

## **AN ALLIGATOR DISTRIBUTION STUDY OF THE DOG RIVER WATERSHED**

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Rabbit Creek has been highly developed for residential use over the past 30 years. This development has taken a toll on the alligator population in this basin of the Dog River Watershed. Alligators are a keystone species in this basin. They help control alligator gar and several invasive species including nutria and feral swine that will over populate and decimate other wildlife and sensitive shorelines if alligators disappear from this watershed. I have attempted to count the alligators in DRWS by sight counting during the day and by night using the eye-shine method. The results are not encouraging. If nesting areas are not protected, fewer and fewer alligators will remain in this area. As a keystone species they create gator holes in the marsh and canals leading into the interiors of marsh areas. These canals and gator holes create valuable habitat for other species when the alligators are not present. Plankton that forms the base of the food chain can be found in some of these holes. Nesting areas are usually located near gator holes. The ultimate goal of this paper is to bring the ecological importance of the alligator to the attention of Dog River Clearwater Revival so it can help protect alligator habitat in the Dog River Watershed. This can be done by forming a conservation land trust and designating sensitive land as conservation easements.

Keywords: alligator, keystone species, invasive species.

### **Introduction:**

The Rabbit Creek Drainage Basin drains the Theodore area of south Mobile County. Near the mouth of the creek where it joins Rattlesnake Bayou, there is a high concentration of development along the banks. Many homes have bulkheads along the bank. The purpose for the bulkhead in theory is to prevent erosion of the creek bank in front of the homes (Draugelis-Dale 2007). Extensive bulkheads create a bath tub effect and act as a wall prohibiting wildlife from freely accessing the creek (Raines 2008). The marsh lands are intermittent east of Rangeline Road. West of Rangeline Road there is less development thus the creek takes on a more natural setting. Since Rabbit Creek has become developed over the past 20 years the basin has seen dramatic changes in wildlife population and habitat. On a recent tour through the area, I noticed a difference between the amount of wildlife in this environment and the amount of wildlife I have

observed in more natural areas like Chickasaw Creek. If DRCR is serious about the revival of Dog River then it must be concerned about the population and diversity of wildlife in the watershed.

The alligator's presence is a gauge indicating the health of this watershed. While birds are transient, alligators (*Alligator mississippiensis*) are considered year round residents and are a keystone species. A keystone species is one which the entire ecosystem depends on in some way. They should be considered vital parts of the healthy environment of this basin. Alligators are the largest reptile found in the Alabama. Once plentiful, they were hunted almost to the brink of extinction, but, during the 1970s, they were listed as endangered and protected (Pritchett 2007). Due to high birthrates their numbers have rebounded, and they are now listed only as threatened. They mate in the water during April and May. Once the female has conceived she finds a secluded area and builds a nest on land consisting of mud and vegetation near the water's edge (Draugelis-Dale 2007). The incubation of the eggs takes about nine weeks after which she digs the young out of the nest and carries them to the water. Due to habitat loss because of the development along the banks especially bulkheads, alligators may find it difficult to locate suitable nesting areas east of Rangeline Road. If this is the case, then nesting areas west of Rangeline Road should be protected to insure the continued presence of alligators in Rabbit Creek. Why would DRCR want to protect suitable nesting grounds for alligators? Like I said earlier, they are a keystone species in every environment they occupy. They open up marsh areas by digging canals into the heart of these areas and create gator holes. In these gator holes, many species find refuge and food, including birds, fish, other reptiles, mammals and plant life. Some plankton found in gator holes are the very foundation of the food chain. Gator holes are a truly unique habitat. (Fig 1) Alligators eat predators like the alligator gar, now protected from over

