roots. Or, as William Miller and Neil King of the Vermont Fish and Game Service have suggested, the hoop could be made of heavy lead cable to help hold it down. In situations when the trap cannot be anchored as firmly as desired, it is necessary to restrict the length of the action of the pull cord. This may be accomplished by placing a knot in the pull cord between the trap and the overhead anchor loop. The knot should be placed at a point that will permit enough action at the trap to cause it to extend and close over the hen, but not pull far enough to cause the poorly anchored hoop to rise from the ground.

There are several other minor details involved in setting and operating the trap, but they may best be learned from experience under the existing conditions. Needless to say, this technique, like any trapping technique, requires careful attention to many small details.

In the five cases where we have trapped, marked and banded incubating females and left their nests unmolested, each has returned to complete incubation. Some ducks have been trapped twice within a period of three to four weeks.

It seems likely that the trap described may be of use in trapping other nesting birds when this is necessary. With modifications in size it might be adapted for a variety of species. Our initial traps were constructed from scrap material including two-inch mesh gill netting. Later models were made from good grade nylon twine by an experienced net maker at a total cost of $3.00 each.

LITERATURE CITED

DZUBIN, ALEX and D. A. MUNRO. 1956. Nest Trapping *in* Guide to Waterfowl Banding. U. S. Fish & Wildlife Service, Sec. 2700-2790.

SOWLS, LYLE K. 1955. Prairie Ducks. The Stackpole Co., Harrisburg, Pa. 193 pp.

WELLER, MILTON W. 1957. An Automatic Nest-trap for Waterfowl. *Jour. of Wildl. Mgt.*, **21** (4) : 456-458.

Maine Cooperative Wildlife Research Unit, Orono, Maine.

GENERAL NOTES

Behavior Notes on the Ipswich Sparrow.—During the spring of 1958, while engaged in migration banding operations on the northern coast of Massachusetts with Carl W. Helms, the author was able to make a few field notes on the behavior of Ipswich Sparrows, *Passerculus princeps*. This species breeds only on Sable Island (off Nova Scotia) and winters uncommonly along the Atlantic coast, and as such has not been studied extensively by field workers. Observations reported below were made on April 5, 6, 13, and 20 at the Parker River National Wildlife Refuge on Plum Island, Mass. Most of the individuals observed were feeding in the same areas with Savannah Sparrows *(P. sandwichensis)* at the water's edge of the man-made empoundments on the western (inland) side of the island. A few were also observed in a brush area where banding mist nets were set up, and one Ipswich was banded, along with several Savannahs. The actual sand dune areas, often cited as the only habitat of the Ipswich, were not investigated.

Feeding and non-social behavior were observed in several individuals. Feeding of the Ipswich resembles that of many ground-feeding emberizines. A bird will move along the ground, pecking intermittently, and then may fly a short distance and begin searching again. The actual pecking movement consists of lowering the head swiftly, while the body is held almost horizontally, and the tail is flicked

slightly, presumably for balance. There appears to be very little lateral motion to the head in the pecking movement. Occasionally, a bird may wade into very shallow water, and peck into it; in which case a lateral shake is given to the head as it is brought up from the peck. This peck-shake seems to function in shaking the water from the head feathers. Locomotion on the ground is running, as opposed to hopping, and the Ipswich is reluctant to fly when chased. Protectively colored, a motionless bird is very difficult to find, and it was noticed that the birds never stop on the light areas of sandy ground, but run over them, stopping only on the darker areas. This appears to be a remarkable behavior trait associated strongly with protective coloration, for one individual repeated the behavior almost a dozen times when pursued by the observer. Locomotion in the air may be described as a weak but fast rowing-wing-beat flight. Flight intention movements consist of sleeking the body feathers, flicking the tail vertically (with no noticeable lateral motion or spread of tail feathers), and flicking the wings slightly at the wrists (at high intensity). The motions correspond well, as far as could be seen, to intensities of incipient takeoff, so that flight intention appears not to have been ritualized for signal purposes in this species. These flight intention flicks are given just before takeoff, and just after landing.

A few comfort movements were also observed. Feather setting (the raising, shaking, and lowering of feathers) is performed on the back and rump area quite often, and is accompanied by a lateral swish of the tail with feathers noticeably spread. One bird was observed to preen its breast briefly, but was not seen to utilize the uropygial gland. Another Ipswich scratched its head by the "indirect" method, the leg passing between the wing and body.

