

## FIRST CONFIRMED BREEDING OF THE LEAST BITTERN IN INYO COUNTY, CALIFORNIA

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The breeding status and distribution of the Least Bittern (*Ixobrychus exilis*) in California have never been fully worked out, owing to the species' small size, secretive habits, and nearly inaccessible marsh habitat. Grinnell and Miller (1944) listed no breeding records for Inyo County. Garrett and Dunn (1981:92) thought "it possibly nested recently in the Saline Valley, INY (two pairs on 25 July 1975), and it may nest very locally elsewhere in District D" (of which Inyo County is part). Most recently, Small (1994:49) concluded that the Least Bittern's "present status in the state is unclear," adding that "it is best regarded as a very local lowland breeder away from the deserts." Recent breeding records for the Great Basin are limited to Malheur National Wildlife Refuge, Oregon, and Honey Lake, California, with no breeding records for Nevada (Alcorn 1988:19, Ryser 1985:90). Elsewhere in the Great Basin, the Least Bittern is a rare migrant (AOU 1983:43-44, Gibbs et al. 1992:2). With much still uncertain about this tiny heron, "in severe decline through a wide portion of its range" (Ehrlich et al. 1992:121), breeding records—such as I present here—are a valuable addition to ornithological knowledge.

In July 1991, I discovered Least Bitterns nesting at Billy Lake, 5 km northeast of Independence, Inyo County. By the end of August 1991, I had found four broods of nestlings there. For the next three breeding seasons, 1992-1994, I observed intensively at Billy Lake, primarily by paddling slowly around the lake in a kayak. Each summer I checked other nearby ponds and marshes and the nearby Owens River; the only other evidence of nesting Least Bitterns I found was at Cottonwood Marsh, along the west side of Owens Lake 5 km south of Lone Pine, 5 July and 28 July 1992 (two flightless young). I found most broods by hearing the peeping calls of the flightless young. Only four times did I find actual nests; all other nests were invisibly hidden in dense cattails (*Typha domingensis*). Over the four years, I spent 243 hours observing or looking for Least Bitterns. In 1992 I found five broods at Billy Lake; in 1993, eight; in 1994, seven.

Billy Lake, a former marsh, was impounded by the Los Angeles Department of Water and Power in 1984, creating a long narrow pond of approximately 6 hectares, typically 2 meters deep. Its elevation is 1146 meters, on the extreme western edge of the Great Basin, with the Sierra Nevada dominating the scenery 15 km to the west.

Billy Lake approximates the hemi-marsh condition (nearly equal amounts of open water and emergent vegetation) particularly conducive to breeding of Least Bitterns (Gibbs et al. 1992). The emergents comprise three general forms: (1) a nearly continuous ribbon of cattails, 1-2 meters wide, surrounding the lake, (2) approximately 1 hectare of dead salt cedar (*Tamarix chinensis*) and dead willows (*Salix* spp.), and (3) "islands" of cattails surrounded by water.

Least Bitterns at Billy Lake nest preferentially in the cattail islands; 21 of 24 broods (87.5%) I found were on islands, well protected from predators and the cattle foraging in the surrounding open range. Average number of nestlings per brood was 3.33 (range 2-6). The average reported in the literature is about 4.5 (Weller 1961). Possibly this discrepancy arose because I usually saw only the hatched nestlings; only once did I find a nest with eggs.

Three locations in the cattail islands at Billy Lake have been used for nesting in three of the four years of my observations, suggesting nest-site fidelity.

To estimate the dates of egg laying, I used 19 days for the incubation period and 25 days as age of first flight (Ehrlich et al. 1988). I backdated 44 days (19 + 25) from first observed flight. If I had no data for first flight for a brood, I used 7 days as their

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age when I could first hear them calling; I then backdated 26 days (19 + 7) to estimated date of laying. Where both dates were available the two estimates of egg-laying dates were within one day of each other, substantiating my estimate of an age of 7 days for first audible calls.

In 1993 (year of my most complete data) I observed eight broods. Estimated dates of laying for these broods, by the methods above, were 1 May, 3 May, 3 June, 7 June, 1 July, 2 July, 5 July, 21 July. Some phase of nest-building, incubation, or feeding of the young was concurrent for at least four of these broods, so there were at least four different pairs of parents. These data suggest, but are insufficient to confirm, double brooding. Nor have other observers confirmed double brooding with marked Least Bitterns (Gibbs et al. 1992, Weller 1961).

A clutch of five nestlings that I observed from hatching could leave the nest for brief periods by an age of 7 days. They gradually expanded their range of activity until at 17 days they abandoned the nest completely, not returning to it even to sleep. As each juvenile Least Bittern attained flight at an age of 25 days (development is asynchronous), it flew across the water to another nearby clump of cattails but continued to call to its nestmates. Then, in a process that I have followed repeatedly at Billy Lake, the group of young bitterns gradually moved farther from its nest island. From day to day I relocated them by their loud and continuous calling. When they were approximately 40 days old I could no longer find them.

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