

THE ORIOLE

A Quarterly Journal of Georgia Ornithology : Official Organ of the
Georgia Ornithological Society



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TECHNICS IN LIFE HISTORY STUDY¹

By EUGENE P. ODUM

Broadly speaking there are two phases of bird study to which the amateur student can make significant contributions: (1) more information is needed on the distribution and migration of various species and subspecies over the state, and (2) more information is needed on the life histories of our common species. With the organization of an increasing number of active bird groups in different parts of the state, definite progress is being made in distributional study. It is hoped that the following brief remarks will stimulate interest in the intensive study of common species.

Life history study should appeal particularly to the amateur student and bird lover since it largely involves the study of the living bird in nature rather than the dead bird in the laboratory or museum. Likewise, one does not need to find rare species or visit far places to make significant contributions. Some of the best life history studies have been made by amateur students in their backyards. The common species are actually more important to us and to the world in which we live than the rare species. The occasional sights of unusual species or the short visits to strange localities are the "spice" which makes bird study so fascinating, but the everyday birds are the real "meat and potatoes" in the ornithologist's diet. Not only do the common species offer abundant material for study but knowledge of the life history and requirements of the different species is necessary for intelligent management (ie.: conservation or control for man's benefit or pleasure); this is true of any wildlife resource whether it be fish, deer, or wrens.

Despite these incentives for study, the commonest birds often have been the most neglected. One reason for this is that the bird student tends to assume that there is nothing new to be learned concerning the Cardinal or Catbird in his yard. This is far from being the case. True, much has been written on the familiar birds, but when the voluminous material is examined critically a good deal of it turns out to be repetition. The actual recorded information boils down to comparatively little and not all of this is accurate. In addition, advances in our knowledge of bird behavior and bird physiology continually provide new opportunities for field observation and experimentation. It seems safe to say that few species of Georgia birds have been adequately studied. For example, the following are but a few southern species which offer attractive opportunities: Brown

¹Based on a paper given at the spring meeting of the G.O.S., April 19, 1941.

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Thrasher (our state bird), Summer Tanager, Cardinal, Blue Grosbeak, Blue-gray Gnatcatcher, Tufted Titmouse, Carolina Wren, Brown-headed Nuthatch, Pine Warbler. The latter two are especially worthy of study since they are important birds of our pine forests, one of the most valuable resources of the state.

Study of nesting habits is an important part of, but does not constitute the complete life history. The bird's activities before and after nesting are important and relatively little known. However, this does not mean that a species study needs to be complete to be of value; even very limited observations if carefully made may be important especially when supplemented by later observations or the work of others.

Perhaps the best way to begin a life history study is to select a definite area, large enough to contain a number of individuals of the species but small enough to be adequately covered by the observer. This might be a backyard, a field, a tract of woods, or section of bottom land along a stream depending on convenience and the species to be studied. Daily and seasonal movements, nesting, population, etc. can then be followed intensively. From this limited region observations can be extended to other points as time or special opportunity permits. An important advantage of this "quadrat" method is that changes from season to season and year to year can be more accurately measured.

GENERAL METHODS

Observations.—Ability to make accurate observations is of first importance. A good prism binocular field glass of 6 or 8 power is generally indispensable for close observation. If obtainable, a telescope of high power glass mounted on a tripod often proves valuable for observation in the open, at a great distance, or at localized spots (as at a nest). In observing birds one should avoid "humanizing" them. Birds have many traits in common with people but after all they are physically, mentally, and physiologically rather different from ourselves (which makes them all the more interesting). It is quite legitimate to humanize bird observations in popular writing but in making the basic observation or in scientific writing one should try to look at the situation from the bird's point of view.

