

SELECTED MAINTENANCE BEHAVIOR IN A GREAT BLUE HERON COLONY ON IRONSIDES ISLAND

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This paper is concerned with a two month study of some selected maintenance behavior of the Great Blue Heron (*Ardea herodias*) and presents a description and interpretation of the activities observed. The maintenance behavior in this paper includes perched position, alert position, scratching, stretching, shaking, care of feet, throat pulsation, bill wiping and feeding of the young.

Field observations were made on Ironsides Island, Jefferson County, New York in the St. Lawrence River during the summer of 1968. The island is one of the Thousand Islands which exist near the junction of Lake Ontario, and the river. The 18 acre island is approximately four miles down the river from Alexandria Bay, New York and one mile up the river from Chippewa Bay, New York (Fig. 1).

The island is composed of red granite partially covered with sandy soil. This is similar to many of the islands which were formed during the last ice age. The island vegetation exhibits an elm-ash-oak edaphic climax. Near the center of the island is a small swamp which contains approximately one foot of water in early summer, but it becomes nearly dry by autumn. (Fig. 1). The Great Blue Herons nest in the highest branches of the American elms (*Ulmus americana*), red maples (*Acer rubrum*), red oaks (*Quercus rubra*) and white ash (*Fraxinus americana*) which surround the swamp.

The colony has 240 nests, which were counted in early spring before the leaves were out. Not all are active during the breeding season. Benning (1968) reports that 110 nests were active in 1967 and that the nests contained a total of 240 young.

The herons were observed and photographed from a small ground blind which was erected in the center of a small clearing that exists near the center of the island (Fig. 1). Photographs were taken with a Miranda single lens reflex 35mm camera coupled to a 13X Bushnell telephoto lens on a gunstock. Drawings were made from the photographs. Total observation time was approximately 52 hours.

BODY POSITIONS

Perched Position—The perch position is the common position that the Great Blue Heron assumes when perching. The heron grasps the branch with its feet. The phalanges curve around the branch. The tibiotarsus and the tarsometatarsus form an angle of approximately 160 degrees with each other. The body is at an angle of approximately 45 degrees with the

horizontal (Fig. 2). The head and neck are not fully retracted nor are they fully extended. The head assumes a position parallel to the ground. Meyerriecks (1960) noted that when the Great Blue Heron assumes the perched position the feathers were neither erected nor sleeked.

Alert Position—When alarmed the heron assumes the alert position (Fig. 3). In this position the legs are straight. The tibiotarsus and the tarsometatarsus form an angle of 180 degrees. The body is at an angle of approximately 90 degrees with the horizontal. The head and neck become extended. The greater the alert response the greater the extension of the neck and head. The feathers are sleeked concomitantly (Meyerriecks, 1960).

BODY MAINTENANCE

Scratching—The Great Blue Heron scratches by bringing the foot directly up to the head (Simmons, 1957) ("Vornherum" of Heinroth, 1930). The leg is brought straight up and the head is lowered slightly, however, the wing is not drooped. Contact is made with the pectinated claw on the middle toe. The head is rotated slowly as the toe works it over. The crest appears to become erected. This scratching process is similar to the scratching behavior of the Black-crowned Night Heron as reported by Maxwell and Putnam (1968). Meyerriecks (1960) describes this behavior similarly for some Great Blue Herons which he observed.

Stretching—Stretching can occur during a preening bout or as an isolated incident. The heron has two ways in which it may stretch. In one method its weight is shifted to one leg and the head and neck are placed in the position that they assume when in the perched position. The leg, without the weight upon it, is bent until the femur and the tibiotarsus are nearly parallel with each other and with the ilium. In this position the tarsometarsus is at right angles to the ilium. The wing is then extended out, followed by the leg. This same manner of stretching can be accomplished with the weight being placed on the opposite leg. This method of stretching is similar to the method used by the Black-crowned Night Heron as described by Maxwell and Putnam (1968). The second method of stretching is accomplished by bringing the two humeri together and parallel to each other above a horizontal body. The head and neck are fully extended (Fig. 4). Upon completion of the stretch the heron assumes the perched position. This manner of stretching is similar to that observed by Meyerriecks (1960) in the Green Heron.

