A Survey for the Southern Leopard Frog (*Rana sphenocephala*) on Long Island

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August 9, 2006

Prepared in partial fulfillment of the requirements of the Office of Science, U.S. Department of Energy Science Undergraduate Laboratory Internship under the direction of Jeremy Feinberg in the Environmental Division at the Brookhaven National Laboratory.

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ABSTRACT

A Survey for the Southern Leopard Frog (*Rana sphenocephala*) on Long Island. CHRIS CAMACHO (Wesleyan University, Middletown, CT 06459) JEREMY FEINBERG (Rutgers University, 1973) TIM GREEN (Brookhaven National Laboratory, Upton, NY 11973).

The southern leopard frog (*Rana sphenocephala*) was once one of the most common frog species on Long Island. However, over the last thirty years, populations have declined rapidly and the southern leopard frog may be extirpated from Long Island. In order to assess the status of *R. sphenocephala* on Long Island, all wetlands on the island with suitable habitat were surveyed. Historic leopard frog sites and areas within the previous range of the species were thoroughly surveyed by foot in an attempt to document any remaining populations. The southern leopard frog was not seen at any of the sites that were evaluated. However, this still does not confirm that this species no longer exists on Long Island. There may still be small, very localized populations which could only be identified during the calling season from Late March to early May, when the species is most easily found.

INTRODUCTION

The southern leopard frog (*Rana sphenocephala*) is a wide ranging species that can be found from Long Island south to Florida, and through the Midwest to Texas and Oklahoma (Conant and Collins, 1998). Southern leopard frogs will breed in a variety of habitats including ditches, wet meadows, seasonal ponds, wooded swamps and sediment basins. On Long Island, they have historically favored open, grassy habitats like farm ponds (Latham, 1971). This species can be distinguished from the pickerel frog (*Rana palustris*), a species that is currently common on Long Island, by the arrangement of their spots. The spots of the pickerel frog are almost square in pattern, while the southern leopard frog's spots are very irregular in shape and pattern.

Although the primary breeding season is in March and early April, southern leopard frogs have been known to breed in every month of the year. Leopard frogs move considerable distances from water, especially in wet grasslands or damp woodlands.

The southern leopard frog was one of the most common frog species on Long Island in the early 1900's. It was known to be common in areas such as Montauk, Orient Point, and Sayville up to the 1960's. It was often found in farm ponds in Orient Point, where it was more common than the green frog (*Rana clamitans melanota*).(Latham, 1971) The species was considered the most abundant frog in several areas as well (Turrell, 1939). However, starting in the mid 1900's, southern leopard frogs were seen less and less. Many factors could have caused its decline including disease, habitat change and succession, chemicals, overcollecting, invasive species, There are several possible explanations for this.

The southern leopard frog is currently a species of special concern in New York State, however, there are not any confirmed records on Long Island since around 1990. The stronghold of the species was previously Long Island.

We want to get an idea of what the reason of the decline may be and find any remaining southern leopard frog populations.We want to conduct a definitive survey of all wetlands that may potentially hold a population of southern leopard frogs. If we find them, they may be put into a breeding program and reintroduced to areas they were found in the past.

MATERIALS AND METHODS

Long Island is full of a myriad of wetlands including lakes, ponds, meadows, swamps, and streams. To narrow down the areas that we would survey, we first tracked down previous records of localities of southern leopard frogs. We went to the American Museum of Natural History and looked at museum specimens of leopard frogs and noted the point of capture of the specimens. We also took anecdotal records into account. We spoke to a number of naturalists who had seen the species in the recent past and created a map . We then used the program Google Earth to find all wetlands within the previous range and also all wetlands with suitable habitat. We proceeded to classify the sites into three groups: primary, secondary, and tertiary. Primary sites are historic leopard frog sites. Secondary sites are areas with appropriate habitat. Tertiary sites are wetlands that could potentially hold a remnant leopard frog population.

We used known southern leopard frog sites from the New Jersey Pine Barrens as references to get an idea of the activity and behavior of the species. We visited these sites several times during the year to determine if the behavior of the species changed throughout the spring and summer.

