

## A CHECKLIST OF THE IGUANAS OF THE WORLD (IGUANIDAE; IGUANINAE)

### IGUANA TAXONOMY WORKING GROUP (ITWG)

(ITWG members below are in alphabetical order and contributed to production of this checklist)

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**Abstract.**—This annotated checklist of the world's iguanas (Iguanidae; Iguaninae) represents an update by the Iguana Taxonomy Working Group (ITWG) of its 2011 list. We recognize 44 extant species (19 subspecies across six species) in eight genera. *Ctenosaura* (as currently recognized) is the most diverse, with 18 species, and *Amblyrhynchus* is the least diverse, with only one species, but seven subspecies. The list provides a comprehensive inventory of the taxonomy, common names, holotype(s), type locality, and distribution of all named taxa of iguanas. Extensive comments clarify contentious issues of nomenclature and/or distribution. Recently published papers suggest that additional diversity of iguanas remains to be described. Of the 44 included species, eight are listed as Critically Endangered (CR) on the IUCN Red List of Threatened Species, 11 as Endangered (EN), nine as Vulnerable (VU), two as Near Threatened (NT), three as Least Concern (LC), and one as Data Deficient (DD). Ten are not yet listed. Thus, over 82% of listed taxa are Threatened (28 of 34: CR, EN, or VU), placing this distinctive group among the most threatened vertebrate groups on the planet (surpassing turtles [50–58%), primates [ca. 49%], and amphibians [ca. 41%]).

**Resumen.**—La siguiente lista anotada representa una actualización mundial para el grupo de iguanas (Iguanidae; Iguaninae) hecha por el Grupo de Trabajo Taxonómico de Iguanas. Reconocemos 44 especies existentes (19 subespecies en seis especies) correspondientes a ocho géneros. *Ctenosaura* es el grupo más diverso, con 18 especies, y *Amblyrhynchus* es el grupo menos diverso, con solo una especie pero siete sub-especies. Esta lista representa un inventario taxonómico completo para el grupo de iguanas, con nombres comunes, holotipos, localidades, y distribución. Posee comentarios extensos que aclaran problemas de nomenclatura y/o distribución. Publicaciones recientes sugieren que aun existen especies de iguanas que necesitan ser descritas. De las 44 especies de iguanas, ocho están en peligro crítico de extinción (CR) de acuerdo al criterio de la lista roja de especies amenazadas propuesta por la Unión Internacional para la Conservación de la Naturaleza, 11 están en peligro (EN), nueve están vulnerables (VU), dos casi amenazadas (NT), tres son consideradas de preocupación menor (LC), y uno es datos insuficientes (DD). Diez aun no están enlistadas. En resumen, mas del 82% del grupo de iguanas enlistadas están amenazadas (28 de 34: CR, EN, o VU), lo que pone este distintivo grupo dentro de los vertebrados más amenazados del planeta (sobre pasando a las tortugas [50–58%], primates [ca. 49%], y anfibios [ca. 41%]).

**Key Words.**—conservation status; nomenclature; Reptilia; taxonomy

### INTRODUCTION

The true iguanas represent an assemblage of relatively large, mostly herbivorous lizards that has long been recognized as being monophyletic (Etheridge 1964). However, controversy exists (reviewed by Knapp and Gomez-Zlatar 2006) concerning whether the radiation should be ranked as a family (e.g., Hollingsworth 1998,

2004; Wiens and Hollingsworth 2000; Frost et al. 2001; Conrad 2008), or as a subfamily (e.g., Pough et al. 2004; Townsend et al. 2004; Smith 2009; Vitt and Caldwell 2009), or whether maintaining the associations between names and clades (monophyletic groups) is more important than reflecting taxonomic ranks (e.g., de Queiroz 1995; Schulte et al. 2003; see also de Queiroz and Gauthier 1990; Schwenk 1994). Considerable controversy also surrounds

# Herpetological Conservation and Biology

the phylogenetic relationships among the eight genera in this family (e.g., see reviews in Hollingsworth 2004; Pyron et al. 2013).

This checklist was compiled by the Iguana Taxonomy Working Group (ITWG) of the IUCN SSC Iguana Specialist Group (ISG), and was based primarily on Etheridge (1982), Hollingsworth (2004), Etheridge and Frost (2001). Catalogues of the Pleurodont Iguanian Families. Available from <http://www.amnh.org/our-research/vertebrate-zoology/herpetology/catalogues-of-the-pleurodont-iguanian-families> [Accessed 25 November 2014]) and the ITWG (2011). The recognized species diversity in this clade has steadily increased over the past three decades, across those compilations. Etheridge (1982) recognized only 31 species, whereas Hollingsworth (2004) listed 40, and the ITWG (2011, herein) accepted 44.

We have not included full synonymies, as those are available from Hollingsworth (2004) and Etheridge and Frost (*op. cit.*). In compiling this checklist we have sought consensus on controversial issues, but have sometimes had to operate by majority rule. In this edition, we recommend a single Standard English Common Name for each taxon (following Crother 2012), but we have added other common names for many taxa. We recognize that although the IUCN prefers to recognize only a single common name for a taxon in each of their three official languages, in reality most taxa are known by multiple names. Distribution is restricted to established breeding populations and do not include waif occurrences. We have also added a final section to many species accounts that references other recent literature. These represent sources not mentioned in the taxon account itself, but which would provide the reader with additional information on distribution, taxonomy, systematics, and/or status of the taxon. Museum acronyms used in the text are explained in Appendix 1.

Because the lizards included in this clade are generally long-lived, have relatively large body sizes, and often have very narrow ranges (either insular or mainland), they are particularly vulnerable to habitat loss, overharvesting, and introduced predators and competitors. As a result, of the 44 included species (Appendix 2), eight are listed as Critically Endangered (CR) on the IUCN Red List of Threatened Species (IUCN. 2014). The IUCN Red List of Threatened Species. Available from <http://www.iucnredlist.org> [Accessed on 14 September 2014]), 11 as Endangered (EN), nine as Vulnerable (VU), two as Near Threatened (NT), three as Least Concern (LC), and one as Data Deficient (DD). Ten are not yet listed. Thus, over 82% of listed taxa are Threatened (28 of 34: CR, EN, or VU), placing this distinctive group among the most threatened vertebrate groups on the planet (Hoffman et al. 2010), surpassing even turtles (50–58%), primates (ca. 49%), and amphibians (ca. 41%). This subfamily also includes one species that has been extirped in the last century

(Powell 2000), *Cyclura onchiopsis*, and is included here (†) and classified on the Red List as Extinct (EX).

This clade is distributed across the New World tropics and subtropics including the West Indies and Galápagos Islands, and the Fiji and Tonga Islands (Etheridge 1982; de Queiroz 1987a; Hollingsworth 2004). Eight living genera and 44 living species are currently recognized; however, undescribed species are known to exist (e.g., see Malone and Davis 2004; Zarza et al. 2008; Gentile et al. 2009).

## ***Amblyrhynchus* BELL [MARINE IGUANAS]**

Original name: *Amblyrhynchus* Bell 1825, Zoological Journal, London 2:206. Type species (by monotypy): *Amblyrhynchus cristatus* Bell 1825. Distribution: Galápagos Islands, Ecuador.

***Amblyrhynchus cristatus* Bell [Marine Iguanas].—** Other names: Iguanas Marinas (Galápagos); Amblyrhynque à crête, Iguane marin des Galapago, Iguane marin (Wrobel 2004). Original name: *Amblyrhynchus cristatus* Bell 1825, Zoological Journal, London 2:206. Holotype: OUM 6176 (Etheridge 1982; Olson 2014). Type locality: "Mexico." Corrected type locality: "Fernandina (Narborough)" (Eibl-Eibesfeldt 1956), although Olson (2014) suggested that the type more likely originated on Isabela (Albemarle), which has implications for the taxonomy of the subspecies (see Comment). Distribution: Galápagos Archipelago, Ecuador (Hollingsworth 2004). Comment: most authors have not recognized subspecies, although the subspecies recognized by Eibl-Eibesfeldt (1962) have not been formally rejected (see Rassmann et al. 1997a). Steinfartz et al. (2009), Lanterbecq et al. (2010), and MacLeod and Steinfartz (2016) demonstrated significant genetic structure among populations. Based on microsatellite data, the latter authors identified 10 island-specific genetic clusters: Fernandina (Narborough) and Isabela (Albemarle), Santiago (James), Pinta (Abingdon), Genovesa (Tower), Marchena (Bindloe), Santa Cruz (Indefatigable), Santa Fe (Barrington), Floreana (Charles) and Española (Hood), western San Cristobál (Chatham), and eastern San Cristobál. These groups ("management units") have only some correspondence with the previously described, morphology-based subspecies (see below), but the authors made no taxonomic recommendations. In addition to the sampled populations above, Marine Iguanas are also known to occur on the mid-sized islands of Baltra (South Seymour), Bartolomé (Bartholomew), Pinzón (Duncan), Plaza Norte, Plaza Sur, Rábida (Jervis), Seymour Norte, and many other smaller islands (Karl Campbell, pers. comm.). If Olson's (2014) correction of the type locality is confirmed by further analysis (e.g., genetic), *A. cristatus albemarlensis* would be a junior synonym of *A. cristatus cristatus* (the latter

Iguana Taxonomy Working Group—Checklist of the Iguanas of the World.



**FIGURE 1.** Fernandina Marine Iguana, *Amblyrhynchus cristatus cristatus* (top left; photographed by Tandora Grant, Fernandina, Galápagos, Ecuador). Isabela Marine Iguana, *Amblyrhynchus cristatus albemarlensis* (top right; photographed by Jeffrey Lemm, Isabela, Galápagos, Ecuador). Santa Cruz Marine Iguana, *Amblyrhynchus cristatus hassi* (second row left; photographed by Jeffrey Lemm, Santa Cruz, Galápagos, Ecuador). San Cristóbal Marine Iguana, *Amblyrhynchus cristatus mertensi* (second row right; photographed by Tandora Grant, Santiago, Galápagos, Ecuador). Genovesa Marine Iguana, *Amblyrhynchus cristatus nanus* (third row left; photographed by Tandora Grant, Genovesa, Galápagos, Ecuador). Pinta Marine Iguana, *Amblyrhynchus cristatus sielmanni* (third row right; photographed by Sebastian Steinfartz, Pinta, Galápagos, Ecuador). Española Marine Iguana, *Amblyrhynchus cristatus venustissimus* (bottom right; photographed by Paquita Hoeck, Gardner by Floreana, Galápagos, Ecuador).

restricted to Isabela), and a new name would have to be proposed for the Fernandina population, assuming it is distinctive (but see MacLeod and Steinfartz 2016). In addition, Gray's 1830 name *ater* is synonymous with *A. cristatus*, and lacks a type or precise type locality, but might be available after further study. This species is known to hybridize with *Conolophus subcristatus* on Plaza Sur Island (Rassmann et al. 1997b). Additional literature: MacLeod et al. (2015); Wikelski (2005); Wikelski et al. (2005).

***Amblyrhynchus cristatus cristatus* Bell [Fernandina Marine Iguanas].**—Original name: *Amblyrhynchus cristatus* Bell. See species account. Distribution: Fernandina (Narborough) Island, Galápagos Archipelago, Ecuador. Comment: see Comment for the species. Fig. 1, 2.

***Amblyrhynchus cristatus albemarlensis* Eibl-Eibesfeldt [Isabela Marine Iguanas].**—Original name: *Amblyrhynchus cristatus albemarlensis* Eibl-Eibesfeldt 1962, Senckenbergiana Biologica 43(3):184. Holotype: Eibl-Eibesfeldt private coll. (Etheridge 1982) = SMF 64179. Type locality: "Insel Albemarle (Isabella)." Distribution: Isabela (Albemarle) Island, Galápagos Archipelago, Ecuador. Comment: see Comment for the species. Fig. 1, 2.

***Amblyrhynchus cristatus hassi* Eibl-Eibesfeldt [Santa Cruz Marine Iguanas].**—Original name: *Amblyrhynchus cristatus hassi* Eibl-Eibesfeldt 1962, Senckenbergiana Biologica 43(3):181. Holotype: SMF 57407. Type

locality: "Indefatigable Südküste, westliche Akademiebucht..., Galápagos-Inseln." Distribution: Santa Cruz (Indefatigable) Island, Galápagos Archipelago, Ecuador. Fig. 1, 2.

