**Supplemental Information**

**The Role of Invasive Species and Charismatic Megafauna**

**In Everglades Herpetofaunal Research**

***Hunter J. Howell and Christopher A. Searcy***

The following material is provided by the authors and was not subjected to peer review or editing by *Herpetological Conservation and Biology*.

**STable 1.** List of published studies, and associated metadata, examining Everglades herpetofauna between 2001 and 2021.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Authors** | **Year** | **Title** | **Urban or Natural** | **Taxon** | **Primary Research Category** | **Funding** | **State Funding** | **Federal Funding** | **Local /Private Funding** |
| Goetz et al. | 2018 | Reduced innate immunity of Cuban Treefrogs at leading edge of range expansion | U | Anurans | Animal Health and Disease | Auburn University | 0 | 0 | 1 |
| Meshaka and Layne | 2005 | Habitat relationships and seasonal activity of the greenhouse frog (*Eleutherodactylus planirostris*) in Southern Florida | U | Anurans | Habitat Use / Distribution / Niche Modeling | N/A |  |  |  |
| Johnston et al. | 2008 | Ecology of a freshwater turtle guild in a southern Florida canal system | U | Chelonians | Species Interaction / Community Ecology | N/A |  |  |  |
| Figueroa et al. | 2021 | Seed consumption by gopher tortoises (Gopherus polyphemus) in the globally imperiled pine rockland ecosystem of Southern Florida, USA | U | Chelonians | Dietary | N/A |  |  |  |
| Ljustina and Shelby | 2018 | Using canals in Southern Florida to measure impacts of urbanization on herpetofaunal community composition | U | Chelonians | Habitat Use / Distribution / Niche Modeling | N/A |  |  |  |
| Corn et al. | 2010 | First Reports of Ectoparasites collected from wild-caught exotic reptiles in Florida | U | Community | Animal Health and Disease | USDA, FWC, USGS | 1 | 1 | 0 |
| Goetz et al. | 2018 | Toxic, invasive treefrog creates evolutionary trap for native gartersnakes. | U | Community | Evolution / Taxonomy | Auburn University | 0 | 0 | 1 |
| Mazzotti et al. | 2016 | Large reptiles and cold temperatures: Do extreme cold spells set distributional limits for tropical reptiles in Florida? | U | Community | Habitat Use / Distribution / Niche Modeling | NPS, USGS, UF | 0 | 1 | 1 |
| Osland et al. | 2021 | Tropicalization of temperate ecosystems in North America: The northward range expansion of tropical organisms in response to warming winter temperatures | U | Community | Habitat Use / Distribution / Niche Modeling | USGS, USFWS, State of Florida, NASA, etc. | 1 | 1 | 0 |
| Engeman et al. | 2011 | The aggressive invasion of exotic reptiles in Florida with a focus on prominent species: A Review | U | Community | Habitat Use / Distribution / Niche Modeling | N/A |  |  |  |
| Meshaka | 2011 | A runaway train in the making: the exotic amphibians, reptiles, turtles, and crocodilians of Florida. Monograph 1 | U | Community | Habitat Use / Distribution / Niche Modeling | N/A |  |  |  |
| Krysko et al. | 2011 | Verified non-indigenous amphibians and reptiles in Florida from 1863 through 2010: Outlining the invasion process and identifying invasion pathways | U | Community | Habitat Use / Distribution / Niche Modeling | N/A |  |  |  |
| Krysko et al. | 2016 | New verified nonindigenous amphibians and reptiles in Florida through 2015, with a summary of over 152 years of introductions | U | Community | Habitat Use / Distribution / Niche Modeling | N/A |  |  |  |
| Fujisaki et al. | 2010 | Risk assessment of potential invasiveness of exotic reptiles imported to south Florida | U | Community | Restoration / Conservation | SFWMD, USGS Priority Ecosystem Studies Program | 1 | 1 | 0 |
