were considered extirpated from their historic breeding rivers of the Yosemite region, where no nesting had been documented since the 1920s (Gaines 1992). After this species was absent for more than 80 years, however, a female and four ducklings were observed on the Merced River in Yosemite Valley, Mariposa County, in June and August 2002 (D. Horner, M. Osbourne, and L. Eade pers. obs.). The only other recent, confirmed Sierra Nevada breeding records were of flightless young observed 2.4 km above Salt Springs Reservoir on the Mokelumne River in Calaveras and Amador counties in 1971, 1972, and 1976 (Remsen 1978, McCaskie et al. 1988). A female was observed with five young on 25 October 1975 at Thermalito Forebay, near Oroville, Butte County (S. Laymon pers. obs.), but this female was unlikely to have nested at this location since there is no suitable breeding habitat nearby.

Recent observations of Harlequin Ducks, possibly nonbreeders, in the Cascade Range and western Sierra Nevada include a pair on 20 April 1996 at Yreka's Greenhorn Park, Siskiyou County (R. Ekstrom pers. obs.); two females on 19 July 1978 at Upper Twin Lake, Lassen National Park, Shasta County (S. Laymon pers. obs.); two immatures on 7 October 2002 at Eagle Lake, Lassen County (B. Webb and T. Manolis pers. obs.); one male on 6 and 16 May 1999 on the North Fork Feather River, 4.8 km below Belden Inn, Plumas County (R. Dimick pers. obs.); one to two females on 21 July 1993, 26 July 1994, 5 July 1998, and 5 August 2006 from 4600 to 5500 ft (1400–1675 m) in the Royal Gorge of the North Fork American River, Placer County (E. Beedy and P. Witter pers. obs.); a pair on 4 May 1997 at about 4000 ft (1220 m) on the Silver Fork of the South Fork American River near Kyburz, El Dorado County (B. Cooley pers. obs.); one female on 14 and 17 July 1968 above Salt Springs Reservoir, Calaveras County (H. Leach pers. obs.); four to five individuals “in

female plumage” on 9 August 1979 at about 4720 ft (1440 m) on the North Fork Mokelumne River, Alpine County (R. Blumenthal pers. obs.); and one male on 9 April 1972 at 4200 ft (1280 m) on Tenaya Creek below Snow Creek, a male on 2 May 1980 at 4000 ft (1220 m) on the Merced River in Yosemite Valley, a pair on 6 May 1978 at 4000 ft (1220 m) on the South Fork Merced River near Wawona (all Gaines 1992), and one male on 2 May 1981 near Wawona, Mariposa County (S. Frazer and G. Zahm pers. obs.).

From 1974 to 2003, Harlequin Ducks were observed on a total of 16 (avg. 4 per year, range = 1–8 per year) Christmas Bird Counts (CBCs) on the California coast from Del Norte to San Diego counties (www.audubon.org/bird/cbc/). They were detected most frequently on the Del Norte, Centerville Beach, Point Reyes, Año Nuevo, and Monterey Peninsula CBCs. The highest annual counts, which often comprise >50% of the statewide total, have consistently been on the Del Norte CBC. From 1974 to 2003, Harlequin Duck numbers averaged about 14 birds (range = 2–40, <0.05 birds per party-hour) for all coastal California CBCs combined. The highest totals were generally between 1979 and 1995, when the statewide average was 21 birds (range = 4–40); in all other years, totals were <10 birds. The highest recent count from any coastal area was 48 birds at Point St. George, Del Norte County, in 1990, but the “total north coast population is very low, certainly fewer than 100 and more likely fewer than 50” (Harris 1996). It is unknown if the decline in numbers of birds wintering on the coast has had any effect on recruitment of breeders in the Sierra Nevada.

ECOLOGICAL REQUIREMENTS

Throughout their breeding range, Harlequin Ducks inhabit turbulent mountain rivers. They prefer streams with low acidity, steep banks, in-stream rocks and islands for roosting and nesting, and relatively high vegetative cover on stream banks. In the Sierra Nevada, “hens and their broods were often found hiding in streamside growths of *Saxifrage*” (Belding in Grinnell et al. 1918). They forage by diving in clear, cold rapids, where they search rock crevices for aquatic insects, including the adults and larvae of caddisflies, mayflies, and stoneflies; occasionally they consume small fish (Robertson and Goudie 1999).

