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Condor 85:499

NEST OF THE RED-STAINED WOODPECKER (*VENILIORNIS AFFINIS*) FROM SOUTHEASTERN PERU

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Despite the extensive range of the Red-stained Woodpecker (*Veniliornis affinis*) in the Neotropics, nothing seems to have been reported about its nesting (Short, Woodpeckers of the World, Delaware Museum of Natural History, monograph series, no. 4, 1982). I describe here a nest with two young discovered on the Tambopata Reserve, Peru.

The 5,600-ha Tambopata Reserve is located 30 km southwest of Puerto Maldonado, Madre de Dios (12°50′S and 69°17′W). According to the Holdridge classification system, the Reserve lies entirely within the humid tropical forest zone (Tosi, Inst. Interam. Cien. Agric., Biol. Tec., 5:vi, 1960), and is dominated by the flood plains of the Tambopata and La Torre rivers.

The living nest tree (undetermined species) was first seen on 30 May 1982. It bordered a well-traveled foot trail in the reserve and was approximately 10 m in height, with a dbh of 23 cm. The canopy in the vicinity of the tree was continuous and estimated at 25–35 m in height. The region immediately surrounding the nest tree appeared to be undisturbed virgin forest with sparse undergrowth.

The nest cavity was 270 cm from the ground and had a circular opening 4 cm in diameter. The cavity depth was not measured but I estimated it to be 15 cm deep.

Using a mirror, I determined that the cavity contained two chicks of approximately equal size. Both chicks appeared to have remiges emerging from their sheaths.

I observed the nest for a total of 3 h on the afternoons of May 30 and 31, during which time I saw an adult bring food to the nest twice. In both instances the prey appeared to be 3–4 cm long coleopteran larva. The young called profusely when a parent entered the nest hole and were audible within 5 m of the nest tree. Any external disturbance to the tree, such as bumping it with a ladder, also aroused the chicks to call.

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BREEDING RANGE EXPANSION OF BELL'S VIREO IN GRAND CANYON, ARIZONA

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Since the late 1960s, Bell's Vireo (*Vireo bellii*) has expanded its Arizona breeding range along the Colorado River from the area of upper Lake Mead and the Hualapai Indian Reservation eastward into Grand Canyon National Park. This range expansion and an associated increase in numbers were first noted by Carothers and Aitchison (1976), and later acknowledged by Brown et al. (1978) and Monson and Phillips (1981). The rate and extent of this range expansion have not been well documented. We provide such documentation here. The associated increase in numbers, in this instance, is of special interest because populations of Bell's Vireo have diminished or disappeared in other areas of the southwestern United States (Phillips et al. 1964, Rea 1977, Goldwasser et al. 1980, Rosenberg et al. 1982).

Expansion of the vireo's range coincides with the construction of Glen Canyon Dam on the Colorado River. The dam site is 24 km upstream from Lees Ferry near the Arizona-Utah border, the farthest upstream point of Grand Canyon National Park. Since its completion in 1963, the dam has prevented floods that had formerly scoured the riverbanks of virtually all but annual vegetation. This same area now supports a dense and extensive riparian woodland composed of *Tamarix chinensis, Tessaria sericea, Salix exigua, S. gooddingii, Baccharis* spp., and *Prosopis velutina* (Carothers and Johnson 1975, Turner and Karpiscak 1980)—essential Bell's Vireo breeding habitat. While the total extent of the habitat development has not been

quantified, it has been estimated from aerial photos that 200 to 500 ha of riparian woodland were present between lakes Mead and Powell by 1975. This represents a large increase in the amount of suitable vireo habitat over that shown on pre-dam aerial photos. Bell's Vireo colonized this new habitat as it developed.

Before 1963 the breeding range of Bell's Vireo along the Colorado River extended northward from the lower Colorado River Valley, through the Lake Mead National Recreation Area, into the extreme western portion of the Grand Canyon (A.O.U. 1957, Phillips et al. 1964). The pre-dam records of breeding Bell's Vireo in the western portion of the Grand Canyon are: two pairs seen by R. W. Dickerman on 20 June 1953 at the mouth of Whitmore Wash (Monson 1953) near River Mile 188 (River Miles measured downstream from Lees Ferry); and an unknown number of vireos noted "in desert brush" at Pierce's Ferry (River Mile 280) on 16 April 1937 by Lyndon L. Hargrave (Phillips et al. 1964, A. R. Phillips and G. Monson, pers. comm.). The Whitmore Wash locality represents the farthest known upriver vireo breeding site. These localities supported small, isolated patches of riparian vegetation along the river at the junction of tributary canyons; they are now connected by a linear and mostly contiguous band of riparian vegetation where edaphic conditions are suitable. Other localities along the river in the extreme western Grand Canyon could also have harbored small breeding populations, where areas of suitable habitat were then available, such as at the mouth of Spring Canyon (River Mile 204), Granite Park Canyon (River Mile 209), Three Springs Canyon (River Mile 216), and Spencer Canyon (River Mile 246). We know of no other records available through 1970.

In June 1971, Johnson found breeding Bell's Vireos at River Mile 179, from which point they were fairly common downstream to River Mile 225. In that year the National Park Service and the Museum of Northern Arizona began a series of boat trips down the river, providing, for the first time, annual information on the birds of the entire river corridor. By July 1973 the vireos had expanded their breeding range upriver to Mile 172, and were common from that point downstream to River Mile 225 (Johnson, unpubl. data). In August 1974, Carothers found vireos breeding at River Mile 171; by May of 1975 they were common breeders upriver to as far as Mile 167 (Carothers, unpubl. data). From 1975 to 1981, River Mile 167 remained the farthest upriver vireo breeding locality that we have verified. However, during these years solitary male vireos were reported singing from several locations between Lees Ferry and River Mile 167.

On 12 June 1982, Brown discovered a Bell's Vireo nest, from which young had recently fledged, at River Mile 43. Two nests, containing eggs and young, were also discovered at Cardenas Marsh (River Mile 71) during May and June 1982; at least five additional male vireos were singing on territory between River Mile 43 and 72 (Brown, unpubl. data). The nest at River Mile 43 indicates a breeding range expansion of at least 219 km during the 11 years from 1971–1982, and 232 km in the 30 years between 1953 and 1982. In addition, the 135 singing males (minimum population size) censused after the method of Bull (1981) from Lees Ferry to River Mile 225 in April 1982 (Brown, unpubl. data) represent a significant increase in numbers over the 67 singing males censused during an identical survey in April 1976 (Carothers, unpubl. data).

The stretch of river from River Mile 167 upstream to River Mile 72 has sheer cliffs that come close to the edge of the river, precluding optimal habitat for Bell's Vireo. From River Mile 72 upstream to River Mile 40, large areas of suitable vireo habitat exist. We postulate that the cliff-lined stretch of river was a partial barrier to vireo range expansion between 1975 and 1981, and that only in 1982 did vireos begin active breeding colonization of suitable habitat between River Miles 72 and 40.

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