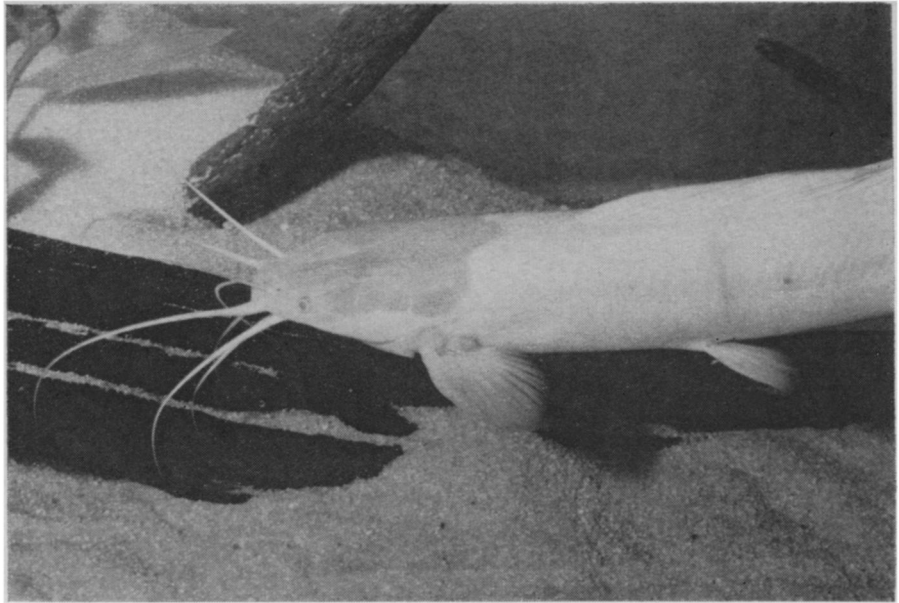




Ambling *Clarias* fuddles Florida dog.



Miami Seaquarium

*Clarias batrachus*, one of several aliens threatening Florida ecology.

## ECOLOGY

# Ecological invaders tilting the scales

Asian catfish join birds, plants and toads in an attack on Florida's balance of nature

by Al Volker

About 18 months ago, citizens living in outlying sections of Palm Beach and Broward (Fort Lauderdale) Counties began to see 16-inch white catfish propelling themselves along on stubby pectoral fins up to a mile from the nearest water.

A witness swore at a Florida Game and Fresh Water Fish Commission hearing that one had attacked his dog. Another said he saw one leap four feet.

**The walking catfish**, which moves much like an infantryman wriggling under barbed wire, was soon classified as belonging to the *Clariidae* family and the *Clarias* genus, but the species was unknown. Word got out that it might be *Clarias lazera*, an African species that reaches four feet in length and perhaps 40 pounds in weight. Floridians, who calmly accept the cross-country meanderings of alligators, didn't like the idea of dog-attacking catfish marching across their lawns at night.

The walking catfish of South Florida, while not the bog-trotting, dog-fighting menace originally described by panicky residents, is nevertheless a potential upsetter of natural balances in the Everglades—a set of delicate arrangements already under siege by bird, plant and toad.

So the Florida Game and Fresh Water Fish Commission took alarm. Biologists Vernon Ogilvie and Bob Goodrick pointed out that *Clarias* appeared to be a voracious feeder. They feared it would soon multiply in the friendly Florida climate and interlinked fresh and brackish canals and eat native fish out of house and home.

Ogilvie asked plaintively, "How can I ever control it? How can I control a fish that—if the water dries up—just buries itself in the mud and comes out again when the water comes back? It's a fish that, if you put poison in the water, I don't know but what it won't



FG&FWFC

Peacock bass: inferior to bigmouth.

crawl out of the water and get away from it."

**His fears** were unfounded. Commission officials have since poisoned several thousand around a tropical fish hatchery. How many innocent fish were poisoned at the same time, has not been reported.

Since then, reports of the walking catfish have been mixed.

Dr. Walter C. Courtenay, ichthyologist at Florida Atlantic University, recently classified the fish as *Clarias batrachus*, an Asian fish that can reach two feet in length.

Like other fish in its family, it has an auxiliary breathing apparatus that allows it to leave the water for as long as 12 hours. Dr. C. Richard Robins of the University of Miami's Institute of Marine Sciences, points out that it need not breathe air unless necessary—if, for example, a pond becomes deoxygenated at night, the catfish can

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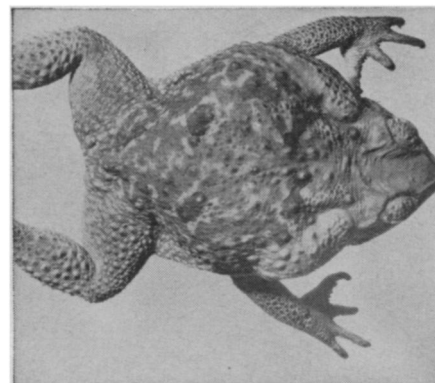
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## . . . ecological hob



*Poison glands swell on toad's neck.*

come to the surface for a gulp of air.

The ghostlike specimens seen on their nocturnal prowls are albinos, says Dr. Robins. In daylight they appear pink. Normally, he says, the fish are mouse-colored with flecks of white.

