for helpful comments on an earlier draft of this manuscript and Kiff for data on egg sets from the Western Foundation of Vertebrate Zoology, Los Angeles, California.—Luis F. Baptista, *Dept. Ornithology/Mammalogy, California Academy of Sciences, San Francisco, California 94118. Accepted 11 Nov. 1983.*

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Age and reproductive success in Northern Orioles.—Rising (Syst. Zool. 19:315–351, 1970) reported breeding by first-year male Northern Orioles (*Icterus galbula*) but did not compare reproductive success of first-year and older males. I recently investigated various aspects of the breeding of first-year and older males in west-central Kansas (Labedz, M.S. thesis, Fort Hays State Univ., Hays, Kansas, 1982). Data concerning clutch-size, fledging success, and range of fledging dates are reported herein.

Methods.—Clutch-size, fledging success, and fledging dates were recorded from a 120-ha study area near Hays, Ellis Co., Kansas in 1981 and 1982. The age of the male associated with each nest, clutch-size, fledging success, and the date on which the first chick fledged were determined by regular observations of the nest. First-year males were determined to be present at a nest when two female-plumaged orioles were observed at or near the nest and both individuals were observed feeding chicks in that nest. Nestlings surviving to banding age were assumed to survive until fledging unless otherwise noted. Fledging was defined as the departure of any chick from the nest without human interference.

Results.—Thirty-four of 61 active Northern Oriole nests were accessible for data collection in 1981 and 1982. In 1981 three nests associated with first-year males had significantly smaller clutches ($t = 7.75$, df = 12, $P < 0.01$) and four nests had significantly lower fledging success ($t = 3.93$, df = 11, $P < 0.01$) than nests associated with older males. Nests with first-year males had a mean clutch-size of 2.3 ± 0.58 eggs while 5.1 ± 0.54 eggs were recorded from nests of older males. Nests with first-year males fledged a mean of 0.8 ± 0.96 chicks while 3.9 ± 1.54 chicks fledged from nests of older males.

In 1982 three nests associated with first-year males had significantly smaller clutches ($t = 5.95$, df = 12, $P < 0.01$) and four nests had significantly lower fledging success ($t = 2.17$, df = 15, $P < 0.05$) than nests associated with older males. Nests with first-year males had a mean of 3.0 ± 0.00 eggs while 4.9 ± 0.54 eggs were recorded from nests of older males. Nests with first-year males fledged a mean of 2.5 ± 1.00 chicks while 3.6 ± 0.87 chicks fledged from nests of older males.

Combining the 1981 and 1982 data, six nests associated with first-year males had significantly smaller clutches ($t = 9.51$, df = 26, $P < 0.01$) and eight nests had significantly lower fledging success ($t = 4.25$, df = 28, $P < 0.01$) than nests associated with older males. Nests with first-year males had a mean clutch-size of 2.7 ± 0.52 eggs while 5.0 ± 0.53 eggs were recorded from nests of older males. Nests with first-year males fledged a mean of 1.6 ± 1.30 chicks while 3.7 ± 1.16 chicks fledged from nests of older birds.

The period of fledging covered 19 days in 1981 and 27 days in 1982 (Fig. 1). In both 1981 and 1982 the earliest fledging from a nest associated with a first-year male was after more than half of the nests of older males had fledged (Fig. 1), indicating that nests of first-year males were initiated later than those of older males. Renesting after a nest had been destroyed was suspected twice in 1982 with nests of older males, but a second nest or second brood was not observed.

Discussion.—Johnsgard (Birds of the Great Plains: Breeding Species and their Distribution, Univ. Nebraska Press, Lincoln, Nebraska, 1979), using data on 57 oriole nests in Kansas,

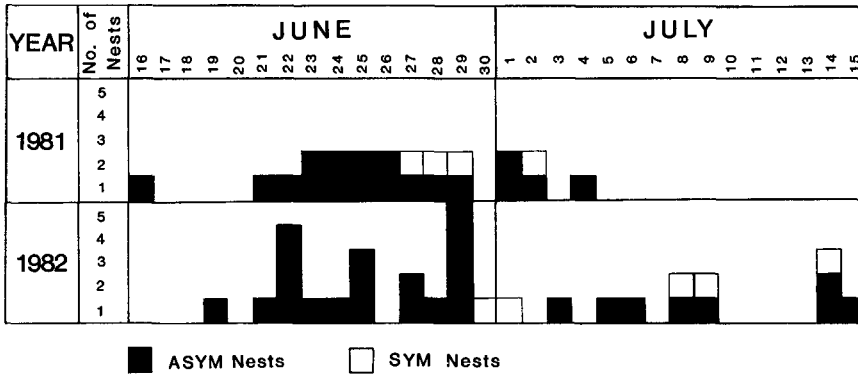

FIG. 1. Histogram of fledging dates of Northern Oriole broods near Hays, Ellis Co., Kansas, in 1981 and 1982.

and Pank (M.S. thesis, Univ. Massachusetts, Amherst, Massachusetts, 1974), studying orioles in Massachusetts, reported an average of 4.7 eggs per clutch, similar to the mean clutch-size of 4.5 ± 0.52 eggs I found when both age groups were combined. Female age appears to affect nesting productivity (Baillie and Milne, Bird Study 29:55–66, 1982); if, as has been suggested (Flood, M.S. thesis, Univ. Toronto, Toronto, Canada, 1980), orioles tend to mate with individuals of similar age (a phenomenon also reported to occur in other species [Coulson and White, Ibis 100:40–51, 1958]) this might account for the significantly smaller clutches in the nests of first-year males. It was impossible to determine the age of female orioles in this study.

