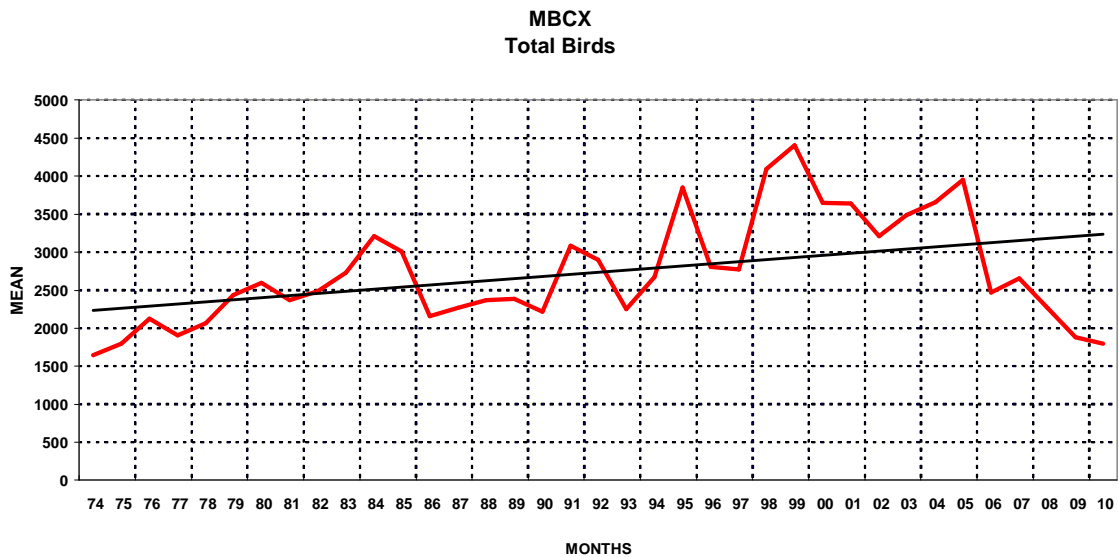


Coastal Waterbirds Southwest Florida 2010

Each year the burning question is how to start? What stands out this year is that for the last two years we have had to abort scheduled censuses a number of times because of wind. For example; in the Cape Romano (CAPE, App. #1 for project descriptions) project monthly census; the mean number of censuses per year (1983-2008) was 11.6; in both 2009-10, we only did six censuses each year (just about half). CAPE is the one project most vulnerable to wind bias (the Gulf is just too rough to count birds accurately). Also of note is the decline of many of the birds that has been going on for the last five years. As can be seen for MBCX (Fig. #1), from 1974 through 2005 there was a reasonably steady increase (although as with most wildlife considerable variation) then the numbers declined just over 50%, in five years.

Figure #1: MBCX all birds yearly mean over 36 years.



In an effort to better understand this trend I crunched the numbers for the indicator species (App. #2) and came up with the following. Of the 17 indicator species 11 (65%) were down the last 2-7 years; this then persuaded me to analyze more and I came up with the following table (Tab. #1)

Table #1. Continuous recent drop for coastal waterbirds in the four projects that there is enough data to look at. See Appendix #5, for species names. The decrease is documented from 2010 to a point when it initially started (see Fig. #1; turn down started 2006, the table reveals -5 for MBCX).

0 = not detected, -1 = one year, 2 = two years and so on W= effect after Wilma (10/24/05). The ? indicates that I have some doubt that this was from Wilma but it is possible.

| Species | MBCX | CAPE | ABCSD | RBSD | |
|---------|--------|--------|-----------------------|---------|--|
| BRPE | -25 | 0 | -4 W? | -3 W ? | |
| DCCO | +2 | -4 | +5 W no | -5 W + | |
| MAFR | 0 | | 0 W - 2 yr. then + | | |
| GBHE | 0 | | | | |
| GREG | +2 | | 0 W ? | -4 W +? | |
| SNEG | 0 | | -5 W + | -6 W + | |
| LBHE | 0 | | -9 W + | -8 W + | |
| TRHE | | | -5 W + | -8 W + | |
| REEG | 0 | | 0 W - | 0 W - | |
| CAEG | | | -9 W?? | -12 W ? | |
| WHIB | -3 | | -10 W - | -6 W ? | |
| GLIB | | | -5 W ? | -3 | |
| OSPR | 0 | -2 | | | |
| BBPL | -5 | -2 | | | |
| SNPL | -6 | | | | |
| WIPL | -5 | + | | | |
| SEPL | -5 | 0 | | | |
| PIPL | -7 | | | | |
| AMOY | | -4 | | | |
| WILL | -5 | 0 | | | |
| WHIM | | 0 | | | |
| MOGO | | 0 | | | |
| RUTU | -6 | 0 | | | |
| REKN | -6 | -4 | | | |
| SAND | -2 | 0 | | | |
| WESA | -7 | -1 | | | |
| LESA | | | | | |
| DUNL | -5 | 0 | | | |
| SBDO | -6 | 0 | | | |
| LAGU | -3 | 0 | | | |
| RBGU | 0 | 0? | | | |
| HEGU | -7 | | | | |
| RYTE | -4 | 0 | | | |
| SWTE | -3 | 0 | | | |
| LETE | -1 | 0 | | | |
| BLSK | 0 +84% | 0 -99% | | | |

