

## Highlights:

- Ubiquitous Anoles
- Bold Hitchhikers
- Barrier Bycatch
- Commercial Fishermen on a Mission

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## Focal Species: Cuban Brown Anole

### Scientific name:

*Anolis sagrei*

### Size:

Usually 5 - 8 in.  
(total length)

### Native range:

Cuba, Bahamas,  
Cayman Islands

### Notes:

Males have a red-orange dewlap or "throat fan"



Cuban brown anoles are one of the most common lizards in Florida—especially in the south. These nonnative lizards arrived in the U.S. as stowaways in cargo and are transported on boats, campers, and other vehicles. They have invaded every country in peninsular Florida, where they thrive in disturbed or urbanized areas but are also found in natural habitats. Their typically brown bodies are marked with dark or light markings that vary a lot. Males often have dark and light bands across their bodies, whereas females and juveniles may have a light stripe with scalloped edges

running down their back.

Many Floridians are familiar with the native green anole (*Anolis carolinensis*)—sometimes called a "chameleon." Native green anoles can be either bright green or dull brown, but have somewhat narrower snouts and males have a pink dewlap. Unfortunately, native green anoles are now seen less often, especially in urbanized areas in the peninsula. The decline of Florida's native anole is due in large part to the presence of the introduced Cuban brown anoles. These invaders are known to displace native green anoles, forcing them to

move higher into the trees. In addition, brown anoles prey on young green anoles and may eventually replace the native species altogether in urban settings. Studies of brown anole populations on dredge spoil islands have found that these invaders are able to rapidly adapt to new habitats and may be larger in some introduced habitats than in their native Caribbean range. Unfortunately, these lizards have already become so widespread that eradicating them would be impossible.

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## Science: Personality of an Invader

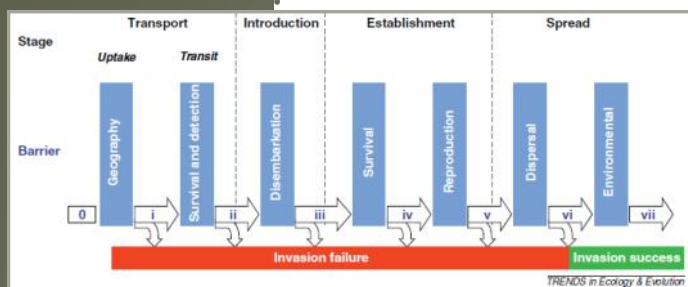


Figure 1 from Chapple et al., 2011 in Trends in Ecology & Evolution

As the figure above depicts, hitchhiking invaders must navigate their way past a variety of barriers on the path to invasion success. Brown Treesnakes invaded Guam by hitchhiking on military equipment and Cuban Treefrogs invaded Florida by hitchhiking in cargo ships. Both species have been extremely successful in their new environ-

ments. However, many hitchhikers fail to become established or are quickly detected and eradicated. So what determines success?

In a recent paper, Dr. David Chapple and colleagues from Australia's Monash University reviewed recent research showing that invader personality traits often play an important role in invasions. Species with a tendency to seek shelter are more likely to be transported and avoid detection, and bold species are more likely to find their way into cargo and disperse in the new environment. Aggres-

sive species may be more likely to outcompete natives. Some personality traits – such as boldness and aggression – may be linked.

Dr. Chapple applied this knowledge to the study of two lizards in Australia. They are closely related and share the same habitat, but only one species has spread overseas by hitchhiking. Chapple found that this species, the invasive Delicate Skink, is more exploratory and has a greater tendency to hide than does its relative, the Garden Skink.

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Physical fish barrier

## More Science: Fish Barrier Impacts

Sea lampreys (*Petromyzon marinus*) are an invasive species in the Great Lakes, where they parasitize native fishes. Parasitism, in combination with pressure from over-fishing, has caused the decline of many native fish species. Lampricide is the most commonly-used management tool, although barriers to prevent breeding migrations have also been used in many areas. These barriers include electrical and physical barriers, some of which can be raised and lowered seasonally. However, these

physical barriers could prevent native, non-jumping fish species from completing their migrations during the sea lamprey migration period.

A recent study by Luis Vélez-Espino and colleagues in Canada and Michigan found that these impacts are likely to be significant. Their research showed that the timing of breeding of most non-target, non-jumping native species overlapped considerably with the timing of lamprey breeding. As a result, lamprey barriers are likely to block

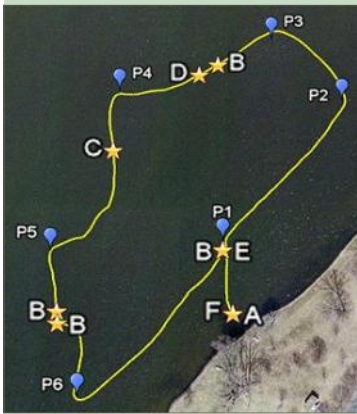
from 44 - 100% of native fish breeding migrations.