Notes and records.—Taking notes and keeping records is of equal importance to accurate observing. The essence of the scientific method is to make careful records of accurate observations. This is where the layman most frequently slips up since he frequently makes hasty observations, fails to make a record of them, and lets his imagination fill in the rest. Remember, that his memory can not be trusted when it comes to details. Consequently, notes should be taken in the field during or shortly after the observation and not several days later. The writer uses small notebooks with spiral bindings (which can be obtained at any dime store) of a size that fit conveniently in the pocket. The pages can be torn out and filed away in small file boxes (also obtainable at the dime store) or the notes can be copied into a more permanent notebook later. The

date and time of day should be recorded for each observation. No matter how trivial the observation seems at the time it should be recorded in writing because it may fit in with some later observation and help clarify otherwise puzzling behavior.

Colored bands.—Much can be learned by simple observation, but if birds can be marked many things may be determined that would otherwise be impossible. Banding is probably the most useful single tool in life history study. Colored bands are often useful and have a great advantage over numbered bands since the bird needs to be trapped only once and may be subsequently identified on sight wherever it happens to be. Colored celluloid bands are now supplied by the Fish and Wildlife Service along with regular bands for investigators with banding permits. Colored bands can also be made by wrapping thin strips of celluloid around a nail and plunging into boiling water. After this treatment the celluloid remains permanently coiled and bands of desired size can be cut off (see Butts, 1931).

Feather impinging.—Attachment of conspicuous feathers to birds is not as permanent as color banding but is sometimes more useful, especially in species where colored bands do not show up in the field. A good method of feather marking is described by Wright (1939) in which the attached feather is cemented to a feather shaft on the bird's body by means of a double pointed needle dipped in iodine which causes the needle to rust and hold fast. Also, feathers may be attached with Duco cement (Baumgartner, 1938). Since feathers are dead structures this method, like banding, produces no injury or pain to the bird.

Trapping.—Marking generally necessitates trapping. Each species presents a special problem to tax the ingenuity of the investigator. Various types of traps are well described in the "Manual for Bird Banders" by Lincoln and Baldwin (1929) and in "Bird Banding Notes" issued periodically by the Fish and Wild Life Service. Birds can often be caught successfully at the nest, especially species which nest in boxes or cavities, although discretion is needed to prevent desertion; if birds are caught near the end of the incubation period or while feeding young rather than earlier in the cycle they are much less likely to desert. The writer has banded many House Wrens and Chickadees at the nest with virtually no desertions resulting. Trapping at roosting places with lights and nets often has valuable possibilities. Much of interest may be learned from marking nestlings; first hatched nestlings are best marked by placing a small bit of thread or string around the leg; later when the leg is large enough, colored bands can be used.

Maps.—Outline base maps are a valuable aid in carrying on a study in a restricted area. The writer uses such maps to chart the actual occurrence or movements of individuals. Maps are essential for habitat, population, and territory studies. The map does not need to be professionally accurate; a rough sketch showing the principal land marks (roads, streams, fences, etc.) and the important habitat types (shrubby, fields, cultivated lands, pine woods, hardwoods, etc.) will usually serve very

well. Such outline maps can be mimeographed at a small cost and a different copy used for each observation.

Blinds.—Where observation or photographing is carried on at a particular point (as at a nest) a blind is often necessary. The umbrella blind described by Chapman (1932) is generally useful and easy to make. Another useful blind can be made by constructing four light H-shaped frames and covering them with burlap. These frames can be set up at the desired place and tied together to form a four-sided blind; if necessary a 5th frame can be used as a roof. In summer, provisions for ventilation at top and bottom should be allowed for comfort of the ornithologist within.

Photography.—A photographic record of the bird's activities is very desirable and a fascinating, although expensive, phase of life history study. Color and motion picture photography are especially attractive. Photography, however, should not be considered the principal aim of life history study but rather one of the tools of research.

LIFE HISTORY TOPICS

The following headings may give some idea of the scope of life history study and emphasize how much still needs to be learned. No attempt will be made here to discuss these broad topics, and only a few of the interesting problems are indicated in outline form.

Pair-formation.—Circumstances surrounding formation of the pair; description and role of courtship displays (if any); permanence of mating; polygamy.