MBCX; of 29 species 19 down (66%).

ABCSD 11 spec. 7 down (64%).

RBSD 9 spec. 8 down (89%).

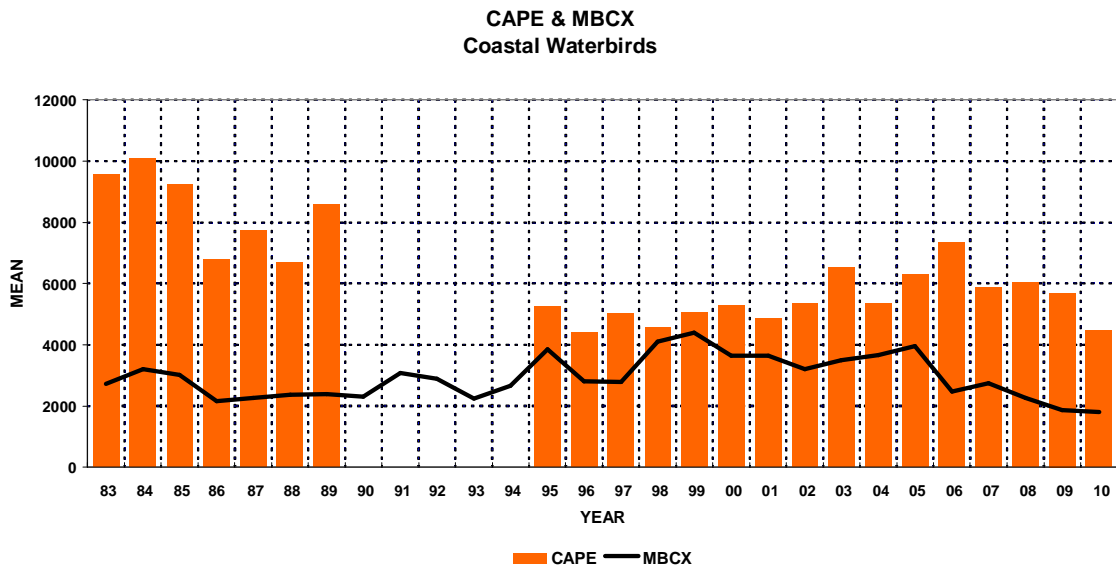
CAPE, 20 spec, 6 down (30%).

Although Wilma did considerable damage to the vegetative structure to the roost islands (ABC, RB and Smokehouse [SK]) it appears that the hurricane did not cause any detectable decline in the projects.

This table shows that three of the four projects have dropped considerably where as CAPE was down; but nowhere near as much

Comparing MBCX to CAPE (Fig.#2) it can be seen that CAPE does not reflect the trend down at MBCX in the last five years, except for 2010.

Figure #2. Comparison of the yearly means for MBCX and CAPE. For the CAPE project (bars) years 1990-94 censusing was discontinued due to the lack of time and funds but then resumed.



Species Accounts (Highlights)

Brown Pelican: The dramatic decline over years in this species continues; this year the total numbers for MBCX were the lowest ever with a mean of 184 (52% lower than the mean for the total 36 years of the project). In December we conducted the 1005th census this is the first project that has had over one thousand censuses recorded.

Magnificent Frigatebird: Did not start to roost in the area until 1980, and have built up ever since. Although the graph (Fig. #3) has gaps (caused by the inability to get another dedicated volunteer team to replace the team lost in 1985 until 1993) it reflects well the numbers of MAFR roosting in the area at night. Very few are in the area mid winter (Dec., Jan., Feb and Mar.) then build up steadily to August (Fig. #4). This year in September and October two different frigatebirds with yellow alphanumeric marked wing tags were recorded roosting (Female 74V, 9/15/10; Male 47T, 10/18/10). These birds had been tagged by a PhD candidate as a part of her research in the largest known MAFR colony in the Atlantic; Barbuda, Lesser Antilles, 1,400 miles from Marco.