The mean of 3.2 ± 1.18 fledgings per nest (when both age groups were combined) is significantly greater ($t = 5.15$, $df = 67$, $P < 0.01$) than the mean of 2.4 ± 1.87 calculated from data given by Pank (1974). Pank (1974) included nests with unincubated (abandoned) clutches; I had difficulty detecting such clutches (the presence of any in my sample would lower the mean number of fledglings reported herein). The significantly fewer fledgings from first-year male nests was primarily due to the significantly smaller clutches for those nests. This agrees with reports of lower fledging success for broods parented by younger birds in other species (De Steven, Ibis 120:516–523, 1978) and might suggest that younger birds are less efficient at caring for eggs and nestlings than are older nesting pairs. I visited nests too infrequently to determine whether mortality occurred in the egg or nestling stage.

Pank (1974) reported that fledging began 5 days later and lasted 4 days longer in the second season of his study, which was interrupted by inclement weather. Unpublished weather data from the Fort Hays Experiment Station, which adjoined the study area, indicate that the weather was somewhat cooler and wetter during the egg-laying period in 1982; this might have been ultimately responsible for the later (3 days) and less synchronous fledging in 1982 (Fig. 1). The late fledging of nestlings belonging to first-year males probably reflects the fact that pairs including a first-year male nested later in the season, as has been reported both for Northern Orioles elsewhere (Flood 1980) and for other species (De Steven 1978).

Lack (Population Studies of Birds, Clarendon Press, Oxford, England, 1966) and others working with other species have attributed the lowered success of younger birds at least partially to inexperience in pair bond formation, nest construction, and care of eggs and

nestlings. I have no proof that inexperience caused the lower reproductive success of first-year male Northern Orioles, but it remains a likely possibility.

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Nesting by injured Common Eiders.—The ability to recover from broken bones and other injuries is well documented for many species of birds, particularly waterfowl (Kirby, Riechman, and Schoenfelder, Wildl. Soc. Bull. 9:150–153, 1981). Tiemeier (Auk 58:350–359, 1941) found evidence of healed bones in 4.5% of more than 6000 museum specimens examined. The highest incidence of healed injuries, 12.6%, was in the family Anatidae. The majority of those injuries were breaks in the humeri, radii or ulnae and most were judged severe enough to have prevented flight during the healing process. Similarly, Whitlock and Miller (J. Wildl. Manage. 11:279–281, 1947), after fluoroscopic examination of more than 900 ducks, found 2% had sustained wing injuries yet had recovered to fly again. Our article presents data on wild, injured ducks that did not regain the ability to fly, yet survived and appeared to behave normally in all other regards.

During nesting studies of Common Eiders (*Somateria mollissima dresseri*) on 75 coastal islands in Maine in 1981, 411 nesting females were handled. Seven had wing injuries severe enough to preclude flight. The first injured eider was found 14 May in the nesting cover of Little Birch Island, Harpswell, Cumberland Co. The distal ends of her right radius and ulna had been previously broken but were now healed, although at an angle preventing flight. On 19 May, another injured female eider was flushed from her nest and captured on Grass Ledge (West), Deer Isle, Hancock Co. The right humerus was broken and the flight feathers badly worn. She appeared healthy in all other regards.

On 3 June at Fisherman Island, Muscle Ridge, Knox Co., a female with a broken left humerus was found incubating four eggs, the average clutch-size in Maine (Choate, M.S. thesis, Univ. Maine, Orono, Maine, 1966). The wing feathers were badly worn and faded and several primaries were reduced to stubby shafts. A check of the nest on 13 June indicated a successful hatch. Also on 3 June, two nesting females, unable to fly due to wing injuries, were found on Damariscove Island, Boothbay Harbor, Lincoln Co. One was captured and had a broken left humerus and severely worn flight feathers but otherwise was in good physical condition.

On Hart Island, Port Clyde, Knox Co., a female eider with a broken left humerus was found nesting 6 June. The last injured eider was found nesting 13 June, again on Fisherman Island. Her right ulna and radius were broken. The feathers of that wing were faded and worn; several were broken. Otherwise the bird was in excellent condition, weighing 1.4 kg, which is near the Maine average at the mid-point of incubation (Korschgen, J. Wildl. Manage. 41:360–373, 1977). A subsequent nest inspection proved a successful hatch.

The extent of bone healing, the degree of feather wear, the retention of feathers on at least three injured wings through the previous annual molt, and the similarity of these injuries to wounds expected from the hunting season indicated all seven birds had been unable to