| Main and Allen | 2002 | Landscape and seasonal influences on roadkill of wildlife in Southwest Florida | U | Community | Restoration / Conservation | N/A |  |  |  |
| Clements et al. | 2019 | Non-native species dominate herpetofaunal communiy patterns in both native and non-native habitat patches in urban Miami-Dade County | U | Community | Species Interaction / Community Ecology | UM, William Evoy Fund | 0 | 0 | 1 |
| Smith | 2006 | Patterns of nonindigenous herpetofaunal richness and biotic homogenization among Florida counties | U | Community | Species Interaction / Community Ecology | University of Tennesse | 0 | 0 | 1 |
| Enge et al. | 2004 | Reptile surveys of pine Rockland habitat in six Miami Dade county parts | U | Community | Species Interaction / Community Ecology | N/A |  |  |  |
| Fujisaki et al. | 2012 | Use of alligator hole abundance and occupancy rates as indicators for restoration of a human-altered wetland | U | Crocodilians | Habitat Use / Distribution / Niche Modeling | USGS Army Corp of Enginners, USGS, NPS | 0 | 1 | 0 |
| Rochford et al. | 2016 | Molecular analyses confirming the introduction of Nile crocodiles, *Crocodylus niloticus* Laurenti 1768 (Crocodylidae), in southern Florida, with an assessment of potential for invasion | U | Crocodilians | Habitat Use / Distribution / Niche Modeling | N/A |  |  |  |
| Burger et al. | 2004 | Gender and spatial patterns in metal concentrations in brown anoles (*Anolis sagrei*) in Southern Florida, USA | U | Squamates | Animal Health and Disease | NIEHS. Institute for Biological Invasions | 0 | 1 | 1 |
| Sanger et al. | 2018 | The effects of thermal stress on the early development of the lizard *Anolis sagrei* | U | Squamates | Animal Health and Disease | Loyola University of chicago | 0 | 0 | 1 |
| Tokarz et al. | 2002 | Effects of testosterone treatment and season on the frequency of dewlap extensions during male-male interactions in the lizard *Anolis sagrei* | U | Squamates | Animal Health and Disease | NSF | 0 | 1 | 0 |
| Epstein et al. | 2020 | Diagnosis and successful medical management of a colonic, urate enterolith in an Argentine Black and White Tegu (*Salvator merianae*) | U | Squamates | Animal Health and Disease | N/A |  |  |  |
| Parker et al. | 2021 | using enclosed y-mazes to assess chemosensory behavior in reptiles | U | Squamates | Behavioral Studies | NPS, James Madison university | 0 | 1 | 1 |
| Kolbe et al. | 2021 | Bright lights, big city: an experimental assessment of short-term behaviroal and performance effects of artificial light at night on Anolis lizards | U | Squamates | Behavioral Studies | University of Rhode Island and National Geographic Society | 0 | 1 | 1 |
| Stroud et al. | 2019 | behavioral shifts with urbanization may facilitate biological invasion of a widespread lizard | U | Squamates | Behavioral Studies | Florida International University | 0 | 0 | 1 |
| Aviles-Rodrigues and Kolbe | 2019 | Escape in the city: urbanization alters the escape behavior of Anolis lizards | U | Squamates | Behavioral Studies | National Geographic Society, NSF, University of Rhode Island | 0 | 1 | 0 |
| Harvey et al. | 2016 | Not seeing is not believing: volunteer beliefs about Burmese pythons in Florida and implications for public participation in invasive species removal | U | Squamates | Community Science and Outreach | FWC, UF | 1 | 0 | 1 |
| Giery et al. | 2017 | Frugivory and seed dispersal by the invasive knight anole (*Anolis equestris*) in Florida, USA | U | Squamates | Dietary | NSF, Fairchild | 0 | 1 | 1 |
| Tiatragul et al. | 2017 | Embryos of non-native anoles are robust to urban thermal environments | U | Squamates | Dietary | NSF, Howard Hughes medical Institute | 0 | 1 | 1 |