On 3/31/11, Ginnie and I recorded another male tagged MAFR at ABC (C) *although I should not put in this report; it makes more sense to include it now.* This is the fourth tagged MAFR reported on the west coast of Florida (three at ABC) out of the 300 tagged; interesting to say the least.

Figure #3: Magnificent Frigatebird, ABC Sundown, over years.

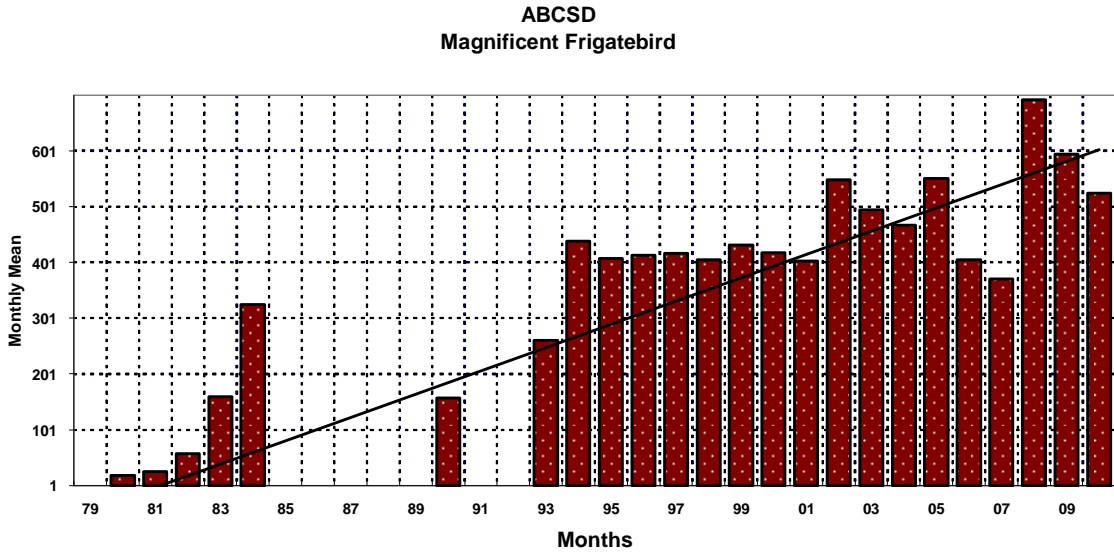
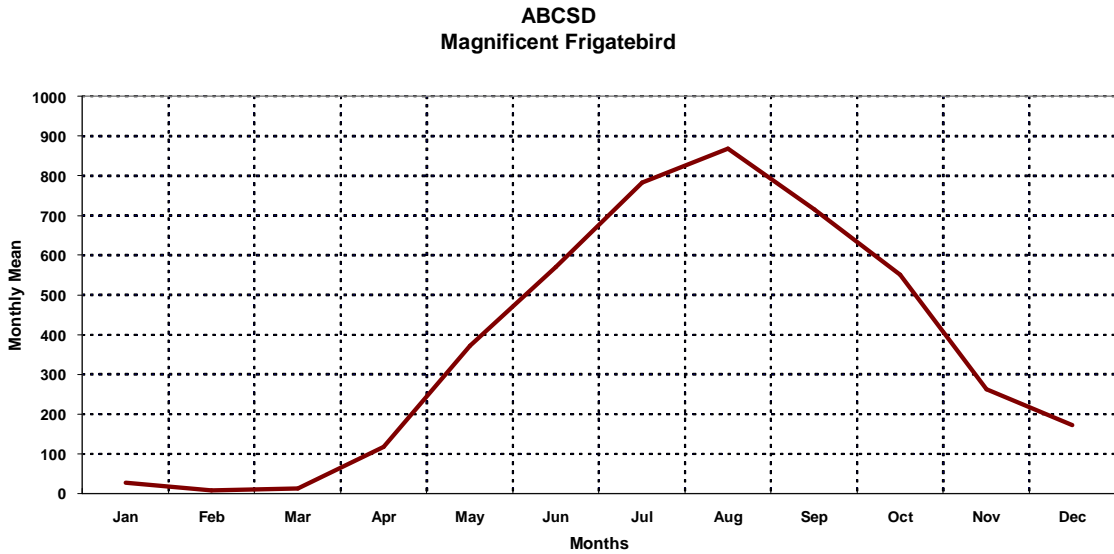


Figure #4:



Osprey: In the last few years I have discussed both the recovery of this species from pesticides, the leveling off the population over nine years (1999-2007) and the decline in productivity 2008-09 and the cause (s). This trend continued in 2010 and as of 2/28 appears to be still going on (but early to tell).

