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## RANGE RESTRICTION OF THE LONG-BILLED CURLEW

WITH SIX ILLUSTRATIONS

By JOHN W. SUGDEN

Awakening with the dawn, the clear calls of the Long-billed Curlew (*Numenius americanus*) carry across the alkali flats and marshes of the inter-mountain region, and from this association the bird comes, during at least the months of April, May and June, to typify this area.

Characteristically a bird of the open prairie, the curlew or sickle-bill chooses in particular the flat open country about the sloughs bordering the Great Salt Lake, Utah, or similar localities about other brackish lakes or sloughs in the adjacent valleys, but not the mountain meadows about the snow-fed fresh water lakes. Its local range is limited by the sage-brush foothills of the mountains. Such places may be found over the broad country between Plain City and the lake, about the Black Sloughs which mark the mouth of the Jordan River, and on the higher grass and weed covered fields of the great Bear River Marshes.

Formerly this magnificent bird ranged over the entire width of the United States but, with the advance of settlement and cultivation of the prairies, its range has retreated westwardly so that now the numbers noticeable on the marshes and flats about the Great Salt Lake represent rather a concentration in a restricted range than an increase in the number of birds. They have decreased notably, but fortunately not to the tragic stage of its near relative, the Eskimo Curlew.

Even here, where the high alkaline content of the soil and poor drainage make agriculture impossible, the range is being further restricted and the nesting birds disturbed by the pasturing of stock. Cattle and sheep, especially the latter, ranging over the breeding ranges during the spring of the year, seriously molest the birds and drive them to other locations. A herd of sheep grazing over the flats will effectively cover every square foot of ground and trample the nests underfoot after having driven the birds off. Cattle do not cause the same amount of disturbance. The herds are not as large and are more scattered, with the individuals grazing separately instead of in mass formation. Apparently the cow will avoid the curlew nest or be frightened away by the flushing bird; but with a flock of sheep the followers crowd behind and trample everything. It is not unusual to find curlews nesting where cattle are grazing in small numbers.

The sheep, however, constitute the greatest menace, particularly during the bird's breeding season, as it is then that they roam the flats before being driven to their summer range at higher altitudes. The curlew cannot compete with the sheep, so must move to the more inaccessible corners, where vegetation is scarce or is not suitable for grazing.



Fig. 1. NEST AND EGGS OF THE LONG-BILLED CURLEW SITUATED IN A FIELD WHERE HORSES WERE PASTURED.

Photographs with this article taken by J. W. Sugden, all at the Bear River Marshes, Plain City or Black Sloughs, near the Great Salt Lake.



Fig. 2. THE "HERRING-BONE" PATTERN OF MARKINGS IS EFFECTIVE FOR CONCEALING COLORATION; ONLY THE EYE OF THE BIRD STANDS OUT PROMINENTLY.

The feeding birds are apt to be gregarious, especially in the vicinity of the nesting region, possibly due to the congregation of birds that are not busy on the nest. At the Bear River Marshes, a flock of about fifty was observed feeding in a thirty acre field. The birds remained together and flew from one part of the field to another in groups of ten or fifteen. No nests were found in this field; but in another, of more sparse vegetation and less desirable as a feeding area, several nests with eggs were located. The birds seldom or never run, but walk gracefully with a backward and forward motion, pausing as they reach from side to side to pick up a grasshopper, beetle or other insect with the long curved bill.

In the field, the bird can be easily and unmistakably identified by its large size (the largest of the Charadriodea), brownish or cinnamon color, long legs and long prominent down-curved bill. The Long-billed Curlew is larger and has a longer bill than the Hudsonian Curlew (*Phaeopus hudsonicus*), whose breeding range does not extend as far south. The Marbled Godwit (*Limosa fedoa*), an occasional visitor here, is similar in color but is smaller and has a straight bill. At a distance, the Long-billed Curlew presents a monochrome color, lighter on the underside. The characteristic cross markings of the feathers, giving the "herring bone" effect, are remarkably effective in concealing the bird, both while on the nest in the low patches of vegetation and while feeding in the higher grass. The sexes are similarly colored.

The Long-billed Curlew is shy and rather noisy when alone or feeding in flocks, but on its breeding grounds when defending the nesting site it becomes aggressive and boisterous. The characteristic note is a loud, clear, resonant *kier-lee-u-u* repeated several times at the rate of about thirty or forty a minute. The last syllable is prolonged and sometimes sounds more like *kier-le-e-e*. It lacks the shuffling quality of the willet call. As the birds fly overhead, uttering their cries, the long curved bill can be easily seen opening with each syllable as the head is turned from side to side. When a bird is flushed from the nest it utters a rapid, rolling, low-pitched sound while hurrying over the ground and a sudden burst of angry protest as it takes to wing.

A shallow saucer-shaped depression lined with a few sticks and grass usually serves as a nest, but sometimes, especially if located in a clump of grass, it may become a rather substantial affair. It may be located in a patch of grass or low growing vegetation or entirely exposed in the open alkali flat; but even in this position it may be extremely difficult to locate because of other similar irregular patches of dirt and vegetation. Even after carefully marking the location of a nest, it often is impossible directly to approach it on a subsequent visit.

Four or sometimes three eggs is the usual number, but occasionally five to eight may be found in the same nest, evidently the product of two females. The hollow of the nest is just large enough to hold the ovate or round ovate, olive-buff eggs. The ground color of the eggs may have a distinct greenish or brownish shade and the fine to medium sized brownish olive markings are usually evenly distributed. On one occasion, a well marked single egg was found in the branches of a sage-bush far from the nesting grounds. Evidently it had been dropped in flight, as the egg had not been incubated and the shell had been punctured by a sage-bush stem. The average dimensions of fifty eggs collected at either Plain City, Black Sloughs, or the Bear River Marshes are: length, 66 mm.; width, 47.4. They vary in length from 59.6 to 74.1<sup>1</sup> and in width from 42.2 to 50.2 mm.