Perhaps even more importantly, predictive models of the effects of blocking native fish migrations suggested that the barriers would negatively impact native fishes as much as lampreys. Fish bypass devices were relatively ineffective for reducing impacts. Without additional measures to capture, sort, and release native fish, the use of barriers could be devastating.

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## Innovations: Robotic Carp Tracker



The common carp is an invasive fish species in the Mid-

west that causes significant damage to lake ecosystems. By understanding the movements of these fish, biologists may be able to efficiently trap and remove them. A new study spearheaded by the Sorenson lab at the University of Minnesota brought together roboticists, computer systems experts, mathematicians, and fish biologists to develop a robotic fish tracking system.

These scientists developed a network of robotic devices that move across the water or ice to locate radio-tagged carp and track their movements. A map of the movements of one individual tracked by one of these robots is shown at the far left. When the robots detect the location of a tagged fish, they triangulate and record its position.

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“Our objective is to assist in locating carp aggregations so they can eventually be removed”

## News Updates: Invasive Pollinators

It is perhaps a natural tendency for ecologists to want to eradicate invasive species whenever possible. However, history has taught us that it is prudent to carefully consider the impacts of such eradications. In some cases, eradicating an introduced prey species that has subsidized native predators could potentially cause an increase in predation

pressure on native prey species, leading to disastrous, cascading ecosystem impacts.

In a recent study, David Wilcove of Princeton University and colleagues showed that invasive rats in New Zealand were playing a critical role in the native ecosystem. Many of the native pollinators have been eliminated from the northern

island as a result of predation by invasive rats. Although those native species no longer pollinate some endemic plants found only on the island, the invasive rats appear to have taken over their role as pollinators. As a result, rat eradication efforts could seriously impact native plants.

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## Noteworthy: Fisherman vs. Carp

In October 2011, the Minnesota Department of Natural Resources (DNR) reported that they had detected silver carp DNA in the Mississippi River in Minnesota – far to the north of their known invasive range. In a noteworthy effort, the DNR hired commercial

fishermen to search the river for signs of these invasive fish. These fishermen took their temporary job seriously, because invasive silver carp could have serious negative effects on native fisheries.

After trolling backwater areas where carp tend to spend

most of their time, the commercial fishermen reeled in approximately 7,000 pounds of common carp – another invasive fish. Fortunately, they found no signs of silver carp.

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Image from [MyFox9News](#)





This newsletter is produced by:

*Dept. of Wildlife Ecology and Conservation*

**Dr. Steve A. Johnson,**  
Associate Professor & Extension Specialist

and

**Monica E. McGarrity,**  
Johnson Lab Outreach Coordinator

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suggestions, or an In Focus photo?  
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## In Focus...

This photo shows what appears to be an invasive Cuban Treefrog trapped in the web of a golden orb weaver spider (*Argiope aurantia*). Spiders often prey on frogs. Jumping spiders (*Phidippus* species) are known to kill and eat frogs in PVC "frog traps."



Photo © Gitta Shurberg, 2011

The Invader Updater is a quarterly newsletter focused primarily on providing information on invasive vertebrate animals in Florida and the southeastern U.S., and was first published in Fall 2009.

## Resources

- ◆ **NEW BOOK!** Dorcas & Gibbons (2011) *Invasive Pythons in the United States: Ecology of an Introduced Predator*. University of Georgia Press, 176 pp. [Visit the UGA Press website.](#)
- ◆ **I'veGot1 Mobile App – NOW AVAILABLE!** Everglades National Park is pleased to announce the release of a much-expanded mobile app for tracking invasive exotics in Florida. The Park partnered with University of Georgia in the development of the "IveGot1" app for the popular iPhone to identify and report invasive plants and animals spotted in Florida. [Learn more...](#)
- ◆ **Invasive Species Compendium (beta)** - The ISC is a constantly developing encyclopedic resource containing datasheets on over 1500 invasive species and animal diseases, countries, habitats and pathways, and a bibliographic database of over 65,000 records (updated weekly). [Check out the animal resources in the compendium...](#)
- ◆ **Cooperative Invasive Species Management Areas (CISMAs)** – read more about these regional efforts and join your CISMA today. <http://www.floridainvasives.org/cismas.html>
- ◆ **Invader Updater News** – don't forget, we keep an [extensive archive of Florida, U.S., and international news stories on our website.](#)
- ◆ Know of an important resource not listed here or in our archives? Let us know – email a description and URL to [monicaem@ufl.edu](mailto:monicaem@ufl.edu).