Least Tern (LETE) and Black Skimmers (BLSK): These two species often nest together in the same locations and have similar timing of migration. Also had very a analogous nesting season to 2009 and will be treated together. Both species arrived and built up in April, nesting was initiated two to three weeks later for LETE and three to four weeks later BLSK (a usual pattern). Both species started at the northeast end of Sand Dollar Spit just off the northwest bend of Marco Island, in about 10 days they then shifted the nesting a little to the west along the spit and then in about the same amount of time repeated the same shift again to the west and south. Thus there were three nesting attempts on Sand Dollar Spit that involved about 900 BLSK and 500 LETE (the last attempt was washed out by wind and tide). Then about 750 BLSK and 100 LETE moved south and nested on the large raked sand flat at the south end of the connection of Sand Dollar Spit and the Marco Beach, in front of the four large condos. After laying some eggs this nesting was aborted and the birds moved a little south still in front of the condos and tried again and failed again. While this was going on both species (150 BLSK and 400 LETE, moved from northeast Sand Dollar to nest on the large sandbar in the middle of Caxambas Pass just south of Marco Island and aborted. In all BLSK produced about 400 scrapes (nests) and LETE 500, many with eggs that produced few chicks. Almost all of the nesting (both species) occurred in areas closed with signs and string by the State of Florida (FWC), Rookery Bay Research Reserve and The City of Marco Island. We did not enter the closed areas therefore it is impossible to know how many eggs were produced but from observing and counting sitting adults it is possible to record numbers of active nests. For the failed six attempts there was only one from weather/tide washout, it is oblivious that something else had occurred; another bad year. When puzzled, blame it on something that can not be proven (see “Conclusion” below). This has been the most unproductive nesting season for these two species since I have been monitoring them (27 years).

Wader Nesting Coastal South Southwest Florida 2010

For some unknown reason with the Southwest Florida wetlands full of water, the nesting season started early for Great Egrets (GREG) and late for Small Waders (SNEG, LBHE, TRHE and CAEG). The wader nesting season, as the weather, has been very different; therefore when all else fails I will blame it on the weather, but in truth I have no idea.

Hydrology: After the last extreme consecutive dry seasons (about March-June) four years at Corkscrew (CSS) and three at Rookery Bay (RB), this year there was no dry-down. In fact the water levels at both sanctuaries were higher than usual; with May's water level at CSS equal to 1970 the highest ever (N=46) and RB's ponds about even with six other years (N=28). Certainly a different year as far as water levels go.

Location and Methods: Note: As in the last few years there was a change in nest censusing methods due to the amount of debris left in the understory of the colonies by hurricane Wilma and the exceptional growth of the live mangrove left on the islands that has become very dense (see each colony description for details). Considerably more effort was expended to try and determine what was going on with the small waders, as recorded below.

Rookery Bay (RB): 26°01.721'N 81°44.573'W. This year one Red Mangrove island, 0.14 ha. Nest census conducted 4/16, 5/20, 6/17, boat, 2 observers 0.5 hour.

Marco Colony (ABC) (named, ABC Islands by State of Florida): 25°57.389'N 81°42.232'W. Three Red Mangrove islands, 2.08 ha.. Nest census conducted 4/13, 5/27, 6/27, one observer, boat 1.5 hours.

Smokehouse Key: (SK): 25°54.562'N-81°43.885'W. One island in Caxambas Pass, 0.8579 hectares (Red Mangrove; a little terrestrial vegetation on sand ridge in center). 4/22, 5/14, 6/12, boat, one hour, one observer.

East River (ER): 25°55.886'N 81°26.667'W. Three Red Mangrove islands, 0.25 ha. (about). Nest census conducted 6/13, canoe, complete coverage, three observers, two hours.

Chokoloskee Bay (CHOK): 25°50.834'N 81°24.71 0.'W. Four Red Mangrove islands, 0.2 ha. (about). This year the waders used all four islands, boat census, 3/30, 4/28, 5/29, two people, one hour.

Note: Although for some of the colonies several census were conducted the numbers of nests in the table (Fig. #1) represent peak numbers of nests.

Sundown Censusing: For two of the colonies above, birds coming in to roost for the night are censused at sundown; the goal of this project is to get an index of the numbers and species in the area, year round. References below as to the use of the area by the different species are derived from these projects.

Marco Colony (ABCSD): Censused monthly with two boats and various numbers of volunteers (4-8). Boats are anchored in the two major flyways (North and East), record species and numbers of birds flying in (and out during the nesting season) one hour before sunset to one half hour after sunset. This project is ongoing and started in 1979.

Rookery Bay (RBSD): Censused every two weeks with one boat and two observers (one a volunteer). The boat is anchored so that most of the birds can be observed flying in one hour before sunset to one half hour after sunset. Recorded, species and numbers of birds flying in (and out during the nesting season). This project is ongoing and started in 1977.