| Chejanovski et al. | 2017 | An experimental evaluation of foraging decisions in urban and natural forest populations of Anolis lizards | U | Squamates | Dietary | NSF, University of Rhode Island | 0 | 1 | 1 |
| Hanslowe et al. | 2016 | First record of invasive Burmese python oviposition and brooding inside an anthropogenic structure | U | Squamates | Dietary | ENP, USGS Greater Everglades Priority Ecosystems Science Program, and USGS Invasive Species Science program | 0 | 1 | 0 |
| Mazzotti et al. | 2020 | Diet of Nile Monitors (*Varauns niloticus*) removed from Palm Beach and Broward Counties, Florida, USA | U | Squamates | Dietary | FWC, SFWMD, and UF | 1 | 1 | 1 |
| Smith et al. | 2016 | Observations on nesting and clutch size in *Furcifer oustaleti* (Oustalet's chameleon) in South Florida | U | Squamates | Dietary | Miami Dade Parks and Open Spaces, University of Florida, FWC, Evergaldes Cooperative Invasive Species Management Area | 1 | 1 | 1 |
| Townsend et al. | 2005 | Predation of a tree snail *Drymaeus multilineatus* (Gastropoda:Bulimulidae) by *Iguana iguana* (reptilia: Iguanidae) on Key Biscayne, Florida | U | Squamates | Dietary | N/A |  |  |  |
| Stroud and Giery | 2016 | Nesting behavior and egg incubation time of introduced brown basilisks (*Basiliscus vittatus*) in South Florida | U | Squamates | Dietary | N/A |  |  |  |
| Wood et al. | 2016 | Insights into the introduction history and population genetic dynamics of the Nile monitor (*Varanus niloticus*) in Florida | U | Squamates | Evolution / Taxonomy | Charlotte Harbor National Estuary program, National Fish and Wildlife Foundation, University of Tennessee, University of Tampa | 0 | 1 | 1 |
| Feiner et al. | 2021 | A highly conserved ontogenetic limb allometry and its evolutionary significance in the adaptive radiation of Anolis lizards | U | Squamates | Evolution / Taxonomy | John templeton Foundation, Wenner-Gren, UF | 0 | 1 | 1 |
| Battles et al. | 2019 | Do structural habitat modifications associated with urbanization influence locomotor performance and limb kinematics in Anolis lizards? | U | Squamates | Evolution / Taxonomy | NSF, University of Rhode Island | 0 | 1 | 1 |
| Wegener et al. | 2019 | Hybridization and rapid differentiation after secondary contact between the native green anole (*Anolis carolinensis*) and the introduced green anole (*Anolis porcatus*) | U | Squamates | Evolution / Taxonomy | NSF, University of Rhode Island | 0 | 1 | 1 |
| Ren et al. | 2016 | Does adaptive radiation of a host lineage promote ecological diversity of its bacterial communities? A test using gut microbiota of Anolis lizards | U | Squamates | Evolution / Taxonomy | University of Virginia, American Museum of Natural History | 0 | 1 | 1 |
| Kahrl et al. | 2017 | Consistent differences in sperm morphology and testis size between native and introduced populations of three Anolis Lizard Species | U | Squamates | Evolution / Taxonomy | University of Virginia, Herpetologists League, American Museum of Natural History | 0 | 1 | 1 |
| Tollis and Boissinot | 2014 | Genetic variation in the green anole lizard (*Anolis carolinensis*) reveals island refugia and a fragmented Florida during the quaternary | U | Squamates | Evolution / Taxonomy | CUNY, American Museum of Natural History | 0 | 0 | 1 |
| Leal et al. | 2012 | Rapid change in the thermal tolerance of a tropical lizard | U | Squamates | Evolution / Taxonomy | Duke University | 0 | 0 | 1 |
| Fieldsend et al. | 2021 | Provenance and genetic diversity of the non-native geckos *Phelsuma grandis* Gray 1870 and *Gekko gecko* (Linnaeus 1758) in Southern Florida, USA | U | Squamates | Evolution / Taxonomy | FIU, Susan Levine Trust | 0 | 0 | 1 |