***Amblyrhynchus cristatus mertensi* Eibl-Eibesfeldt [San Cristóbal Marine Iguanas].**—Original name: *Amblyrhynchus cristatus mertensi* Eibl-Eibesfeldt 1962, Senckenbergiana Biologica 43(3):185. Holotype: SMF 57430. Type locality: "etwa 3 km südwestlich der Wrack-Bucht der Insel Chatham (S. Cristobal)..., Galápagos-Inseln." Distribution: San Cristobal (Chatham) and Santiago (James), Islands, Galápagos, Archipelago, Ecuador. Fig. 1, 2.

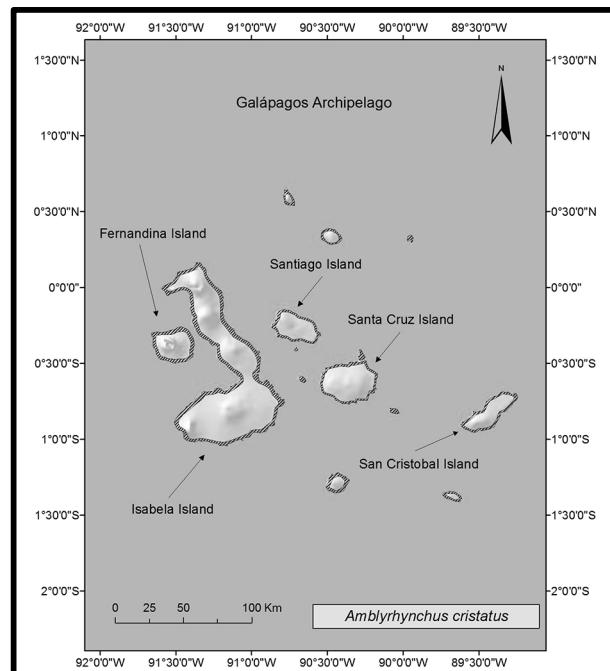
***Amblyrhynchus cristatus nanus* Garman [Genovesa Marine Iguanas].**—Original name: *Amblyrhynchus nanus* Garman 1892, Bulletin of the Essex Institute 24:8 (*Amblyrhynchus cristatus nanus* according to Eibl-Eibesfeldt 1962). Holotype: BMNH 99.5.4 = BMNH 1946.8.30.20 (Etheridge 1982). Type locality: "Tower Island" [Galápagos]. Distribution: Genovesa (Tower) Island, Galápagos Archipelago, Ecuador. Fig. 1, 2.

***Amblyrhynchus cristatus sielmanni* Eibl-Eibesfeldt [Pinta Marine Iguanas].**—Original name: *Amblyrhynchus cristatus sielmanni* Eibl-Eibesfeldt 1962, Senckenbergiana Biologica 43(3):188. Holotype: SMF 57417. Type locality: "Westküste der Insel Abingdon." Distribution: Pinta (Abingdon) Island, Galápagos Archipelago, Ecuador. Fig. 1, 2.

***Amblyrhynchus cristatus venustissimus* Eibl-Eibesfeldt [Española Marine Iguanas].**—Other name: Hood Island Marine Iguana (Wrobel 2004). Original name: *Amblyrhynchus cristatus venustissimus* Eibl-Eibesfeldt 1956, Senckenbergiana Biologica 37:90. Holotype: SMF 49851. Type locality: "Nordküste der Insel Hood (Españaola)." Distribution: Española (Hood) and Gardner Islands, Galápagos Archipelago, Ecuador. Fig. 1, 2.

#### BRACHYLOPHUS CUVIER [MELANESIAN IGUANAS]

Other names: Vokai (Fiji); Banded Iguanas, Fiji Iguanas, Fijian Crested Iguanas, Fijian Iguanas (Wrobel 2004). Original name: *Brachylophus* Cuvier 1829, In Guérin-Méneville, Iconographie du Règne Animal, Paris 1:9. Type species (by monotypy): *Iguana fasciata* Brongniart 1800. Distribution: Fiji Islands (reintroduced to Tonga Islands; introduced to Vanuatu). Comment: a phylogeny of populations of *Brachylophus* has been estimated by Keogh et al. (2008) based on sequences of two mitochondrial genes. However, additional taxa may exist (Fisher et al. 2009, 2012). Although the recent description of two new species clarifies the taxonomy of *Brachylophus*, the correct identification of the species

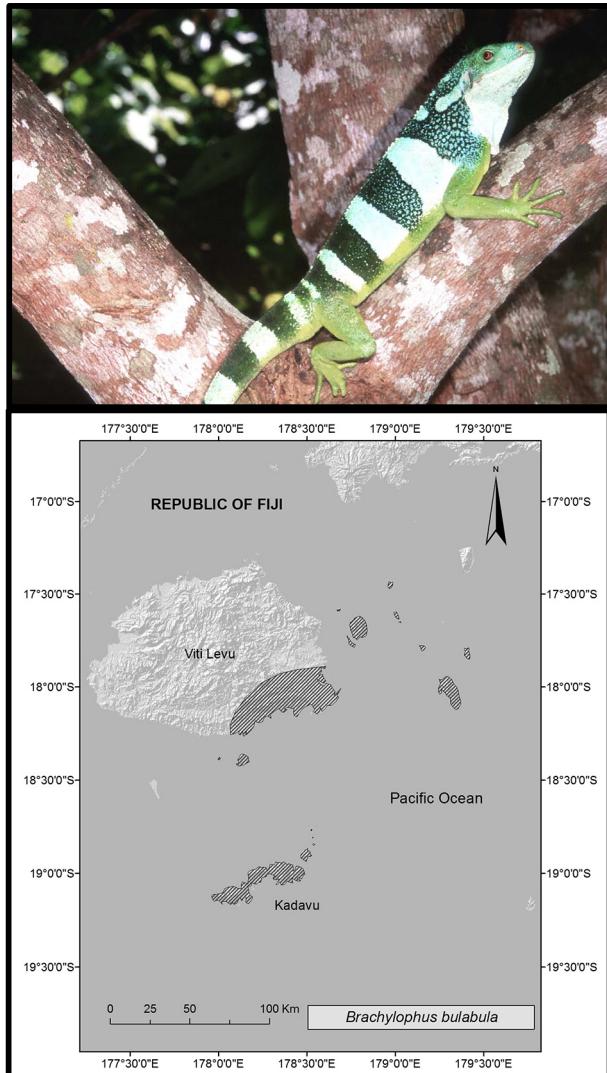


**FIGURE 2.** Range of Marine Iguanas, *Amblyrhynchus cristatus*. (All range distribution maps were generated by Jorge Morales-Mávil under the direction of the ITWG).

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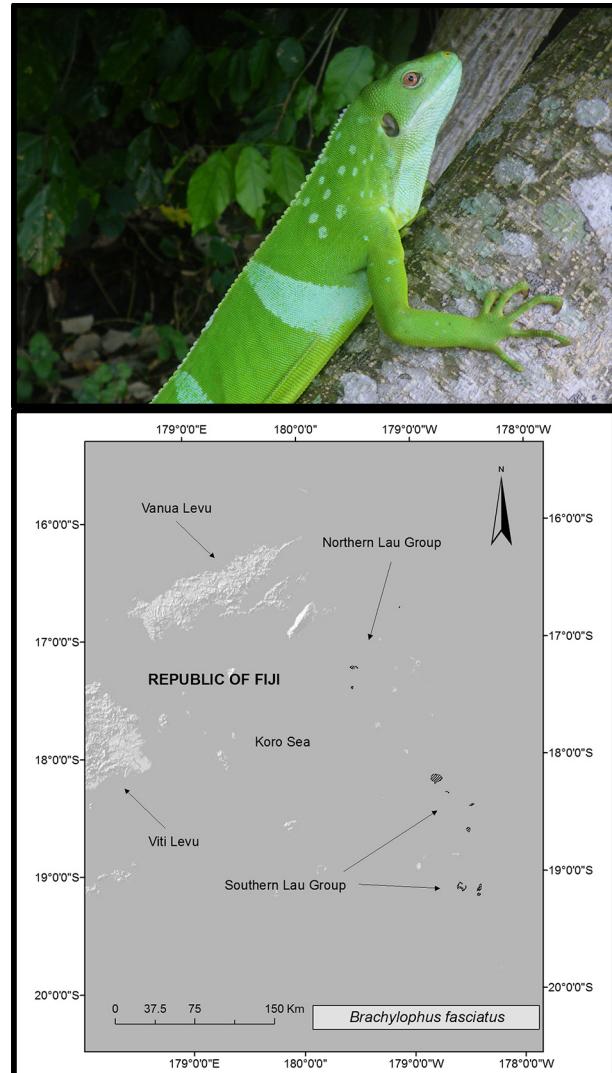
occurring on many islands is not yet certain. This is complicated by introductions by humans (Kraus 2009). Additional literature: Burns et al. (2006).

***Brachylophus bulabula* Fisher, Harlow, Edwards, and Keogh In Keogh, Edwards, Fisher, and Harlow [Central Fijian Banded Iguanas].**—Other names: Fiji Iguanas, Fijian Banded Iguanas (IUCN. 2014. *op. cit.*). Original name: *Brachylophus bulabula* Fisher, Harlow, Edwards, and Keogh 2008, *In* Keogh, Edwards, Fisher, and Harlow, Philosophical Transactions of the Royal Society B 363(1508):3419. Holotype: CAS 172524. Type locality: "Navuloa Village, Ovalau Island, Republic of Fiji (17°42'05.95"S, 178°45'42.12"E)". Distribution: larger northwestern islands of the Viti group of Fijian islands, including at least Ovalau, Gau, Kadavu, and Viti Levu (Keogh et al. 2008). Comment: *B. bulabula* is the sister species of *B. vitiensis* (Keogh et al. 2008). Fig. 3.



**FIGURE 3.** Central Fijian Banded Iguana, *Brachylophus bulabula*. (Photographed by Peter Harlow, Ovalau, Fiji).

***Brachylophus fasciatus* (Bronniart) [Lau Banded Iguanas].**—Other names: Tongan Banded Iguanas (IUCN. 2014. *op. cit.*); Banded Iguana, Brachylophus à bandes, Fiji Banded Iguana (Wrobel 2004). Original name: *Iguana fasciata* Bronniart 1800, Bulletin des Sciences, par la Société Philomathique, Paris 2:90. Holotype: apparently lost (Gibbons 1981). Type locality: none given; "Tonga", according to Keogh et al. (2008). Distribution: Lau Island group of Fiji, including at least Lakeba, Aiwa, Oneata, and Moce (Keogh et al. 2008); apparently extirpated from Tonga during prehistory (Pregill and Steadman 2004), but presumably re-introduced (Keogh et al. 2008). Introduced on Vanuatu (Kraus 2009). Comment: *B. fasciatus* is the sister species to the clade including *B. vitiensis* and *B. bulabula* (Keogh et al. 2008). Fig. 4.



**FIGURE 4.** Lau Banded Iguana, *Brachylophus fasciatus*. (Photographed by Robert Fisher, Fiji).

***Brachylophus vitiensis* Gibbons [Fijian Crested Iguanas].**—Other name: Fiji Crested Iguana (Wrobel 2004). Original name: *Brachylophus vitiensis* Gibbons 1981, Journal of Herpetology 15(3):257. Holotype: MCZ 157192. Type locality: "Yaduataba island (16°50'S; 178°20'E), Fiji." Distribution: Fiji Island group, found on the island of Yadua Taba and (presumably) the northern islands of the Yasawa group (Keogh et al. 2008). Comment: *B. vitiensis* is the sister species of *B. bulabula* (Keogh et al. 2008). Additional literature: Harlow et al. (2007). Fig. 5.

#### **CONOLOPHUS FITZINGER [GALÁPAGOS LAND IGUANAS]**

Other names: Iguanes terrestres, Land Iguanas (Wrobel 2004). Original name: *Hypsilophus* (*Conolophus*) Fitzinger 1843, Systema Reptilium, Wien 1:55. Type species (by

original designation): *Amblyrinchus demarlii* Duméril and Bibron 1837 = *Amblyrhynchus subcristatus* Gray 1831 (according to Gray 1845). Distribution: Galápagos Islands (Gentile and Snell 2009). Comment: Tzika et al. (2008) and Gentile et al. (2009) have presented evidence that *Conolophus* includes five evolutionarily significant units, only three of which have been formally named. Additional literature: Márquez B. et al. (2010); Gentile et al. (2013); Ali and Aitchison (2014).