Pink is the color of the suddenly-popular *C. batrachus* at the Miami Seaquarium. As if to demonstrate newly publicized ferocity, it promptly bit off the tail of an unwary lungfish that shared a wall tank with it.

**Examination of stomach contents** of some of the poisoned fish showed they had been eating shrimp, minnows, frogs and tadpoles, as expected. But one also had eaten on its night-time strolls a species of land-dwelling snail that is the sole diet of the almost-extinct Everglades kite.

The fears of the Florida Game and Fresh Water Fish Commission are well-founded, says Dr. Robins, even though the catfish is not the fearsome species found in Africa. The population explosion of *C. batrachus*, he says, illustrates a point:

People should be careful about releasing foreign fish in waters as hospitable as Florida's. Even a fish harmless to man or other fishes takes up room in the overall ecology and may shoulder a more valuable fish away from nature's feeding trough.

Once fish get well-established, he says, they are harder to evict than, say, elephants or wildebeest.

Tropical fish hobbyists, says Dr. Robins, often free their pets at vacation time, and they thrive in the natural state and often grow much bigger.

**Well-intentioned stocking** of alien animals—to please sportsmen, to control pests or to supply food—often has backfired, Dr. Robins points out.

In the Miami area, the huge poisonous toad, *Bufo marinus* (SN: 7/8/67, p. 38), was brought in to control insects; now it has all but eliminated native toads. There is little or no hope now of eliminating *B. marinus*, even though hundreds of dogs have died in

## ... with Florida's ecology



Florida Audubon Society  
*African bulbuls dine on mango crop.*

convulsions after biting into Bufo's poisonous skin.

The toad possesses one of the most toxic venoms known. It is secreted by parotid glands of the neck in the form of a milky fluid which oozes through pores in the skin. The venom is produced at times of great danger or great pain. Indians in the South American regions where it is native impale the toad on a stick and hold it over a fire. They rub blowgun darts in the resultant venom.

**More recently** and more humanely, it has been discovered that the venom is a rich source of the hormone-like substance serotonin, a substance found

Tilapia proved they could live in water close to freezing, and now they're filling drainage areas along the Gulf Coast. They've proved to be no gamer than a stick and not very tasty.

**The list** of animals that turned villainous after they escaped or were turned loose, Dr. Robins points out, is a long one:

Starlings pester city residents.

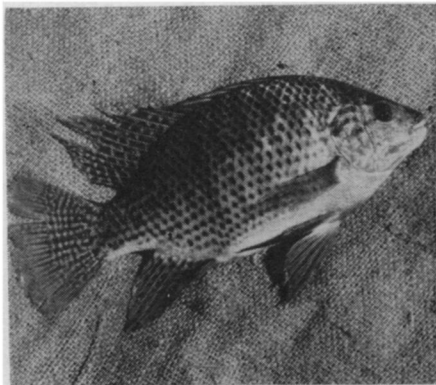
The red-whiskered bulbul, a beautiful African finch, has developed a liking for Florida mangos and would be a costly marauder if it moves north into peach and apple orchards.

The gambusia, pikelike five-inchers, gobble mosquitofish which are worth millions to watery South Florida because they subsist on mosquitoes and their eggs.

**Even plants** get into the act—the purple-flowered water hyacinth, introduced before the turn of the century to beautify ponds, now clogs waterways of southern states and costs millions a year in dredging bills.

Florida law restricts import of only two fish—the piranha and the tiny Candiru catfish, both South Americans. The former sometimes attacks people frenziedly; the latter invades their urinary tracts.

"I don't think we need new laws—we have enough already," Dr. Robins says, "but I would like to see a clear



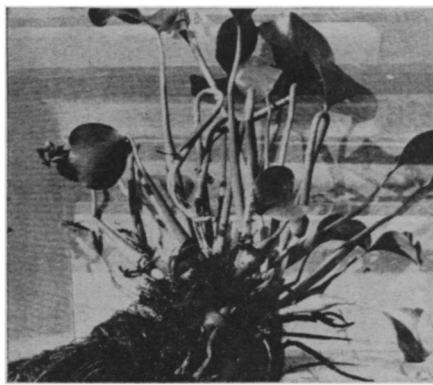
Wallace Hughes

*Tilapia: game and tasty as a stick.*

in human nerves and other tissues which is proving invaluable to research.

The peacock bass of South America was thought to be a welcome running-mate for the largemouth native bass in Florida, but ichthyologists already fear that the peacock bass (which is not a true bass) will displace the respected largemouth and prove to be neither as game nor as tasty.

**Tilapia**, a foot-long mouth-brooding African fish, was placed in ponds all over the South several years ago. Experts thought they were a safe gamble because they were said to be unable to stand cold weather. They were wrong.



*Alien water hyacinth chokes streams.*

policy established on introduction of foreign animals, printed warnings to every tropical fish buyer on the danger of freeing pets in waterways, and self-policing by the aquarium fish industry against allowing nursery ponds to overflow and against dumping unwanted specimens into waterways."

In the meantime, war to the death is being waged against the nocturnal walking catfish by the Florida Game and Fresh Water Fish Commission, which is pessimistic about its chances of victory over a fish that would just as soon walk away from a poisoned pond as not.



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