UF IFAS Extension UNIVERSITY of FLORIDA

WEC360

The Argentine Black and White Tegu in South Florida: Population Growth, Spread, and Containment[1]

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Florida's Reptilian Invasion

The accumulation of exotic reptiles and amphibians in Florida has been called a "runaway train" that has yet to be controlled (Meshaka 2011). The state is home to more non-native species of reptiles and amphibians than anywhere else in the world. South Florida is especially at risk because of its subtropical climate, large areas of disturbed habitats, and thriving trade in exotic pets. Although pythons have received the majority of public attention, invasive lizards also pose a significant threat to south Florida's native wildlife and ecosystems.

Figure 1. Argentine black and white tegu (*Salvator merianae*). Credits: Robin Bijlani, University of Florida

The Argentine black and white tegu (Figure 1) (*Salvator merianae*, formerly *Tupinambis merianae;* Harvey et al. 2012) was introduced to Florida through the pet trade and has established breeding populations in Hillsborough County (central Florida) and Miami-Dade County (south Florida). The tegu is one of the largest lizard species in the Western Hemisphere, growing up to four feet in total length. Females lay an average of 35 eggs per year starting at age three or four. Tegus have survived below-freezing temperatures in Florida by burrowing during the winter months (McEachern et al. 2015). The tegu's broad habitat use and omnivorous diet create the potential for severe ecological impacts.

More Tegus in More Areas

Collaborative interagency efforts to assess the south Florida tegu population through surveys, trapping, radio-tracking, and removal began in 2009 within the Everglades Cooperative Invasive Species Management Area (ECISMA). Since then, Argentine black and white tegus have grown in number and expanded their range in south Florida. Figure 2 shows the number of tegus removed per year by ECISMA cooperators. Both the number of tegus removed and the effort expended to catch them have increased. These totals do not include tegus removed by private trappers, some of whom reported removing more than 400 in one year.

The south Florida tegu population is centered in Florida City and Southern Glades Wildlife and Environmental Area, about six miles from Everglades National Park (Figure 3). Tegus are dispersing from this core area. To

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the east, they are approaching the Turkey Point Power Plant site, a nesting area of federally threatened American crocodiles (*Crocodylus acutus*). To the west and south they are advancing toward Everglades National Park and the Florida Keys (Figure 3). Levees facilitate tegus' spread into vulnerable habitats that would otherwise be isolated from terrestrial invaders (Klug et al. 2015).

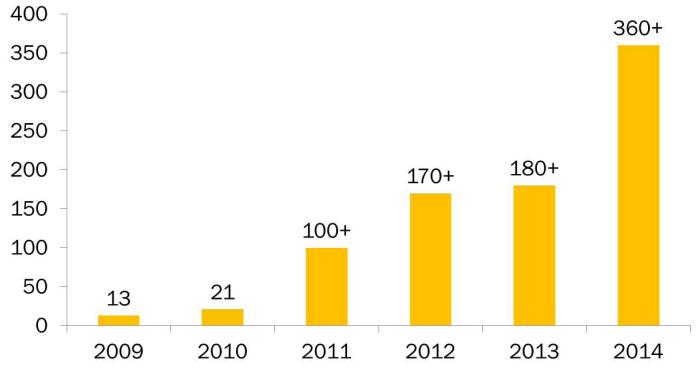

Figure 2. Tegus removed by year (2009–2014) by Florida Fish and Wildlife Conservation Commission, University of Florida, and partners within the Everglades Cooperative Invasive Species Management Area.
Credits: Florida Fish & Wildlife Conservation Commission

