Reprinted from Colonial Waterbirds, Volume 11, No. 2, 1988

History of Wading Bird Populations in the Florida Everglades: A Lesson in the Use of Historical Information

PAULA C. FROHRING, DOROTHY P. VOORHEES, AND JAMES A. KUSHLAN

Department of Biology, University of Mississippi,
University, Mississippi 38677 USA

Abstract.—Population size is a crucial aspect of the biology of any species and a key to developing appropriate conservation strategies. Population trend analysis requires use of historical information, the quality of which varies widely according to its source, methods of collection, purpose of collection, political climate prevailing at the time, and the literary nature of the report. The extensive documentation of Everglades "wading bird populations" exemplifies the perpetuation of illusion and interpretation inherent in such historic information. Records of millions of nesting wading birds in southern Florida, often cited in the popular, scientific, and resources management literatures, have no credible origin. Such reports of large numbers refer primarily to White Ibis, whose historical populations can be estimated at about 100,000 birds. The documentable historic population of Wood Storks was no more than 20,000 birds (Kushlan and Frohring 1986). Historically high counts for commonly listed herons are 9,200 Great Egrets, 10,300 Snowy Egrets, and 9,800 Tricolor Herons (Kushlan and White 1977). Past information on any colonial waterbird population must be used and evaluated with extreme caution, and only after interpreting data on a species by species basis.

Key words.—Census, conservation, Everglades, heron, historical, ibis, populations, south Florida, stork, wading birds.

Colonial Waterbirds 11(2): 328-335, 1988

Knowledge of population size and trend is an important aspect of the biology of any species and a key to developing an appropriate conservation strategy. Determining avian population sizes is difficult under the best of circumstances because of problems in developing and using census techniques having sufficient accuracy and precision to support a meaningful inference of population size. Determining long-term population trend is even more difficult, because past information must be used.

The history of wading bird populations in the Everglades of southern Florida provides a cautionary lesson in the use and misuse of antique information. Consider, for example, a representative article on the Everglades and Everglades National Park appearing in Newsweek for April 7, 1986 (Moreau 1986). It stated, "With half of the Everglades already developed, 90 percent of its wading birds have disappeared. Only 250,000 wading birds visited the park last spring, compared with 2.5 million for the same area in the 1930's."

The concept of some censusable group called wading birds is imprecise. References commonly cited from the late 1800's through early 1900's include gulls, terns, pelicans and cormorants none of whom wade. From a conservation perspective, none of these species have the same ecological requirements, nor do the various ciconiiform species ranging from Wood Storks to Cattle Egrets. Robertson and Kushlan (1974) offered the figure 2.5 million, referring to such a variable composite of species, not for the 1930's nor just in the Everglades, but for all southern Florida in 1870. The highest original figure made in the 1930's was one million birds, but the same estimator offered different, lower numbers in different writings, and this number was expanded to 1.2 million by Robertson and Kushlan (1974). The Newsweek article is historically consistent in misquoting without reference and in selecting pieces of historical data then putting them together as fact. Finally it is almost incidental to point out that the number of birds that happen in any year to be "visiting" the southern Florida marshes bears no direct relation to the status of the local breeding populations supported by the Everglades. Historical data are similarly riddled with mixed-species nest, bird, juvenile, nesting and roosting counts that cannot be compared.

Bird Populations as History

Primeval Numbers and Plume Hunting

Over a period of about 40 years plume hunters killed a massive number of some bird species in the United States, in Cen-

tral and South America, and in the Old World. In 1892, a single agent reported the shipment of 130,000 birds for millinery purposes, followed by 192,000 a decade later from Florida alone (Kersey 1975). Contemporary interpretations of the devastation to southern Florida's coastal bird populations prior to 1900 rely heavily on the impressions generated by W. E. D. Scott (e.g, 1887, 1888, 1891, 1892), who traveled Florida's Gulf Coast in 1874, 1878, 1880 and, later, in 1886. However he provided little quantitative information. In recalling his 1880 trip, his grandest estimate was "literally thousands"; other estimates of his or of local people he interviewed included "myriads," "many," "the happy and populous community," "plenty," "vast numbers," and "bird life . . . so abundant . . . that it would be difficult to exaggerate in regard to their number" (Scott 1887). Only occasionally did he discriminate quantitatively between the various colonially nesting species such as herons, gulls, cormorants, terns, or pelicans. He did not necessarily specify if birds were nesting, roosting, or wintering. In his later trip along a stretch of coast south to near Fort Myers, he described the devastation within 15 rookery sites that were either active on his trip or had been active in the recent past (Scott 1887). From his interviews with local residents and plume hunters, not personal experience, he also summarized the condition of colonies southward to Cape Sable. Some of his sweeping reports, such as the statement that no colonies existed on the southwest coast, were immediately challenged (Jamison 1891). He responded with the following statement: ". . . He would have patience indeed who could count the nests in a single acre of the two hundred acres, or there abouts, that are included in the single rookery known as late as 1878 . . ." (Scott 1891). In other words, he could not count them.