#### ***Conolophus marthae* Gentile and Snell [Pink Land Iguanas]**

—Other names: Iguanas Rosadas (Galápagos); Pink Iguanas (IUCN. 2014. *op. cit.*). Original name: *Conolophus marthae* Gentile and Snell 2009, Zootaxa 2201:1. Holotype: a free-living adult male with a Passive Integrated Transponder #091-601-303. Type locality: "approximately four km north of the Equator on the top of Volcan Wolf, Isla Isabela Galápagos National Park,

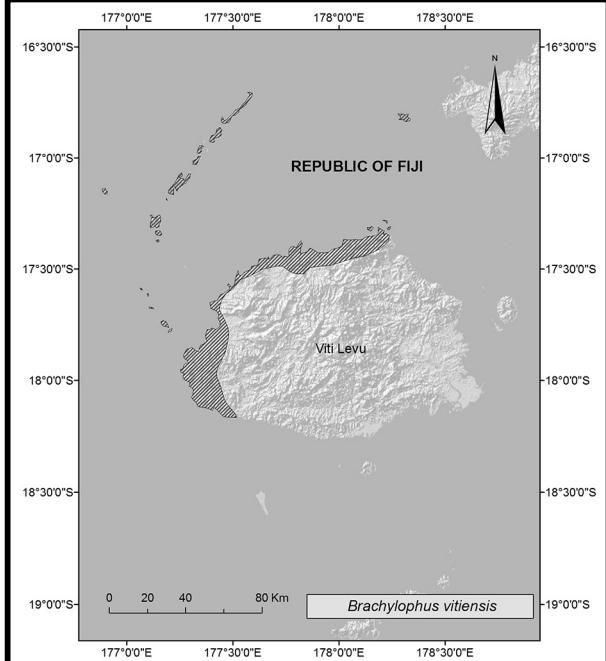


FIGURE 5. Fijian Crested Iguana, *Brachylophus vitiensis* (Photographed by Peter Harlow, Yadua Taba, Fiji).

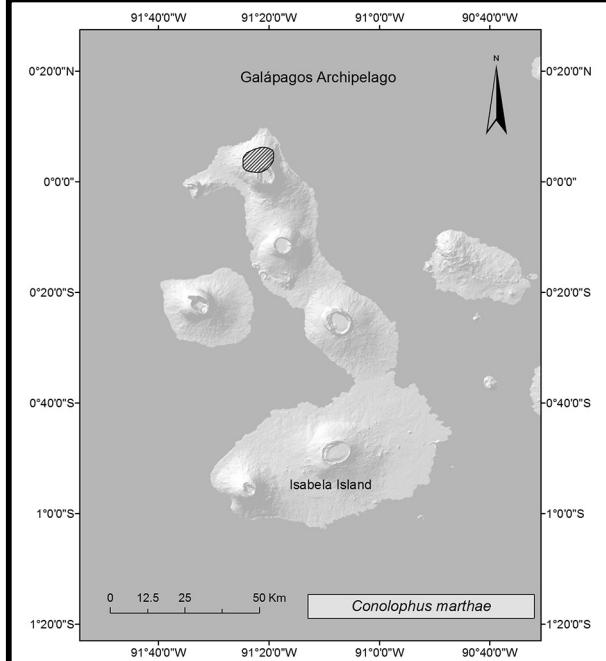


FIGURE 6. Pink Land Iguana, *Conolophus marthae* (Photographed by Gabriele Gentile, Isabela, Galápagos, Ecuador).

# Iguana Taxonomy Working Group—Checklist of the Iguanas of the World.

Ecuador ( $0.03792^{\circ}\text{N}$ ;  $91.36324^{\circ}\text{W}$ , datum WGS84...)." Distribution: Volcán Wolf, northern Isabela (Albemarle) Island, Galápagos Archipelago, Ecuador (Gentile and Snell 2009; Gentile et al. 2009). Comment: additional support for the recognition of this species appeared in Tzika et al. (2008) and Gentile et al. (2009). *C. marthae* is sister to the clade including the other two *Conolophus* species (Gentile et al. 2009). Additional literature: Donegan (2009); Nemesio (2009). Fig. 6.

***Conolophus pallidus* Heller [Barrington Land Iguanas].**—Other names: Iguanas Terrestres de Barrington, Santa Fe Land Iguana (IUCN. 2014. *op. cit.*); Barrington Island Iguana, Barrington Island Land Iguana (Wrobel 2004). Original name: *Conolophus pallidus* Heller 1903, Proceedings of the Washington Academy of Sciences 5:87. Holotype: CAS 4749. Type locality: "Barrington [= Santa Fe] Island, Galápagos Archipelago." Distribution: Santa Fe (Barrington)

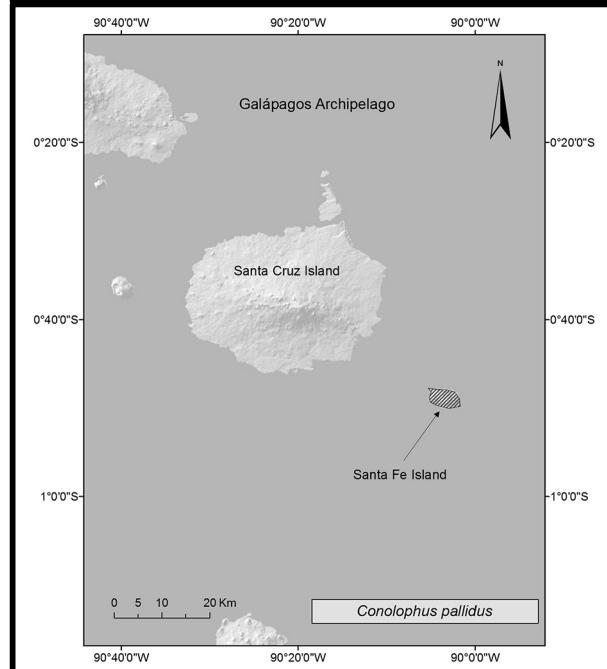


FIGURE 7. Barrington Land Iguana, *Conolophus pallidus* (Photographed by Joseph Burgess, Santa Fe, Galápagos, Ecuador).

Island, Galápagos Archipelago, Ecuador (Gentile et al. 2009). Comment: this species appears to be sister to a clade composed of the western (Isabela and Fernandina) populations of *Conolophus subcristatus* (Gentile et al. 2009). Fig. 7.

***Conolophus subcristatus* (Gray) [Galápagos Land Iguanas].**—Other names: Iguanas Terrestres de Galápagos (IUCN. 2014. *op. cit.*); Land Iguana (Wrobel 2004). Original name: *Amblyrhynchus subcristatus* Gray 1831, The Zoological Miscellany, London 1831:6. Type: not located, although Olson (2014) inferred that it was collected on the voyage of the HMS *Blonde* expedition in March 1825. However, Olson was unable to confirm the current existence of the type. Type locality: "Galápagos?" Restricted type locality (Olson 2014): "Banks Bay, Albemarle (Isabela) Island, Galapagos". Distribution: Galápagos Archipelago, Ecuador, including the islands of Santa Cruz (Indefatigable), Isabela

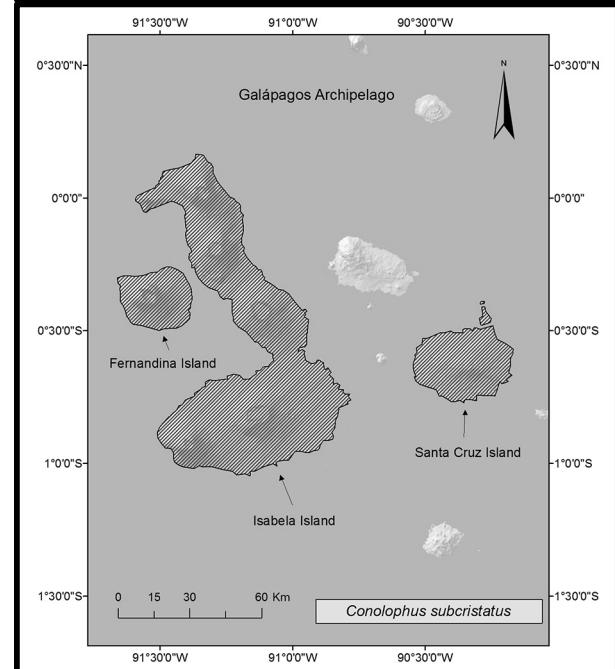


FIGURE 8. Galápagos Land Iguana, *Conolophus subcristatus* (Photographed by Jeffrey Lemm, Seymour Norte, Galápagos, Ecuador).

(Albemarle), Fernandina (Narborough), and Plaza Sur (Hollingsworth 2004; Gentile et al. 2009; Fabiani et al. 2011); extirpated from Santiago (James; Snell et al. 1984) and Rábida (Jervis; subfossil only, Steadman et al. 1991); introduced on Seymour Norte (North Seymour) in the 1930s (Phillips et al. 2005), Venecia in 1997 (Cayot et al. 1994), and Bartolomé (three individuals, non-breeding; Washington Tapia pers. comm.); and repatriated to Baltra (South Seymour; Cayot and Menoscal 1992; Phillips et al. 2005). Comment: Tzika et al. (2008) and Gentile et al. (2009) have reported genetic evidence suggesting that some populations of *C. subcristatus* may deserve recognition as species. The name *demarlii* Duméril and Bibron (1837, Erpétologie Générale, Paris 4:197) is potentially available for a newly described form of *Conolophus*, although the type locality is unknown ("inconnue") and the holotype (originally in le Château-Musée de Boulogne-sur-Mer) has been lost (Céline Ramio and Roger Bour, pers. comm. to JBI 15 February 2010). Similarly, the name *pictus* Rothschild and Hartert (1899, Novitates Zoologicae 6:102; Syntypes BMNH 99.5.6.41–44; type locality "Narborough" [= Fernandina]), originally applied to a subspecies, is also available. This species is known to hybridize with *Amblyrhynchus cristatus* on Plaza Sur Island (Rassmann et al. 1997b). Fig. 8.

## CTENOSAURA WIEGMANN [SPINY-TAILED IGUANAS]

Other names: Black Iguanas, Garrobos, or Jamos (locally); Greater Spinytail Iguanas (Wrobel 2004). Original name: *Ctenosaura* Wiegmann 1828, Isis von Oken, Leipzig 21:371. Type species (by subsequent designation by Fitzinger 1843): *Ctenosaura cycluroides* Wiegmann 1828 = *Lacerta acanthura* Shaw 1802 (according to Gray 1845). Distribution: México to Panamá. Comment: preliminary phylogenetic analyses including most species in *Ctenosaura* led Köhler et al. (2000) to erect subgenera for three included clades: *Ctenosaura* Wiegmann 1828 for *acanthura*, *hemilopha*, *similis*, and *pectinata*; *Enyaliosaurus* Gray 1845 for *alfredschmidti*, *clarki*, *defensor*, *flavidorsalis*, and *quinquecarinata*; and *Loganisaura* for *bakeri*, *melanosterna*, *oedirhina*, and *palearis*. This arrangement was only partially supported by Gutsche and Köhler (2008), based on partial sequences of a mitochondrial gene. De Queiroz (1987a, b) and unpublished work by Stephen et al. have found no evidence of a monophyletic group consisting of *acanthura*, *hemilopha*, *similis*, and *pectinata*. Unpublished molecular work by Stephen, Reynoso, Sabey, and Buckley also indicates that *alfredschmidti* and *defensor* are not closely related to other *Ctenosaura*, calling into question at least two of the three subgenera above, and possibly warranting the recognition of *alfredschmidti* and *defensor* as a separate clade from

*Ctenosaura* (for which the name *Cachryx* Cope is available). A well-resolved phylogenetic hypothesis of all *Ctenosaura* is sorely needed.