| Dowell et al. | 2016 | Combining genetic and distributional approaches to sourcing introduced species: a case study on the Nile monitor (*Varanus niloticus*) in Florida | U | Squamates | Evolution / Taxonomy | Henry Luce Foundation, Fordham University | 0 | 0 | 1 |
| Short and Petren | 2011 | Fine-scale genetic structure arises during range expansion of an invasive gecko | U | Squamates | Evolution / Taxonomy | University of Cincinnati | 0 | 0 | 1 |
| Falk et al. | 2016 | A validation of 11 body-condition indices in a giant snake species exhibits positive allometry | U | Squamates | Evolution / Taxonomy | ENP, USGS Greater Everglades Priority Ecosystems Science Program, and USGS Invasive Species Science program | 0 | 1 | 0 |
| Kolbe et al. | 2013 | Physiological variation among invasive populations of the Brown Anole (*Anolis sagrei*) | U | Squamates | Evolution / Taxonomy | Indiana Academy of Science, NSF, University of Rhode Island | 0 | 1 | 0 |
| Toro et al. | 2004 | The evolution of jumping performance in Caribbean Anolis lizards: solutions to biomechanical trade offs | U | Squamates | Evolution / Taxonomy | NSF | 0 | 1 | 0 |
| Kolbe et al. | 2007 | Multiple sources, admixture, and genetic variation in introduced Anolis lizard populations | U | Squamates | Evolution / Taxonomy | NSF, DDIG, and EPA | 0 | 1 | 0 |
| Kolbe et al. | 2004 | Genetic variation increases during biological invasion by a Cuban lizard | U | Squamates | Evolution / Taxonomy | NSF, EPA | 0 | 1 | 0 |
| Kolbe et al. | 2007 | Differential admixture shapes morphological variation among invasive populations of the lizard *Anolis sagrei* | U | Squamates | Evolution / Taxonomy | NSF, EPA | 0 | 1 | 0 |
| Kolbe et al. | 2008 | Admixture determines genetic diversity and population differentiation in the biological invasion of a lizard species | U | Squamates | Evolution / Taxonomy | NSF, EPA | 0 | 1 | 0 |
| Kolbe et al. | 2007 | Multiple sources, admizture, and genetic variation in introduced Anolis lizard populations | U | Squamates | Evolution / Taxonomy | NSF. US EPA | 0 | 1 | 0 |
| Pyron et al. | 2019 | Morphology and molecular data reveal invasion of cryptic golden tegus (*Tupinabmbis cryptus* Murphy et al. 2016) in Florida | U | Squamates | Evolution / Taxonomy | USGS, NSF | 0 | 1 | 0 |
| Wood et al. | 2018 | Insights into the introduction histroy and population genetic dynamcis of the Argentine black-and-white tegu (*Salvator merianae*) in Florida | U | Squamates | Evolution / Taxonomy | USDA, SFWMD, Columbus Zoo, University of Louisville, NFWF, University of Tennessee, University of Tampa, Charlotte Harbor National Estuary Program | 1 | 1 | 1 |
| Krysko et al. | 2003 | The madagascar giant day gecko, *Phelsuma madagascariensis grandis* Gray 1870, (Sauria:Gekkonidae): a new established species in Florida | U | Squamates | Evolution / Taxonomy | N/A |  |  |  |
| Krysko and Abdelfattah | 2005 | A key to the geckos (Sauria: Gekkonidae) of Florida | U | Squamates | Evolution / Taxonomy | N/A |  |  |  |
| Stroud and Mothes | 2020 | An extreme cold event leads to community-wide convergence in lower temperature tolerance in a lizard community | U | Squamates | Evolution / Taxonomy | N/A |  |  |  |
| Bock et al. | 2021 | Changes in selection pressure can facilitate hybridization during biological invasion in a cuban lizard | U | Squamates | Evolution / Taxonomy | N/A |  |  |  |

**STable 2.** List of primary research categories and the number of studies within each category funded by State, Federal, and Local/Private Funding.