Scott (1891) was also reminding his readers, up front, he was talking in relative terms. His, and many of the later writings, were not meant to create a paper trail of species-specific population censuses. They were inherently polemical pieces intended to affect public policy. Response to Scott's articles was immediate. Shufelt (1887) deplored the "disgusting slaughter" described by Scott. Repercussions were long-lasting, because his information was the basis for Robertson and Kushlan's (1974) estimate of 2.5 million wading birds in southern Florida prior to the plume hunting era. Clearly, there is no basis for any quantitative projection of bird numbers during this era.

Illegal Plume Hunting Decades

The reports and commentary of Scott, Shufeld, and others led to the passage of the Federal Lacey Act in 1900 and Florida statutes in 1891 and 1901 that made plume hunting illegal. Florida Audubon Society and National Committee of the Audubon Societies employed wardens to guard the better known rookeries of plume birds. The wardens were local residents, most of whom had been previously engaged in the plume trade (Kersey 1985). The most famous was Guy Bradley, later martyred when shot trying to protect a colony (Tebeau 1963). Some of these wardens provided the first estimates of numbers of species at specific roost and nesting sites. O. E. Baynard, Supervising Warden for Florida, reported guarding 5,100 Great Egrets in 11 colonies, 2,375 Snowy Egrets in 13 colonies, along with 6,200 Tricolor Herons, 7,076 Little Blue Herons, and 26,000 White Ibis in Florida (Anon. 1914). Many reputable men would follow, and it is from their reports that we have predominant impressions of species' population numbers from the early 1900's to the 1950's. But not all wardens presented equally credible estimates.

Wardens assisted interested visitors, and perhaps influenced their own conclusions. Chapman (1908) visited Cuthbert Rookery with Guy Bradley, reporting at least 2,000 Tricolor Herons, 3-400 Great Egrets, and fewer numbers of Little Blue Herons and Snowy Egrets. He also relayed the view that several species would go extinct unless additional wardens were provided (Tebeau 1963). Other visitors simply did not concur on the numbers they saw. For example, Bent and Job visited Cuthbert Lake together. Bent reported himself (Bent 1904), and to the Audubon Director that 4,000 birds were nesting (Dutcher 1904). Job (1905) reported "about three thousand nests or six

thousand birds." Still other noted ornithologists reflect the difficulty traversing the area. Howell (1932), for example, noted that in 1903 the Cape Sable "area was too vast and the travelling too difficult to arrive at any reasonably accurate estimate of numbers of birds breeding."

Herbert Mills (1916) managed to confound reports on bird status with no help from wardens or fellow ornithologists. He found so few Snowy and Great egrets on a 1915 trip from Tampa to Key west that he stated they would be "slaughtered in 1916, unless money can be found for their protection" (Mills 1916). He stated that people were "erroneously optimistic in regard to the status of egrets in Florida," citing a steamboat company which advertised "millions of Egrets" along Okeechobee and the canals. Mills suggested that this misconception was due to peoples' not distinguishing between egrets and White Ibis. Yet in the same article, Mills himself engaged in this misconception. He offered to loan a photographic exhibit of a devastated colony to anyone who would post it. This photograph was show "concrete evidence of the milliners' criminality" and illustrate the "threatened doom of the Egret." However the photographs were not of egrets but of a White Ibis colony. Both he and Job contended it had originally contained 10,000 birds. Mills, however, said that those birds not shot had deserted the colony by the time of their visit (Mills 1916); Job said there were 1,500 occupied nests (Anon 1915). Sprunt (1954) noted that Florida natives shot this species by the hundreds for food, so although this particular incident may not have been an act of malice by 'sportsmen' as Mills alleged, it served his cause (Anon 1933b, Sprunt 1954). Such drives to literally disgust the public were effective.

