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In the March 22nd edition of the News-Press (Fort Myers, FL) their excellent long-time environmental writer, Kevin Lollar, reported on the recent delisting of the American crocodile population in Florida by the U.S. Fish and Wildlife Service. The agency has downgraded the reptile from Endangered to Threatened.

Other than this reclassification the article also discussed the strange behavior of an American crocodile that inhabits the J. N. "Ding Darling National Wildlife Refuge on Sanibel Island. Since I am familiar with these fantastic crocodilians and this animal in particular I offer the following commentary as the first of many that I hope finds a temporary home on this page.

CROCODILE COMEBACK — THE SANIBEL CONNECTION

FIFTY YEARS AGO, I published a contribution to a scientific journal that discussed the geographic range of the American crocodile along Florida's Gulf coast. Little has really changed in the crocodile's Southwest Florida distribution since my 1957 work. Well, that is, except for an increase in the number of crocodiles in our region. There are now known small crocodile populations in scattered pockets along our coast, whereas 50 years ago there were only anecdotal reports they occasionally lived in the local tidal red mangrove forests. Years ago, a commercial net fisherman reported to me that in 1936 he and others had caught a crocodile in their net in MacIntyre Creek, Sanibel Island, during a stop-net operation.

When we compare the current number of crocodiles in Florida to the reptile's historical pinnacle population we discover there were more of them in Florida in the years between 1920 and 1940 than are here today. That historic peak was reached because of man's alteration to the crocodile's localized ecosystem near Florida Bay in the decade prior to 1912. By 1940 the American crocodile population in Florida began to plummet and reached an all time low in the late 1960s.

Wildlife officials portray the recent decision to delist the Florida population of the American crocodile from Endangered to Threatened generally as a success story, and it is. Land acquisition since the mid-1940s and habitat management and man's cooling canal development in the 1970s within that habitat has led to the increase. Law enforcement helped, too, but it had a minor role.

Of special interest to us locally is the hermit female American crocodile that loves Sanibel Island and is determined to live out her life there. Over the past 27 years, at every opportunity I had for input, I have suggested that blood be drawn from this unusually large female American crocodile and subjected to DNA genetical analysis. Here's why: In 1965, I legally purchased a live two-foot-long American crocodile of Jamaican origin from a Miami wild animal dealer. The specimen was about two-and-a-half years old and in those days too small to determine its sex with standard sexing methodology. Although they are taxonomically exactly the same I assume there would be DNA differences because the Florida and Jamaican populations have been geographically separated for centuries if not eons. This juvenile crocodile was exhibited at a short-lived small wildlife center I had helped develop on Sanibel. Soon after the center closed, the croc outgrew

living in my bathtub. I also tired from having to move it so my family and I could bathe, so I sold it to a private reptile collector from the mainland. Over the years I lost contact with this person and have no personal knowledge of the croc's fate. It is important to know that for years the wild lands and waters of Sanibel Island have been a depository for many forms of unwanted captive wildlife — both native and exotic species.

In 1979, I began to wonder more about what became of my crocodile; had it been released on Sanibel when it outgrew its owner's capacity to house it? What piqued these thoughts? That year a visitor to Sanibel Island photographed an adult crocodile close to the exit of the J. N. "Ding" Darling National Wildlife Refuge. This was announced in island newspapers by the late naturalist/author, George Campbell. A year later, an employee of the Refuge (me) documented, with photographs, the presence of an adult American crocodile in residence on the refuge.

After 1980, its fear of man decreased and this crocodile slowly lost the characteristic timidity exhibited by the species. Sanibel resident crocodile watchers later discovered the animal deposited eggs over a span of several years. Each time, following a wait for the end of the normal incubation period, the eggs were opened, their contents examined, and each was determined to be "infertile."

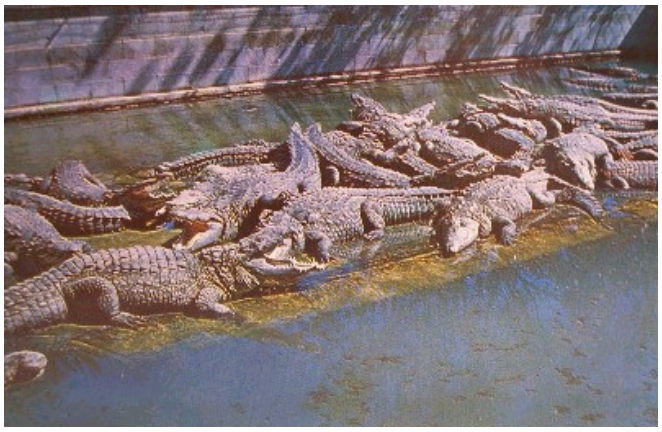
In the early 90s Sanibel resident and Lee County Mosquito Control District employee, and my friend, Roger Zocki, reported to me that he had made an unusual observation while performing an official inspection to ascertain the density of mosquito larvae in a public-excluded inaccessible area of the refuge. He had seen the crocodile in the close company of a large adult alligator of near equal size. I should state that Roger did not observe them in a reproductive embrace, nor were they displaying any aggressive behavior toward each other. Had this crocodile ever been in serious combat with a large alligator the lady would be an amputee.