Territory (technically an area defended by the male, pair, or colony against others of same species).—Size and establishment of territory (if any); relation to pair-formation and nesting; length of time maintained; method of defense.

Nest building.—Selection of site; method of building; role of sexes; materials; dates; time of day building carried on; time required.

Egg laying.—Time of day eggs laid; how soon laid after completion of nest and after mating; number, size, and color variations of eggs; effect of season, weather, latitude on number of eggs (number supposed to be smaller in South or during hot weather); behavior of adults during laying period.

Incubation.—When started; role of sexes; length of incubation period; behavior of adults; length of "on" and "off" periods (technically, "attentive" and "inattentive" periods).

Hatching.—Time required; sequence of hatching (eggs should be numbered with India ink as they are laid to determine this); disposition of shells; condition of young when hatched; percentage of hatch.

Development of young.—Development of feathers and feather tracts; relative growth of body parts; increase in weight (a small portable scales, a pair of dividers, and a millimeter rule is needed to gather these data); length of nest life; behavior of young; method and frequency of feeding; role of sexes in feeding, elimination of excreta.

Dispersal of young.—Time cared for after leaving nest; length of time young remain in nesting locality; percentage return following season (usually small); behavior of young.

Number of broods.—There is very little accurate data on number of broods in the South. Care should be taken to distinguish between second broods and second

nesting attempts; a second nesting is not necessarily a second brood since many single brooded species will renest if the first nest is destroyed.

Nesting success.—Best figured in one or both of the following ways: (1) percentage of nests successful (2) percentage of eggs laid which are fledged.

Parasites.—Nestlings are often parasitized by fly larvae (*Protocalliphora*) which pupate in the nest material after the young leave (If nest material is placed in a moist jar the adult flies may be captured when they emerge). Adult birds often carry various external parasites. If parasites are preserved in alcohol (rubbing alcohol will do) or formalin the writer will be glad to have them identified.

Molting.—Dates; time required; sequence of feather loss; rate of feather growth; relation to weather and season; behavior of birds during molting. (Study of molting is a fertile field for bird banders).

Migration and seasonal movements.—Dates of arrival and departure of breeding individuals, male and female (most of our spring migration dates refer to males; in many cases females are supposed to arrive later but specific information is needed), transient, winter resident or immature individuals; local seasonal movements (many of so-called permanent residents are much more migratory than formerly supposed; even individuals which remain in a given locality throughout the year often have a seasonal change in habitat.); effect of weather; homing.

Voice.—Song (if any); variation in form, time of year ("song period") and day heard, relation to courtship, territory and nesting; call notes,—number of different notes which can be distinguished, function of notes. (Birds, particularly passerines, often have a larger vocabulary than the bird books credit them. Many notes seem to have definite functions or meanings; that is, they are given under definite circumstances and produce definite responses on part of their fellows. Thus, many species have "recognition notes," "alarm notes," "warning notes," "scolding notes," "mating notes," etc. in addition to songs.)

Roosting habits.—Place of roosting; behavior of roosting bird; seasonal variation in roosting; time of roosting in relation to sun setting and light intensity.

Flocking and social behavior.—Time of year species flocks or associates with other species (if at all); size and constancy, age and sex composition, behavior and movements of flocks. (In recent years there has been much interest in the social life of birds; definite "peck-orders" seem to develop in the flocks of some species but the significance of this phenomena is not clear. Further study of wild flocks is needed).

Habitat selection.—Type of habitat (some species have very definite habitat choices, others seem to be more tolerant); relation to vegetation (few species seem to be restricted to a particular species of plant, but many seem to be restricted by the type or by the total quantity of the vegetation); relation to physiography; seasonal variation in habitat; variations in different localities; special nesting requirements.

Population.—Density of population (usually expressed in individuals or pairs per 100 acres or one individual to so many acres); seasonal variation; yearly variation (birds naturally vary in numbers from year to year, some few species have been shown to have regular cycles of abundance; more data are needed especially in southern regions).