The reports that exist, although rough and inconsistent, do seem to place the numbers of birds at the most well known colony sites in the hundreds and low thousands. It is also clear that plume hunters took a toll on some species. Snowy Egrets became nearly extinct according to Sprunt (1954). Pearson (1922-1923) reported scattered colonies of Great Egrets in South Florida during 1922, but said they were shot out so continuously that the birds were too disturbed to count. As late as 1930, Pearson testified before the Senate that men pretending to be Audubon Wardens watched colonies until they were "ripe" then shot the birds. Local hunters were bootlegging birds into Key West (Tebeau 1963). But not all wading birds were equally affected by the trade. According to Chapman (1922) "The [Tricolor] Heron has fortunately never found favor with milliners and consequently is doubtless as abundant today as it ever was; rookeries containing thousands of birds not being uncommon in Florida." Of Little Blue Herons, he stated, "Thanks to their lack of 'aigrette' plumes Little Blue Herons are some of the most common Herons in Florida today." We cannot be quite certain how popular the White Ibis was for food. Cooke (1913) stated that throughout Florida, "the White Ibis has been one of the most abundant breeding birds . . ." and that it had "suffered so little at the hands of plume hunters that it is still common . . . and in some places is really abundant." Wood Storks appear not to have been effected as both Cooke (1913), and Chapman (1922) considered them common.

The 1930's

By the late 1920's, due to publicity, increased protection, increased sentiment for birds, and/or a change in women's fashions (Tebeau 1963, Blake 1980, Kersey 1975), hunting pressures decreased. The sensational population numbers that would burst forth in the next few years are best interpreted in relation to the new conservation issue of the day, the drive to establish a national park in the Everglades. A few wardens accommodated the cause nicely.

The idea for Everglades National Park took root in 1929 when the Tropical Everglades National Park Association was organized by local Miami citizens. That same year the Florida legislature passed an act providing for the establishment of an Everglades National Park Commission to acquire the necessary lands. In February, 1930 a National Park Service committee visited the area and reported to Congress on the suitability of the site for park purposes. During the visit 15,000 ibises and herons were seen in the Shark River Rookery (Anon. 1930). Wardens reported

20,000 egrets in the same colony that year. In December, 1930, a bill authorizing National Park Service to accept 2000 square miles was introduced in the Senate. From December 26, 1930 to January 3, 1931, a committee was sent to assess the area, reporting "a number of probably 40,000" herons, egrets and ibis roosting at Shark River during their visit (Anon. 1931). On February 10, 1931, the Senate unanimously passed the measure. Later the same month an attempt to call up this bill on the floor of the house for a vote was overruled due to a rush of business (Anon. 1931). Warden W. A. Roberts reported from 40-50,000 birds at East River, 100,000 White Ibis at the same site that spring. The following fall of 1931, he reported an estimate of 300,000 birds for the Biological Survey, but by (18 September) believed there to be 600,000 in what we assume to be the West Coast roosts he was patrolling (unpubl., NPS files). This figure was not published but was submitted to Audubon Society Officials. In 1932, another special subcommittee investigated the Everglades area, returning with a glowing report (Olmsted and Wharton 1932) in which they reported that the sight of "thousands upon thousands of ibis and herons of various species flocking in at sunset from their distant feeding grounds" and later to their nesting rookeries ranked "high among the natural spectacles of America." Response to these estimates was speedy. Howell (1932) noted, "The long unremitting, but finally triumphant, struggle of the National Association of Audubon Societies for the rescue from extinction of the plume birds of Florida presents a record probably unparalleled in the annals of conservation in this or any other country." Actually, the large counts at this time were of White Ibises, non-plumed birds.