There was ample opportunity to observe social behavior, for Ipswich and Savannah Sparrows often fed together in small groups. When doing so, they utter "tzeet" intermittently, which appears to be a social note. As in many small bird flocks, frequent aggressive encounters take place. On the 5th, I was able to observe at a distance of less than ten feet the social behavior of an Ipswich and two Savannah Sparrows. (I am indebted to Allan Goodridge for confirmation of my field identification of these individuals.) The aggressive posture is the same for both species. The head is thrust forward toward the opponent, and the bill is opened, displaying the gape. In addition, the wings are raised in a quick upward jerk, and the tail may be raised slightly, although the feathers are not spread. The threat posture is frequently accompanied by a running chase by the dominant individual, but rarely ends in flight of either. A note "buzt" or "buzt-buzt-buzt" is sometimes uttered by the dominant individual, and so is assumed to be an aggression note. Infrequently, a "replacement flight" is seen, where one individual flies at another, replacing the latter at the spot from which he fled. Fear response seems to be relatively simple and unritualized, and consists of sleeking the body feathers as in flight-intention, escaping from the opponent by running or flying, and erecting the feathers on the crest. I describe the Ipswich's fear note as "chik," given singly or in groups of two to five; that of the Savannah was indistinguishable from it. In the situation described above, interspecific aggression was free, and the Ipswich won its bouts with one of the Savannahs by posturing, but had little contact with the other.

No sexual displays were observed in the Ipswich. However, the brief songs of three individuals heard on two separate days were noted. Song posts of 4-5 inch high tufts of matted grass were utilized, one individual singing 17 consecutive songs from the same place. The songs heard resembled closely one of the common songs of the Savannah, and may be described as "zi-zi, zetetetetet-etetetet, zit-er-it," the first notes barely being audible, the trill rising then falling, and the last phrase uttered very quickly.

Discussion. There are virtually no other behavior studies on the Ipswich, although a few ethological papers provide comparison on behavior patterns of other emberizine species. The feeding behavior does not seem significantly different from that of the other North American emberizines which I have observed, with the exception of the shake-peck and the protective coloration behavior discussed above. Fight-intention movements for a number of passerines have been described by Andrew (1956a), and the Ipswich supports his generalization that emberizines have large vertical tail flicks with little lateral displacement. However, the Ipswich does not seem to have a great spread of tail feathers, as is reported to be the general emberizine pattern (see also Mayr, Andrew, and Hinde, 1956:265,

Table I.) The feather comfort movement observed agree with those described for European emberizines (Andrew, 1956b), and the head-scratching supports Simmons (1957) and Andrew (1956b) who indicate that the indirect (passerine) method is probably used by all emberizines.

Social behavior affords some comparisons too. The calls of the European emberizines have been studied by Andrew (1957), and although homologies between species would have to be substantiated by audiospectrograph recordings, the Ipswich "tzeet" seems to be close to some of the social "seep" notes of *Emberiza* spp. The threat posture utilizes the same "head-forward" basis as the European emberizines (Andrew, 1956-7). Although gaping is also part of the *Emberiza* display, wing-raising and tail-raising are not. Andrew (1956-7), quoting Sabine, mentions that *Spizella arborea* does use its tail, and I have observed that species and *Junco hyemalis* raising the tail in threat, although other species (e.g. *Passerella iliaca)* do not. *Emberiza* spp. (Andrew, 1956-7), *Junco hyemalis* and *Passerella iliaca* do not use wings in threat, whereas *Spizella arborea* appears to use them (pers. obs.). It does not seem clear at this time whether or not threat display in emberizines is species-specific, but these observations do suggest that it is not the same in all species. Fear response seems to be very similar to *Emberiza* spp. (Andrew, 1956c), and fear-provoked crest raising has been observed by the author in a number of North American emberizines (e.g., *Junco hyemalis, Passerella iliaca, Spizella arborea).*

Specific Status. The question of taxonomic status of the Ipswich does not seem to have been studied seriously since the paper of Peters and Griscom (1938) twenty years ago. On the basis of morphological variation, they considered the Ipswich as not specifically distinct from the Savannah. This was before general acceptance of the modern concept of species as "groups of actually (or potentially) interbreeding natural populations which are reproductively isolated from other such groups" (Mayr, Linsley, and Usinger, 1953:25), and the abolition of the Ipswich met with resistance from taxonomists (e.g., Grinnell, 1939). The A.O.U. Checklist still retains the Ipswich as a species (p. 586), although Eisenmann (in litt.) tells me that even the most conservative ornithologists now believe it to be an insular representative of the Savannah Sparrow. Most of the behavior pattern discussed in this note are usually not significantly different from species to species. Perhaps only the threat display and the song might be expected to be unlike in two species. That these are nearly identical in the Ipswich and Savannah is not proof of conspecificity, of course. These patterns are to be considered merely as taxonomic characters, such as plumage and size, which are often helpful in distinguishing between populations.

The real question, of course, is: "Do reproductive isolating mechanisms between the two forms actually exist?", and no attempt to answer this is made here. It would seem that with the great morphological and behavioral similarities between the Ipswich and the Savannah, the most logical solution might be to follow the trend of modern taxonomy in considering the two forms conspecific until some evidence of an isolating mechanism has been found.

I am grateful to Drs. Andrew J. Meyerriecks, Ernst Mayr, and E. O. Wilson for critical comments on this note.

LITERATURE CITED

American Ornithologists Union. 1957. Checklist of North American Birds, 5th Edition.