Shaking—Shaking may occur during a preening bout or it may be an isolated activity. The heron leans forward slightly, presumably for balance, extends its wings and erects its feathers. The heron then moves its body vigorously back and forth around the anterior-posterior axis, causing the wings to move in and out. The session may last as long as 15 seconds.

Shaking appears to place the feathers in order. This description is similar to the shaking behavior of the Black-crowned Night Heron as described by Maxwell and Putnam (1968) and of the Green Heron as described by Meyerriecks (1960).

Care of Feet—The Great Blue Heron pecks at its feet infrequently. We noted this behavior only during a preening bout. It does not appear to serve any useful purpose. Maxwell and Putnam (1968) describe this behavior similarly in the Black-crowned Night Heron and Meyerriecks (1960) describes a similar behavior in the Green Heron.

Throat Pulsation—The gular region will move rapidly in and out for long periods of time. Throat pulsation occurs more frequently during hot weather. Lowe (1954) states that on hot sunny days the nestlings of the Grey Heron (*Ardea cinerea*) appear to suffer from a lack of shade and they may be seen sitting with open mandibles and pouches vibrating with rapid panting. Maxwell and Putnam (1968) noted this behavior in the Black-crowned Night Heron and they termed it "throat pulsation." They have suggested that it serves as a heat regulatory device.

Bill Wiping—Bill wiping occurs infrequently during or after a preening bout. The head is lowered and the bill is repeatedly wiped in a stropping action on each side of the branch upon which the heron is perched. Similar behavior was noted in Black-crowned Night Herons by Maxwell and Putnam (1968) and in the Green Heron by Meyerriecks (1960).

FEEDING BEHAVIOR

Feeding the Young—There are two generalized methods by which the young are fed. One method involves the very young and is partly a result of their lack of maturation. In this method the adult dominates the behavior with the young heron being quite passive. The adult takes a position near the edge of the nest. The young herons begin shaking and bobbing their heads with widely opened mouths. This behavior appears to stimulate the adult to begin retching. After a few minutes of retching the adult succeeds in regurgitating the food and places it with its bill in the young heron's open mouth. The young do not vigorously grasp the adult's bill during the transfer. Feeding behavior similar to this was noted in the Grey Heron (*Ardea cinerea*) by Lowe (1954). Cottrille and Cottrille (1958) noted that after feeding of the very young Great Blue Herons the adults arranged the young in the nest and then brooded them.

When the young herons become more mature a second type of feeding behavior ensues. In this type of feeding behavior active participation of

both adult and young is evident. This feeding method may vary in duration and sequence of events. However, it usually occurs in the following manner. In the pre-transfer behavior the adult enters the nest area. The nestlings make a series of thrusting and bobbing actions as the adult approaches with head lowered. The most aggressive of the young places its mandibles outside and to the base of the adult's mandibles. Then the adult and young sway until the young's mandibles slide off the adult's. Noble, Wurm, and Schmidt (1938) described a similar behavior in the Black-crowned Night Heron and labeled it "bill grasping." This behavior apparently stimulates the adult to begin retching, which may last from two to 10 minutes. If the young become too aggressive during any part of the feeding bout then the adult may assume the stiff-necked upright display which is a threat display (Meyerriecks, 1960). This serves to reduce the aggressiveness of the young heron. When the adult has completed regurgitation of the food, the actual transfer occurs.

The adult then permits one of the nestlings to place its mandibles outside the adult's mandibles from below and to the side (Fig. 5). The young's mandibles are at an angle of 65 degrees with the horizontal. This differs from the description of the process given by Cottrille and Cott-rille (1958). It also differs from the food transfer of the Black-crowned Night Heron as described by Maxwell and Putnam (1968). This juxtaposition of bills (Herrick, 1935) allows the food to be regurgitated without being lost. During this bill contact they shake their heads vigorously and flap their wings. The young heron grasps the food and withdrawal ensues with the young heron retaining and swallowing the food.