In 1932 an additional issue had surfaced. "Financial stringency" had forced the release of all full-time wardens except the two on the Gulf Coast at Ten Thousand Islands, and these were to take a 50 per cent cut in salary to stay on two more months (Holt 1932). Wardens by this time had reported 50,000 Egrets and herons at Shark River (10,000 more than the Subcommittee saw), and 81,000 White Ibis at Ten Thousand Islands (Holt 1932). But by early 1933, wardens reported 700,000 water-birds at Ten Thousand Islands (Anon. 1933a), 100,000 more than the previous year's record; and while Audubon members visiting the area estimated 100,000 water-birds at Shark River (Anon 1933b), wardens "toyed with figures" arriving at 250,000 White Ibises alone (Holt 1933b). If warden estimates were escalating incredulously, they did cause action. On February 1, 1934, the year-round force of two wardens in Ten Thousand Islands was augmented by a third man, with the view that these men were not just protecting their jobs, they were protecting their lives by not having to travel alone (Anon. 1934). Because of the prominence of political and financial influences during this time, these wardens' estimates do not warrant immortalization.

With this numerical impression, we trace the much quoted visits of two conservation officials in 1933 and 1934, and the political results of their excersions. In May 1933, the National Association of Audubon Societies Director, E. G. Holt, made an inspection tour of the Gulf Coast rookeries. Holt (1933a) in his Society report noted carefully what he actually observed: At a colony site at Lane River he saw several thousand Wood Storks fledging and some birds of other species. However, he relayed in Bird-Lore what the wardens had told him. "On Lane River, the wardens reported some 50,000 Wood Ibises, 40,000 Louisiana (Tricolor) Herons, 40,000 Snowy Egrets and 15,000 American (Great) Egrets breeding. The mortality here was excessively high, caused, presumably, by a terrible plague of mosquitoes" (Holt 1933b). Recall Holt did not personally see such large numbers of birds, but rather relayed the warden's reports of what his wardens said he would have seen if only he had made his inspection a few weeks earlier, that is before the mosquito plague broke up the colony. Post-nesting roosts that year were reported to be so large "the boys have quit trying to express them in figures" (Holt 1933b). That same year, 1933, the State of Florida set aside 325,000 acres of state owned land within the maximum boundaries of Everglades Park for national park purposes.

The wardens gave up counting in the hundreds of thousands. However, someone with less experience would make an estimate which would be accepted throughout the historical literature. In 1934, R. P. Allen, newly appointed sanctuary director, undertook his first-ever visit to a south Florida wading bird colony as part of his own inspection of Gulf Coast sanctuaries. At Shark River, he (Allen 1934a) reported that "nearly two-thirds of the rookery appeared to be composed of White Ibises." He "finally decided that one million adult birds, all species combined, would be a reasonable estimate of the population at the time (of his) observations." He reported the colony was 100 yards wide by one quarter mile long, and later it was reported to him to have increased to one-half mile long. Allen (unpublished field notes, NPS files) had attempted to validate his estimate by a nest count, estimating up to 12 nests/ft 2. Taking coverage at 180 yards by 3/4 mile (80 yards wider and 1/2 mile longer than he actually saw), he calculated that 240,000 yds 2 at 2 pair/ft 2 would equal about 1,000,000 birds. (Actually, such a calculation results in an estimate of 8.5 million birds). On May 30, 1934, just one month after Allen's incredible report, F. D. Roosevelt signed the bill authorizing Everglades National Park (Blake 1980).

Allen periodically re-estimated the high numbers he initially stated. In 1936, he reported to the American Ornithologists' Union that he saw 800,000 birds (Allen 1936). In 1939 he wrote a letter to Dr. Ira Gabrielson on the subject of the Everglades park in which he stated, "At its height the Shark River rookery has been estimated to contain upwards of 250,000 birds" (unpubl. NPS Files). In the late 1950's, he returned to the high counts, stating "The figure was certainly in excess of 500,000, and may have been twice that" (Allen 1957). He also admitted that "it was an utter impossibility to arrive at anything resembling an accurate total of the number of adult birds present" (Allen 1957). In a 1958 interview with the Miami Herald (May 4), he is reported to have recalled "The white Ibis there was too numerous to count. We gave up between 450,000 and 500,000 birds." He also estimated from these and from a "number of colonies in that region during 1931-1939" that "the total number of wading birds of all species ran into the hundreds of thousands" (Allen 1958). This statement seems rather modest in light of his original account.