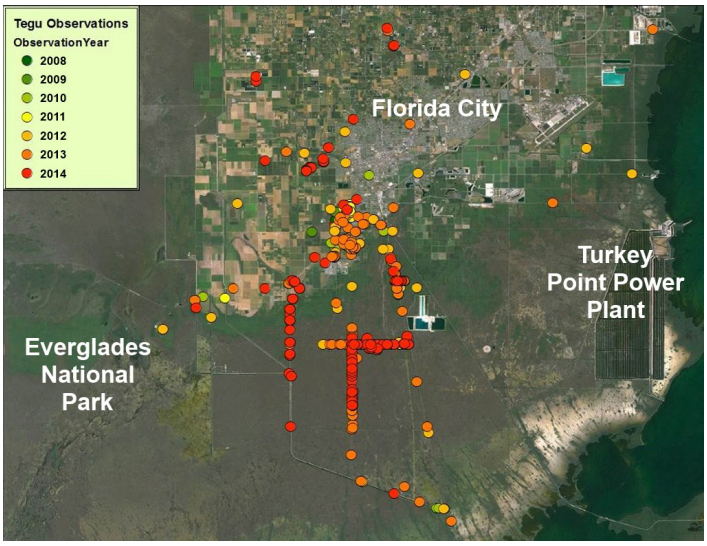

Figure 3. Tegu locations by year in southern Miami-Dade County.
Credits: Florida Fish and Wildlife Conservation Commission. 2014. Exotic species database. Florida Fish and Wildlife Conservation Commission, Tallahassee, FL (accessed December 1, 2014)

Recent tegu sightings west of the Everglades Agricultural Area and south of the Caloosahatchee River suggest that southwest Florida may also be vulnerable to invasion.

What's at Stake

The Argentine black and white tegu is an omnivore that eats fruits, vegetables, eggs, insects, and small animals. As a predator, the tegu is likely to have harmful effects on south Florida's native wildlife. In an analysis of 124 gut content samples from tegus captured along the urban fringe in Miami-Dade County, 39% contained vertebrate remains. These included frogs, toads, lizards, snakes, turtles, and small mammals (Figure 4).

Figure 4. Fur of native cotton rat (*Sigmodon hispidus*) found in tegu gut content analysis.
Credits: Liz Barraco, Florida Fish & Wildlife Conservation Commission

Tegus are especially known for eating buried eggs of reptiles and have been documented eating American alligator (*Alligator mississippiensis*) and turtle eggs in Florida (Figure 5; Mazzotti et al. 2014). Camera traps have also captured photos of a tegu on an American crocodile nest. Hence, a growing and spreading tegu population may reduce populations of threatened and endangered native species such as crocodiles, sea turtles, ground-nesting birds, and the endemic Key Largo woodrat (*Neotoma floridana smalli*).

Figure 5. Argentine black and white tegu leaving an American alligator nest with an alligator egg in its mouth.
Credits: Mazzotti et al. (2014)

Working Together to Reduce the Threat

Management actions depend on where a species is on the "invasion curve" (Figure 6). Based on recent observations, we hypothesize that tegus are moving out of the "containment" phase, becoming so widespread and abundant that costly long-term management may be needed. If we act now, we may be able to contain tegus within their current footprint.

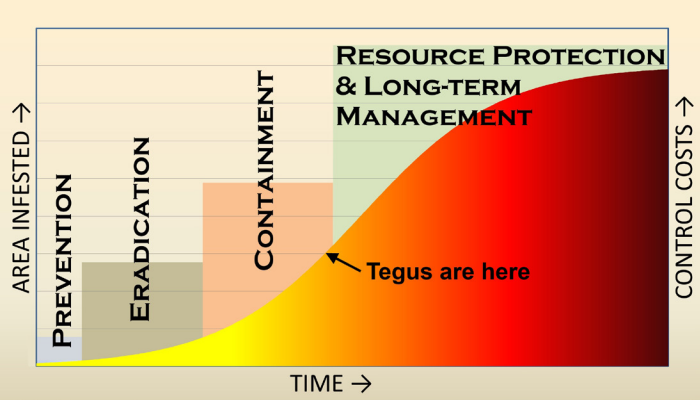

Figure 6. The invasion curve.
Credits: Adapted from Invasive Plants and Animals Policy Framework, State of Victoria, Department of Primary Industries, 2010

The University of Florida, the Florida Fish and Wildlife Conservation Commission, the United States Geological Survey, the United States Fish and Wildlife Service, and the South Florida Water Management District propose to expand a cooperative program to contain and reduce the tegu population. Program tasks include the following:

- Locate and remove tegus in the occupied area using driving and walking surveys, camera traps, and live traps
- Prevent expansion to new areas (including both public and private lands) via live traps, camera traps, and community outreach
- Develop and validate new control tool technology by optimizing trap design and conducting a trap trial to evaluate cost effectiveness
- Use radio telemetry to understand how tegus move through the landscape; apply results to enhance removal of tegus

By acting now, we increase the chance that we will succeed in reducing the harm invasive tegus cause to native wildlife. Preventing their spread will be less expensive and more effective than attempting to remove an established population later.

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