



## INTRODUCED SPECIES

# New County Record for the Veiled Chameleon (*Chamaeleo calyptratus* Duméril and Bibron 1851), in Broward County, Florida, With Notes on Intentional Introductions of Chameleons in Southern Florida

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The Veiled Chameleon (*Chamaeleo calyptratus*) is an arboreal lizard native to Saudi Arabia and Yemen, where it is found on high plateaus to elevations of 2,800 m and in foothills, forests, low-elevation maize fields, and inland river valleys (Fritz and Schütte 1987, Meerman and Boomsma 1987, Zari 1993, Showler 1995, Schmidt 2001). This species has been introduced via the pet trade to Hawaii (Kraus and Duvall 2004) and Florida (Krysko and Enge 2004), USA. In Florida, it has been established since at least 2002 (Krysko and Enge 2004) and evidence of additional independent introductions exist from Alachua, Collier, Hendry, Lee, and Miami-Dade counties (Krysko et al. 2011, Gillette and Krysko 2012). Herein, we document another introduction of *C. calyptratus* in Broward County, Florida.

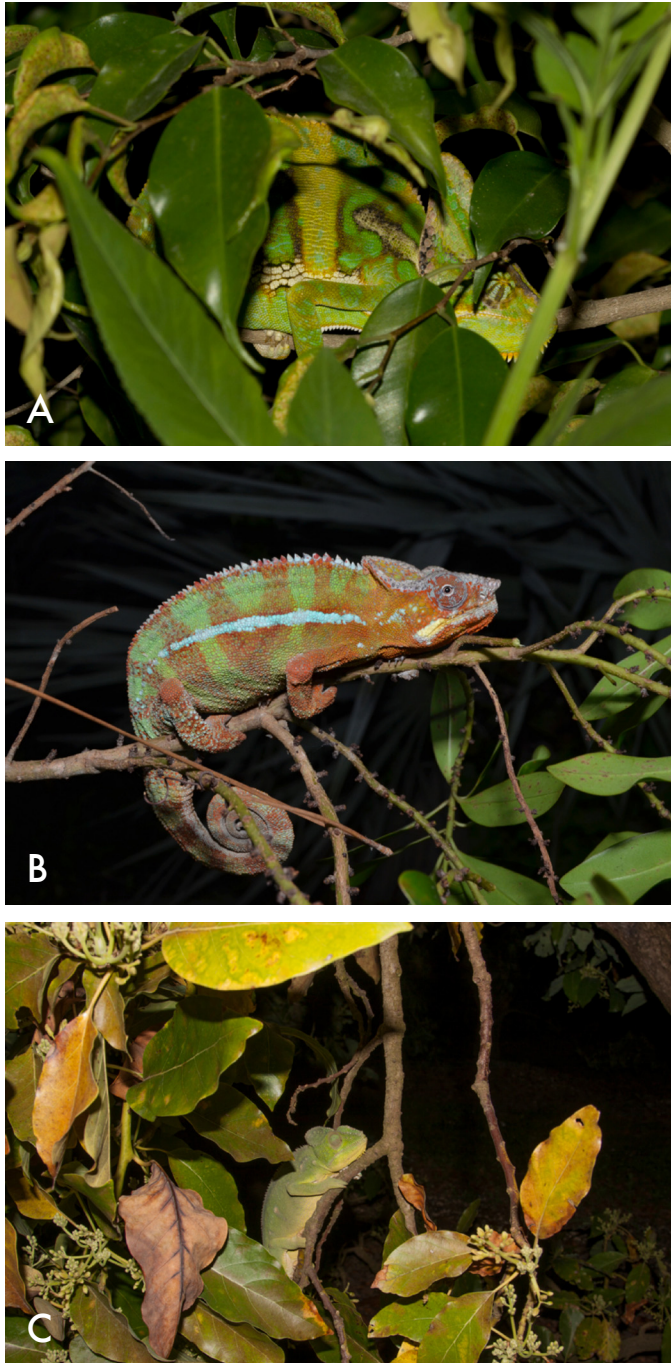
On 30 December 2013, the University of Florida received an anonymous tip about a possible population of *Chamaeleo calyptratus* on state-owned lands in Broward County. On 1 January 2014 between 1900–2100 h, JRE and MRR conducted a nighttime search around a Florida Highway Patrol station and area right-of-way. At approximately 1930 h, we observed an adult female *C. calyptratus* (photographic voucher UF-Herpetology 172296) sleeping on a Brazilian Pepper Tree (*Schinus terebinthifolius*) about 2.5 m above the ground (26.11969°N, -80.33859°W, Datum WGS84, 5 m elevation). At approximately 2000 h, we observed flashlights in a nearby area. Upon contact, two people revealed themselves to be commercial chameleon collectors who had two *C. calyptratus* in their possession. The collectors told us the chameleons were collected from the same site that evening. At 2025 h, we observed an adult male *C. calyptratus* (UF-Herpetology