Species Accounts:

Great Egret: Nesting started quite early (mid January) at both ABC and CHOK and about as usual (March) at RB and SK, they do not nest at East River. At both of the early colonies, numbers increased steadily and peaked (high) mid May, in both the other colonies (ER, RB) numbers of nests were much lower (but average) and peaked later. In none of the colonies was there any indication of a second wave of nesting, which is unusual. Chick production appears to have been successful as there are good numbers of young GREG feeding along the mangrove edges as of now. For the 28 years of this study GREG have increased fairly steadily (61%) this year produced the highest number of

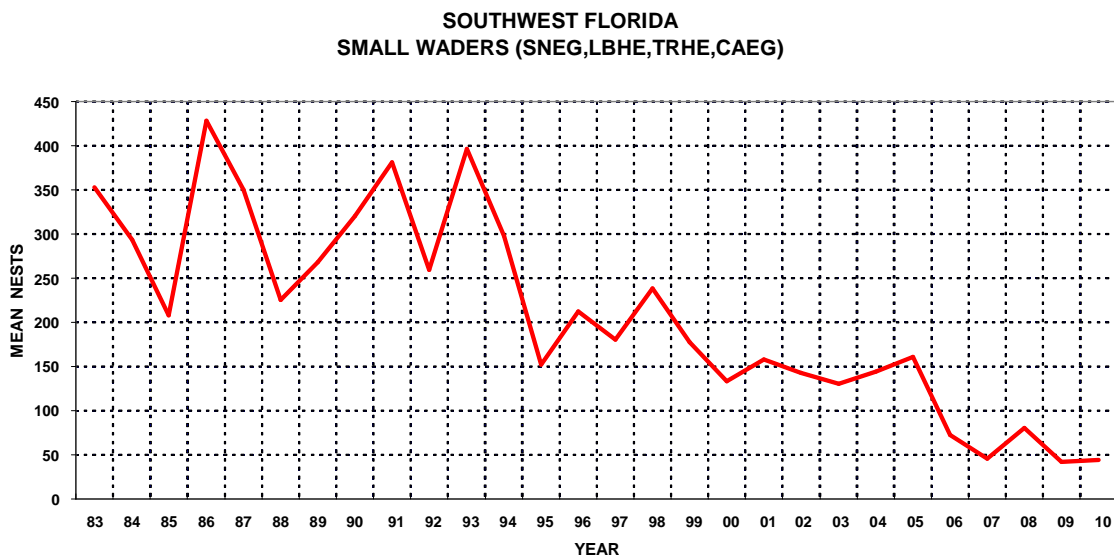
nests recorded (436). In the sundown counts GREG were quite low early in the year but in April, May, June increased significantly.

Small Waders (SNEG, LBHE, TRHE and CAEG): Nesting started late in very small numbers and seem to be producing young but as of this writing it is hard to tell how they are doing. This is the first year no LBHE nests have been recorded. Small wader nesting has declined in the area dramatically (86%, N = 28, also Fig. #5). The sundown censuses indicate that none of these species has been in the area in any numbers.

Reddish Egret: Not sure what is going on; nests dropped at ABC (2) and each nest failed; there were four large young at SK (two nests) looks as though these may make it.

White/Glossy Ibis: No attempts to nest again this year.

Figure #5: Small wader (SNEG, LBHE, TRHE, CAEG) nests coastal southwest Florida 1983-2010.



Conclusion

It really appears that something is going on but between the explosion of human use of the coast in the area, changes in weather patterns and who knows what else; it is impossible to pin down any specific cause. Most people working on wildlife turn to the lack or abundance of food as a major cause of change; fish, mollusks and crustaceans are a major part of the diet of coastal waterbirds. As far as I know there are almost no studies on this type of food in the area, therefore we can not get any help that way. I could go on with a lot more “IFS” but will not. Your guess is as good as mine.

Appendix #1. Project Descriptions.

The information in this report has been generated from seven monitoring projects that have been conducted in Southwest Florida over the last 35 years. Not all of these projects started at the same time therefore they have been going on for different lengths of time and are structured differently.

Marco Bay Complex (MBCX):

Study Area: An 18980 ha. coastal/estuarine area just north of Marco Island, Florida (25°57'N-81°42'W) contains estuarine bays, rivers (also called creeks), mud flats, beaches and sandbars. The site also encompasses; three small Red Mangrove (*Rhizophora mangle*) islands totaling approximately 2.5ha., situated, 0.35 km north of Marco Island, Florida, at 25°57'24''N and 81°42'13''W; the islands are known as the ABC islands and are owned by the State of Florida (locally called the Marco Colony or Roost). And the Rookery Bay Roost (26°06'51''N-81°44'43''W), currently two small islands 0.78ha, situated in the southeastern quadrant of Rookery Bay in the Rookery Bay National Estuarine Research Reserve, owned by the National Audubon Society and leased to the State of Florida.