On July 7, 1968 we took a qualitative sample of food by using the method of systematic regurgitation (Kirkpatrick, 1940). This method involved startling the young by walking under the nest thus causing regurgitation. The analysis of 34 fish yielded 28 or 82% alewives (*Alosa pseudoharengus*), 5 or 15% rockbass (*Ambloplites repestris*) and one or 3% lake chub (*Semolitus plumbeus*). These results would seem to indicate that in years of high alewife populations the Great Blue Heron may serve to reduce alewife numbers.

SUMMARY

A preliminary field study of some selected maintenance behavior of the Great Blue Heron was conducted on Ironsides Island in the St. Lawrence River, New York, in the summer of 1968. Descriptions of behavior patterns associated with body maintenance and feeding of the young are given. A qualitative sample of the Great Blue Heron diet was taken.

ACKNOWLEDGMENTS

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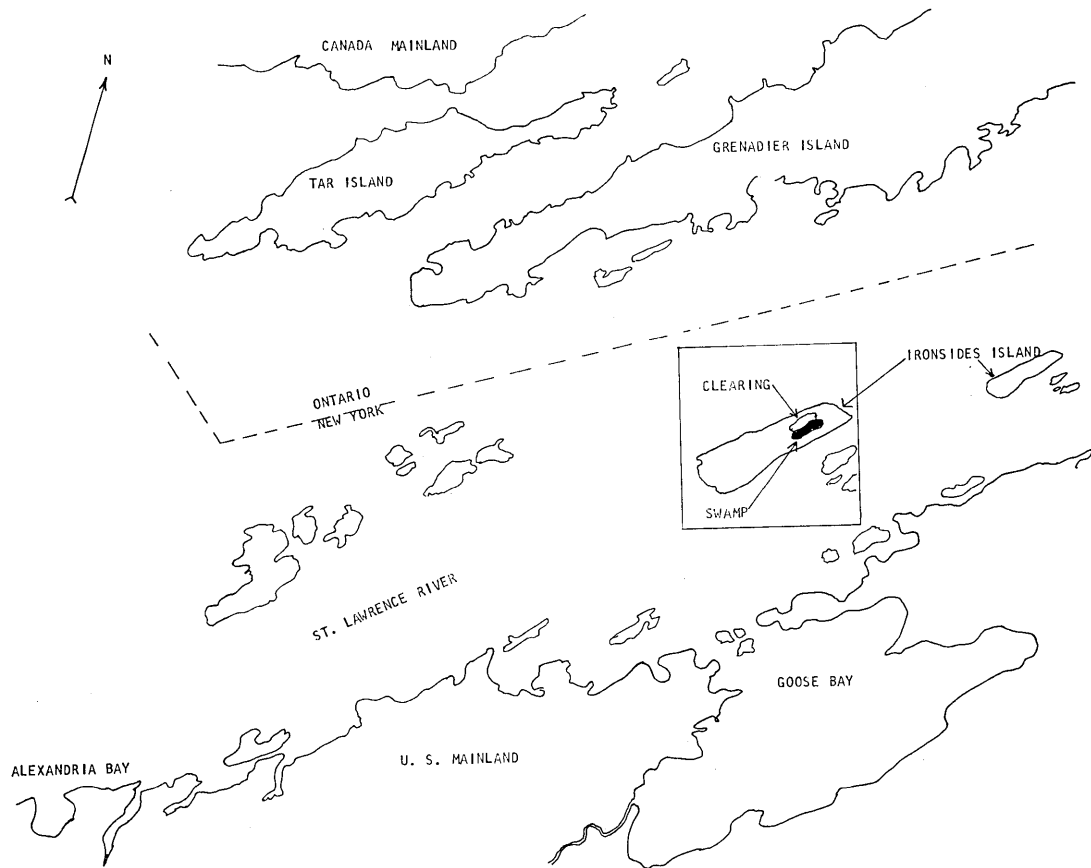


Fig. 1 Location of Ironsides Island on the U.S.-Canadian border.