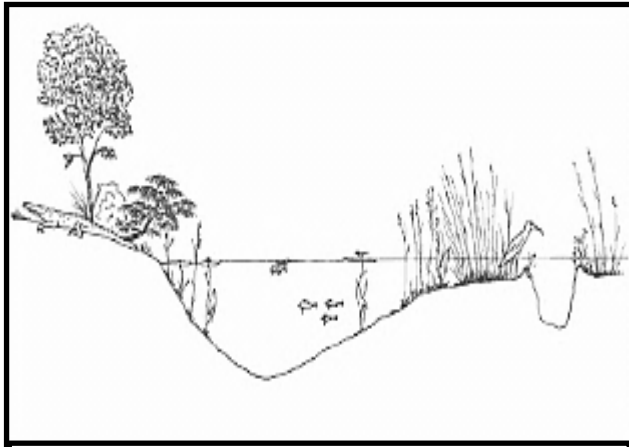


Figure 1. Gator Hole. These areas are used by many marsh dwelling creatures. sofia. usgs.gov

fishing, yet these fish consume huge quantities of game fish, such as bass, bream and other sport fish found in Dog River. They control nutria, (*Myocastor coypus*) populations. These are an invasive species of large herbivorous rodents that eat vast areas of marsh grasses which protect the shorelines of Dog River from wave action and especially

storm damage. Alligators also eat feral swine, or wild pigs (*Sus scrofa*) which were recently sighted on Rabbit Creek Drive west of Rangeline Road. This invasive species can triple its population within a year, is not afraid of humans and carries diseases such as psuedorabies, tuberculosis, and even anthrax. Psuedorabies has similar symptoms to rabies but is not actually the rabies virus; it is still fatal to pets. Wild pigs have the potential to destroy private property along the shoreline as well as contaminate the water itself with fecal material, urine and sediment disturbed by its rooting and hollowing habits. This bioturbation releases nutrients from the soil and loosens sediment which will increase erosion in the watershed and add sediment to the river. Wild pigs are going to be a major problem for this area for some time to come.

Alligators are the last line of defense from invasive species. If alligators disappear from the Dog River Watershed the entire ecosystem will suffer. Left unchecked, the nutria will eat the marsh lands which protect the shoreline and provide nurseries for fish and their young, alligator gar will eat the game fish so valued by sportsman, and wild pigs will over run the entire area destroying property and threatening people and pets. As the food chain suffers there will be fewer reasons for people to come to Dog River. People are here for the beauty of the area, if the

ecosystem fails, that beauty could be lost and the mission of the Dog River Clearwater Revival will have failed. If alligators are the keystone of the ecosystem then people are the cornerstone of the revival and the revival of Dog River depends on the survival of its alligator population.

**Research Question:**

My research question: I originally wanted to count alligators only in Rabbit Creek, but after 5 visits to the area, I failed to locate a single alligator. That finding led me to search beyond my original planned study area. Where are alligators located in the Dog River Watershed? Are there enough nesting areas available along the banks of the Dog River Watershed to support a healthy alligator population? How can more land be set aside for habitat protection?

I believe this research will serve as a base-line for future research as the watershed becomes more developed in the years to come. Hopefully, this research will establish a need to protect the riparian habitat along the banks of creeks and bayous throughout the Dog River Watershed.

**Methods:**

I carried out this count by government approved methods which include night shine eye counts, and basking counts (Lockwood 2007). I used my kayak and a motorized boat to travel up the creeks(Fig 2). I launched my kayak at Rangeline Road and



