Wilson Bull., 105(2), 1993, pp. 354–356

Male Kirtland's Warbler with incubation patch.—An adult male Kirtland's Warbler (*Dendroica kirtlandii*) with an incubation patch was mist netted on the morning of 19 July 1991, 13 km SSE of Mio in Huron National Forest, Oscoda County, Michigan (44°32′36″N, 84°03′24″W). The bird's age and sex were determined by plumage coloration, worn feather condition, molt pattern, and unflattened wing chord of 72.0 mm. We have never had a female of this species with a wing chord greater than 70.0 mm in length (Sykes and Kepler, unpub. data). The bird was undergoing fall basic definitive molt, weighed 14.2 g, and had a subcutaneous fat score of zero (Helms and Drury 1960). We color banded it uniquely (dark blue above red on the left leg and dark blue above U.S. Fish and Wildlife Service aluminum band no. 2020-63494 on the right), photographed it in the hand (Fig. 1), and released it. No measurements of the incubation patch were taken. Captured at the same time in the same net was a hatching-year (HY) female of unknown relationship to the male.

In the course of our research on the Kirtland's Warbler on its breeding grounds in Michigan (1984, 1986–1991), we captured 106 individual AHY males (some more than once per year and in more than one year). All males were examined for fat and molt condition with each capture; of all males scrutinized, only the individual mentioned above had an incubation patch. Through July and well into August, all AHY female Kirtland's Warblers we examined (N = 80) had obvious incubation patches.

The incubation patch of passerines is located in the ventral apterium. No contour feathers are lost in the formation of the patch, but all the down feathers within the apterium are molted during its development, facilitating transfer of heat from the body of the incubating bird directly to the eggs (Bailey 1952). Formation of the incubation patch is correlated with the nesting cycle and consists of four basic changes: (1) defeatherization stage, (2) vascularization stage, (3) edematous stage, and (4) recovery stage (Bailey 1952). Although not microscopically confirmed, the male Kirtland's Warbler was believed to be in the recovery stage. The edema and vascularity subside during recovery, and the epidermis returns to normal by the time the young are able to fly and feed themselves (Bailey 1952). Refeatherization of the apterium occurs during the fall basic definitive molt. Thus, all evidence and circumstances suggest that our male was in the recovery stage.

In his definitive study, Bailey (1952) never encountered a male incubation patch among passerine species. Verner and Willson (1969) reported incubation patches in males of nine species of non-Parulinae passerines. However, Verner and Willson (1969) cautioned that it is usually impossible to determine if males on the nest are simply covering the eggs or applying heat to them. Among the Parulinae, males generally do not incubate the eggs (Chapman 1917, Hann 1937, Lawrence 1948, Kendeigh 1952, Meanley 1971, Pulich 1976, Morse 1989). Nolan (1978) found no evidence of male incubation in his extensive study of the Prairie Warbler (*Dendroica discolor*). Most accounts of incubating male warblers, namely Nashville (*Vermivora ruficapilla*), Northern Parula (*Parula americana*), Black-throated Green (*D. virens*), Blackburnian (*D. fusca*), Pine (*D. pinus*), Black-and-white (*Mniotilta varia*), and Hooded (*Wilsonia citrina*) warblers, as reported in Bent (1953), are open to question because of misinterpretations and identification errors (Bent 1953, Mayfield 1960, Verner and Willson 1969, Morse 1989). In a study of Hooded Warblers in Maryland, a single male was discovered to have assumed the female role, built nests, and incubated eggs during two consecutive years (Niven 1993). The bird was collected and proved to have normal testes with no ovarian tissue; it did not have an incubation patch (Niven 1993, D. K. Niven, pers. comm.). Mayfield (1960) stated that incubation is performed entirely by the female in the Kirtland's Warbler, but presented a 1951 case in which a male briefly settled on the eggs. Walkinshaw (1983) found that incubation usually was performed only by the female Kirt-

FIG. 1. Ventral view of AHY male Kirtland's Warbler showing incubation patch, Oscoda County, Michigan, 19 July 1991.

land's Warbler, but he told us that he once observed a male sitting on eggs for a brief period (L. H. Walkinshaw, pers. comm.).

Male warblers generally do not brood or shade the young (Chapman 1917, Kendeigh 1945, Lawrence 1953, Stewart 1953, Cox 1960, Elliott 1969, Nolan 1978, Morse 1989). However, there are a few exceptions. Walkinshaw (1959) found a male Prairie Warbler that brooded and shaded the young, and Niven (1993) noted an instance of brooding by a male Hooded Warbler. In the Kirtland's Warbler, Mayfield (1960, p. 100) reported a male in 1932 "fully snuggled down on the young after feeding them," as observed by Harry W. Hann, and Walkinshaw (1989, pers. comm.) discovered a male brooding nestlings in 1970.

Incubation and brooding by male warblers is an infrequent behavior that requires further investigation. The male Kirtland's Warbler herein reported appears to be the first documented case of a male Parulinae with an incubation patch.

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Temporal differences in size of Northern Saw-whet Owls during spring migration.—Northern Saw-whet Owls (*Aegolius acadicus*) exhibit reversed sexual size dimorphism, males being smaller than females (Earhart and Johnson 1970, Mueller 1986, McGillivray 1987). Various sexing criteria using wing chord have been published (Anonymous 1980, Weir et al. 1980, Buckholtz et al. 1984), but their accuracy has been questioned (Mueller 1982, 1990; Slack 1992). Using such criteria, Weir et al. (1980) concluded that females preceded males during fall migration. Mueller (1990) questioned the utility of these sexing criteria to show differential timing of migration by sex; he noted that all but the largest and smallest individuals