We conducted walking pedestrian surveys at these sites and also conducted calling surveys. We searched the perimeter of all wetlands and focused on searching in open, grassy areas with shallow water. We used a tapeplayer and played the calls of southern leopard frogs in an attempt to induce the frogs to call. We used a dipnet to capture any larval amphibians in the wetlands that were surveyed.

RESULTS

After surveying 51 primary, 86 secondary, and 38 tertiary sites on the island, we did not find or confirm any surviving leopard frog populations on Long Island. However, we did receive reliable reports of southern leopard frogs from Montauk and Staten Island. We did document several other species of frogs including green frogs (*Rana clamitans melanota*), bull frogs (*Rana catesbeiana*), pickerel frogs (*Rana palustris*), spring peepers (*Hyla crucifer*), gray tree frogs (*Hyla versicolor*), Fowler's toads (*Bufo fowleri*), and eastern spadefoot toads (*Scaphiopus holbrookii holbrookii*).

DISCUSSION

The two potential surviving populations in Montauk and Staten Island should be confirmed in the near future. These populations could be located, captured, used for a captive breeding program. The frogs could then be introduced at other historic leopard frog sites throughout the island in an attempt to re-establish the species.

After surveying all of the sites by foot, we did realize that many of the historic sites have changed dramatically since the early 1900's. Many of the farm ponds where southern leopard frogs were previously abundant have succeeded into forested ponds. *Phragmites* has invaded many of these wetlands and is or has completely taken over and crowded out all of the native vegetation. This may have crowded out the leopard frogs, as they prefer open areas.

However, we did survey several historical sites on Long Island with ideal southern leopard frog habitat, but did not see any leopard frogs at these sites. The absence of the species from these areas is alarming and may be due to other environmental factors, such as disease. In the future, environmental samples could be taken from these sites to determine the reason for the decline of this species.

ACKNOWLEDGEMENTS

Special thanks to Katie Heiser for her valuable help in the field. We would also like to thank Miranda Mockrin, Andy Sabin, Murray Lantner, Larry Penny, Fred Schlauch, Gary Lawton, Ai Wen, and Alex Felson for their assistance with the project.

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FIGURES

Figure 1: Examples of southern leopard frog habitat from the New Jersey Pine Barrens.

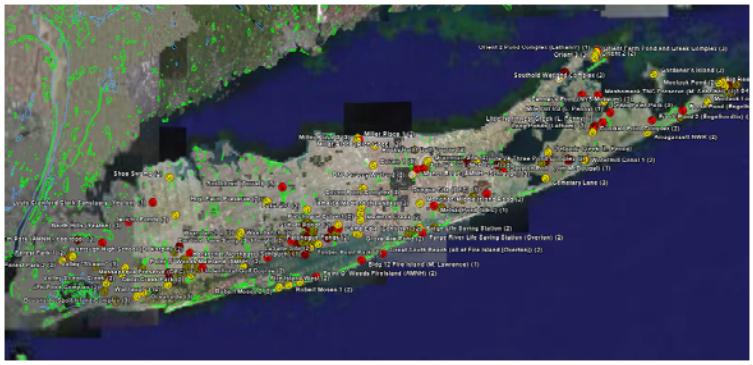

Figure 2:A map of primary, secondary, and tertiary southern leopard frog sites on Long Island. Sites with red marks are historic sites. Other potential sites are in yellow.

Figure 3: An example of suitable southern leopard frog habitat from a historic leopard frog sites on Long Island.

Figure 4: Examples of poor southern leopard frog habitat from Long Island. The area on the left is a swampy, closed canopy wetland. The area on the right is being overtaken by *Phragmites*, which is the tall, stalk-like plant in the background.

Figure 5: A close relative of the southern leopard frog, the pickerel frog. This species is found near shallow water in open, grassy areas, just like the southern leopard frog. However, unlike the leopard frog, the pickerel frog is fairly common on Long Island.

Figure 6: A bull frog (left) and a green frog (right). In places where leopard frogs were once abundant, bullfrogs and green frogs are now very common. It is possible that they have outcompeted the leopard frogs.