|  |  |  |  |
| --- | --- | --- | --- |
| **Primary Research Category** | **Sum of State Funding** | **Sum of Federal Grant** | **Sum of Local/Private Funding** |
| Community Science and Outreach | 1 | 1 | 2 |
| Species Interaction / Community Ecology | 2 | 12 | 4 |
| Behavioral Studies | 2 | 6 | 4 |
| Reproductive Biology | 3 | 8 | 4 |
| Population Ecology | 5 | 11 | 6 |
| Movement Ecology | 1 | 9 | 7 |
| Animal Health and Disease | 1 | 8 | 9 |
| Dietary | 4 | 14 | 11 |
| Restoration / Conservation | 6 | 23 | 12 |
| Evolution / Taxonomy | 2 | 22 | 17 |
| Habitat Use / Distribution / Niche Modeling | 3 | 22 | 18 |
| Grand Total | 30 | 136 | 94 |

**STable3.** List of all Greater Everglades Ecosystem Restoration Conference (GEER) Presentations and Posters from 2001 to 2021.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Authors** | **Year** | **Origin** | **Species** | **Megafauna** | **Taxon** | **Type** |
| Rice et al. | 2003 | Invasive | Cuban Treefrog | No | Anurans | Talk |
| Walls | 2010 | Invasive | Cuban Treefrog | No | Anurans | Poster |
| Casler et al. | 2003 | Native | All Anurans | No | Anurans | Poster |
| Ugarte et al. | 2003 | Native | Pig Frog | No | Anurans | Talk |
| Schuman and Bartoszek | 2008 | Native | All Anurans | No | Anurans | Talk |
| Ugarte et al. | 2000 | Native | Pig Frog | No | Anurans | Poster |
| Brandt | 2010 | Native | All Anurans | No | Anurans | Talk |
| Dixon | 2010 | Native | All Anurans | No | Anurans | Talk |
| Anderson | 2015 | Native | All Anurans | No | Anurans | Talk |
| Waddle | 2015 | Native | All Anurans | No | Anurans | Talk |
| Everham | 2017 | Native | All Anurans | No | Anurans | Talk |
| Hart et al. | 2003 | Native | Diamondback Terrapin | No | Chelonians | Talk |
| Hart | 2006 | Native | Diamondback Terrapin | No | Chelonians | Poster |
| Hart | 2008 | Native | Diamondback Terrapin | No | Chelonians | Talk |
| Darby et al. | 2008 | Native | Mud and Musk Turtles | No | Chelonians | Talk |
| Denton | 2015 | Native | Diamondback Terrapin | No | Chelonians | Poster |
| Denton | 2021 | Native | Diamondback Terrapin | No | Chelonians | Poster |
| Fujisaki | 2008 | Invasive | All Invasives | No | Community | Talk |
| Rochford and Mazzotti | 2015 | Invasive | All Invasives | No | Community | Talk |
| Claunch | 2019 | Invasive | All Invasives | No | Community | Poster |
| Jennings | 2019 | Invasive | All Invasives | No | Community | Talk |
| Rice et al. | 2000 | Native | All Amphibians | No | Community | Poster |
| Cassani and Lindblad | 2003 | Native | All Amphibians | No | Community | Talk |
| Rice et al. | 2003 | Native | All Amphibians | No | Community | Talk |
| Howell | 2021 | Native | All Amphibians | No | Community | Poster |
| Rice et al. | 2003 | Native/Exotic | All Herpetofauna | No | Community | Poster |
| Glenn | 2003 | Native/Exotic | All Herpetofauna | No | Community | Poster |
| Everham | 2015 | Native/Exotic | All Herpetofauna | No | Community | Poster |
| Searcy | 2021 | Native/Exotic | All Herpetofauna | No | Community | Talk |
| Franklin | 2000 | Native | American Alligator | Megafauna | Crocodilians | Poster |
| Palmer et al. | 2000 | Native | American Alligator | Megafauna | Crocodilians | Poster |
