

In all three observations, we noted the pale tail bars, narrow moustache stripe, large size, and pale underparts which distinguish this species from sympatric falcons. The juvenile was distinguished from the adult by having feet and cere, but not eye ring, yellow, having more rufous or rust on dorsum, and having a light brownish wash on the belly and flanks.

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Institute for Raptor Studies, Box 4420, OM Star Route, Oracle, Arizona 85623. Accepted for publication 2 May 1980.

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APPARENT REPLACEMENT CLUTCH LAID BY WILD CALIFORNIA CONDOR

ED N. HARRISON

AND

LLOYD F. KIFF

Current proposals for the management of the endangered California Condor (*Gymnogyps californianus*) suggest "double-clutching" (removal of the first clutch to induce laying of another in the same season) as a potential technique for increasing the productivity of the existing population (Ricklefs 1978, Anon. 1979). However, Koford (1953) stated that for "free-living California Condors, the laying of a second egg after the first is taken is unknown."

The assumption that California Condors will lay more than one clutch during a single breeding season appears to be based largely upon the presumed laying history of a captive condor in the United States National Zoo in Washington, D.C. According to Koford (1953), that female was thought to have produced a second egg 33 days after the first was found broken in one year. In another season a second egg was found 41 days after the first was discovered and evidently removed from the cage. More recent examination of the National Zoo records, however, revealed the possibility that more than one condor was probably responsible for the 18 or more eggs produced there between 1919 and 1939 (Wilbur 1978 and pers. comm.), and the matter cannot be satisfactorily resolved now.

The Western Foundation of Vertebrate Zoology collection contains a California Condor egg (WVZ #79,767) that was collected on 16 March 1939 from a nest site near Santa Paula, Ventura County, California by Martin C. Badger, a local collector who took at least five eggs from the same site between 1916 and 1943 (Badger notes at WVZ). The existence of the 1939

specimen was not generally known until after Badger's death in the early 1970's. It is accompanied by 8 mm movie film footage which documents the actual collecting episode. The nest site, a small cave near the top of a sheer cliff, is shown clearly in the film.

On 30 September 1939 Carl Koford visited the same nest site with Sidney Peyton and found that the cavity contained a nestling condor (Koford notes). One of us (E. N. H.) visited the nest with Koford on five separate dates between 5 October and 4 November 1939 in order to make a photographic record of the development of the young condor. The nestling was banded on 17 October by Koford and E. N. H. It was last seen and photographed on 4 November, when it still had not left the nest (Fig. 1). When the nest site was visited by Koford on 13 December 1939, it was empty. The young bird was later found dead near the nest (letter from C. Hooper to F. C. Sibley, 12 February 1967), and its skeleton is preserved at the Museum of Vertebrate Zoology in Berkeley (MVZ #120,358).

Because of the great fidelity that individual condors apparently have for specific nest sites and because of the generally retarded development of the Santa Paula nestling, we feel that it is likely that it hatched from a replacement clutch. At two other condor nests under observation by Koford and E. N. H. in 1939, the young left their nest cavities by late September, and one was capable of flight by early November when the Santa Paula bird was still in the nest (Koford notes).

Replacement clutches have been reported frequently for other cathartid vultures, including captive Andean Condors (*Vultur gryphus*) at the London Zoo in the 1840's (Olivares 1963), Amsterdam Zoo (Dekker 1967), San Diego Zoo (Lint 1960), Oklahoma City Zoo (J. C. Snelling pers. comm. to S. Wilbur), Patuxent Wildlife Research Center, Laurel, Maryland (Anon. 1979), and Bronx Zoo (Ricklefs 1978). A single female in the latter collection produced three fertile clutches in 1978. A King Vulture (*Sarcoramphus papa*) laid a replacement clutch at the Naples Zoo (Cuneo 1968), and apparent replacement clutches have been reported for wild Turkey Vultures (*Cathartes aura*) by Mas-



FIGURE 1. California Condor nestling believed to have hatched from replacement clutch. Santa Paula, California, 4 November 1939.

lowski (1934) and Black Vultures (*Coragyps atratus*) by Stockard (1904), Beal (1932), Turcotte (1933), and Jones (1936). Replacement laying occurs most often in these and other raptors when the first clutch is lost at an early stage of incubation (Newton 1979). Badger noted on the data slip accompanying his 1939 specimen that the egg was fresh when collected.

Even though this evidence appears to indicate that wild California Condors have the capacity to lay a replacement clutch in the same season, such behavior may be unusual. Koford remarked that "If second layings occur, egg collectors would have discovered this fact long ago." However, we doubt that collectors ordinarily returned to condor nests in the same season after they had taken an egg, since most traditional sites were reached only with great effort. Thus, replacement clutches might easily have been overlooked by egg collectors, especially if they occur irregularly.

We are grateful to Sanford Wilbur for supplying us with information on replacement clutches in cathartid species and for other assistance. We owe a great debt to the late Carl Koford for his field companionship (E. N. H.) and encouragement (L. F. K.). Koford's original field notes were examined through the courtesy of the staff of the Museum of Vertebrate Zoology, University of California, Berkeley.

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