***Ctenosaura acanthura* (Shaw) [Veracruz Spiny-tailed Iguanas].**—Other names: Garrobos del Noreste (Liner and Casa-Andreu 2008); Chiguipiles, Iguanas Espinosas, Iguanas Negras, Tilcampos (México); Eastern Spinytail Iguana, Iguane noir du Mexique, Northeastern Spinytail Iguana (Wrobel 2004). Original name: *Lacerta Acanthura* Shaw 1802, General Zoology, London 3(1):216. Holotype: BMNH XXII.20.a (Bailey 1928) = BMNH RR 1946.8.30.19 (Etheridge 1982). Type locality: not given. Designated type localities: "California" (Boulenger 1885), in error (Smith and Taylor 1950); "Tampico, Tamaulipas, Mexico" (Bailey 1928), inappropriate restriction (de Queiroz 1995). Distribution: lowlands of eastern México, from Tamaulipas southward to the Isthmus of Tehuantepec in

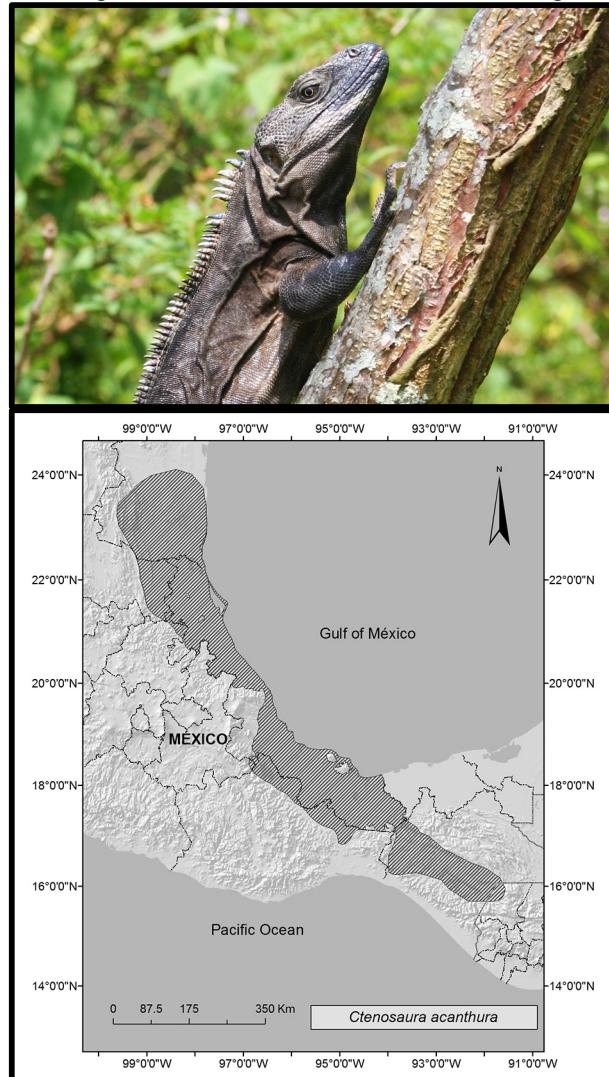


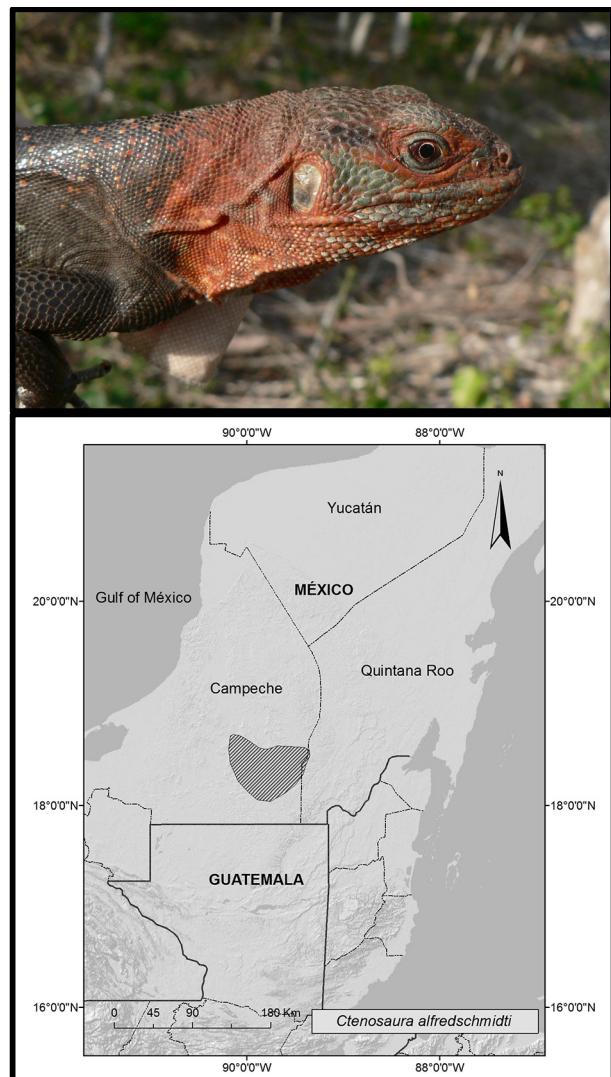
FIGURE 9. Veracruz Spiny-tailed Iguana, *Ctenosaura acanthura* (Photographed by Jorge Morales-Mávil, Los Tuxtlas, México).

southeastern Veracruz and eastern Oaxaca, México (Mendoza Quijano et al. 2002; Hollingsworth 2004; Zarza et al. 2008). Comment: Zarza et al. (2008) demonstrated that this taxon is nested within the diverse taxon currently called *C. pectinata*. Until the taxonomy of *C. pectinata* is clarified (see Comment on that species), we continue to recognize *acanthura* as a separate species from *pectinata*. See Comment for *C. pectinata* concerning the identity of spiny-tailed iguanas from the Central Depression in Chiapas and Guatemala. Additional literature: Morales-Mávil et al. (2016a). Fig. 9.

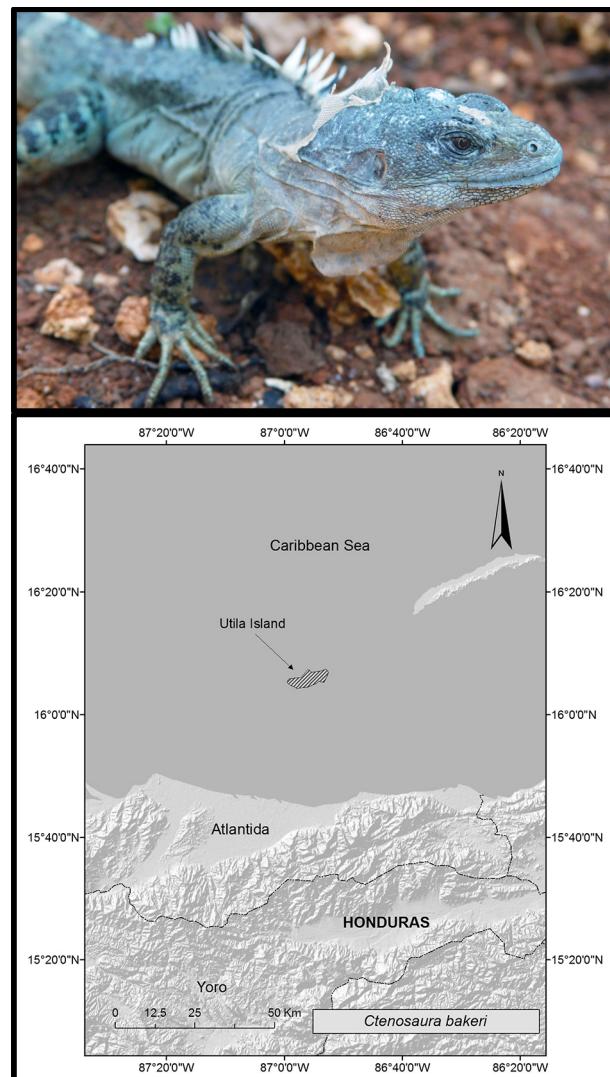
***Ctenosaura alfredschmidti* Köhler [Campeche Spiny-tailed Iguanas].**—Other names: Garrobo de Campeche (Liner and Casas-Andreu 2008); Escorpiones (México); Campeche Spinytail Iguana (Wrobel 2004). Original name: *Ctenosaura alfredschmidti* Köhler 1995, Salamandra 31(1):5. Holotype: SMF 69019. Type locality: "70 km östl. von Escarcega auf der Straße nach

Chetumal, Campeche, Mexico." Distribution: known only from near the type locality on the Yucatán Peninsula, in the Mexican state of Campeche. Comment: Radachowsky et al. (2003) reported this species from northeastern Guatemala, but Stephen et al. (unpubl. data) identified specimens from this population as *C. defensor*. Additional literature: Morales-Mávil et al. (2016b). Fig. 10.

***Ctenosaura bakeri* Stejneger [Útila Spiny-tailed Iguanas].**—Other names: Swamper, Wishy-Willy (Honduras); Baker's Spinytail Iguana (IUCN. 2014. *op. cit.*); Utila Spinytail Iguana (Wrobel 2004). Original name: *Ctenosaura bakeri* Stejneger 1901, Proceedings of the United States National Museum 23:467. Holotype: USNM 26317. Type locality: "Utila [sic] Island, Honduras." Distribution: Isla de Utila, Islas de la Bahía, Honduras (Pasachnik et al. 2009, 2010, 2011b). Comment: this species appears to be the sister taxon of



**FIGURE 10.** Campeche Spiny-tailed Iguana, *Ctenosaura alfredschmidti* (Photographed by Catherine Stephen, Campeche, México).



**FIGURE 11.** Utila Spiny-tailed Iguana, *Ctenosaura bakeri* (Photographed by John Binns).

# Herpetological Conservation and Biology

*C. oedirhina* (Pasachnik et al. 2010), and is known to hybridize with *C. similis* (Pasachnik et al. 2009). Additional literature: Gutsche and Streich (2009); Schulte and Köhler (2010); Pasachnik et al. (2012b). Fig. 11.

***Ctenosaura clarki* Bailey [Balsas Spiny-tailed Iguanas].**—Other names: Nopiches (Duellman and Duellman 1959); Balsas Armed Lizards, Michoacán Dwarf Spiny-tailed Iguanas (IUCN. 2014. *op. cit.*); Mexican Club Tails, Nopilchis (Liner and Casas-Andreu 2008); Balsas Spinytail Iguana (Wrobel 2004). Original name: *Ctenosaura clarki* Bailey 1928, Proceedings of the United States National Museum 73(12):44. Holotype: MCZ 22454. Type locality: "Ovopeo, Michoacan, Mexico." Corrected type locality: "Oropeo...at an elevation of about 1,000 feet in the lower Tepalcatepec Valley about 8 miles south of La Huacana" (Duellman and Duellman 1959). Distribution: Southwestern México, in the Balsas-Tepalcatepec basin in the states of

Michoacán (de Queiroz 1995), Jalisco (Larry Buckley, pers. comm.), and Guerrero (UNAM collection records from HerpNet), México. Fig. 12.

***Ctenosaura conspicuosa* Dickerson [San Esteban Spiny-tailed Iguanas].**—Other name: Garrobos de Isla San Esteban (Liner and Casas-Andreu 2008). Original name: *Ctenosaura conspicuosa* Dickerson 1919, Bulletin of the American Museum of Natural History 41(10):461. Holotype: AMNH 5027 = USNM 64440 (Bailey 1928; Cochran 1961; de Queiroz 1995). Type locality: "San Esteban Island, Gulf of California, México." Distribution: Isla San Esteban and Isla Cholludo, Sonora, México (Grismer 1999a). Comment: previously regarded as a subspecies of *Ctenosaura hemilopha* (Smith 1972), *C. conspicuosa* was considered a separate species by Grismer (1999b), and this proposal was corroborated by mitochondrial DNA sequence data reported by Cryder (1999) and Davy et al. (2011).

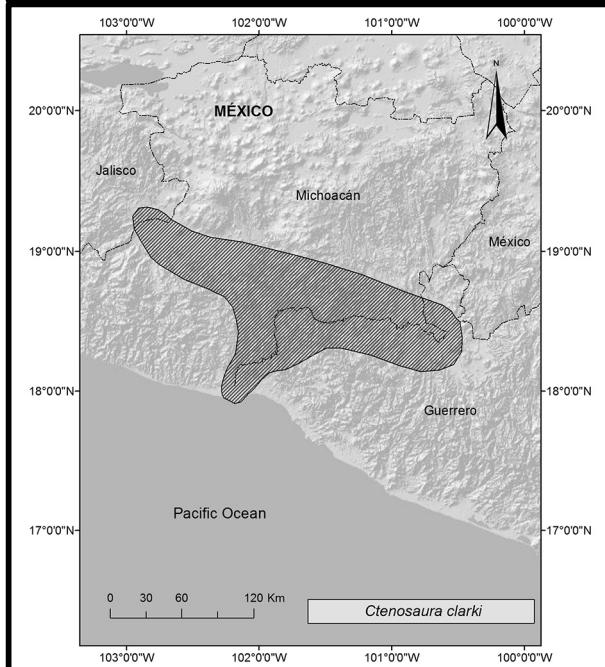


FIGURE 12. Balsas Spiny-tailed Iguana, *Ctenosaura clarki* (Photographed by Javier Alvarado-Díaz).