As someone most curious about the origins of Sanibel's crocodile I urge that some qualified and permitted person/agency conduct the following study: Officials should again capture this crocodile, draw a blood sample, and compare this through standard DNA protocols with the DNA of the core population of crocodiles in Dade and Monroe counties. Today, there are crocodiles also living wild near Bonita Springs, Rookery Bay, and the Marco Island airport. Like the Sanibel croc their true origins are also mysterious, however, their DNA analyses should be excluded from the more urgent Sanibel study. With more animals available south of Sanibel Island there is more time to collect blood specimens. Is the Sanibel hermit a Florida American crocodile or is it a Jamaican American crocodile?

Has the Sanibel crocodile repeatedly paired sexually with an alligator? This may seem a strange suggestion and may be considered by wildlife geneticists to be highly unlikely for two so distantly related crocodilians (I know they belong to two different genera and represent two divergent families of the Order Crocodilia). I offer the suggestion that the "isolated" Sanibel croc may be so hormone-loaded seasonally she would indeed be receptive to the advances of an amorous bull alligator. The scientific literature that I have reviewed does not address the question if alligator sperm is capable of fertilizing a crocodile egg, but I believe it is possible that the sex act between the species may be hormonally sufficient for the crocodile to ovulate and the eggs to shell. That none of the eggs ever produced by this female were fertile would seem a logical outcome. I don't agree with the assumption that has been offered by some biologists that

the Sanibel hermit croc is reproductively senile. It still takes two to tango, and she is ovulating and producing shelled eggs. The critical missing factor, it seems to me, is the penetration of the yolk wall by strong, viable, and genetically compatible sperm. In my opinion if a male crocodile were the partner this female would complete the process of producing fertile eggs and with proper management Sanibel's crocodile population would be growing. Should this be the croc that once belonged to me she would be about 43-years old and approaching the end of her life. Time to study her in detail is running out! Isn't there some bright young wildlife biologist out there that's not bogged down in bureaucratic nonsense who will pick up this ball and run with it? Please share the outcome with us all through Kevin Lollar at the News-Press, and submit a contribution on the results to this Newsletter.

Charles LeBuff
March 25, 2007



Adult American crocodiles at Everglades Wonder Gardens, Bonita Springs, Florida, in 1952. These specimens were caught between 1936 and 1947 in Florida Bay near Key Largo. Later, in 1953, another was captured and added to this collection from near Osprey, Sarasota County, Florida, after it had frightened swimmers. Into the early 1950s these specimens regularly mated and produced quantities of fertile eggs. American crocodiles habitually bask with their mouth agape. American alligators also display this habit, but to a far lesser degree.

POSTED COMMENTS/FEEDBACK ON THIS ARTICLE

Hi Charles, I enjoyed your info on the crocs. Here's a bit more info on their distribution. Three years ago just south of Alligator Alley on SR 29 there was a 10 to 11-foot* Crocodylus acutus *(American crocodile, ed.) in the canal all winter. It was well documented (pics, videos, etc.) by employees of Everglades Day Safari and Park personnel. Additionally, two 5 to 6-foot crocs were on Loop Road during that same time period. This puts the crocs a long way from salt water and their usual habitat preferences. It seems that* C. acutus *may be moving inland due to several factors. One factor is that being they are highly territorial suitable coastal habitat may be lacking. Another is that in more tropical climes they readily live in fresh water areas and with global warming perhaps our fresh water areas are becoming more inviting. Keep up the good work. All the best, Tom Crutchfield

Received 4/4/07

Dear Charles,

No, I had not read this before, thanks. Can't say I really disagree with you anywhere. My only hesitation about catching the animal has been that larger, older critters are stressed by capture events and so I always think twice about that. I sure have been curious about its genetics.

Interesting that the large (similar sized females) at Rookery Bay also lay infertile clutches. We have caught four of those crocs at nests and there were at least 2 more there. But no guarantee one was a male. We took genetic samples, they were not analyzed.

I always thought that given her single existence that the clutches on Sanibel were infertile, they otherwise appeared healthy.

I have seen crocs and gators court in captivity before and exhibit social behavior in the wild towards each other. They could mate (not anatomically impossible that is for sure) but I doubt there would be any offspring.

Acutus *is known to interbreed with both Morelet's and* **rhombifer.**

There has been at least one croc swimming up the Caloosahatchee River.

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