

Ecology of Everglades Alligator Holes

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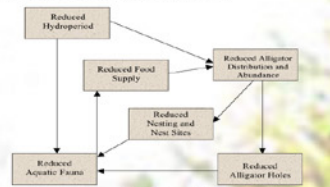
Description

The American alligator (*Alligator mississippiensis*) creates small ponds, called alligator holes, by excavating substrate and vegetation. These holes are common in the Everglades and Frank Craighead in 1968 characterized alligator holes by these three components:

- 1.) A depression in the muck or limestone bedrock;
- 2.) Water to fill the resulting basin; and,
- 3.) Alligators to create and maintain the hole.

Function

- Provide water necessary for mating;
- Act as dry season refugia for aquatic organisms;
- Provide concentrated area for birds and mammals to forage;
- Provide disturbance site for plant establishment through soil enrichment and removal of vegetation; and,
- Increase overall diversity of Everglades

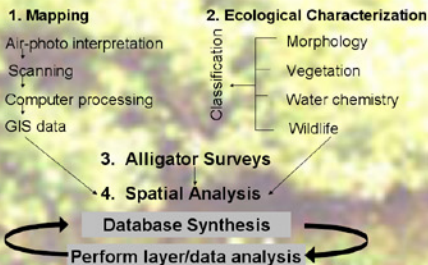


Flow Chart of Hydroperiod Effects on Alligators. Redrawn from Marl Prairie Rocky Glades Workshop by Steve Davis and Tomma Barnes

Questions

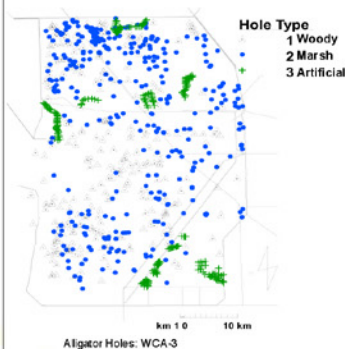
1. Where are alligator holes?
2. What do alligator holes look like?
3. How are alligator holes arranged in space?

Methods



Methodology Flow Chart

Mapping Summary

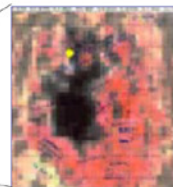


- Holes are classified in three categories by vegetation type.
- Color, infrared aerials (1:24,000) are adequate to map alligator holes.
- Spatial accuracy is 60 m.
- Commission accuracy depends on size, location, and vegetation. Holes in sloughs are more difficult to identify than in wet prairies and sawgrass.

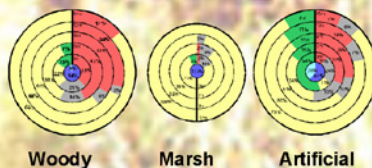
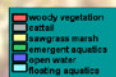
Ecological Characterization



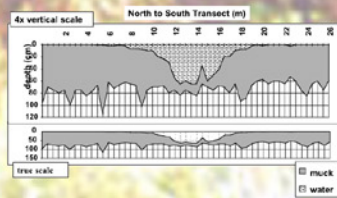
This image is a digital enlargement of an alligator hole at 1 meter resolution. These field maps assist in classifying vegetation types, identifying alligator holes, and mapping vegetation. Yellow dot indicates location of picture on right.



- Small holes are structurally and vegetatively distinct from larger holes.
- Larger holes surrounded by woody vegetation provide upland habitat and increase the diversity and richness of the surrounding vegetation.
- Larger alligators (and hatchlings) are found in larger holes, while juveniles are found in surrounding smaller ponds – holes act as social refugia.

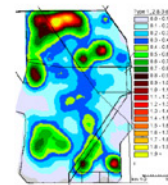


Composition of Vegetation in Three Meter Rings from Edge of Open Water

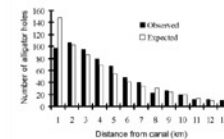


Example of transect data for an alligator hole showing water and muck depths in the North to South direction. Note vertical scale exaggeration.

Spatial Analysis



Density Map: All Holes



Number of Alligator Holes as Compared to distance from canal.

- Holes are clustered, but clusters are not clustered.
- Clusters are 3 km apart.
- Vegetation and canals have an effect on overall hole distribution.
- Fewer holes than expected are found within 1 km of a canal.



Canal Influence: Number of Alligator Holes as Compared to Distance from Canal at 1 km Increments.

Number of Alligators Observed at Different Hole Types

	# Active-Spring	# Active-Fall	Trails	Adult	Hatch	Juven.	Nest	Other*
Type 1	5 (56%)	7 (78%)	9	2	7	0	1	3
Type 2	6 (55%)	8 (73%)	11	0	0	5	0	3
Type 3	7 (78%)	8 (89%)	9	3	5	1	2	6
Total	18 (62%)	23 (79%)	29	5	12	6	3	12

* Other signs include: tail drags, footprints, sunning spots, or gator dens.



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