Food habits.—Examination of stomachs is the usual method employed in food study, but much can be learned from field observation without killing any birds, particularly since so much data is already available from stomach analysis. The kinds of fruit, seeds and larger insects can often be determined by observations, as well as the place, methods, and rate of feeding. Pellets and droppings give clues to food habits but their examination requires special knowledge of the food organisms.

Predators.—Species that prey on adults, young, or eggs; defence against predators; mortality rate (Remember that birds should have some natural checks to prevent overpopulation and that predators are but one of these checks; climate, territorial habit, food or cover may be more important limiting factors than predation. The problem is to determine when predation is excessive.)

Other environmental relations.—Behavior and mortality during storms or extreme weather conditions; water requirements (how frequently species drinks, bathes, or

takes dust baths, if at all); weight variations; competition with other species for food or nesting sites, etc. Since no bird does or can live alone ecological aspects such as the last five topics should be considered an important part of a life history study.

The above outline is a general one not applying to a particular species. Any one of the topics might be made a study in itself. The references cited below should be consulted for additional suggestions and information. Whatever the approach, for most of us bird study proceeds piecemeal as time and opportunity permits.

In conclusion, I would be glad to correspond with interested students on life history problems. Also, I am setting up a special file here at the University of Georgia for life history information in order to determine what is known and what needs to be learned. Accordingly, I am hoping that members of the G.O.S. will send in interesting observations and data. Even very limited records such as a nesting date, the length of an incubation period, or a roosting observation would be welcome; it is only necessary that the observation be accurately recorded. In this way it is hoped that a pool of useful information of Georgia birds can be accumulated.

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July, 1941

THE LEAST FLYCATCHER BREEDING IN NORTHEAST GEORGIA

By GLENN W. BELL

The fourth edition of the American Ornithologists' Union Check-list gives the Least Flycatcher (*Empidonax minimus*) a range as far south as North Carolina. So far as is known there have never been any reports of the species having bred in Georgia, and there are only a very few records at all for the entire state.



Figure 1. Nest of the Least Flycatcher, Rabun County, Ga., June 20, 1941.
(Photograph by Glenn W. Bell.)

During the summer of 1941 I instructed in nature study at Camp Cherokee for Boys, located in Rabun County, Georgia, about 20 or 25 miles from the North Carolina line, at an approximate elevation of 1875 feet above sea level. Here it was my good fortune to find and photograph nests of the Least Flycatcher and find the bird a not uncommon summer resident, as it was also heard near Lake Rabun and near Clayton, both localities also in Rabun County.

There were two nests found, the first of which was photographed. This first nest was 12 feet from the ground in a small maple tree located near an open place ten feet from a building frequented by many people. At the date of finding, June 20, 1941, it contained 3 well-incubated eggs and one young bird. Several days later, however, it was

abandoned probably because of the extremely hard rains and my photography and bother.

A second nest was built in an even more frequented place than the first. It was built of small bits of paper and some bark and lichens. It contained so much paper that it was almost white. The young were not bothered and left the nest on July 28.

Easy opportunity for comparison with the very similar Acadian Flycatcher (*Empidonax virescens*) was afforded. The call notes were entirely different. That of the Least Flycatcher was a clear "che-bec" with the accent on the last syllable, while that of the Acadian had the accent on the



Figure 2. Least Flycatcher brooding young, June 22, 1941.
(Photograph by Glenn W. Bell.)

first syllable of its well known call. The fuss notes of the Least Flycatcher were characteristic also. A nest of the Acadian Flycatcher was located only 70 feet from the first nest of the Least. Notes and nest and eggs were compared. Two eggs of *minimus* had some slight brown specks on the larger end in the first nest. According to Chapman this occurs sometimes. All the other eggs were pure white.

Although no specimen was taken I am sure of the identity of the species. Whether these nests are the results of further range extension to the south for this species, or whether they have simply been overlooked in the past, I am unable to say.