172297) sleeping on a *S. terebinthifolius* about 3 m above the ground (26.12038°N, -80.33814°W). Digital images of the chameleons were sent to Laurence L. Connor (Florida Fish and Wildlife Conservation Commission) who confirmed our identifications. Vouchered specimens are crucial in documenting introductions (Krysko et al. 2011) and these known vouchers represent the first two *C. calyptratus* from Broward County.

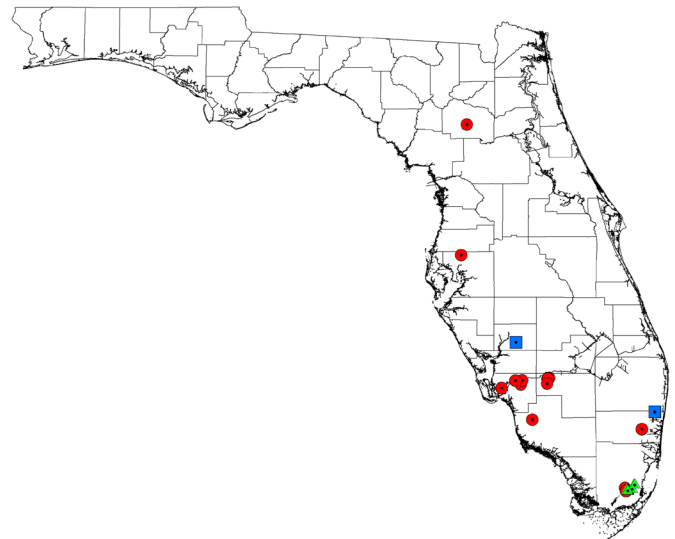
On 2 January 2014, MRR and Michelle J. Curtis (University of Florida) conducted a second survey of the area. A *C. calyptratus* of unknown sex was observed at 2106 h, perched on a *S. terebinthifolius* about 3 m above the ground (26.11993°N, -80.33974°W). Another *C. calyptratus* of unknown sex was observed perched in another *S. terebinthifolius* about 4 m above the ground at 2110 h (26.11972°N, -80.33869°W). Both chameleons were behind a fence, preventing collection or satisfactory photographs.

The release of nonnative wildlife is illegal (Rule 68-5 F.A.C) and Florida law considers release of nonnative wildlife to be a misdemeanor (Florida Statute § 379.231). Despite this, multiple chameleon populations have been discovered throughout the state (Figs. 1 & 2), but primarily in southern Florida. Rumors abound that animals were intentionally released by individuals interested in harvesting them from the wild for future sale in the pet trade. On several occasions, JRE and MRR observed collectors trespassing on posted private lands to obtain chameleons. For example, Oustalet's Chameleons (*Furcifer oustaleti*) in Miami-Dade County, Florida, were first observed to be introduced into a private property (Gillette et al. 2010) and subsequently have

spread to county-owned land (UF-Herpetology 163066, 163067, 165705, 170786). Further discoveries of *F. oustaleti* (UF-Herpetology 166502, 166565, 166123) found up to 11 km from the originally reported population are suggestive of subsequent translocations. More recently Panther Chameleons (*Furcifer pardalis*) were discovered in Broward



**Fig. 1.** Chameleons introduced to Florida: A. Veiled Chameleon (*Chamaeleo calytratus*) (UF-Herpetology 166817), Miami-Dade County, Florida, photograph by Christopher Gillette; B. Panther Chameleon (*Furcifer pardalis*) (UF-Herpetology 170801), Broward County, Florida, photograph by Michael R. Rochford; C. Oustalet's Chameleon (*Furcifer oustaleti*) (UF-Herpetology 165207, Miami-Dade County, Florida, photograph by Kenneth L. Krysko.



