

NOTES

BREEDING OF THE BLACK SWIFT IN THE GREAT BASIN

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The Black Swift (*Cypseloides niger*) has an extensive albeit somewhat disjunct range in western North America from southern Canada south to southern California (Foerster and Collins 1990) and Arizona (Knorr 1989) and east to Colorado (Knorr 1950, 1961). Its range in the Great Basin has been unclear. I found several breeding colonies on the eastern margin in Provo Canyon, Utah (Knorr 1962), but until 1986 my subsequent attempts to locate Black Swift colonies elsewhere in the Great Basin were unsuccessful. Even so, observations by Ridgway (1874) suggested that there might be other sites located along the western margin of the Great Basin.

On 14 July 1986, while searching for Black Swift nesting habitat from an aircraft, I found a likely waterfall at 2400 meters elevation in Cloudburst Canyon, a tributary of the West Fork of the Carson River in the Carson Range of Alpine County, California. It is located at 38°45' N, 119°51' W, 12 km southwest of the Nevada state line. Proceeding on foot to the site, which cannot be seen from any existing road or trail, the following day I found a colony of Black Swifts, estimated at four to six pairs. After a climb up one side of the canyon flanking the waterfall, I was able to see only two nests—one in a crevice behind a thin curtain of water and another about 1 meter from the nearest water. Subsequently, I visited the site a half dozen times or more each summer through the 1992 nesting season to determine the size of the colony and approximate arrival and departure dates. The greatest number of adults I saw in the air at one time was 11. Arrival dates ranged from 5 to 10 May, departure dates from 30 August to 5 September. Because of the difficult terrain and precarious observation point, I was unable to collect any data on incubation and raising of the young.

The ecological characteristics previously described for Black Swift nest sites (Knorr 1961, Hunter and Baldwin 1962, Foerster and Collins 1990) were all present in Cloudburst Canyon. When this colony was discovered in 1986, 6 years of severe drought in California and western Nevada were just beginning. By the end of each summer, the Cloudburst Canyon waterfall was reduced to a mere trickle. Nevertheless, the birds returned each year. Fidelity of Black Swifts to their nesting sites appears to be very strong, as no known site has ever been found to be abandoned (Knorr 1989). Similarly, my statement (Knorr 1961) that Black Swifts do not nest on truly intermittent streams seems to be holding its validity.

The unique combination of ecological factors characterizing Black Swift nesting sites does not occur in many places, presumably explaining the wide scattering of colonies. The Black Swift's known nesting sites nearest Cloudburst Canyon are at Tenaya Gorge in Yosemite National Park, 115 km south (Michael 1927), and at Feather Falls, Butte County, 150 km northwest (Knorr pers. obs. 1968).

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COMMON RAVEN POPULATIONS IN JOSHUA TREE NATIONAL MONUMENT, CALIFORNIA

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Common Raven (*Corvus corax*) numbers in the Mojave Desert have grown substantially, with increases ranging from 5 to 15% annually over the past 20 years (Robbins et al. 1986, USDI 1990). These population increases, and the location of Desert Tortoise (*Gopherus agassizii*) shells near raven nests and perches, have resulted in ravens being suggested as a cause of the decline of tortoise populations (Berry 1985, Berry et al. 1986).

The conclusion that raven populations have increased is based on Breeding Bird Surveys, in which birds are counted from roadsides (Robbins et al. 1986). Estimates of raven populations are thus based on data from areas of diverse human land uses including agriculture, livestock grazing, and urban/suburban development. Knight and Kawashima (in press), however, found that raven numbers can be considerably greater along highways than away from them. Currently, there is no information on raven numbers in areas away from roads and not grazed by livestock.

Accordingly, we surveyed raven numbers in native desert scrub away from roads. Our goal was to determine a baseline estimate of raven population density in a part of the Mojave Desert suitable for nesting ravens but free from contemporary land-use changes.

Our study area was heterogenous and located in the Pinto Basin and Eagle Mountains of Joshua Tree National Monument and U.S. Bureau of Land Management wilderness and natural lands, San Bernardino County, California (33°55' N, 115°30' W). Elevations ranged from 420 to 1210 m. Rain (< 110 mm annually) falls predominantly in the winter, though there are occasional summer thundershowers. The dominant vegetation consisted of widely spaced shrubs, including creosote bush (*Larrea divaricata*) and shadscale (*Atriplex brevifolia*) (Munz and Keck 1959). The