The incubating bird spreads out over the nest, with the twenty centimeter bill extended, its tip resting on the ground, depending on the general concealing coloration for protection. The peculiar checkered markings of the feathers simulate closely



Fig. 3. TYPICAL EGGS OF LONG-BILLED CURLEW IN A WELL-CONSTRUCTED NEST.



Fig. 4. THE LONG-BILLED CURLEW SPREADS OUT OVER ITS NEST, WITH THE TIP OF ITS BILL RESTING ON THE GROUND.

the growth of salt weed or mineral weed scattered over the alkali flats. With this sense of security, the bird holds to the nest until certain that it has been observed or is in danger actually of being trampled upon. If a person is cautious, avoiding sudden motions, the site may be passed within a few feet without the bird flushing. So effectual is the concealing coloration that the entire bird, bill and all, blends with the background and the black bead-like eye alone stands out prominently; often this is the most effective means of relocating the nesting bird.

Once while I was examining a large field, a Short-eared Owl (*Asio flammeus*) left its nest about forty feet distant, but a surprise came when a curlew, which had not been noticed, burst off its nest not a pace away. The bird had boldly remained motionless and did not reveal its position until blundered upon by the observer who failed to see or even suspect the nearness of the bird. The more cautious and frightened owl had left on the first hint of being approached, although she had a nest containing six young of different ages and one egg that was near the hatching point. Western Willets (*Catoptrophorus semipalmatus inornatus*) often choose the same general nesting region, and the nests of curlews and willets may be found very closely placed, with occasionally one or the other kind of egg in the wrong nest.

If approached carefully, quietly and slowly, especially if near the end of the incubation time, the nesting curlew may allow itself to be gently stroked or even lifted a little from the nest. The satisfaction of such an experience, the stroking of a wild bird on its nest, compensates for the many weary steps required in locating the site and earns for the faithful bird the safety of its household and the admiration of the observer. Meanwhile, the mate has been anxiously and noisily endeavoring to protect the nest. It circles about with angry cries and frequently swoops toward the observer, suddenly banking upward with a shrill cry as it whirs past within inches of striking.

The birds often feign an injury and limp away from the nest with extended wings dragging at a ridiculous angle, in an attempt to induce the disturber to follow them away from their valuable nests. However, they do not practice this ruse to the same extent as do Black-necked Stilts (*Himantopus mexicanus*). A dozen of these latter birds may be dancing about at the same time, whether their nests be in danger or not. After trailing along, always away from the nest, if followed or if it is satisfied that the trick did not work, the curlew takes to wing with a burst of noise. Probably both sexes share in the incubation of the eggs, or at least the male assists, as is a common procedure in some others of the shore-bird group.

The young are reported as hatching in about thirty days and soon after are able to use their legs and run rapidly. Such is the advantage of relatively large eggs containing an abundance of food material, allowing considerable development prior to hatching. The young are adept in concealing themselves, relying upon their coloration to make themselves inconspicuous when lying motionless among the low vegetation. The fledglings will scurry over the ground on their long awkward looking legs and suddenly "freeze," quail-like, disappearing from sight. Even with the well developed concealing coloration, the mortality among the young must be high, as it is unusual to see more than two chicks being solicitously guarded by their parents. When in danger, the adults become considerably excited and anxiously coach their offspring to safety.

By the middle of April, the curlew are on the nesting grounds and nidification has begun. Fresh eggs are in the nests during the first week in May, and the following month the young are about. Depending upon weather conditions, the above dates may vary. In 1929, spring in the intermountain region was unusually delayed



Fig. 5. OCCASIONALLY A CURLEW'S EGG MAY BE DEPOSITED IN A WILLET'S NEST.



Fig. 6. IF CAUTIOUSLY APPROACHED, THE INCUBATING BIRD MAY ALLOW ITSELF TO BE GENTLY STROKED.

and at the beginning of the period the nesting was considerably retarded, but the difference became less noticeable as the season advanced.

Toward the middle of September, the juvenile birds are grown and are ready to respond to the migratory urge to seek the more equable climate farther south; and by the first of October only stragglers are left. Very few, if any, Long-billed Curlews pass the winter in the vicinity of the Great Salt Lake.

Certain evidence, although not indisputable, tends to show that additional eggs or a second set may be laid if the first is disturbed or destroyed. Occasionally nests containing fresh eggs may be found as late as June, after young of the first brood have appeared. A female curlew, that had been shot with a .22 caliber rifle by some boys roaming over the grounds, contained one large egg about to be laid and the nest was later found containing three deserted eggs. In addition the ovary contained twelve more ova in various stages of development. Potentially there were enough ova for three additional sets and the larger of these were of sufficient size to continue development if allowed to.

The breeding range of the Long-billed Curlew has been greatly reduced by its inability to compete with the advancement of civilization and now it occupies but a restricted area in the Great Basin. Further restriction seems inevitable with the attempts to drain the alkaline sloughs and with the more serious menace of ranging stock, especially sheep, over the grounds during the breeding season. The question then is: Can the Long-billed Curlew hold out against these factors or modify its habits so as to be able to rear enough young to offset these decimating factors and return at least the same number of birds to the breeding grounds each spring? It is doubtful.

*Salt Lake City, Utah, October 20, 1932.*