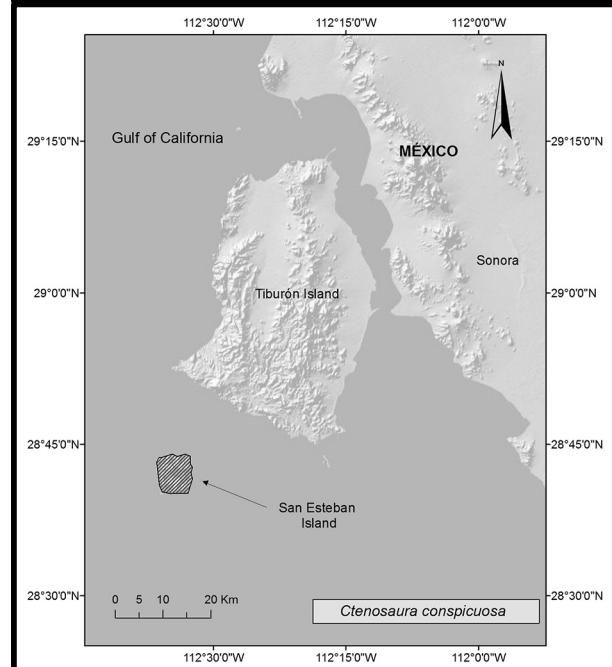


FIGURE 13. San Esteban Spiny-tailed Iguana, *Ctenosaura conspicuosa* (Photographed by Lee Grismer).

Grismer (1994, 2002) also argued that both the Isla San Esteban and Isla Cholludo populations represented descendants of individuals of *C. nolascensis* introduced by Seri native people; however, the divergence time estimates provided by Davy et al. (2011; see also Grismer 2002) indicate that *conspicuosa* diverged from *nolascensis* long before humans were present in the Americas. Mitochondrial haplotype data (Cryder 1999) and historical data (Nabhan 2002) indicate that the population of *conspicuosa* on Isla Cholludo was introduced there from Isla San Esteban by the Seri. Fig. 13.

***Ctenosaura defensor* (Cope) [Yucatán Spiny-tailed Iguanas].**—Other names: Chop (IUCN. 2014. *op. cit.*); Garrobos de Yucatán (Liner and Casas-Andreu 2008); Choop (Mayans); Yucatan Spinytail Iguana (Wrobel 2004). Original name: *Cachryx defensor* Cope 1866, Proceedings of the Academy of Natural Sciences of Philadelphia 18:124. Syntypes: USNM 12282 [3

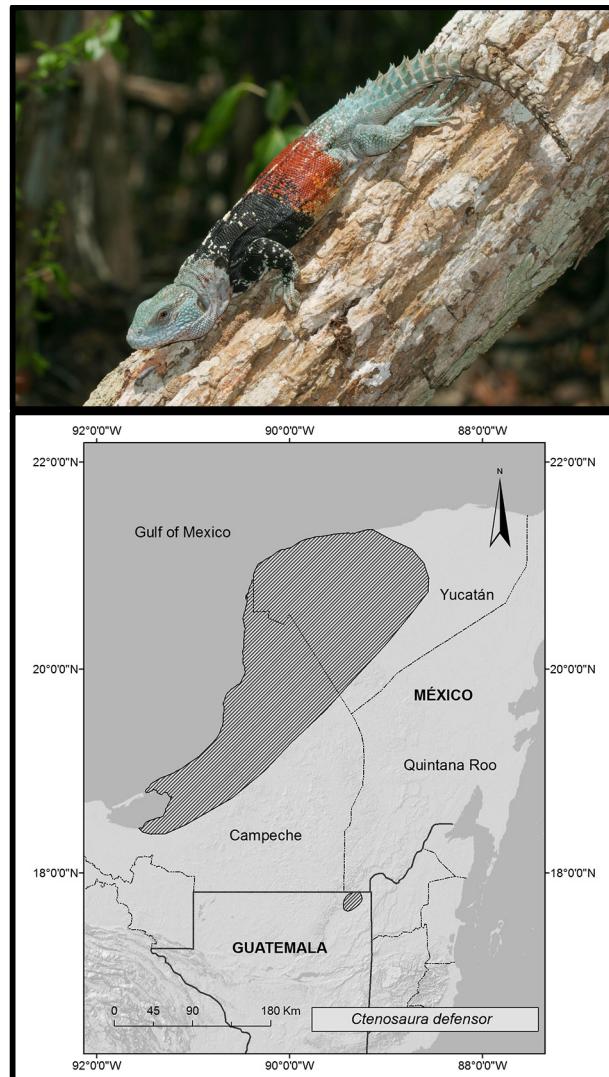


FIGURE 14. Yucatán Spiny-tailed Iguana, *Ctenosaura defensor* (Photographed by Joseph Burgess, Chencho, México).

specimens] (Bailey 1928; de Queiroz 1995). Type locality: not given; Yucatán, by implication (de Queiroz 1995). Restricted type locality: "Chichén Itzá, Yucatán, Mexico" (Bailey 1928), an inappropriate restriction (de Queiroz 1995). Distribution: Yucatán Peninsula in the Mexican states of Campeche and Yucatán (Hollingsworth 2004) and northeastern Guatemala (see Comment for *C. alfredschmidti*). Fig. 14.

***Ctenosaura flavidorsalis* Köhler and Klemmer [Yellow-backed Spiny-tailed Iguanas].**—Other names: Rumias (IUCN. 2014. *op. cit.*); Yellow-backed Spinytail Iguana (Wrobel 2004). Original name: *Ctenosaura flavidorsalis* Köhler and Klemmer 1994, Salamandra 30(3):197. Holotype: SMF 75845. Type locality: "1 km südl. La Paz (750 m ü. N.N.; 14°16', 87°40'; Dpto. La Paz, Honduras)." Distribution: Eastern Guatemala through northern El Salvador and southern Honduras (Köhler and Klemmer 1994; Hollingsworth 2004). Fig. 15.

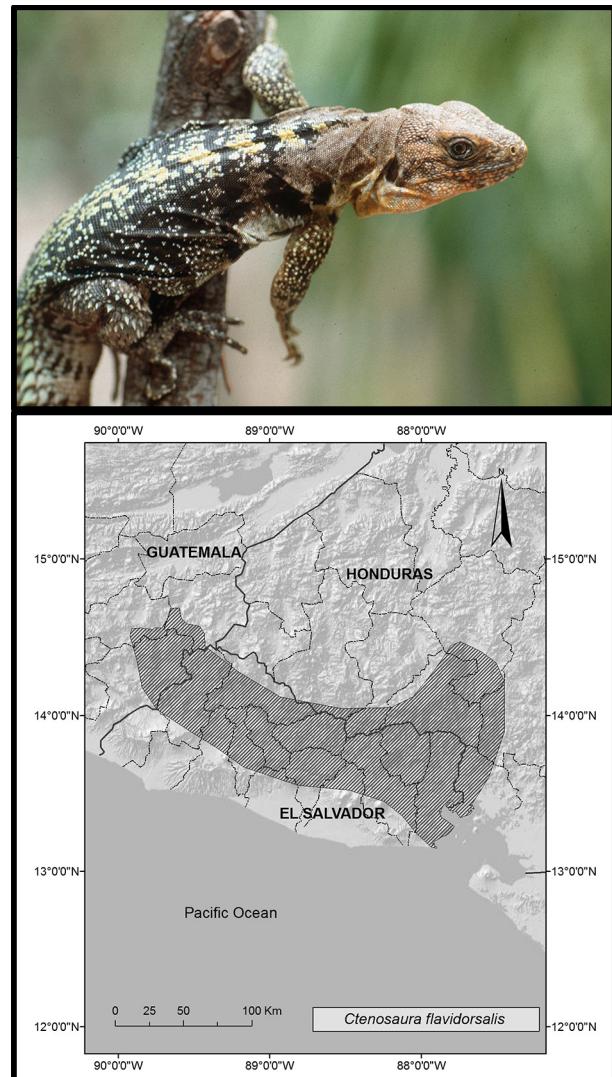


FIGURE 15. Yellow-backed Spiny-tailed Iguana, *Ctenosaura flavidorsalis* (Photographed by Gunther Köhler, La Paz, Honduras).

***Ctenosaura hemilopha* (Cope) [Baja California Spiny-tailed Iguanas].**—Other names: Garrobos del Cabo (Liner and Casas-Andreu 2008); Garrobos, Iguanas del Desierto, Iguanas Negras (México); Cape Iguana, Cape Spinytail Iguana, Cape Spiny-tailed Iguana, Iguane à queue épineuse-et-crête courte, Iguane commun à queue épineuse, Northern False Iguana, Peninsular Spinytail Iguana (*C. hemilopha hemilopha*), Short-crested Spiny-tailed Iguana, Spiny-tailed Iguana (Wrobel 2004). Original name: *Cyclura* (*Ctenosaura*) *hemilopha* Cope 1863, Proceedings of the Academy of Natural Sciences of Philadelphia 15:105. Syntypes: USNM 5295 [4 specimens]; one recataloged as USNM 69489 (de Queiroz 1995). Type locality: "Cape St. Lucas"; "near Soria Ranch, Cape San Lucas, Baja California, Mexico" [USNM 5295] and "San Nicolás, between Cape San Lucas and La Paz, Baja California, Mexico" [USNM 69489] (Cochran 1961; de Queiroz 1995). Distribution: Baja California Sur, México, from the vicinity of Loreto southward through the Cape Region, and

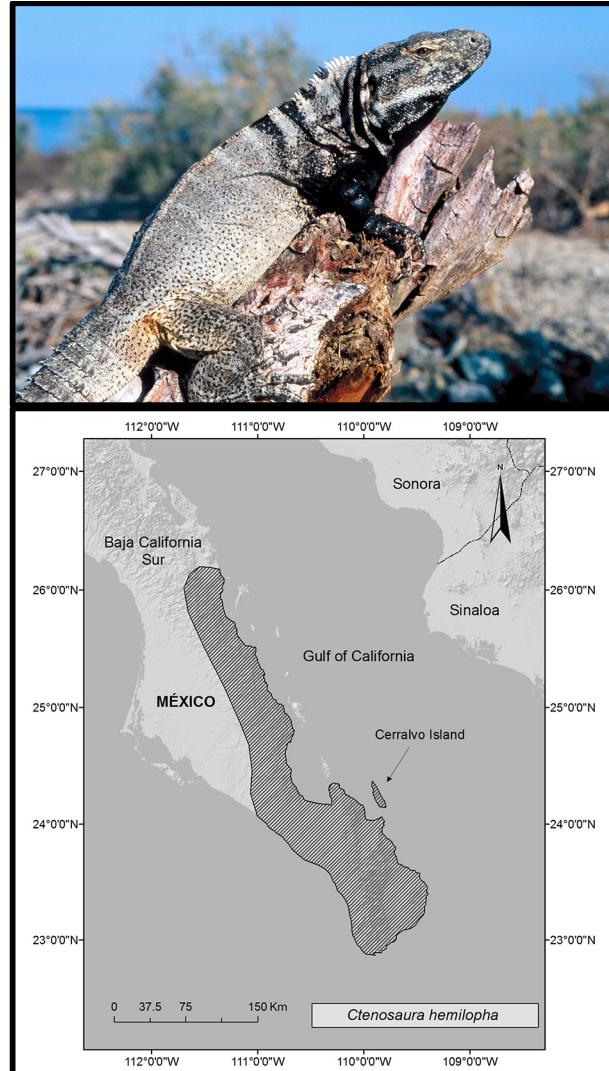


FIGURE 16. Baja California Spiny-tailed Iguana, *Ctenosaura hemilopha* (Photographed by Lee Grismar).

Isla Cerralvo (Hollingsworth 2004). Comment: three previously recognized subspecies (*conspicuosa*, *macrolopha*, and *nolascensis* following Smith 1972) were treated as separate species by Grismar (1999b). See Comments for those species. Other literature: Davy et al. (2011). Fig. 16.