Allen used the image of massive bird numbers elsewhere too. He began one artticle with the vision of a "bird community housing many more than ten times 10,000 Ibises alone!" He then relayed the actual report of the observer, Alexander Sprunt, Jr., who stated that "The very idea of attempting any count of this rookery was laughable. It cannot possibly be counted from the surface. It would take dozens of boats and observers, for it covers such a tremendous area that anything but an aerial view would be utterly confusing" (Allen 1937a). In the next issue of Bird-Lore, Allen wrote, "readers will recall the account in the issue for May-June (p. 226) of an enormous White Ibis rookery, containing possibly as many as half a million birds" (Allen 1937b). By 1939 the image was established: "readers will remember that there was an enormous rookery of White Ibis at a point on the St. Johns River, estimated by Mr. Sprunt to contain roughly half a million individuals" (Anon. 1939). Sprunt (1954) did not recall such a number in his own account. He stated that of two enormous concentrations of White Ibis he observed in the late 1930's (one near Lake Washington and one at the headwaters of Broad River) "populations of these rookeries ran from 50,000 to 60,000" birds.

Even the wardens, whose livelihoods and lives were at stake, did not augment the water-bird numbers to anything near one million. If Allen's credibility is to be accepted, one has to decide which figure to choose, and we find no basis choosing the one million. Robertson and Kushlan (1974) estimated 1.2 million in 1935, but offered no direct reference for this figure. Therefore, unless a new, valid source is uncovered, we must reject the million figure as a reliable estimate.

1940's and 1950's

The National Audubon Society (its name changed in 1940) continued to support wardens in southern Florida until

July 1, 1946 (Sprunt 1954). Although an enabling act had been passed with an amendment in 1937, the national park did not open until December 9, 1947. For a decade after responsibility passed to the Federal government, very little quantitative information on numbers of nesting wading birds was collected. Wardens, however, continued to count west coast roosts, not initially included in the park's boundaries. These reports of coastal roosts generally ranged from 1,000 to over 80,000 birds (unpubl. warden reports, NAS files; ranger reports, NPS files). Because these censuses were systematically conducted by counting the birds flying into their evening roosts on coastal islands, they provide a credible record of roosting numbers. They usually represented composite species totals, rather than just White Ibis, and are about the same magnitude as Sprunt's (1954) recollections. Alexander Sprunt was able to report the following: "Truly the egrets . . . today are probably in a better state than they were a hundred years ago" (Sprunt 1954). In 1956, based on an appreciation of its importance to wading birds in the summer and fall, the Gulf Coast was added to Everglades National Park.

From 1957 to 1960, the National Audubon Society and Florida Audubon Society conducted ground and aerial surveys of Florida water bird colonies. These surveys found more colony sites than had ever been known before; and, discounting the unsupportable numbers reported by wardens and Allen in the 1930's, these surveys also found the largest cumulative total nesting numbers of most species ever reported. Thus, the early 1960's surveys provide the historic base-line for nesting population trend data for those species consistently surveyed. Immediately following these surveys, in 1962, levees were completed across the Everglades, isolating the Park from its water source to the north. Thus, the long-discussed effects of water management finally began to occur in fact. The next comprehensive ground and aerial survey was sponsored by U.S. Fish and Wildlife Service in 1974 and 1975. Perhaps because of more participants and funds, a record 42 colony sites produced a total of 129,800 nesting wading birds, 43% composed of White Ibis, and 26% of a relatively recent newcomer, the Cattle Egret (Kushlan and White 1977). Having no previous, comparable survey on record, this survey resulted in the base-line population levels for Great and Snowy egrets, and for Tricolor and Little Blue herons.

So, What are the Historical Numbers?

During the late 1800's and early 1900's, plume and bird skin trade took a terrible toll on particular bird species. In southern Florida the most observable ravages were seen in bird colonies and roosts along the coast. Birds most written about were colonial water birds. Snowy Egrets and Great Egrets were apparently most heavily sought for their thirty-two dollar per ounce egret plumes (Hundley 1963, Cooke 1913, Chapman 1922). What is actually known about either one of these species' historical numbers is scant. The exorbitant 15,000 Great Egret and 40,000 Snowy Egret counts prior to the mosquito plague (Holt 1933b) stand quite alone in history. Unpublished Audubon warden notes provide such subsequent high numbers as 7000 Great Egrets in a single Gulf Coast roost, 1935, and 5000 Snowy Egrets nesting at Shark River in 1938. These historical highs are lower than the results of the more recent surveys of 1974-75, which yielded 9,200 Great Egrets in 34 colonies and 10,300 Snowy Egrets in 23 colonies throughout southern Florida (Kushlan and White 1977).

