

SPREAD OF THE CATTLE EGRET IN THE WESTERN HEMISPHERE

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Prior to 1930 the Cattle Egret (*Bubulcus ibis*) was restricted largely to southern Portugal, Spain, and Africa. But during the 1930's, and possibly before, the species appeared in South America, and has since spread throughout much of the Western Hemisphere. This paper summarizes the range extension of the Cattle Egret from the Old World to the New, and the bird's success in populating the Western Hemisphere.

ARRIVAL AND SPREAD IN THE WESTERN HEMISPHERE

The Courantyne River forms the boundary between British Guiana and Surinam. In 1877, and again in 1882, Cattle Egrets were reported on the Dutch shore of the Courantyne River (Palmer, 1962). No specimens were collected on either of these occasions. Other sight records were made in Guiana in 1911 and 1912 (Wetmore, 1963).

During World War I, R. B. Cunninghame Graham surveyed the cattle industry in Colombia; and following the war he published a book concerning his South American experiences in which he described several "white ibises" which "sat on the cattle's backs" in the lower Rio Magdalena drainage of Colombia (Graham, 1921: 239). Wetmore (1963) feels certain the birds described by Graham were Cattle Egrets. This sighting occurred in 1916 or 1917.

Despite these early reports, it was not until 1937 that a specimen of the Cattle Egret was taken in South America. This specimen, the first taken in the Western Hemisphere, was collected by Emmet Blake near Buxton, East Coast, British Guiana on 27 May 1937 (Blake, 1939). Blake checked with government officials and was assured that the bird could not have entered the country as a cage bird; accordingly he listed it as an "accidental visitant."

Blake's collection was the first in a succession of collections and sightings showing a steady northward and westward spread by the Cattle Egret. In 1943, a specimen was collected in the State of Guarico, Venezuela (Phelps, 1944). This individual was with three other birds on the prairies of the Apure River. It is unlikely that all four birds had escaped from captivity, and the specimen showed no signs of having been a captive.

In March, 1946, a Cattle Egret was seen with several other egrets in Surinam (Haverschmidt, 1947). Because this was the third South American sighting in as many years, all at widely different places, "it seems unlikely that they were escaped captive birds" according to Haverschmidt. A specimen was collected from Surinam, the first for that small country, in December 1946 (Haverschmidt, 1950). The specimen was taken from one of three flocks that contained a total of 105 birds. More collections were made in 1947, and Haverschmidt (1950) found the bird to be common in

the area in 1947 and 1948. Basing his suspicions on the plumage and the enlarged testes of the specimens, Haverschmidt felt the species was breeding in Surinam, but he could find no nests.

By 1950, the Cattle Egret was apparently well established in Surinam and British Guiana (Haverschmidt, 1951) and was continuing to extend its range. A specimen was collected in Colombia during January 1951 on the Lower Rio San Juan (Haverschmidt, 1953). The species increased in number and spread throughout Colombia during the 1950's. Ten Cattle Egrets were seen in the Cauca Valley in western Colombia in 1954 (Dugand, 1956), and the species was found to be a well established, year-round resident in the country by 1957 (Lehmann, 1959). Two nesting colonies, one containing 300-350 nests and the other with about 500 nests, were found in Colombia in 1958 (Lehmann, 1959). According to Lehmann, the Cattle Egret had penetrated to the interior of the country by 1959 and "with the exception of the Narino its range covers almost all the country."

During the same period, the species had appeared in Peru. In October 1956, four Cattle Egrets were observed feeding with cattle on the Rio Itaya in northeastern Peru (Stott, 1957). The Rio Itaya is a tributary of the Amazon about 2,300 miles upstream from the Atlantic. Obviously then, the Cattle Egret was not just spreading around the coast of South America but was very definitely penetrating the interior of the continent. Later, Peruvian reports showed the bird in northern and southern jungle areas, on the central and southern Andean Plateau at altitudes up to 12,000 feet, and along the northern and central coasts of that country (Frazier, 1964). Recently, sightings have been reported from southern Peru and northern Chile (Post, 1970).