727 Cherokee Avenue
Atlanta, Georgia
August, 1941

GENERAL NOTES

A LATE SPECIMEN OF BACHMAN'S WARBLER FROM GEORGIA.—On the night of September 23-24, 1924, there was a bad storm with rain in the Savannah region, and birds were heard flying all night in the darkness. Sometime during the night a young male Bachman's Warbler (*Vermivora bachmani*) struck Tybee Light, along with 79 other birds, including 45 Oven-birds (*Seiurus aurocapillus*), 10 Northern Water-Thrushes (*Seiurus noveboracensis*), and 11 Bobolinks (*Dolichonyx oryzivorus*).

The specimen was skinned by Mr. Walter Hoxie, and it remained in his possession for some time. Upon the suggestion of Mr. Gilbert Rossignol, the specimen was sent to the late Mr. A. T. Wayne of the Charleston Museum. Mr. Wayne seemed very much interested, and on April 4, 1930 he wrote me:

"The date of finding of the Bachman's Warbler—September 24—is the latest for the United States. The bird migrates in July and has been taken at Key West, Florida the middle of July. The only one I have ever seen in July was on the 16th, 1919, when I took a young male in a large swamp near my home and have the bird now. Bachman's Warbler is excessively rare in S. C. (near Charleston) and I never expect to see another specimen as the great swamp in which I found it breeding has been deforested by a lumbering company. The bird that struck the light on Tybee Island must have evidently come from S. E. Missouri or N. E. Arkansas."

Mr. Wayne was under the impression that Mr. Hoxie sold this specimen to the British Museum, however the whereabouts are not known definitely.—ANNA S. BASSETT, 1010 East Park Ave., Savannah, Georgia.

PROBABLE BREEDING OF THE EASTERN NIGHTHAWK IN CLARKE COUNTY—Late in the afternoon of July 14, 1941 a male Nighthawk was seen feeding over an open slashing approximately eight miles west of Athens. Although in previous years this species had never been found as a breeding bird in Clarke County both the actions of this bird and the character of the country in which it was encountered left little doubt but that there was a nest close by. On the basis of geographic probability the Florida Nighthawk should be the breeding bird here, but on collecting this bird its measurements indicated clearly that it represented the northern race. According to the 1931 Check List *Chordeiles minor minor* breeds south to northern Georgia, so this would indicate a slight extension in the present recognized breeding range of this form. The wing of this male measured 198 mm., as compared to a wing length of 183 mm. in a male of *Chordeiles minor chapmani* taken at Gulfport June 30, 1941. Ridgway (The Birds of North and Middle America, Vol. 6, page 563) gives 198 mm. as the average length of wing for *Chordeiles minor minor*, the extremes being 184-208 mm.—THOS. D. BURLEIGH, Fish and Wildlife Service, Gulfport, Mississippi.

NEWS AND REVIEWS

The fall meeting of the Georgia Ornithological Society will be held at Pine Mountain State Park near Warm Springs on the week-end of October 4-5.

Special tribute goes to Miss Clemmie Willingham for her fine publicity and radio work preceeding the Atlanta meeting. This is and should be one of our biggest activities at a time when our membership is so small. Bird lovers will not join our ranks when they don't even know that we exist.

MINUTES OF THE LAST MEETING

The ninth semi-annual meeting of the Georgia Ornithological Society was held at Emory University and Atlanta on April 19-20, 1941 with the Atlanta Bird Club proving a very cordial host.

Saturday's morning session was devoted to techniques of bird study and included interesting demonstrations and talks on bird-banding and skin preservation. The afternoon session followed a tour through the ornithological collection of the Emory University Museum. Mrs. R. E. Hamilton presided in the absence of President DeLoach. Routine reports were given by the officers as to work done in the last semester. Mrs. Victor H. Bassett, historian-librarian, made a plea that the members send her clippings of all kinds.