Methods: Censuses are conducted by-weekly along a 32 km. (20 mile) transect which winds through the above area. The census starts at 08:00, is run in a small boat as quickly as possible (to eliminate bird movement bias) and takes approximately 4 hours. General data recorded; date, time, wind velocity and direction, tide and temperature. For Brown Pelicans; numbers, location, age class, plumage and breeding status. For other coastal water birds; species, numbers and breeding status; any other relevant information is noted. Over the route, data is obtained by moving between bird activity areas quickly. Then recording in the activity areas from the boat, while either running slowly or stopped and when necessary walking the major sandbar. After each census the data is recorded and summarized on computer. This project started in 1973 and is ongoing.

Naples Beach (NB):

Study Area: The center of the study site is at 26°06'55''N & 81°48'16''W, on the beach in the city of Naples, Collier County Florida. Two locations along 10 km., of urban beach on the Gulf of Mexico.

Methods: Censused at least bi-weekly; at one location (Third Ave. N.) with a long piling groin (erosion barrier) all pelicans and other species that can be observed are recorded from a fixed point. The second location, one kilometer of beach (0.63 mile), 3 km. (1.9 mile) south of the first, has 3 large (older and more deteriorated than the northern groin which has been rebuilt) and 6 small groins; this site is walked as quickly as possible. These methods were adopted after considerable censusing of the entire beach. This project started in 1972 and is ongoing.

Note: Due to a decrease in funding this project was suspended in 1990 and resumed in 1994.

Cape Romano (CAPE):

Study Area: Twenty six miles (41.6 km.) of Gulf of Mexico coast, south of Marco Island Florida, from Caxambas Pass to Indian Key Pass. The center is at Morgan Point at Cape Romano 25°-50'-40''N & 81°-40'-49''W. Habitat encountered consists of, sandbars and beaches on and near, barrier mangrove islands, along the Gulf of Mexico. Much of the area is under the Rookery Bay National Estuarine Research Reserve, a number of the islands are either privately owned or belong to the Federal Government. The only historical information known is "The Birds of the Southwest Florida Coast, Edward J. Reimann", (1940 unpublished); this list records the species of birds observed in the area, 1936-38.

Methods: The transect (50.8 km., 31.6 mile) is censused monthly from a small boat and run as quickly as possible, (approximately 5 hrs.) to minimize bird movement bias. Censusing is done at high tide, so as to take advantage of the birds roosting. Recorded are; bird species and numbers, date, time, tide, sky condition, temperature, wind direction and velocity. In nineteen eighty-six, the transect was divided into six sub-transects, so that shorebirds could be recorded as to location. This project started in 1982 and is ongoing.

Note: Due to a decrease in funding this project was suspended in 1990 and resumed in 1994.

Colony Monitoring, Southwest Florida (CMSF):

Rookery Bay (RB): 26°01'51"N 81°44'43"W. Two Red Mangrove islands, 0.22 ha., nest census conducted mid April and late May, walk through, complete coverage; one-person, one hour.

Note: After hurricane Wilma (10/24/05) over half the mangrove was destroyed and it was impossible to walk through the island (use of the northern island ceased 7/1/06) but as the island was quite open it was possible to count nests from a small boat; one person ½ hour.

Marco Colony (ABC) (named, ABC Islands by State of Florida): 25°57'24"N 81°42'13"W. Three Red Mangrove islands, 2.08 ha.. Nest census conducted mid April and late May, walk through, complete coverage; one person, two hours each census.

Note: After hurricane Wilma (10/24/05) over half the mangrove was destroyed and it was impossible to walk through the island, but as the islands were quite open it was possible to count nests from a small boat; one person 1 ½ hour.

East River (ER): 25°55'39"N 81°26'35"W. Three Red Mangrove islands, 0.25 ha. (approximate), nest census, canoe, complete coverage, one person, one hour.

Chokoloskee Bay (CHOK): 25°50'43"N 81°24'46"W. Four Red Mangrove islands, 0.2 ha. (approximate), boat census, two people, one hour.

Chokoloskee Pass (CHPS): 25°46'48"N 81°24'26"W. One mostly Red Mangrove island, 0.5 ha. (approximate) boat census, two people, one hour.

Smokehouse Key (SK): 25°54'17"N 81°43'19"W. One Red Mangrove island, 0.5 ha. (approximate). Walk through nest census, one person one hour.