Thus, following its arrival the Cattle Egret apparently established a foothold on the northeast coast of South America. From this area the bird spread throughout the northern portion of that continent, and from this area, also, the species probably moved North across the Caribbean to North America.

Willard Dilley of Clewiston, Florida, reported Cattle Egrets in South Florida during the summer of 1941 or 1942 (Sprunt, 1955), but thinking the birds were escaped captives, he did not report this sighting. Other sightings took place at Belle Glade, Florida, between 1946 and 1949 (Sprunt, 1955). Because these sightings were unreported and specimens were not taken, no proof exists for the Cattle Egret's presence in North America prior to 1952, but in the spring of that year Richard Borden photographed some "Snowy Egrets" with cattle at Lake Okeechobee, Florida (Peterson, 1954). The birds he photographed were later correctly identified as Cattle Egrets.

Later that same spring a Cattle Egret was seen and correctly identified on a farm near Wayland, Massachusetts. After some difficulty the specimen was secured, and, on that day, 23 April 1952, a new species was officially added to the list of birds occurring in North America. Although there was no evidence that the bird had been kept in captivity, possible sources of escape were checked, but all replies were negative (Drury *et al.*, 1953).

A Cattle Egret landed aboard the trawler *Blue Foam* off the Grand Banks, Newfoundland in the fall of 1952 (Godfrey, 1954). This specimen, the second for North America, was actually obtained 300 miles at sea.

On 5 May 1953, S. A. Grimes and Glenn Chandler found the first Cattle Egret nest recorded for North America in a heronry on King's Bar near Okeechobee, Florida (Alexander Sprunt, Jr., in Grimes, 1953). Grimes returned the following month and obtained the first photographs of nesting Cattle Egrets in the New World.

Interest in this immigrant continued to grow; and during the breeding season of 1954, a new nesting area was discovered in Florida. In May, Rice (1956) found the first Cattle Egret nest in north Florida at Lake Alice on the University of Florida campus in Gainesville. The bird had been unknown in the Gainesville area until the previous fall when an individual was sighted on Payne's Prairie (Rice, 1956). Rice had estimated a pre-nesting population of seven Cattle Egrets at Lake Alice in 1954; at the end of the nesting season, he counted 12 birds. Two nests at Lake Alice were probably successful that first year according to Rice.

The Cattle Egret was well established in the United States before being reported from the West Indies. This could be due to a paucity of field observers in the West Indies, or it could well be that the species arrived in North America directly from South America, not by island hopping.

The Cattle Egret was not reported in the West Indies until February 1955. Toward the end of that month (21 February) Seaman (1955) found a flock of 26 birds in a pasture at Sprat Hall, St. Croix, Virgin Islands. An immature male specimen was taken. More Cattle Egrets were seen in the West Indies during the following year when the bird was again present on St. Croix (Seaman, 1958), this time in a heronry at Krause Lagoon. The species also appeared on Haiti during 1956 (Owre, 1959), and Bond (1957) reported seeing 20 Cattle Egrets feeding with steers in Jamaica during November of the same year. Nesting birds were reported from two islands in 1957: four nests were found on St. Croix (Seaman, 1958), and 50 or more pairs were seen constructing nests in Cuba (Smith, 1958).

During these years, the species had not stopped extending its range on the North American mainland. In 1956 Cattle Egrets bred outside Florida for the first time with nests reported in North Carolina, South Carolina, and Louisiana (Sprunt, 1956). By 1956 (Sprunt, 1956) specimens had been obtained in Maine, New Hampshire, Massachusetts, North Carolina, Florida, and Louisiana; and sight records had been reported for Rhode Island, New York, New Jersey, Maryland, Virginia, South Carolina, Missouri, Texas, and Illinois. The species was also reported for the first time from Ontario in 1956 (Devitt, 1962). In 1957 a specimen was secured near Mobile, Alabama (Imhof, 1958), adding that state to the Cattle Egret's expanding range.