Two herons, the Tricolored and Little Blue, have small, dark plumes. The former brought at least a small profit (Scott 1887) but neither were very effected by the plume trade (Chapman 1922). Wardens reported 40,000 Tricolored Herons to Holt (Holt 1933b), and although Little Blue Herons were not noted in this grandiose number, they had already gained prominence in a warden's 1931 unpublished account of 10,000 in a Gulf Coast roost. Subsequent (or alternative) highs from early times are 4,275 Tricolor Herons in 5 roosts and 2 rookeries on the Gulf Coast in 1936, and 2000 Little Blue Herons roosting in a the Gulf Coast, 1932. Recent highs are 9,800 Tricolor Herons in 22 colonies in southern Florida during the 1974-75 survey (Kushlan and White 1977) and 809 Little Blue Herons in 1981 in

Everglades National Park (unpubl. NPS files).

Historically the closest synonym for wading bird was White Ibis. This species was used for evidence of the plume trade's barbarity, to demonstrate the effectiveness of the Audubon wardens' protection, and simultaneously to provide the "natural spectacle" that would be preserved in establishing a national park in the Everglades. Quantities of the same species at Shark River and at Gulf Coast roosts were thought to reflect effects of floods and droughts amplified by drainage projects, and helped influence the inclusion of the Gulf Coast into the current Park area. In addition to the 250,000 and 666,000 estimates (Holt 1933 and Allen 1934, respectively), there were several estimates of 100,000 ibis roosting and nesting in the 1930's and 1940's (Howell 1932, Audubon wardens 1936, Peterson and Fisher 1955). From the 1950's to 1981, the highest nesting count for southern Florida has been 56,000 White Ibis in 1974(Kushlan and White 1977). Aerial roosting surveys covering the same Gulf coast and interior within the Park boundaries suggest a recent trend. In 1977, we counted 53,000 White Ibis in 14 roosting sites; by 1979 3,600 White Ibis were counted in 7 roosts, and in 1982 three remaining sites contained 2,400 White Ibis. Perhaps the birds have shifted. If so they have abandoned an area historically important for post nesting roosts since the late 1800's.

The only other species for which long-term data exist is the Wood Stork. Kushlan and Frohring (1986) showed that erroneously high report of Wood Stork numbers have colored an understanding of its local population trends. Documentable historic numbers are about 10,000 pairs in the 1950's and 1960's, concurring with Sprunt's (1954) evaluation of them "enjoying a rather static condition of well-being in Florida." As in the White Ibis, a declining trend is documentable for Wood Storks sometime after the levees were constructed through the Everglades in 1962.

CONCLUSIONS

The image of historically large wading bird concentrations in southern Florida has been tremendously effective in inspiring social and political conservation action there and nationwide. The image of a million or more individuals is compelling indeed, and who can dispute any number? However, repeatedly, the very people on whom we rely, as well as the less reliable sources, concurred they could not, or did not actually, count the birds. We simply do not know how many of the various water bird species inhabited southern Florida historically.

The lessons learned in critical analysis of one region's records may apply elsewhere. Though popular causes may benefit from embellishment, population analysis and resources management must use historical information with caution. It is past time to accept the term "wading bird" as a censusable, manageable population unit, because there is no such entity. To treat any, some, or all species as a single group is to further postpone implementation of appropriate conservation. And it is definitely past time to accept any but rigorous, comparable censuses as bases for trend analysis and management action.

LITERATURE CITED

Allen, R. P. 1934a. Inspection of Gulf Coast Sanctuaries. Bird-Lore 36: 338-342.

Allen, R. P. 1936. The flock movements of herons, egrets, and ibises. Paper read the the 1936 meeting of the American Ornithologists' Union. (on file National Park Service, Homestead, Florida.)

Allen, R. P. 1937a. News From the Sanctuary Front. Bird-Lore 39: 226-229.

Allen, R. P. 1937b. News From the Sanctuary Front. Bird-Lore 39: 363.

Allen, R. P. 1957. An urgent appeal for information on the wading birds. Audubon Field Notes 11: 458-460.

Allen, R. P. 1958. A progress report on the wading birds survey. Report, National Audubon Society (National Park Service files, Homestead, Florida.)

Anonymous, 1914. Egret protection. Bird-Lore 16: 485.

Anonymous, 1915. Motion pictures for the National Association. Bird-Lore 17: 410-412.