Figure 2. Kayaking on Rabbit Creek for Basking Count

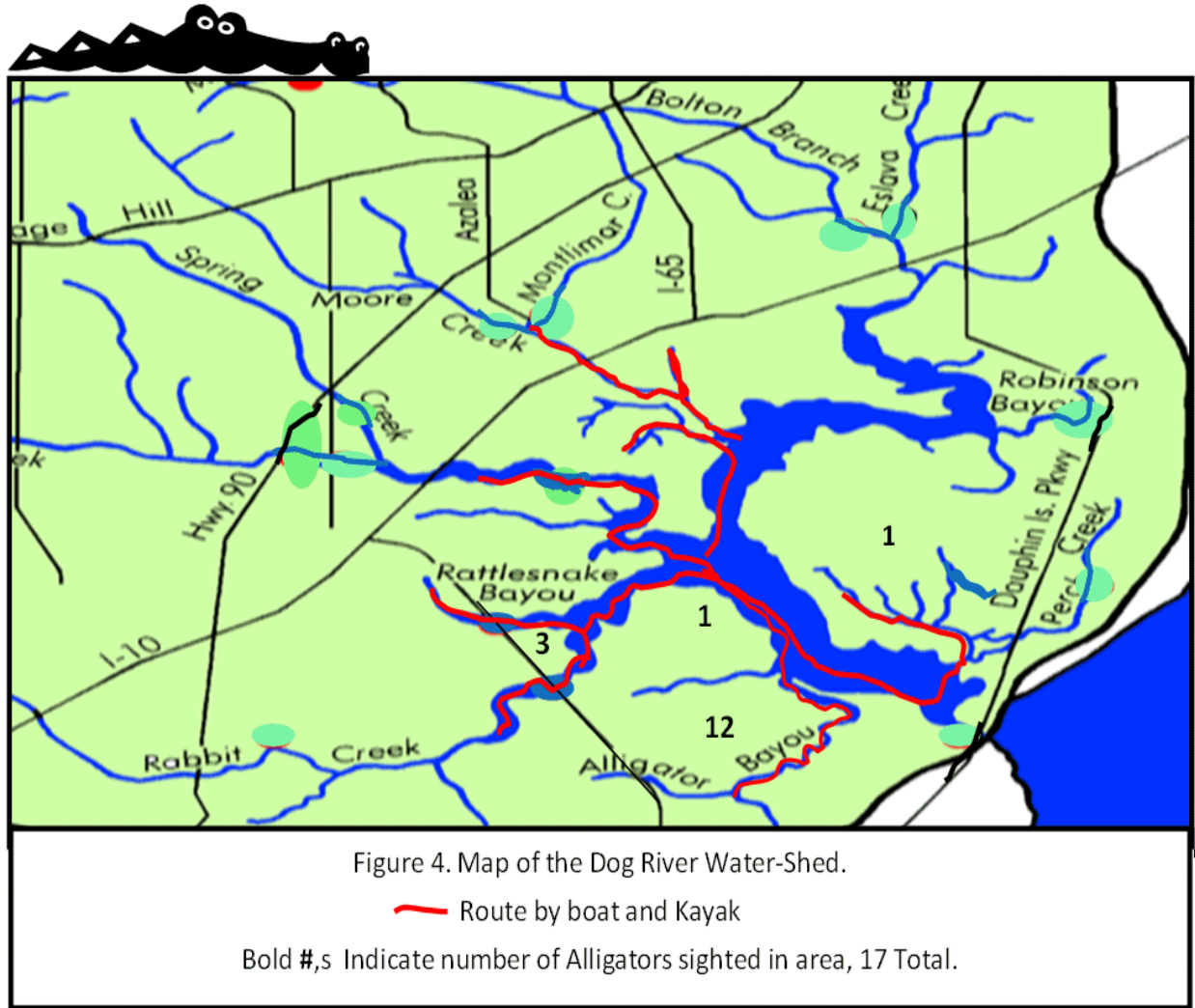
traveled west up Rabbit Creek then east toward Rattlesnake Bayou. Then I traveled 1 mile east to the mouth of Rabbit Creek. On the next trip I launched at the same spot on Rabbit Creek and travelled to the Dog River Bridge and back. A motor vessel was used for the night shine eye counts which consist of using a bright light at night to illuminate alligator's eyes which reflect light brilliantly. The eyes glow bright orange (Fig 3). When I used this method I counted the pairs of eyes. This method worked best because alligators are more active at night. The basking count method is used to count alligators as they bask in the sun. They pull themselves out of the water and lie motionless in the sun. This was the least successful method. I would have counted any I encountered while basking but I soon realized I could not depend on this method as an accurate measuring tool. I performed each of these methods to determine which would return the best results. Each trip my team made at night we launched the boat at Schwartz Landing off of Rabbit Creek Drive. We traveled west to Rangeline Road, reversed our route and proceeded east to Rattle Snake Bayou. We traveled slowly, about idle speed, so one team member could sweep the light back and forth from shore to shore while avoiding shining the light directly into the homes lining the banks. This method allowed me to see the banks and the water in my path thus we safely navigated through the creeks listed.