Although their nests are undescribed in California, historically Harlequin Ducks were thought to nest “among the rocks” along streams

of the western Sierra Nevada (Belding in Grinnell et al. 1918). Elsewhere in their range, they usually nest on the ground, under the shelter of driftwood or rocks, and always beside swift-flowing rivers. They sometimes nest on cliff ledges and in cavities in trees and stumps lined with conifer needles, mosses, or leaf litter. The species is single-brooded, and females tend the precocial young alone, often moving to slower stretches of their nesting streams (Robertson and Goudie 1999).

Wintering Harlequin Ducks occur in shallow, intertidal and subtidal coastal waters. They forage near large kelp beds, over rocky shorelines, breakwater areas, submerged cobble benches, and coastal lagoons, often in rough water (Harris 1996, Brown 1998, Robertson and Goudie 1999). They usually forage in shallow water along rocky shorelines, but they can dive to depths up to 65 ft (20 m). Their diet is composed entirely of animal matter consisting of a variety of intertidal and subtidal marine invertebrates, including crustaceans, amphipods, and gastropods (especially mussels) and occasionally small fish and roe (Palmer 1976, Robertson and Goudie 1999).

THREATS

The Harlequin Duck's disappearance from most of its historic breeding range in the Sierra Nevada may have been due to shooting by fishermen (Belding in Grinnell et al. 1918). Because of its relatively small numbers throughout its range, such an extermination program could easily remove sparse breeding populations from popular fishing streams (Brown 1998). Shooting and trapping are key factors in the reduction and loss of North American breeding populations (Robertson and Goudie 1999), though the extent of such activities in California is undocumented.

In the Sierra Nevada, degradation of former breeding streams by hydraulic mining, logging, and reservoirs has removed or degraded extensive areas of suitable nesting habitat. Chronic disturbance of nesting birds by rafters, hikers, fishermen, and researchers can reduce reproductive success (Robertson and Goudie 1999). Heavy recreational use of most large rivers on the west slope of the Sierra Nevada may preclude recolonization of otherwise suitable habitats. Studies of Harlequin Ducks outside California suggest that they are very traditional in their choice of breeding (and wintering) areas, and once they have been extirpated from a watershed recolonization may be a slow and uncertain process (Brown 1998). Ingestion

of pesticides, plastics, lead, and other toxicants are potential risks for wintering populations, and oil spills are known to affect birds in coastal areas adversely (Robertson and Goudie 1999).

MANAGEMENT AND RESEARCH RECOMMENDATIONS

- Implement measures to protect nesting populations from human disturbance during the breeding season, from April through late July, if any extant populations are found during breeding surveys in the Sierra Nevada or Cascade Range; streamside hiking and rafting are prohibited in many eastern Canadian and U.S. national parks in areas with high densities of nesting Harlequin Ducks (Robertson and Goudie 1999).
- Perform standardized surveys of remote stream reaches in the Yosemite region, northern Sierra Nevada, and Cascade Range to determine whether nesting populations continue to exist in California; most existing surveys (e.g., Breeding Bird Survey routes) are not designed to detect this species, and most of their potential breeding habitat is not surveyed effectively by birders (Remsen 1978).
- If feasible, determine the wintering locations and status of birds that breed in the Sierra Nevada through radiotelemetry studies or other methods.
- Conduct standardized surveys from boats to determine the size and locations of current wintering populations; most existing surveys (e.g., CBCs and winter waterfowl counts by state and federal agencies) are not designed to detect this species throughout its potential range along the California coast.

MONITORING NEEDS

Since almost no population data currently exist for nesting Harlequin Ducks in California, any observations of this species in the state's interior are important and should be well documented, if possible, with notes and photographs. Rivers with historical or recent observations should be surveyed systematically at least once every five years (preferably more often) to document possible nesting populations that may exist in the Sierra Nevada or Cascade Range.

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