Anonymous, 1930. Proposed Everglades National Park. Bird-Lore 32: 238-240.

Anonymous, 1931. The Everglades Park project. Bird-Lore 33: 158-159.

Anonymous, 1933a. A crisis in our warden service. Bird-Lore 35: 74-75.

Anonymous, 1933b. Audubon members report of Florida Bird-life. Bird Lore 35: 186-187.

Anonymous, 1934. Audubon wardens active. Bird-Lore 36: 147-148.

Anonymous, 1939. White Ibises on the move. Bird-Lore 41: 99-101.

Bent, A. C. 1904. Nesting habits of the Herodiones in Florida. Auk 21: 20-29, 259-270.

Blake, N. M. 1980. Land into Water—Water into Land. Tallahassee, Florida, U.S.A: University Presses of Florida.

Chapman, F. M. 1908. Camps and Cruises of an Ornithologist. New York, U.S.A.: D. Appleton and Co.

Chapman, F. M. 1922. Handbook of Birds of Eastern North America. New York, USA: D. Appleton and Co.

Cooke, W. W. 1913. Distribution and migration of North American herons and their allies. USDA, Biological Survey Bulletin 45.

Dutcher, W. 1904. Report of committee on bird protection: Florida. Auk 21: 120-208.

Holt, E. G. 1932. Critical situation in Florida. Bird-Lore 34: 443.

Holt, E. G. 1933a. Report of E. G. Holt. (on file National Park Service, Homestead, Florida).

Holt, E. G. 1933b. Report of Ernest G. Holt, Director of Sanctuaries: Florida. Bird-Lore 35: 371-372.

Howell, A. H. 1932. Florida Bird Life. New York, U.S.A.: Coward-McCann.

Hundley, M. H. 1963. Sixty Years in Retrospect. Florida Naturalist 36: 71-73.

Jamison, H. K. 1891. Some rookeries on the Gulf coast of Florida. Auk 8: 233.

Job, H. K. 1905. Wild Wings. Cambridge, Massachusetts, U.S.A.: Houghton Mifflin Co.

Kersey, H. A., Jr. 1975. Pelts, Plumes, and Hides, White Traders among the Seminole Indians, 1870-1930. Gainesville, Florida, U.S.A.: University Presses of Florida.

Kushlan, J. A. and P. C. Frohring. 1986. The history of the southern Florida Wood Stork population. Wilson Bulletin 98: 368-386.

Kushlan, J. A. and D. A. White. 1977. Nesting wading bird populations in southern Florida. Florida Scientist 40: 65-72.

Mills, H. R. 1916. The egret situation in south Florida. Bird-Lore 18: 60-68.

Moreau, R. 1986. Everglades forever? Newsweek 107(14): 72-74.

Olmsted, F. W. and W. P. Wharton. 1932. The proposed Everglades National Park. Report of the a Special Committee of the National Parks Association Appointed to Study All the Features in Connection with the Proposed Everglades National Park in the State of Florida. Senate Document No. 54, 72nd Congress, 1 St. Session. (U.S. Serial Set, No. 9520).

Pearson, T. G. 1922-1923. Herons of the United States. Bird-Lore 24: 306-314; 25: 70-79; 218-221.

Pearson, T. G. 1934. Proposed Everglades National Park. Bird-Lore 32: 238-240.

Robertson, W. B., Jr., and J. A. Kushlan. 1974. The southern Florida avifauna. Memoir 2. Coral Gables, Florida, U.S.A.: Miami Geological Society.

Shufelt, R. W. 1887. The wanton destruction of the Florida heronries. Science 10: 47-48.

Scott, W. E. D. 1887. The present condition of the bird rookeries of the Gulf Coast of Florida. Auk 4: 135-144, 213-222, 273-284.

Scott, W. E. D. 1888. A summary of observation of the Gulf coast of Florida. Auk 5: 373-379.

Scott, W. E. D. 1891. Florida heron rookeries. Auk 8: 318-319.

Scott, W. E. D. 1892. Notes on the birds of the Caloosahatchie region of Florida. Auk 9: 209-218.

Sprunt, A., Jr. 1954. Florida Bird Life. New York, U.S.A.: Coward-McCann.

Tebeau, C. W. 1963. They Lived in the Park. Miami, Florida, U.S.A: The University of Miami Press.