

done, the Project will defeat one of its own original purposes; namely, crane conservation.

(4) Food patches of corn or buckwheat should be maintained in occupied or prospective ranges to replace the grain fields lost through the removal of farmers.

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DIVISION OF GAME MANAGEMENT, UNIVERSITY OF WISCONSIN,  
MADISON, WISCONSIN.

## A LIFE HISTORY STUDY OF THE YELLOW-BREASTED CHAT

BY GEORGE A. PETRIDES

In an effort to increase the photographic record, as well as to add to our knowledge of the life-history of the Yellow-breasted Chat (*Icteria v. virens*), two nests of this species were studied during the nesting season of 1937. This enterprise was carried out under the direction of Dr. Paul Bartsch of The George Washington University, whose gracious loan of photographic equipment made possible the pictures here reproduced.

Photographs of the chat are extremely rare. To the best of my knowledge, the two pictures taken by Dr. A. A. Allen are the only ones, until this date, that have appeared in the literature.<sup>1</sup> This species is the shyest of the warblers and although often heard it is but seldom seen. Once the bird realizes that it is observed it becomes silent and moves about only furtively. The parents are silent about the nest and the discovery of the nesting site is accomplished only by systematic search. Many investigators emphasize the extremely timid nature of the chat and some have stated that the parents will leave their eggs



FIG. 27. Nest and eggs of the Yellow-breasted Chat.



FIG. 28. The female Chat resting at the nest.

or young on very little provocation and that even slight disturbances of the nest or the leaves around it may cause the birds to desert.<sup>1</sup>

In the present study, although the birds of the first nest were "conditioned" somewhat by a gradual encroachment upon their nesting territory, the second nest was approached noisily through the underbrush on six different occasions and the contents lifted out and handled. Despite this, there seemed to be no evidence of a tendency to desert and on all occasions the adults were seen or heard about the nest and the young hatched and flew normally.

Some caution was exercised in preparing the birds of the first nest for study in the case that these individuals were as timorous as reputed. The blind, a green umbrella tent six and one-half feet high, was first erected some eighteen feet from the nest and moved forward about four feet every other day until, when the eggs were hatched, the tent was only two and one-half feet from the nest. On each visit several leaves were plucked from before the nest until it was well exposed.

It was not possible to identify the sexes in the field but it was concluded that the brooding bird was the female. (It appeared somewhat bedraggled and slightly less intense in color). She was no more suspicious than a bird of any other species and indeed she became quite tame for, despite the proximity of the blind, only very sudden sounds and movements disturbed her. It was possible to stand outside the blind, beside the nest, without flushing the bird. Throughout this study the behavior of the birds of the two nests was in marked contrast to that described in the literature.

The nests were the usual bulky structures composed of grasses and placed in typical positions three feet from the ground in grape and blackberry vine tangles. The first nest was discovered on June 13, 1937, and at that time contained one egg. On the 15th there were three eggs (Fig. 27). The second nest was found on the 19th and also contained three eggs. A visit on the 25th showed three eggs still in each nest, but on the morning of the 27th there were, in each nest, three small young which had undoubtedly hatched late the day before. Thus the incubation period was eleven days from the appearance of the full clutch. F. Burns,<sup>2</sup> however, records an incubation period of fifteen days for a pair of Vermont birds.

The young were born naked—the feather tracts showing dark blue on the wings and less darkly on the back.<sup>3</sup> The primary quills did

<sup>1</sup>Bird Lore, Vol. 21, No. 2, 1919.

<sup>2</sup>Wilson Bull., Vol. 27, 1915, p. 286.

<sup>3</sup>A. A. Saunders in Forbush's "Birds of Massachusetts" (III, 1929, p. 298) says that the chat is the only warbler that he knows that does not possess natal down.



FIG. 29. The female Chat cleaning the nest.