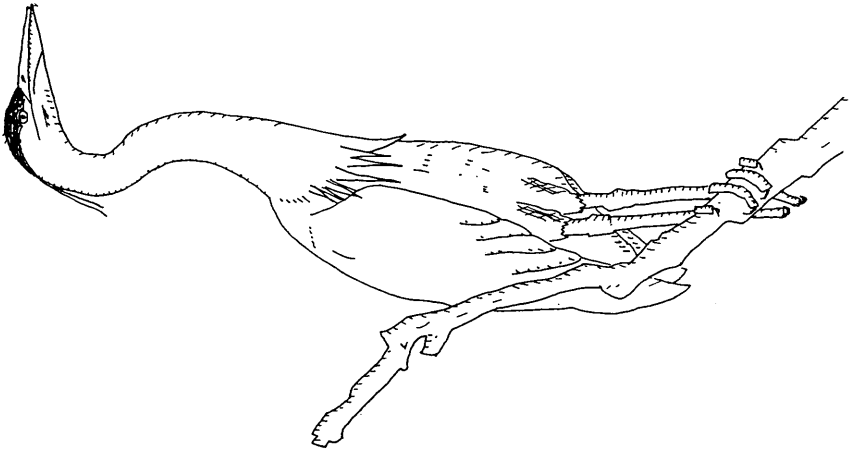


Fig. 3. Alert Position

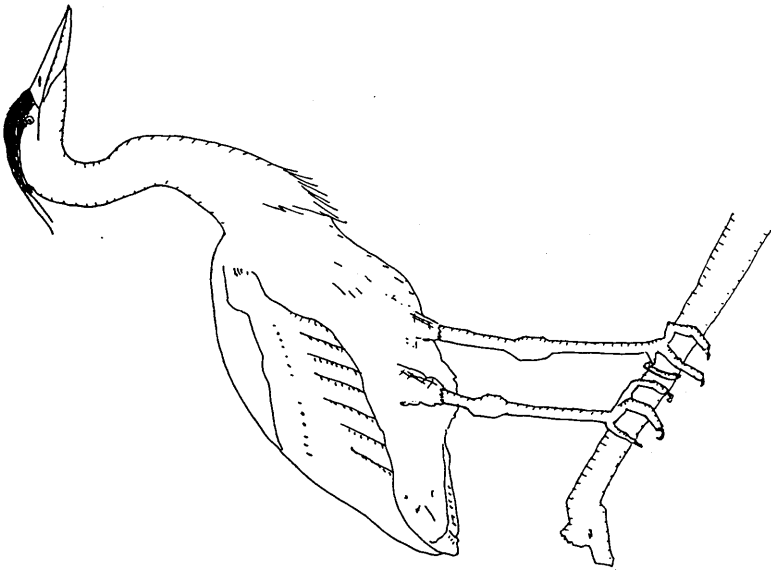


Fig. 2. Perched Position

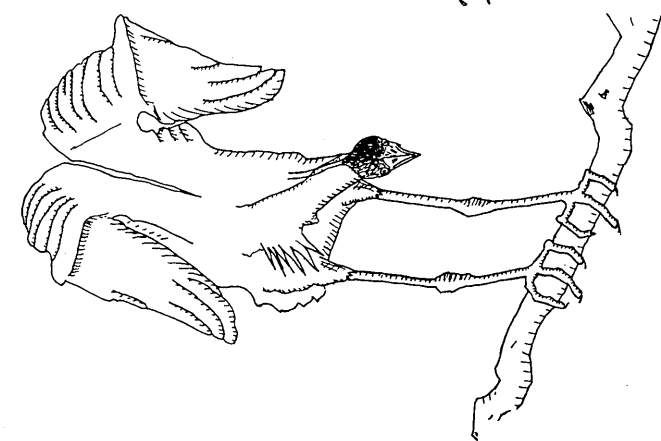


Fig. 4. Stretch Position



Fig. 5 Great Blue Heron Feeding a Nestling.