| Rice et al. | 2000 | Native | American Alligator | Megafauna | Crocodilians | Poster |
| Slone and Allen | 2000 | Native | American Alligator | Megafauna | Crocodilians | Poster |
| Allen | 2000 | Native | American Alligator | Megafauna | Crocodilians | Talk |
| Gross et al. | 2000 | Native | American Alligator | Megafauna | Crocodilians | Talk |
| Dalrymple et al. | 2000 | Native | American Alligator | Megafauna | Crocodilians | Talk |
| Mazzotti et al. | 2000 | Native | American Crocodile | Megafauna | Crocodilians | Poster |
| Richards | 2000 | Native | American Crocodile | Megafauna | Crocodilians | Talk |
| Mazzotti et al. | 2003 | Native | American Alligator | Megafauna | Crocodilians | Poster |
| Mazzotti et al. | 2003 | Native | American Alligator | Megafauna | Crocodilians | Poster |
| Cherkiss and Mazzotti | 2003 | Native | American Alligator | Megafauna | Crocodilians | Talk |
| Phillips | 2003 | Native | American Alligator | Megafauna | Crocodilians | Talk |
| Slone et al. | 2003 | Native | American Alligator | Megafauna | Crocodilians | Talk |
| Zweig et al. | 2003 | Native | American Alligator | Megafauna | Crocodilians | Talk |
| Chopp et al. | 2003 | Native | American Alligator | Megafauna | Crocodilians | Talk |
| Rice | 2006 | Native | American Alligator | Megafauna | Crocodilians | Talk |
| Slone | 2006 | Native | American Alligator | Megafauna | Crocodilians | Talk |
| Cherkiss | 2006 | Native | American Crocodile | Megafauna | Crocodilians | Poster |
| Lorenz | 2006 | Native | American Crocodile | Megafauna | Crocodilians | Talk |
| Ogurcak et al. | 2008 | Native | American Alligator | Megafauna | Crocodilians | Talk |
| Mazzotti et al. | 2008 | Native | American Alligator/Crocodile | Megafauna | Crocodilians | Talk |
| Miller | 2008 | Native | American Crocodile | Megafauna | Crocodilians | Talk |
| Green et al. | 2008 | Native | American Crocodile | Megafauna | Crocodilians | Talk |
| Mazzotti et al. | 2008 | Native | American Crocodile | Megafauna | Crocodilians | Talk |
| Jeffery | 2010 | Native | American Alligator | Megafauna | Crocodilians | Poster |
| Bartoszek | 2010 | Native | American Alligator | Megafauna | Crocodilians | Poster |
| Burtner | 2010 | Native | American Alligator | Megafauna | Crocodilians | Poster |
| Watling | 2010 | Native | American Crocodile | Megafauna | Crocodilians | Talk |
| Green et al. | 2010 | Native | American Crocodile | Megafauna | Crocodilians | Talk |
| Fujisaki | 2015 | Native | American Alligator | Megafauna | Crocodilians | Poster |
| Shinde | 2015 | Native | American Alligator | Megafauna | Crocodilians | Poster |
| Beauchamp | 2015 | Native | American Alligator | Megafauna | Crocodilians | Talk |
| Farris | 2015 | Native | American Alligator/Crocodile | Megafauna | Crocodilians | Poster |
| Brandt | 2015 | Native | American Alligator/Crocodile | Megafauna | Crocodilians | Talk |
| Faughman | 2017 | Native | American Alligator | Megafauna | Crocodilians | Poster |
| Nestler | 2017 | Native | American Alligator | Megafauna | Crocodilians | Poster |
| Strickland et al. | 2017 | Native | American Alligator | Megafauna | Crocodilians | Poster |