FIG. 30. The female Chat shielding the young from the sun, often called brooding.

not project on the day after hatching (27th) although on the 28th they were about  $\frac{1}{8}$  inch long and on the 30th about  $\frac{3}{8}$  inch. By the 2nd they had developed sufficiently to enable the young to fly.

On July 1 three young were present in both nests but on the 3rd, when the nests were again visited, they were empty and no chats were seen, although several notes were heard near the second nest. Thus the young developed to the flying stage in the period from June 26 to July 2—a period of eight days.

Brooding of both eggs and young was accomplished by the female alone during the time of observation, and although several attempts were made by the male to feed the young, his shyness caused their failure. It did not appear, however, that the male ever brooded the eggs or young.

The food of the young consisted almost entirely of soft-bodied orthoptera and larval lepidoptera. The only insect definitely identified was the large green mantis (*Paratenodera sinensis*), two half-grown specimens of which were fed the four-day old young. An unknown species of brown, almost hairless caterpillar was the greatest capture in numbers. A small green long-horned locust and a small brownish grasshopper also were fed the youngsters.

The four-day old young were fed only six times in five hours by the female, although the male attempted unsuccessfully to feed them several times. Copeland,<sup>4</sup> however, records a feeding time average of once every thirty-four minutes for the four-day old young over a thirteen-hour period.

The nest was kept very clean and the female, after feeding the young, would look carefully about the nest and if any excretory capsules were present she would pick them up in her bill and eat them. On one occasion after swallowing the excretory sacs of two of the young she pulled a third capsule from the anus of the third and flew off with it.

On or about the nest the female—and the male on occasion—uttered notes that may be classified in ascending order of alarm as follows:

1. A mild chatter in the throat, a gargling growl.
2. Clapping of the mandibles, rarely given.
3. A chuck-ing note given singly or as *cuk-cuk* or *cuk-cuk-cuk* in a rapid and sharp manner, quite common.

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<sup>4</sup>Wilson Bull., Vol. 21, 1909, p. 42.

4. The more common, scolding chat note given in a nasal tone and most conveniently written "cheow", given sharply and usually singly.

These notes, some of which were always given when another bird species approached the nest bush and sometimes when other noises occurred. The first type was given when the bird was on the nest and apprehensive of intruders while the third type seemed to be given to attract the attention of the male while he was singing. The fourth is the most common alarm note and often preceded a flight from the nest. The nest was often quitted silently, however.

The male of this pair sang in spurts from first one direction and then another while the blind was occupied. His calls were only occasionally answered by his mate and although Townsend<sup>5</sup> records the chat imitating other species, this pair did not show that tendency despite the fact that a nearby Mockingbird whistled crudely like a chat.

The male of this pair also occasionally performed its clownish "courtship" flight-song given with "dangling legs, pumping tail, and slowly flapping wings". There did not seem to be any excuse for this performance at any time, however.

#### SUMMARY

The reputed timidity of this species advised a gradual approach of the blind to within three feet of the nest and the gradual removal of leaves surrounding the nest. The female bird became quite tame and no difficulty was experienced in photographing it. A second nest was visited often and the contents handled but, contrary to reputation, the young were hatched and flew normally. The suspicious nature of this species is believed over-emphasized in the literature.

From data on both nests the incubation period was found to be eleven days, and the young spent eight days in the nest before leaving. The young were born naked. Brooding of both eggs and young was accomplished by the female alone during the period of observation, although both sexes evidently feed the young.

Their food consisted of soft-bodied orthoptera and larval lepidoptera. *Parutenodera sinensis* (mantis) was identified but the species of locusts and caterpillars were undetermined. The four-day-old young were fed only six times in five hours. The cleanly habits of the bird were noticed.

Four different types of notes uttered by the female at the nest are given in ascending order of alarm.

THE GEORGE WASHINGTON UNIVERSITY,  
WASHINGTON, D. C.

<sup>5</sup>Auk, XLI, 1924, p. 548.