The species was added to the Mississippi list in 1960 when three birds were taken (Williams, 1961). In 1962 several nests were found in Ontario (Baillie, 1963; Buerkle and Mansell, 1963), the first nests reported in Canada.

While the Cattle Egret was establishing itself in the eastern United States and the West Indies, it was not remaining sedentary elsewhere. In 1954, the species made its appearance in Central America when two birds were seen with cattle in the Panama Canal Zone (Eisenmann, 1955). Other sightings were made in the area throughout the fall of that year. The first observation of the species in Costa Rica was recorded 3 December 1954 at a cattle ranch in the Province of Guanacaste by Slud (1957). This northward movement through Central America continued in the late 1950's with specimens being taken in Guatemala (Land, 1963) and southern Mexico (Dickerman, 1964) in 1958.

By the early 1960's the Cattle Egret was probably well established in Mexico according to Wolfe (1961) and had been sighted from as far south as Teapa (Andrle and Axtell, 1961) and Villahermosa (Wolfe, 1961) to as far north as Tampico (Wolfe, 1961) on the east coast of that country.

The first nest found in Mexico was located by Dickerman (1964) near Minatitlan, Veracruz in May 1963. By that time the species had become widespread in the Gulf coastal lowlands of Southern Mexico and was dispersing inland. It had reached the west coast of Mexico, possibly by way of the Isthmus of Tehuantepec, by 1964 when Edwards (1965) photographed the species in an area north of Acapulco near the site where Dickerman (1964) had seen a few birds a month earlier. The first specimen from the Pacific coast was taken in 1965 by Hubbard (1966) in Chiapas, Mexico.

First reports of the species from the western United States began appearing with a record from Texas (Sprunt, 1956). The reports continued when a few Cattle Egrets were present in a heronry near Tulsa, Oklahoma, in the spring and summer of 1962 (Tomer, 1967). The species nested in that area the following two years.

The arrival of the Cattle Egret on the Pacific coast of the United States was confirmed in 1964 when McCaskie (1965) collected a specimen in San Diego County, California. Another California specimen, one of four birds seen, was taken at the Point Mugu Game Preserve in Ventura County 30 October 1966 (Nichols, 1967). These birds had reportedly been in the area the previous year; arriving in September 1965 and leaving the following March, the birds had again returned in September.

DISCUSSION

From the data cited above, it is probable that the Cattle Egret became established in South America in the early 1930's but might have arrived earlier. In the ensuing 40 years, the species has spread throughout northern South America, the West Indies, the eastern United States and into Canada, Central America, and Mexico, and has recently arrived on the west coast of the United States.

There can be little doubt that the arrival of the Cattle Egret in South America was a natural occurrence. Blake's specimen from British Guiana showed no signs of having been caged, and he was assured by government officials that the bird was not imported. The ability of birds to fly across the Atlantic Ocean is supported in the literature. A few examples will suffice: a flock of Fieldfares (*Turdus pilaris*) was carried from Europe to Greenland about 1937, and the species has since become established (Peterson, 1954); Sooty Terns (*Sterna fuscata*) banded in the Dry Tortugas have consistently been recovered on the west coast of Africa (Robertson, 1969). In 1957, a Little Egret (*Egretta garzetta*) was collected in Trinidad (Downs, 1959). This bird had been banded six months earlier in Spain, 4,000 miles across the Atlantic.

In addition to the above examples, it should be mentioned that Cooke (1945) lists recoveries of 43 individuals of 16 species that have been recorded through band recoveries as having crossed an ocean. The shortest of these flights was from Iceland to the east coast of Greenland; the longest flight was from East Prussia to Mexico.

As for the powers of dispersal of the Cattle Egret itself, Sprunt (1955) says the species has a "tendency to wander widely." This has been admirably demonstrated in the past not only by the bird's dispersal from Asia to Australia (Sprunt, 1955), but also by its appearance on Ascension Island, 800 miles off the coast of Africa (Chapin, 1956); by its arrival in the Galapagos Islands (Leveque *et al.*, 1966); and by the presence on the Yucatan Peninsula of a Cattle Egret banded at Lake Okeechobee, Florida (Ligas, 1958).

