

GENERAL NOTES

Stretch and Snap displays in the Great Egret.—Although ritualized reproductive displays have been described in detail for many species of herons, Meyerriechs (Publ. Nuttall Ornithol. Club, No. 2, 1960) noted the apparent absence of Stretch and Snap displays in the Great Egret, *Casmerodius albus*. In a heronry on Phillips Island near Beaufort, North Carolina, I have seen both of these displays in this species. During March and April, 1971–1973, I observed more than 25 egrets performing Stretch and Snap displays. I made detailed qualitative records of frequency, duration and sequences of display components for 11 birds, the results of which are summarized here.

The Stretch display consisted of the following sequential events: (1) moderate to full erection of scapular plumes and lowering of the neck to a vertical position with the bill extended, followed by twig-grasping or tremble-shoving movements resembling nest-building activity; (2) raising and stretching the neck with bill pointing vertically; and (3) depressing the head toward the back as the heel joints were rapidly bent. Some variation both between and within individuals was noted in the performance of the display. For example, the vertical neck-lowering component at the beginning of the display was occasionally repeated several times, accompanied by rapid flexion of the heel joints. Less frequently, the sequence of movements of the display was abbreviated such that vertical neck-raising and head depression occurred in the absence of prior neck-lowering. The sequence of movements in the display could also be interrupted by preening of the outer primaries. Preening most frequently occurred following either neck-lowering or head depression. Fig. 1 shows the typical sequential components of the Stretch display.

The Snap display was less variable and consisted of the following sequential events: (1) full scapular plume erection and extension of the neck out and down, immediately followed by (2) erection of feathers of head and neck, and (3) flexion of the heel joints to lower the body to the perch or floor of the nest. Heel joint flexion was accompanied by a loud snapping together of the mandibles. Fig. 2 illustrates the typical components of the Snap display.

In such herons as *Ardea cinerea*, *A. herodias*, and *Butorides virescens*, the general features of the Stretch display are as follows:

1. The bird extends the neck vertically upward.
2. Then the neck is lowered until the occipital portion of the head almost touches the back.
3. The bird lowers its body to the floor of the nest.
4. Crest or crown feathers and scapular plumes are erected.

In those species, as in the Great Egret, the Snap display is slightly less complex than the Stretch:

1. The bird extends the head and neck fully forward and downward.
2. Crest and neck feathers are erected, the degree depending upon the species.
3. The mandibles are snapped together, making a sharp sound.

In the Great Egret the head and neck were lowered at the inception of both displays, but several important differences exist between the Stretch and Snap. First, the distinct click of the bill which accompanied the Snap display was not associated with the neck-lowering component of the Stretch display. Also, head and neck feathers were not erected during neck-lowering in Stretch display, but erection was always a component of a Snap performance. In addition, the neck was more fully extended in the Snap display.

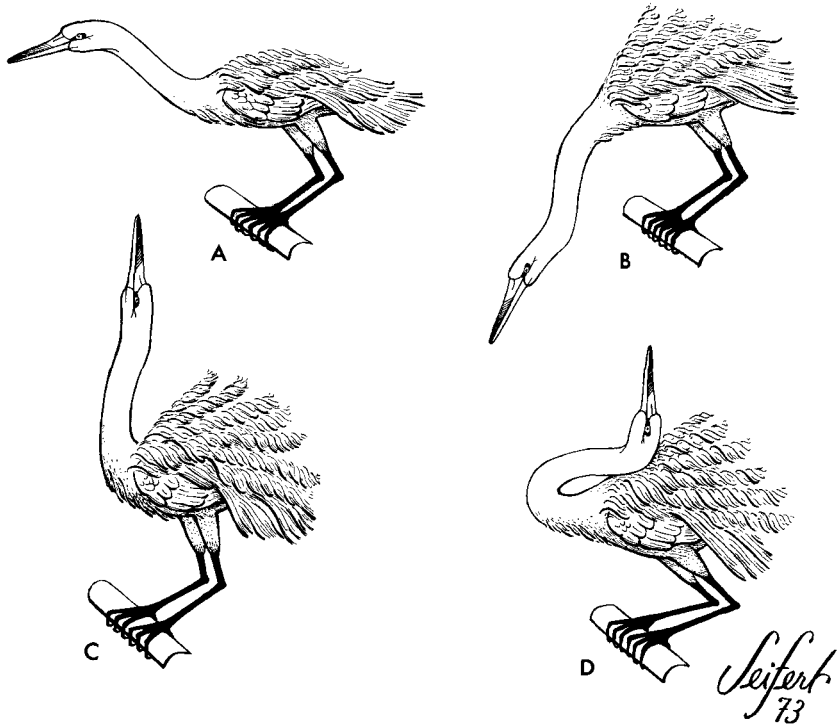


FIG. 1. Principal components of Great Egret Stretch display: From starting position (A), scapular plumes are erected as the bill is lowered (B) and then the head and neck are raised into a tightened "S" position (C and D) as the heel joints are bent.

