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Investigating the Ecological Role of American Alligators in South Florida

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Problem Statement:

What ecological role do American Alligators serve in South Florida?

Background

Within an ecosystem, certain species have roles that have a large effect on the types and abundance of other species. These keystone species play critical roles in sustaining an ecosystem, such as a pollinator or a top predator. American Alligators (*Alligator mississippiensis*), the largest reptile in North America, is a top predator in the marsh and swamp habitats in the southern United States. Through observation and research, we have determined that the American Alligator is a keystone species in the Florida Everglades. As top predators, American Alligators eat large numbers of gar and other predatory fish, which helps to maintain the balance of fish populations

that would usually fall prey to these fish predators. Gar, in particular, are known to consume valuable species like bass and bream, whose populations are able to continue because the population of their predators is kept from increasing drastically.

In the Everglades, it is common to come across gator holes that are formed when an alligator digs with their jaws and claws. These holes are able to retain freshwater through dry spells, providing refuge for aquatic species (Miller and Spoolman, 2012). In addition, the freshwater contained in the gator holes is vital for the survival of many of the Everglades insect, reptile, and bird populations.

American Alligators also leave behind nesting mounds at the end of their breeding season. These mounds quickly become nesting and feeding sites for birds, including many of the Ev-



Everglades' heron and egret species. Several species of turtles, including the Florida red-bellied turtle (*Chrysemys nelson*), can use abandoned gator nesting mounds to incubate their own eggs.

Implications & Conclusions

Due to its role as a keystone species, the extinction of the American Alligator would likely have devastating impacts on several other Everglade species. In the past, alligator populations were been depleted through overexploitation by

hunters and poachers. By the 1960s, the American Alligator population in the Florida Everglades was near extinction. The American Alligator was placed on the Endangered Species list and the protection afforded the animals the opportunity to rebound. The population made a strong comeback, and in 1977 the American Alligator was reclassified as a Threatened species. There are currently over 1 million alligators in Florida and their story is considered to be an example of the success that can be possible through wildlife conservation.