This project started in 1983 and is ongoing.

Osprey Nesting (OSPR):

Study Area: A 58.4 km (36.6 mile). transect along the coast. The study area, north and south of Marco Island, Collier County, Florida (25°57'N-81°52'W); for description the transect is divided into two sub-transects..

1. North Marco: Marker #56 in the Inland Waterway, 4 km. (2.5 mile) south of Naples; to Big Marco Pass, length, 20.8 km. (13 mile).
2. South Marco: Caxambas Pass (at the southwest extremity of Marco Isl.) traveling counter-clockwise around Marco Island to Big Marco Pass thus completing the circle around Marco Island); length, 37.6 km. (23.6 mile).

Methods: For both North and South Marco Island, censuses are conducted bi-weekly in the beginning of the nesting season and weekly after the first full grown chicks are observed. In all nests that are on man made structures (navigational markers and signs in the water) the contents are recorded with the use of a mirror on a pole. Information from tree nests (that are impossible to view with the mirror) is obtained by recording the behavior of, first adults and then, both adults and chicks. For each nest that can be viewed with the mirror, the number of eggs and small chicks are recorded. For every nest, the number, behavior of the adults, the number and age of the chicks is recorded. This project started in 1984 and is ongoing.

Note: Due to a decrease in funding this project was suspended in 1990 and resumed in 1994.

Sundown Censusing: For two of the colony/roosts above (ABC and RB), birds coming in to roost for the night are censused; the goal of this project is to get an index of the numbers and species in the area, year round.

Marco Colony (ABCSD):

Location: Three small Red Mangrove (*Rhizophora mangle*) islands totaling approximately 2.5ha. Situated, 0.35 km north of Marco Island, Florida, at 25°57'24''N and 81°42'13''W.

Methods: Censused monthly with two boats and various numbers of volunteers (4-8). Boats are anchored in the two major flyways (north and east), record are species and numbers of birds flying in and out, one hour before sunset to one half hour after sunset. This project is ongoing and started in 1979 and is ongoing.

Rookery Bay (RBSD):

Location: Two small islands, approximate 0.78ha, situated in the eastern quadrant of Rookery Bay (26°06'51''N-81°44'43''W).

Method: Censused bi-weekly with one boat two observers (one a volunteer). The boat is anchored so that most of the birds can be observed flying in one hour before sunset to one half hour after sunset. Recorded, species and numbers of birds flying in and out. This project started in 1977 and is ongoing.

Appendix #2. Indicator Species.

This category has been created to see to use a subset of species of coastal waterbirds for meaningful but less time consuming analysis.

Species

1. Brown Pelican (*Pelecanus occidentalis*)
2. Great Egret (*Ardea albus*)
3. Tricolored Heron (*Egretta tricolor*)
4. Cattle Egret (*Bubulcus ibis*)
5. White Ibis (*Eudocimus albus*)
6. Osprey (*Pandion haliaetus*)
7. Black-bellied Plover (*Pluvialis squatarola*)
8. Wilson's Plover (*Charadrius wilsonia*)
9. Piping Plover (*C. melodus*)
10. Willet (*Catoptrophorus semipalmatus*)
11. Sanderling (*Calidris alba*)
12. Western Sandpiper (*Calidris mauri*)
13. Short-billed Dowitcher (*Limnodromus griseus*)
14. Laughing Gull (*Laris atricilla*)
15. Royal Tern (*Sterna maxima*)
16. Least Tern (*S. antillarum*)
17. Black Skimmer (*Rynchops nigra*)

Indicator Species Definition

Occurs in the area in sufficient numbers to provide adequate information for trends.
 There is enough data for analysis.
 Represents a group or family.
 Must be a coastal waterbird.
 Has occurred in the area over many years.
 Data used to analyze a species comes from either the most single representative project for the species (as CAPE for AMOY) or group of projects (MBCX, CAPE for BRPE).