Both displays occurred at the onset of the breeding season when displaying and nesting territories were being selected. All displaying birds had bright green lores and dark mandibles, characteristic of individuals of this species at the height of early breeding activity. Birds were not individually marked and the sexual monomorphism of this species precluded the positive identification of displaying individuals by sex.

The Stretch display definitely served to attract other birds of the species, and in two separate observations mounting of the displaying bird occurred. Thus, the display might be performed by both male and female Great Egrets. However, recent investigations of Cattle Egrets (*Bubulcus ibis*) suggest that females may mount in attempts to overcome the hostile tendencies of performing males (Lancaster, D. A., *Living Bird*, 9:167-194, 1970). The possibility exists, therefore, that the display may be performed exclusively by males. Obviously, both of these patterns reflect sexual drive. Meyerricks (op. cit.) suggested that Snap displays are also indicative of hostile motives. However, further speculation would seem premature and in need of more detailed information on the displays.

I thank Jane Seifert for her excellent line drawings of the displays. Dr. B. S. Martof and Dr. T. L. Quay made helpful comments on the manuscript. These observations were

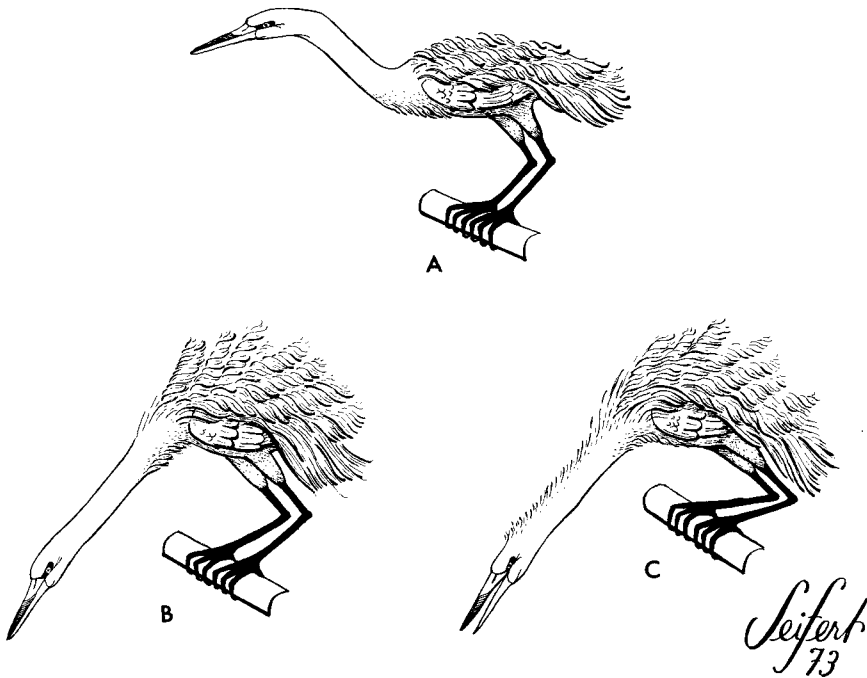


FIG. 2. Principal components of Great Egret Snap display. From starting position (A), scapular feathers are erected as the bill is lowered (B). The neck feathers are then erected, heel joints rapidly bent, and the mandibles snapped together (C).

made during the course of a study supported in part by grants from the Frank M. Chapman Fund of the American Museum of Natural History and the National Audubon Society.—DONALD A. McCORMON, JR., *Department of Zoology, North Carolina State University, Raleigh, North Carolina 27607. Accepted 24 December 1973.*

Probable predation by Swainson's Hawks on swimming spadefoot toads.—Swainson's Hawk (*Buteo swainsoni*) captures both invertebrate and vertebrate prey, mainly insects and smaller mammals (Brown and Amadon, *Eagles, Hawks and Falcons of the World*, vol. 2, McGraw-Hill, New York, 1968; Bent, *Life Histories of North American Birds of Prey*, Part 1, Dover Publications, New York, 1961; Craighead and Craighead, *Hawks, Owls and Wildlife*, Dover Publications, New York, 1969). At least occasional captures are also made of birds and herptiles (McAttee, *Food habits of common hawks*, U.S. Dept. Agric. Circ. 370, 1935). All of these items are known to be taken on the ground or in the air. Our field observations show that flying *B. swainsoni* probably also captures adult plains spadefoot toads (*Scaphiopus bombifrons*) from the surface of open water.

Spadefoot toads are sporadic breeders, their appearance being dependent upon occasional heavy rains (Bragg, *Gnomes of the Night, the Spadefoot Toads*, Univ. Penn. Press, Philadelphia, 1965). Except for such normally brief periods, these animals are