It was moved and seconded that the Society procure membership cards, and upon the kind offer of Mr. T. E. Dennington to donate them, the motion was passed. In the way of new business the Society went on record as opposing all traffic in wild bird feathers. Mr. A. F. Ganier, Nashville, Tennessee, a representative of the Wilson Ornithological Club asked the G. O. S. to affiliate with the W. O. C. The matter was referred to a committee composed of Mrs. J. C. Oliver, as chairman, Mrs. Hugh Harris, and Mr. Ray Werner. Earle R. Greene, former president, gave a report of the progress made on his intended list of the birds of the Okefenokee Swamp. Without a decision as to the next place of meeting, the business session was adjourned.

At 6:30 P. M. Saturday evening some 100 members and guests assembled for the Society's semi-annual banquet. Dr. R. C. Rhodes, Biology Department, Emory University, acted as toastmaster for the evening. Dr. Eugene P. Odum of the University of Georgia presented an excellent illustrated lecture upon his experiments in the compilation of the life history of the Black-capped Chickadee with comments upon methods used in other species. H. S. Peters, flyway biologist of the Fish and Wildfire Service, showed the motion pictures of his recent trip to the Arctic breeding grounds. The banquet closed and members retired in preparation for the early breakfast and field trip.

Early Sunday morning members gathered at North Fulton Park for breakfast and field trip. Dinner was held at Fernbank Forest and a check-up revealed that 92 species of birds had been observed.

Everyone upon departing expressed hearty votes of thanks to the program committee and to the host club for the success of the meeting.—MRS. R. E. HAMILTON, Executive Secretary, Dalton, Georgia.

THE ORIOLE

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THE ORIOLE is mailed to all members of the Georgia Ornithological Society not in arrears for dues. Classes of membership are as follows:

Student _____ } \$1.00; Regular, \$2.00; Sustaining, \$5.00; Life, \$25.00
Library _____ }
Out-of-State _____ }

EDITORIAL

As we approach our tenth semi-annual meeting, let us pause to evaluate our accomplishments of the last five years and plan for the future. The Society started out with 111 charter members. Today we have only 136, not a sizable increase for such a period. Some may say that we are a large organization, but are we? Are our meetings inspirational; do we actually learn any more about birds at them, or do we come only to see old friends and chat with them? Is *The Oriole* a true organ of the Society, does it represent our group as we really are? These are questions which have weighed upon your editor's mind for a long time. At our next meeting we should discuss them; we should try harder to find means of improvement.

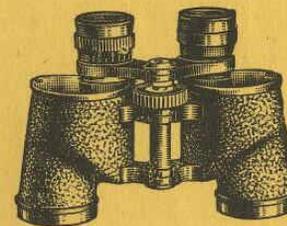
If everyone brought in one new member, perhaps we could lower our dues. Certainly this would be a decided improvement. Other states with populations less than that of Georgia, have ornithological clubs three and four times as large as the G. O. S. We should be able to do it.

Maybe the various clubs over the state could affiliate with the G. O. S. As the matter now stands, the Atlanta Bird Club has nearly as many members as the G. O. S. Why can't we work out some way in which every member of affiliated local clubs is also a member of the G. O. S.?

Perhaps, also, our society could become incorporated and start an endowment fund. In order to further the aims of our By-laws such a fund would be most helpful. We have heard several people offer large amounts if they could be equaled by others. With a fund large enough we could use only the interest for educational and conservational objectives, while the principal could continue to grow.

These are just some of the ideas to improve our organization. Perhaps you have many more. Be sure to think about them before the meeting and be prepared to state your opinions tersely.

Bausch & Lomb BINOCULARS



Glasses to meet the stringent requirements of bird observation should conform to the following high standards:

1. Ruggedness to withstand the hard knocks inevitable in the out-of-doors.
2. Freedom from color distortion.
3. High light transmission.
4. A sufficiently high magnification.
5. A wide field that is not distorted at the edges.

**BAUSCH & LOMB BINOCULARS MEET
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