ANDREW, R. J. 1956a. Intention movements of flight in certain passerines, and their use in systematics. *Behaviour* **10**: 179-204.

——1956b. Normal and irrelevant toilet behavior in *Emberiza* spp. *Brit. Jour. Anim. Behav.* **4**: 85-91.

——1956c. Fear responses in *Emberiza* spp. *Brit. Jour. Anim. Behav.* **4**: 125-132.

——1956-7. The aggressive and courtship behavior of certain emberizines. *Behaviour* **10**: 255-308.

——1957. A comparative study of the calls of *Emberiza* spp. (buntings). *Ibis* **99**: 27-42.

GRINNELL, J. 1939. Proposed shifts of names in *Passerculus*—a protest. *Condor* **41**: 112-119.

MAYR, E., R. J. ANDREW, and R. A. HINDE. 1956. Die systematische Stellung der Gattung *Fringilla*. *J. Orn.* **97**: 258-273.

PETERS, J. L. and L. GRISCOM. 1938. Geographical variation in the Savannah Sparrow. *Bull. Mus. Comp. Zool.* **80**: 445-478.
SIMMONS, K. E. L. 1957. The taxonomic significance of the head-scratching methods of birds. *Ibis* **99**: 178-181.
Jack P. Hailman, 4401 Gladwyne Drive, Bethesda, Maryland.

Cardinal Banded in Connecticut, Retrapped in Pennsylvania.—On May 2, 1958, I trapped and released at 926 W. Beaver Ave., State College, Pennsylvania, an adult male Cardinal *(Richmondena cardinalis)*, 55-129171, which had been banded on December 13, 1957, by G. Hapgood Parks at 99 Warrenton Ave., Hartford, Conn. Although this bird was not retrapped the evidence indicates that it remained in Hartford until March 14, 1958. Mr. Parks wrote that a banded male Cardinal, which retained the same behavior pattern throughout the period, remained at their feeding trays from the date of banding until March 14. Also, this is the only male Cardinal which they have ever seen at their station. The bird has not repeated in State College, but since there are other Cardinals present, it still could be in the area.—Dorothy L. Bordner, 926 W. Beaver Ave., State College, Penna.

Ed. note: this record is of outstanding interest, for several reasons:

(1) the species is generally considered sedentary, with few recoveries of banded birds at any great distance from the point of banding. State College is about 270 air miles from Hartford, about WSW, so that this is one of the longest trips on record for the species;

(2) the species has been extending its range vigorously. For example, in Connecticut, only two records were known down to 1913, and it did not breed until 1944. By the 1955 Christmas census, 105 individuals were recorded in the Westport area, and birds were reported in 8 towns in the Hartford area. It is believed that the speed of its increase comes at least in part from continued movement of birds into the newly-colonized areas, and the State College recovery suggests that some individuals may retreat southward under the impact of severe weather rather than dying from cold or lack of food. March, 1958 was marked in New England by five severe northeasterly snowstorms, and the apparent effect on the pioneering Cardinals can be measured by the number of places in eastern Massachusetts reporting one or more birds. As reported to the *Records of New England Birds*, by 10-day periods, January, 1958 had a maximum of 23, February 20, the first third of March 10, the middle third 7, and the last third only 2 (2 individuals).

(3) the movement of this Cardinal is curiously reminiscent of the Evening Grosbeaks which were banded in numbers in Connecticut in December, 1955 and January, 1956, at various stations including Mr. Parks' and my own, several of which were retaken at State College, Penna., in early 1958, and others of which were reported from central New York State more-or-less north of State College.—E. Alexander Bergstrom.

The Killing of an Adult Bird by a Blue Jay.—There seems to be some question as to whether or not a Blue Jay *(Cyanocitta cristata)* will kill an adult bird. Bent (Life Histories of North American Jays, Crows, and Titmice, pp. 40-44) quotes Professor F. E. L. Beal as stating: "The most striking point in the study of the food of the Blue Jay is the discrepancy between the testimony of field observers concerning the bird's nest-robbing proclivities and the results of stomach examinations . . .", and Mr. Manly Hardy as stating: "It is a great robber of birds' nests, taking both eggs and young. I also feel quite sure that in some cases it kills adult birds . . .".

On May 20, 1958 I saw a Blue Jay holding a brown Purple Finch with his feet on a branch of a lilac bush just outside my window. The Purple Finch was dangling from the branch and the Blue Jay was hitting it repeatedly on the head with his beak. I rapped sharply on the window and after a few seconds the Blue Jay dropped the finch and flew to a nearby tree. In a few minutes the jay returned to the finch which was lying on the ground beneath the lilac bush. I rapped again on the window and the jay again flew to the tree. I hurried out and picked up the finch which was dead. Its skull had been pierced a number of times and was covered with blood. The finch was one we had banded just two days earlier.—Mrs. James R. Downs, Glebe Farm, South Londonderry, Vermont.