***Ctenosaura macrolopha* Smith [Sonoran Spiny-tailed Iguanas].**—Other name: Garrobos de Sonora (Liner and Casas-Andreu 2008). Original name: *Ctenosaura hemilopha macrolopha* Smith 1972, Great Basin Naturalist 32(2):104. Holotype: FMNH 108705. Type locality: "La Posa, San Carlos Bay, 10 mi NW Guaymas, Sonora." Distribution: Northwestern México, from the vicinity of Hermosillo, Sonora, southward through the northern third of Sinaloa, and extreme western Chihuahua (Hollingsworth 2004). Comment: previously regarded as a subspecies of *Ctenosaura hemilopha* (Smith 1972), *C. macrolopha* was considered

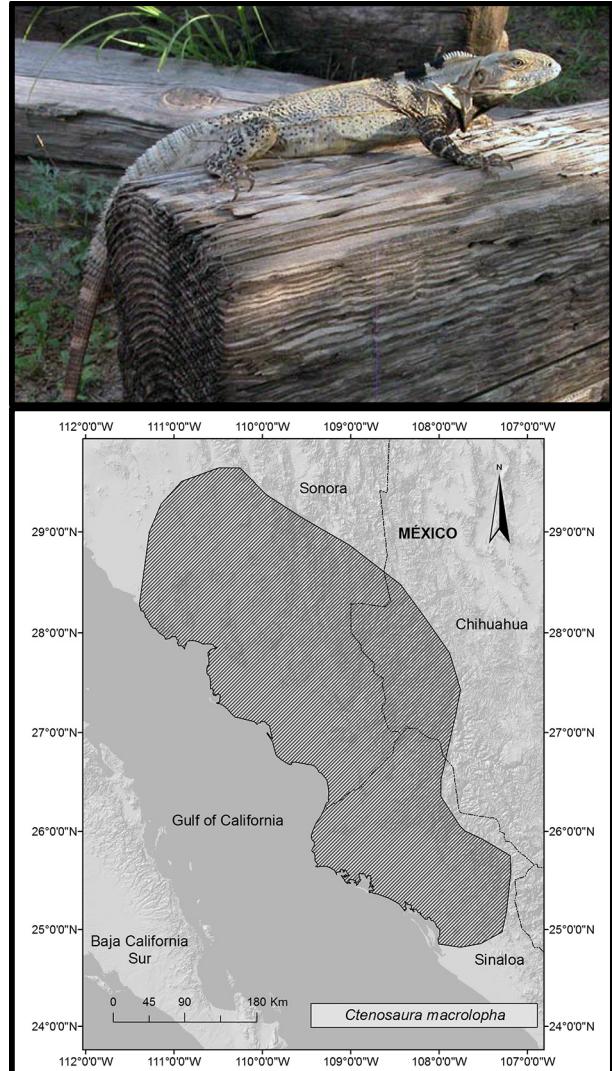


FIGURE 17. Sonoran Spiny-tailed Iguana, *Ctenosaura macrolopha* (Photographed by Victor Hugo Reynoso).

a separate species by Grismer (1999b), a proposal that was corroborated by mitochondrial DNA sequence data reported by Cryder (1999) and Davy et al. (2011). See Comment for *C. nolascensis* concerning introgression from that species to *C. macrolopha*. Fig. 17.

***Ctenosaura melanosterna* Buckley and Axtell [Black-chested Spiny-tailed Iguanas].**—Other names: Jamos (Honduras); Aguán Valley Iguanas, Cayos Cochinos Iguanas, Jamos Negros Río Aguán Iguanas (IUCN. 2014. *op. cit.*). Original name: *Ctenosaura melanosterna* Buckley and Axtell 1997, Copeia 1997(1):139. Holotype: KU 101441. Type locality: "2 km south of Coyoles Central, Departamento of Yoro, Honduras." Distribution: North-central Honduras in the Río Aguán Valley and Cayos Cochinos (Pasachnik et al. 2010, 2011a). Comment: this species was formerly considered part of *C. palearis*, but was recognized as a separate species by Buckley and Axtell (1997); the two

species appear to be sister species (Pasachnik et al. 2010). Based on genetic differences between mainland and island populations, Pasachnik et al. (2011a) identified two evolutionarily significant units within *melanosterna*. Additional literature: Pasachnik et al. (2012c, 2014); Montgomery et al. (2014). Fig. 18.

***Ctenosaura nolascensis* Smith [Nolasco Spiny-tailed Iguanas].**—Other names: Iguanas Espinosa de Nolasco, San Pedro Nolasco Spiny-tailed Iguanas (IUCN. 2014. *op. cit.*); Garrobos de Isla San Pedro Nolasco (Liner and Casas-Andreu 2008). Original name: *Ctenosaura hemilopha nolascensis* Smith 1972, Great Basin Naturalist 32(2):107. Holotype: UCM 26391. Type locality: "Isla San Pedro Nolasco, Sonora." Distribution: Isla San Pedro Nolasco, Sonora, México (Grismer 1999a, b). Comment: previously regarded as a subspecies of *Ctenosaura hemilopha* (Smith 1972), *C. nolascensis* was considered a separate species by

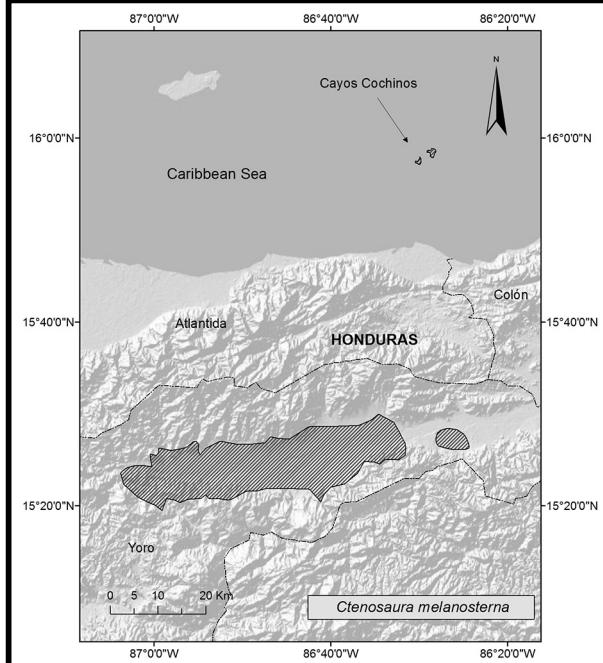


FIGURE 18. Black-chested Spiny-tailed Iguana, *Ctenosaura melanosterna* (Photographed by John Binns).

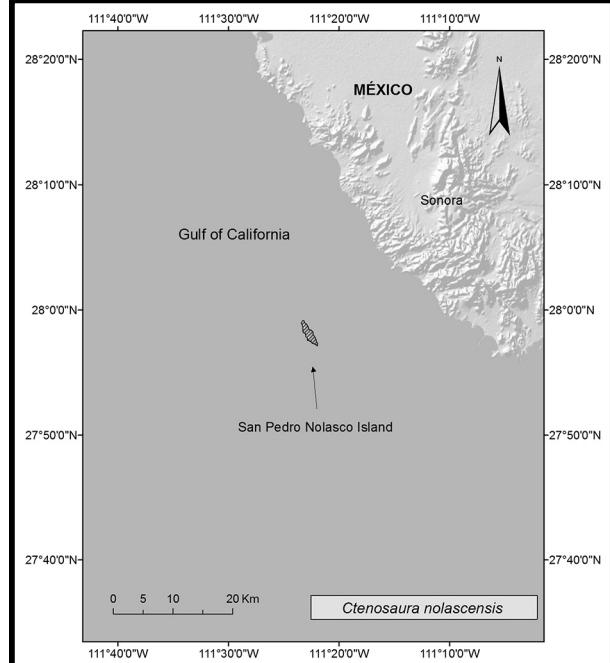


FIGURE 19. Nolasco Spiny-tailed Iguana, *Ctenosaura nolascensis* (Photographed by John Binns).

# Herpetological Conservation and Biology

Grismer (1999b), a proposal that was corroborated by mitochondrial DNA sequence data reported by Cryder (1999) and Davy et al. (2011). Davy et al. (2011) recently demonstrated that *C. nolascensis* is a composite of at least two distantly related matrilines which likely represent two ancient independent colonizations not mediated by humans. They also found evidence suggesting that, prior to human occupation of the area, *C. nolascensis* dispersed back to the mainland and introgressed with *C. macrolopha*. Fig. 19.

***Ctenosaura oaxacana* Köhler and Hasbún [Oaxaca Spiny-tailed Iguanas].**—Other names: Guiou (IUCN. 2014. *op. cit.*); Garrobo de Oaxaca (Liner and Casas-Andreu 2008). Original name: *Ctenosaura oaxacana* Köhler and Hasbún 2001, Senckenbergiana Biologica 81(1/2):260. Holotype: SMF 43259. Type locality: "Tehuantepec, Estado de Oaxaca, México." Distribution: Pacific versant of the Isthmus of Tehuantepec, Estado de

Oaxaca, México (Köhler and Hasbún 2001). Comment: this species was formerly considered part of *C. quinquecarinata*, but was recognized as a separate species by Köhler and Hasbún (2001); the two species appear to be sister species (Hasbún et al. 2005). Additional literature: Rioja et al. (2012). Fig. 20.

***Ctenosaura oedirhina* de Queiroz [Roatán Spiny-tailed Iguanas].**—Other names: Black Iguanas, Iguanas Negras, Wish-willys, (Honduras); De Queiroz's Spiny-tailed Iguanas, Garrobos (IUCN. 2014. *op. cit.*); De Queiroz's Spinytail Iguana, Roatan Spinytail Iguana (Wrobel 2004). Original name: *Ctenosaura oedirhina* de Queiroz 1987, Copeia 1987(4):892. Holotype: UF 28532. Type locality: "approx. 4.8 km (converted from 3 miles) west of Roatán on the path to Flowers Bay, Isla de Roatán, Departamento de las Islas de la Bahía, Honduras." Distribution: Islas de Roatán, Santa Elena, Barbareta, and various small islets surrounding Roatán, in the Islas de la

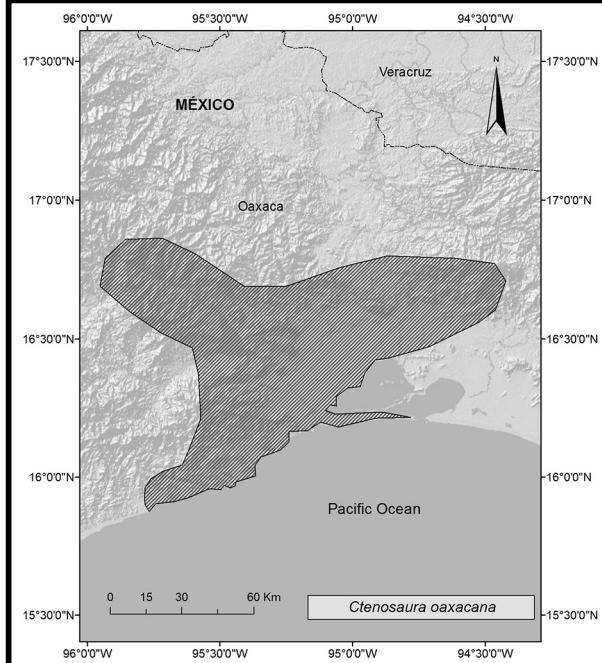


FIGURE 20. Oaxaca Spiny-tailed Iguana, *Ctenosaura oaxacana* (Photographed by John Iverson, México).

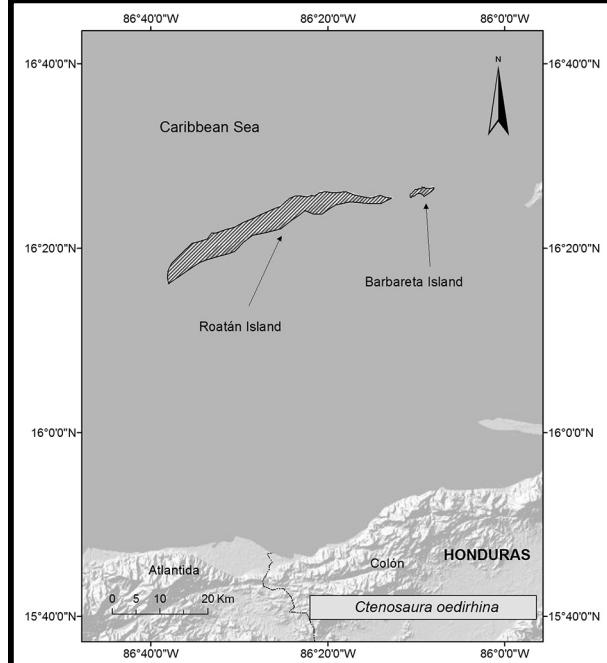


FIGURE 21. Roatán Spiny-tailed Iguana, *Ctenosaura oedirhina* (Photographed by Stesha Pasachnik).

# Iguana Taxonomy Working Group—Checklist of the Iguanas of the World.

Bahía, Honduras (Pasachnik 2013; Pasachnik et al. 2015). Comment: this species was considered part of *Ctenosaura bakeri* (Meyer and Wilson 1973; Wilson and Hahn 1973), but was recognized as a separate species by de Queiroz (1987b); the two species appear to be sister taxa (Pasachnik et al. 2010). Additional literature: Goode et al. (2016); Pasachnik and Hudman (2016). Fig. 21.