Appendix # 5, CW Species List

| | Abbreviation | Status |
|--|--------------|----------|
| 1. Brown Pelican (<i>Pelecanus occidentalis</i>) | BRPE | BR-1 |
| 2. Double-crested Cormorant (<i>Phalacrocorax auritus</i>) | DCCO | BR-2 |
| 3. Anhinga (<i>Anhinga anhinga</i>) | ANHI | BR-2 |
| 4. Magnificent Frigatebird (<i>Fregata magnificens</i>) | MAFR | R-2 |
| 5. Great Blue Heron (<i>Ardea herodias</i>) | GBHE | BR-2 |
| 6. Great Blue Heron White Morph (<i>A. herodias</i>) | GWHE | BR-3 |
| 7. Great Egret (<i>A. alba</i>) | GREG | BR-1 |
| 8. Snowy Egret (<i>Egretta thula</i>) | SNEG | BR-1 |
| 9. Little Blue Heron (<i>E. caerulea</i>) | LBHE | BR-1 |
| 10. Tricolored Heron (<i>E. tricolor</i>) | TRHE | BR-1 |
| 11. Reddish Egret (<i>E. rufescens</i>) | REEG | BR-2 |
| 12. Cattle Egret (<i>Bubulcus ibis</i>) | CAEG | BR-1 |
| 13. White Ibis (<i>Eudoctmus albus</i>) | WHIB | BR-2 |
| 14. Glossy Ibis (<i>Plegadis falcinellus</i>) | GLIB | BR-2 |
| 15. Roseate Spoonbill (<i>Ajaia ajaja</i>) | ROSB | R-3 |
| 16. Osprey (<i>Pandion haliaetus</i>) | OSPR | BR-1 |
| 17. Black-bellied Plover (<i>Pluvialis squatarola</i>) | BBPL | R-2 |
| 18. Snowy Plover (<i>Charadrius alexandrinus</i>) | SNPL | BR-3 |
| 19. Wilson's Plover (<i>C. wilsonia</i>) | WIPL | BR-2 |
| 20. Semipalmated Plover (<i>C. semipalmatus</i>) | SEPL | R-2 |
| 21. Piping Plover (<i>C. melodus</i>) | PIPL | V-FWSp-3 |
| 22. American Oystercatcher (<i>Haematopus palliatus</i>) | AMOY | R-3 |
| 23. Willet (<i>Catoptrophorus semipalmatus</i>) | WILL | R-2 |
| 24. Ruddy Turnstone (<i>Arenaria interpres</i>) | RUTU | R-2 |
| 25. Red Knot (<i>Calidris canutus</i>) | REKN | R-2 |
| 26. Sanderling (<i>C. alba</i>) | SAND | R-2 |
| 27. Western Sandpiper (<i>C. mauri</i>) | WESA | R-2 |
| 28. Least Sandpiper (<i>C. minutilla</i>) | LESA | V-FWSp-3 |
| 29. Dunlin (<i>C. alpina</i>) | DUNL | V-FWSp-2 |
| 30. Short-billed Dowitcher (<i>Limnodromus griseus</i>) | SBDO | R-2 |
| 31. Laughing Gull (<i>Laris atricilla</i>) | LAGU | R-1 |
| 32. Ring-billed Gull (<i>L. delawarensis</i>) | RBGU | V-FWSp-1 |

| | | |
|--|------|----------|
| 33. Herring Gull (<i>L. argentatus</i>) | HEGU | V-FWSp-2 |
| 34. Royal Tern (<i>S. maxima</i>) | RYTE | R-1 |
| 35. Sandwich Tern (<i>S. sandvicensis</i>) | SWTE | R-2 |
| 36. Least Tern (<i>S. antillarum</i>) | LETE | B-SpS-2 |
| 37. Black Skimmer (<i>Rynchops nigra</i>) | BLSK | BR-2 |
| 38. Fish Crow (<i>C. ossifragus</i>) | FICR | BR-2 |

| | | |
|-----------|----|--|
| Breeding | B | Breeds in Collier County (CC). |
| Resident | R | In CC all year; not necessarily breeds. |
| Visitor | V | Spends part of the year in CC. |
| Transient | T | Migrates through CC either spring, fall or both. |
| Straggler | St | Unexpected occurrence, not easily interpretable. |

| | |
|--------|----|
| Spring | Sp |
| Summer | S |
| Fall | F |
| Winter | W |

| | | |
|------------|---|---------------------------------------|
| Abundant | 1 | Easily observed. |
| Common | 2 | Often seen. |
| Uncommon | 3 | Not frequently seen. |
| Occasional | 4 | Not every year. |
| Accidental | 5 | Less than 5 records. |
| Introduced | 6 | Introduced by man into the continent. |

Examples:

| | |
|-------------------|---|
| Brown Pelican | BR-1 = Breeding, Resident, Abundant. |
| Western Sandpiper | R-2 = Resident, Common. |
| Ring-billed Gull | V-W-2 = Visitor, Winter, Common. |
| Dunlin | V-FWSp-2 = Visitor; Fall, Winter, Spring; Common. |
| Avocet | T-FSp-3 = Transient, Fall, Spring, Uncommon. |
| Lesser Scaup | V-W-4 = Visitor, Winter, Occasional. |
| Common Eider | St-W-5 = Straggler, Winter, Accidental. |
| Shiny Cowbird | BR?-3 = Breeding, Resident??. Uncommon |

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