Figure 3. Alligator in Alligator Bayou. Eyes illuminated by spotlight glow bright orange, known as eye shine.

## **Results:**

I had to stray from my original research question because I did not find any alligators in Rabbit Creek. That is not to say definitively that none exist there. But I did spot 17 alligators over 4 visits to other areas. One alligator was spotted during the day in Rattle Snake Bayou approximately 300 meters from the mouth of the bayou. Two others were spotted at night a few weeks later close-by; I believe this to be the same alligator because of its proximity to the first sighting. There were 9 sightings in Alligator Bayou on the night of April 7, 2012; the night of the full moon. On April 23, 2012 four alligators were spotted in Alligator Bayou and 1 was spotted in Perch Creek (Fig 4). However local residents along Perch Creek insist several are present. All were spotted using the night eye shine method. All of these alligators submerged as the boat approached. One surfaced next to the boat on the opposite side of the bayou as we were exiting Alligator Bayou. That individual was approximately two meters in length and appeared healthy. The banks of Alligator Bayou are lined with evenly growing grass. There were no signs of nutria in this area on the first trip to the bayou; however several were spotted on the second visit. In areas where nutria were spotted in Rabbit Creek and Rattle snake Bayou we saw no alligators. There were no alligators spotted in Dog River, Rabbit Creek, Halls Mill Creek, Moore Creek.



**Conclusion:**

Rabbit Creek is an important part of the Dog River Watershed. Its banks have been heavily developed by residential property owners. Many of the home owners have built bulkheads along the creek bank to protect their property from wave damage and erosion. The bulkheads have reshaped the banks of the creek limiting access to inland areas from water dwelling wildlife such as Alligators. Alligators are a threatened species and are still protected. With habitat being replaced with housing development it's not hard to see how this must affect Alligator populations in the area. Invasive species and hungry predators are threatening the entire

ecosystem. These species are supposed to be kept in check by a healthy alligator population. I have counted the present population of Alligators to establish a base line for future studies in these basins of the watershed. The results are not encouraging. I know there are more than 17 alligators in DRWS but the absence of them in the creeks is disturbing. I believe their absence in these basins is because of human activity. I believe there are too many boats traveling the creeks during the day, too much artificial light at night and no longer adequate nesting areas available. Whatever the cause is it is evidenced by their absence. I am betting it is a combination of all three.

A watershed is only as healthy as the diversity of its thriving natural resources. Alligators are the keystone of this diverse ecosystem and while individual alligators appear healthy overall as a keystone species they are suffering. I believe they are being crowded out. They depend on the marshes and other marshland dwelling animals depend on them. Dog River Clearwater Revival should make it a priority to protect these vital marginal areas. Marsh land should be set aside and protected from further destruction so these creatures can survive. How would landowner go about setting aside land for habitat preservation?

Alabama's Uniform Conservation Act, signed into law May 29<sup>th</sup>, 1997 by former Gov. Fob James was designed for land preservation. It is the best way to protect valuable habitat. Under this act individual landowners can declare their land as a conservation easement and donate it to a non-profit land trust. A land trust is designed to set aside land for recreational, agricultural and protecting natural resources among others. A conservation land trust would have to be formed by the Dog River Clear Water Revival. Once a portion of their property is donated as a conservation easement the landowner qualifies for tax breaks. Building restrictions will then apply which will protect the land from further development. The most difficult part of



this plan would be for Dog River Clear Water Revival to form a conservation land trust. An attorney would have to be consulted because a non-profit land trust must be formed and certain criteria would have to be met under Alabama law.

For more information on Alabama's Uniform Conservation Act visit

[www.conservationseast.com/Alaease.htm](http://www.conservationseast.com/Alaease.htm)

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Figure 1 [http://sofia.usgs.gov/sfrsf/rooms/wild\\_wet\\_eco/gator\\_croc/](http://sofia.usgs.gov/sfrsf/rooms/wild_wet_eco/gator_croc/)

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