***Ctenosaura palearis* Stejneger [Motagua Spiny-tailed Iguanas].**—Other names: Garrobo del Motagua, Guatemalan Black Iguanas, Guatemalan Spiny-tailed Iguanas, Iguanas de Organo, Iguanas de Tuno (IUCN 2014. *op. cit.*). Original name: *Ctenosaura palearis* Stejneger 1899, Proceedings of the United States National Museum 21:381. Holotype: USNM 22703. Type locality: "Gualan, Guatemala." Distribution: Southeastern Guatemala in the Río Motagua Valley (Ariano and Pasachnik et al. 2011). Comment: this species is the sister taxon of *C. melanosterna* (Pasachnik et al. 2010). Fig. 22.

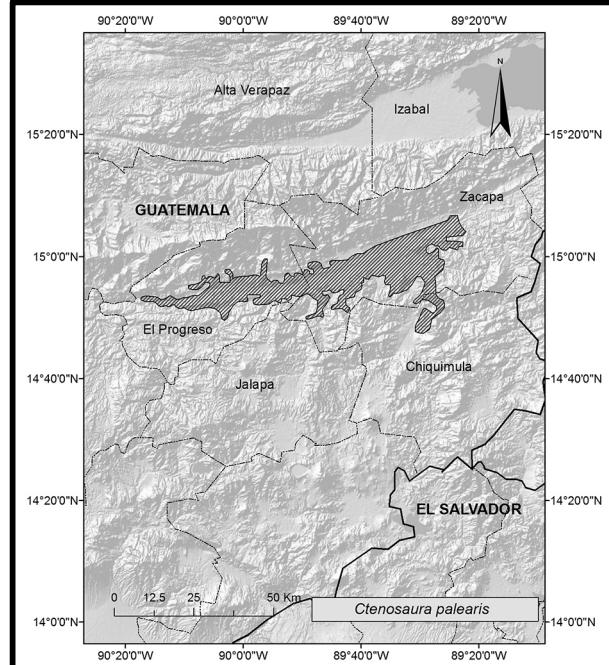


FIGURE 22. Motagua Spiny-tailed Iguana, *Ctenosaura palearis* (Photographed by Daniel Ariano).

***Ctenosaura pectinata* (Wiegmann) [Guerrero Spiny-tailed Iguanas].**—Other names: Garrobo de Roca (Liner and Casas-Andreu 2008); Iguane à queue épineuse-et-crête courte, Mexican Spinytail Iguana, Spinytail Iguana, Spiny-tailed Iguana, Western Spiny-tailed Iguana (Wrobel 2004). Original name: *Cyclura pectinata* Wiegmann 1834, Herpetologica Mexicana, Berlin: 42. Syntypes: ZMB 574–575 (Taylor 1969; de Queiroz 1995). Type locality: "Mexico". Restricted type locality: "Colima, Colima, Mexico" (Bailey 1928), an inappropriate restriction (de Queiroz 1995). Distribution: Western México from north of Culiacán in Sinaloa southward at least to the Isthmus of Tehuantepec in southeastern Oaxaca (see Comment), including Isla Isabela and Islas de las Tres Marías, Nayarit (Hollingsworth 2004; Zarza et al. 2008). Introduced to south Texas and south Florida, USA (Kraus 2009). Comment: Zarza et al. (2008) found that *C. pectinata* contains at least eight mutually exclusive

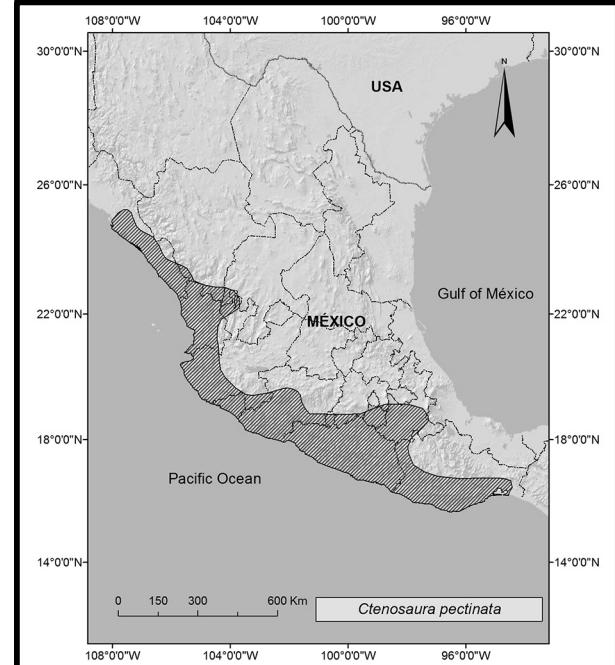
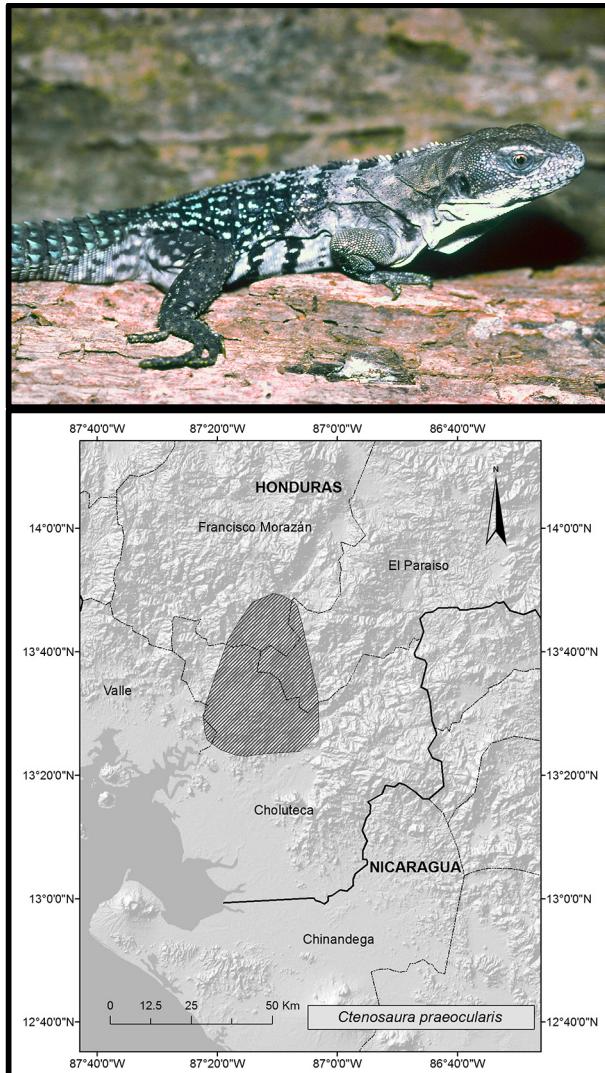


FIGURE 23. Guerrero Spiny-tailed Iguana, *Ctenosaura pectinata* (Photographed by John Binns).

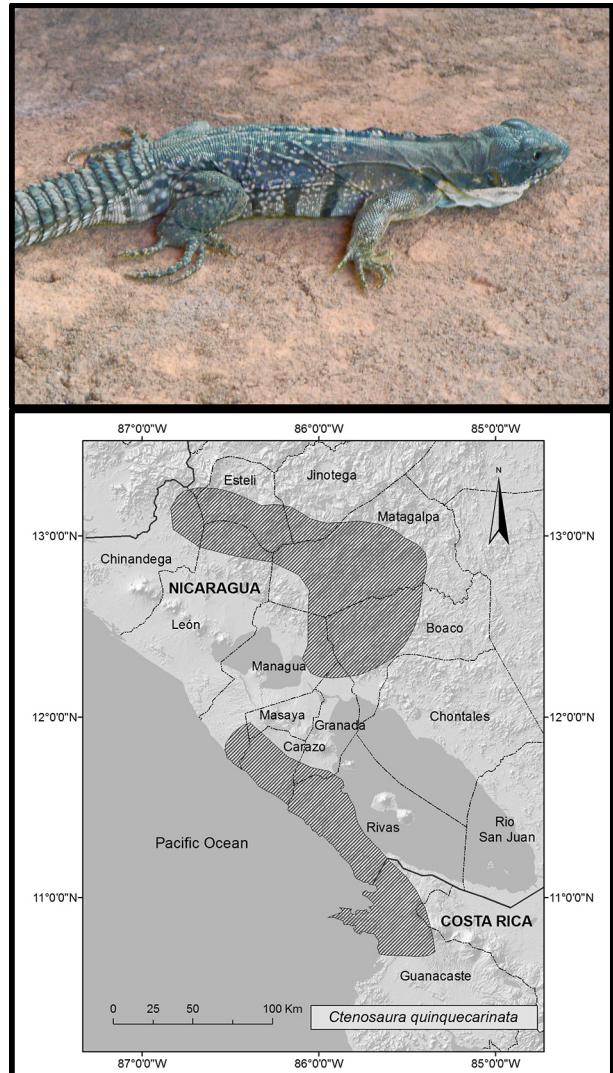
mitochondrial DNA clades across its range (with *C. acanthura* closely related to members of the most southeastern clade). Zarza et al. (2011) presented evidence from 12 microsatellite loci sampled only across the central range in western México (where four of the eight mtDNA clades were found) that only two nuclear DNA clusters were present in the area and they were discordant with the mtDNA clades. More range-wide genetic and morphological sampling is needed to understand variation in this complex, and its taxonomic implications. Until specific taxonomic designations are made, we tentatively recognize two species: *C. acanthura* and *C. pectinata*. Spiny-tailed iguanas in the Central Depression of Chiapas and extreme western Guatemala have been referred to as both *C. pectinata* (Alvarez del Toro 1960, 1983; Johnson 1989, 1990) and *C. acanthura* (Köhler 2003; Acevedo 2006). The identity of these iguanas needs to be determined. Additional literature: Zarza et al. (2016). Fig. 23.



**FIGURE 24.** Southern Honduran Spiny-tailed Iguana, *Ctenosaura praecocularis* (Photographed by John Iverson).

***Ctenosaura praecocularis* Hasbún and Köhler [Southern Honduran Spiny-tailed Iguanas].**—Other name: Jamos (IUCN. 2014. *op. cit.*). Original name: *Ctenosaura praecocularis* Hasbún and Köhler 2009, Journal of Herpetology 43:197. Holotype: SMF 79520. Type locality: "Cerro Las Mesitas, 10 km east of Sabanagrande toward Nueva Armenia, Montegrande, Departamento Francisco Morazán, Honduras, 800 m, 13°46.43'N, 86°11.83'W." Distribution: Pacific versant of southeastern Honduras in the Departments of Francisco Morazán and Choluteca (Hasbún and Köhler 2009). Comment: this species appears to be most closely related to *C. flavidorsalis* (Hasbún et al. 2005). Fig. 24.

***Ctenosaura quinquecarinata* (Gray) [Five-keeled Spiny-tailed Iguanas].**—Other names: Colas Chatas (IUCN. 2014. *op. cit.*); Nicaraguan Iguanas (Nicaragua); Central American Armed Lizard, Five-keeled Spinytail



**FIGURE 25.** Five-keeled Spiny-tailed Iguana, *Ctenosaura quinquecarinata* (Photographed by Catherine Stephen, Leon, Nicaragua).

Iguana, Oaxacan Spinytail Iguana (Wrobel 2004). Original name: *Cyclura quinquecarinata* Gray 1842, Zoological Miscellany, London 1842:59. Holotype: BMNH 41.3.5.61 = BMNH RR 1946.8.30.48 (Etheridge 1982). Type locality: "Demerara?" [= Georgetown, Guyana], in error (de Queiroz 1995); "South America", in error (BMNH catalogue; de Queiroz 1995). Restricted type locality: "Tehuantepec, Oaxaca, Mexico" (Bailey 1928), an inappropriate restriction (de Queiroz 1995); restricted to "the southern portion of the distribution of *C. quinquecarinata* in Costa Rica and Nicaragua" (Hasbún and Köhler 2001). Distribution: Nicaragua to northwestern Costa Rica (Hasbún and Köhler 2001, 2009; Köhler and Hasbún 2001). Comment: this species appears to be sister to *C. oaxacana* (Hasbún et al. 2005). Fig. 25.