**Fig. 2.** Verified records of three species of Chameleons in Florida, USA. Red circles: *Chamaeleo calytratus*; green triangles: *Furcifer oustaleti*; blue squares: *F. pardalis*. Records in Alachua, Collier, De Soto, and Hillsborough counties represent single individuals.

County (Rochford et al. 2013). Throughout Florida, *C. calytratus* now occurs on both private property and state-owned rights-of-way (Krysko et al. 2011, Gillette and Krysko 2012). With this new introduction, we document ongoing intentional introductions of chameleons throughout southern Florida.

#### Acknowledgments

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#### Literature Cited

- Gillette, C.R. and K.L. Krysko. 2012. New county record for the Veiled Chameleon, *Chamaeleo calytratus* Duméril and Bibron 1851 (Sauria: Chamaeleonidae), in Florida. *Reptiles & Amphibians* 19:130–131.
- Gillette, C.R., K.L. Krysko, J.A. Wasilewski, G.N. Kieckhefer III, E.F. Metzger III, M.R. Rochford, D. Cueva, and D.C. Smith. 2010. Oustalet's Chameleon, *Furcifer oustaleti* (Mocquard 1894) (Chamaeleonidae), a non-indigenous species newly established in Florida. *Reptiles & Amphibians* 17:248–249.
- Fritz, J.P. and F. Schütte. 1987. Zur Biologie jemenitischer *Chamaeleo calytratus* Duméril & Duméril, 1851 mit einigen Anmerkungen zum systematischen Status (Sauria: Chamaeleonidae). *Salamandra* 23:17–25.
- Kraus, F. 2009. *Alien Reptiles and Amphibians: A Scientific Compendium and Analysis*. Invading Nature: Springer Series in Invasion Biology 4. Springer, Dordrecht, The Netherlands.
- Kraus, F. and F. Duvall. 2004. New records of alien reptiles and amphibians in Hawaii. *Bishop Museum Occasional Papers* 79:62–64.
- Krysko, K.L., K.M. Enge, and F.W. King. 2004. The Veiled Chameleon, *Chamaeleo calytratus*: A new exotic species in Florida. *Florida Scientist* 67:249–253.
- Krysko, K.L., K.M. Enge, and P.E. Moler. 2011. Atlas of Amphibians and Reptiles in Florida. Final Report, Project Agreement 08013, Florida Fish and Wildlife Conservation Commission, Tallahassee.

- Meerman, J. and T. Boomsma. 1987. Beobachtungen an *Chamaeleo calypttratus* Duméril & Duméril, 1851 in der Arabischen Republik Jemen (Sauria: Chamaeleonidae). *Salamandra* 23:10–16.
- Rochford, M.R., J.R. Edwards, P.L. Howell, J. Ketterlin Eckles, L.A. Barraco, L.L. Connor, M.J. Curtis, K.L. Krysko, and F.J. Mazzotti. 2013. The Panther Chameleon, *Furcifer pardalis* (Cuvier 1829) (Chamaeleonidae), another introduced chameleon species in Florida. *Reptiles & Amphibians* 20:205–207.
- Schmidt, W. 2001. *Chamaeleo calypttratus*. *The Yemen Chameleon*. Natur und Tier-Verlag GmbH, Berlin, Germany.
- Showler, D. 1995. Reptile observations in Yemen, March–May 1993. *The Herpetological Bulletin* 53:13–23.
- Zari, T.A. 1993. Effects of body mass and temperature on standard metabolic rate of the Desert Chameleon *Chamaeleo calypttratus*. *Journal of Arid Environments* 24:75–80.