A number of authors have speculated about the source of Cattle Egrets immigrating to the New World. The shortest distance between Africa and South America is about 2,000 miles, the distance from Senegal to Rio Grande do Norte Province, Brazil. Although the Cattle Egret occurs in this region of Africa (Palmer, 1962), it is unlikely that the immigrants crossed the Atlantic from this point. There are two reasons for this conclusion. First, the species apparently arrived not in Brazil but in the Guianas, well to the north. Secondly, in crossing from Senegal to Brazil the birds would have encountered unfavorable winds. Rather, it is likely the immigrants came from North Africa, perhaps Morocco, or even from southern Portugal or Spain. By this route they could have utilized the Northeast Trade Winds and been carried directly to the northeast coast of South America, i.e., to the Guianas. A similar conclusion was reached by Blake (1961).

Following its arrival in South America, the Cattle Egret radiated northward and westward along the South American coast from the Guianas. As previously described, the species subsequently appeared in Venezuela, Colombia, Peru, and Chile.

It is generally accepted that the arrival of the Cattle Egret in the United States was the result of a natural extension of the species' range. Birds no doubt entered the country from South America

via the Florida Keys (Meyerriecks, 1960) and dissipated northward. But how and why did the species find its way to this country?

The years preceding the arrival of the species in the United States were very wet years in the Guianas (Lowe-McConnell, 1967). While studying the biology of the Cattle Egret in British Guiana, Lowe-McConnell (1967) found that the population tended to build up during wet years, and "it seems likely that the excess population spread along the coastal plains." From the increasing South American population, then, came the birds that emigrated to the United States.

It seems likely that Sprunt (1953) was correct in assuming that the immigrants arrived by a direct flight from South America, because, as has previously been pointed out, the species was well established in this country before being recorded in the West Indies. This being the case, why did the birds continue on to North America instead of stopping in the Caribbean?

Following studies at Lake Alice in Gainesville, Florida, Rice (1956) concluded that the Cattle Egret reached that north Florida city as a result of associating with mixed flocks of wintering herons in the Lake Okeechobee area. When these flocks returned to Lake Alice to breed, a few Cattle Egrets followed them there. He extended this theory by suggesting that the first immigrants to North America arrived with other herons returning from South American wintering grounds to their breeding grounds in Florida. This is perhaps the simplest and also the most likely explanation for the arrival of the Cattle Egret in North America. It also helps to explain the absence of the species from the West Indies during the early 1950's. The migrating herons came directly to Florida leading their Old World relative as they came. The invasion of the West Indies occurred later, probably by Cattle Egrets from South America, because the first reports of the species in the area are from islands near the growing Cattle Egret population on the northern coast of that continent.

The colonization of the western United States remains at present in its early stages. The arrival of the Cattle Egret in the areas where it occurs in this section is easily explained by a steady northward extension by the species up the coasts of Central America and Mexico. The successive reports of Cattle Egrets in Panama, Costa Rica, Guatemala, and southern Mexico were documented in the first part of this paper. This movement up the east coast of Mexico continued to Texas and Oklahoma.

The arrival of the species on the Pacific coast of Mexico could be accounted for in two ways. It is possible that Cattle Egrets moved up the Pacific coast of Central America from Colombia without being detected. This seems rather unlikely, however. A more probable explanation appears to be that some individuals crossed from the Gulf coast of Mexico to the Pacific coast via the lowlands at the Isthmus of Tehuantepec. This theory is supported to some degree by the first sightings on the Pacific coast, which were from areas in close proximity to the Isthmus: in the

State of Guerrero in 1964 (Dickerman, 1964; Edwards, 1965) and in the State of Chiapas in 1965 (Hubbard, 1966).

Following its arrival on the Pacific coast, the Cattle Egret could easily have extended its range up the coast to southern California.

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