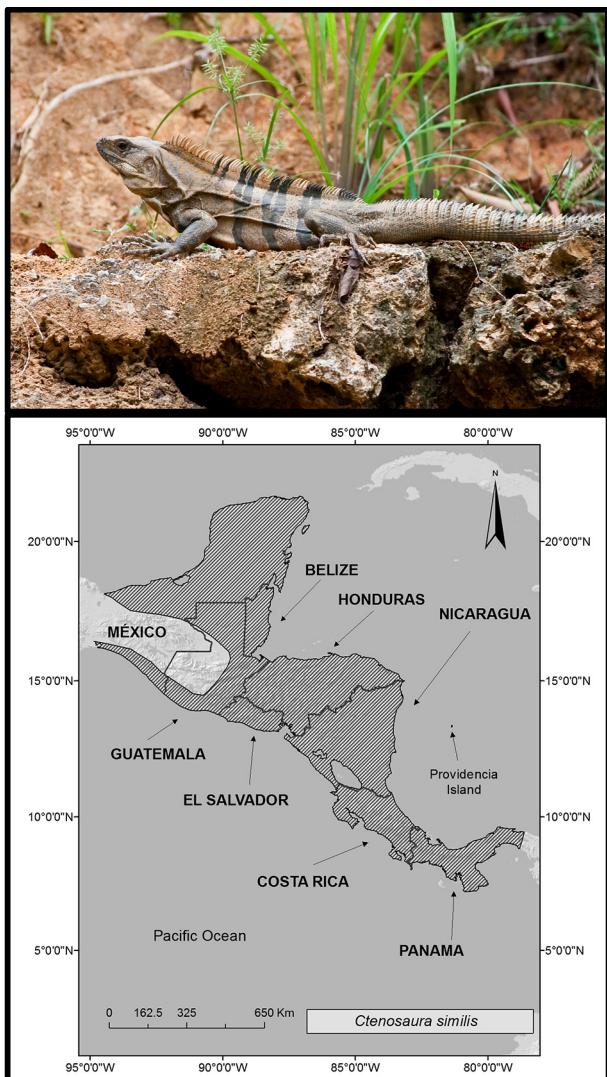


FIGURE 26. Common Spiny-tailed Iguana, *Ctenosaura similis* (Photographed by John Binns, Útila, Bay Islands, Honduras).

***Ctenosaura similis* (Gray) [Common Spiny-tailed Iguanas].**—Other names: Iguanas de Roca, Sheros (Guatemala); Black Spiny-tailed Iguanas (IUCN. 2014. *op. cit.*); Garrobos Negros (Liner and Casas-Andreu 2008); Garrobos, Iguanas Negras (local names); Iguanas Rayadas (México); Black Iguana, Black Spinytail Iguana, Common Spinytail Iguana (Wrobel 2004). Original name: *Iguana (Ctenosaura) Similis* Gray 1830, *In Griffith and Pidgeon, Cuvier's Animal Kingdom*, London 9:38. Type: Mus. [of Mr.] Bell [number not given] (de Queiroz 1995), not located (Bailey 1928). Type locality: not given. Restricted type locality: "Tela, Honduras, Central America" (Bailey 1928), inappropriate restriction (de Queiroz 1995). Distribution: from the Isthmus de Tehuantepec southward through Central America on both versants to Panamá City and Colón, Panamá (de Queiroz 1995; Hollingsworth 2004). Introduced to south Florida, USA (Kraus 2009), and Maya Cay (off Roatán), Honduras (Stesha Pasachnik, pers. obs.), and the Berry Islands, The Bahamas (Knapp et al. 2011). Comment: preliminary phylogeographic studies (Pasachnik, Buckley, and Reynoso unpubl. data) have found considerable variation within this wide-ranging taxon; the name *Ctenosaura completa* Bocourt (type locality "Guatemala.... La Union [El Salvador]") is available if multiple species are recognized. Additional literature: Avery et al. (2014). Fig. 26.

***Ctenosaura similis similis* (Gray) [Common Spiny-tailed Iguanas].**—Original name: *Iguana (Ctenosaura) Similis* (Gray 1830). See species account. Distribution: as for the species, excluding Isla de Providencia, Colombia.

***Ctenosaura similis multipunctata* Barbour and Shreve [Providence Spiny-tailed Iguanas].**—Original name: *Ctenosaura similis multipunctata* Barbour and Shreve 1934, Occasional Papers of the Boston Society of Natural History 8:197. Holotype: MCZ 36830. Type locality: "Old Providence Island". Distribution: Isla de Providencia, Colombia (Barbour and Shreve 1934). Comment: given that the nominotypical subspecies occurs on nearby San Andrés Island (90 km distant), the validity of this subspecies should be re-evaluated.

#### ***CYCLURA HARLAN* [ROCK IGUANAS]**

Other names: Cyclures, Iguanes à cornes, Rhinoceros Iguanas (Wrobel 2004). Original name: *Cyclura Harlan* 1824, Journal of the Academy of Natural Sciences of Philadelphia 4:250. Type species (subsequent designation by Fitzinger 1843): *Cyclura carinata* Harlan 1824. Distribution: West Indies from The Bahamas through the Greater Antilles (Henderson and Powell 2009; Buckner et al. 2012). Comment: a well-resolved phylogenetic hypothesis was published by Malone et al. (2000).

***Cyclura carinata* Harlan [Turks and Caicos Rock Iguanas].**—Other names: Booby Cay Rock Iguanas (The Bahamas); Guanas (Turks and Caicos); Mayaguana Rock Iguana, Southern Bahamas Rock Iguana, Turks Island Iguana (Wrobel 2004). Original name: *Cyclura carinata* Harlan 1824, Journal of the Academy of Natural Sciences of Philadelphia 4:250. Type: not located (Etheridge 1982). Type locality: "Turk's Island." Distribution: Turks and Caicos Islands and Booby Cay off Mayaguana in The Bahamas (Henderson and Powell 2009; Buckner et al. 2012). Comment: Bryan et al. (2007) proposed sinking the previously recognized *Cyclura carinata bartschi* Cochran 1931 (from Booby Cay off Mayaguana in The Bahamas) based on the absence of diagnostic mtDNA haplotypes or morphological characters. Preliminary mitochondrial DNA data suggest that western populations in the Caicos Islands may be distinct from all other populations (Bryan

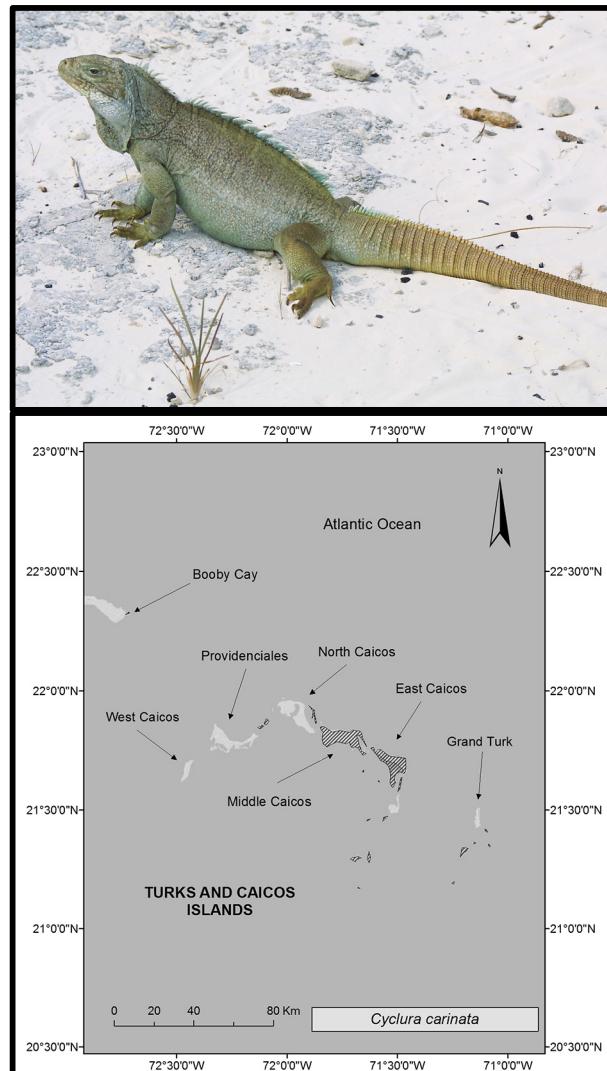


FIGURE 27. Turks and Caicos Rock Iguana, *Cyclura carinata* (Photographed by John Binns).

et al. 2007; Mark Welsh, pers. comm.). This species is sister to *C. ricordii* (Malone et al. 2000). Additional literature: Reynolds (2011). Fig. 27.

***Cyclura collei* Gray [Jamaican Rock Iguanas].**—Other names: Jamaican Ground Iguanas (IUCN 2014. *op. cit.*); Jamaican Iguanas (Jamaica); Jamaica Iguana (Wrobel 2004). Original name: *Cyclura Collei* Gray 1845, Catalogue of the Specimens of Lizards in the Collection of the British Museum, London: 190. Holotype: BMNH 1936.12.3.108. Type locality: "Jamaica." Distribution: Jamaica, currently restricted to the Hellshire Hills in the southeast (Henderson and Powell 2009). Comment: this species is sister to the clade comprising *C. cyclura*, *C. nubila*, *C. lewisi*, and *C. rileyi* (Malone et al. 2000). Additional literature: Wilson (2011); Wilson et al. (2016). Fig. 28.

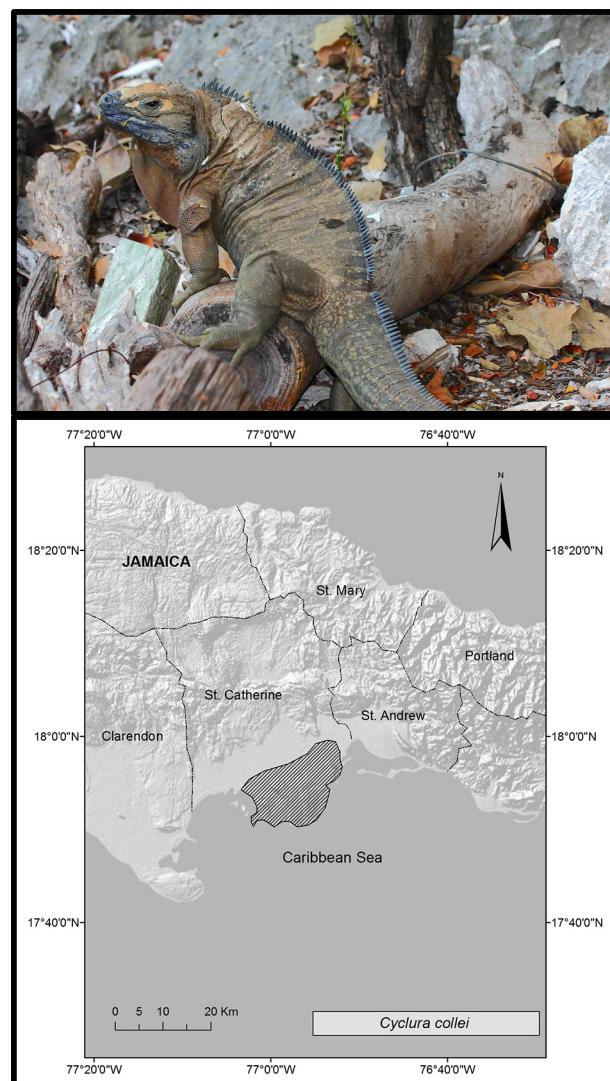


FIGURE 28. Jamaican Rock Iguana, *Cyclura collei* (Photographed by Joseph Burgess).

***Cyclura cornuta* (Bonnaterre) [Hispaniolan Rhinoceros Iguanas].**—Other names: Corned Iguana, Hispaniolan Rock Iguana, Iguane à cornes, Iguane cornu, Iguane rhinocéros, Rhinoceros Iguana, Rhinoceros Rock Iguana (Wrobel 2004). Original name: *Lacerta Cornuta* Bonnaterre 1789, Tableau Encyclopédique et Méthodique des Trois Règnes de la Nature, Erpétologie, Paris: 40. Type: not located (Etheridge 1982). Type locality: "Sainte-Domingue...dans les mornes de l'hôpital, entre L'Artibonite and les Gonaives." Distribution: Hispaniola, including Isla Beata, Isla Saona, Île de la Gonâve, Île de la Petite Gonâve, Île Grande Cayemite, and Île de la Tortue (Henderson and Powell 2009). Comment: prior to 2000, most authors followed Schwartz and Carey (1977) and recognized *C. stejnegeri* from Mona Island and the extinct *C. onchiopsis* from Navassa Island as subspecies of *Cyclura cornuta*. That taxonomy has subsequently been followed by some authors (e.g., Malone et al. 2000; Pérez-Buitrago and Sabat 2007; Lemm and Alberts

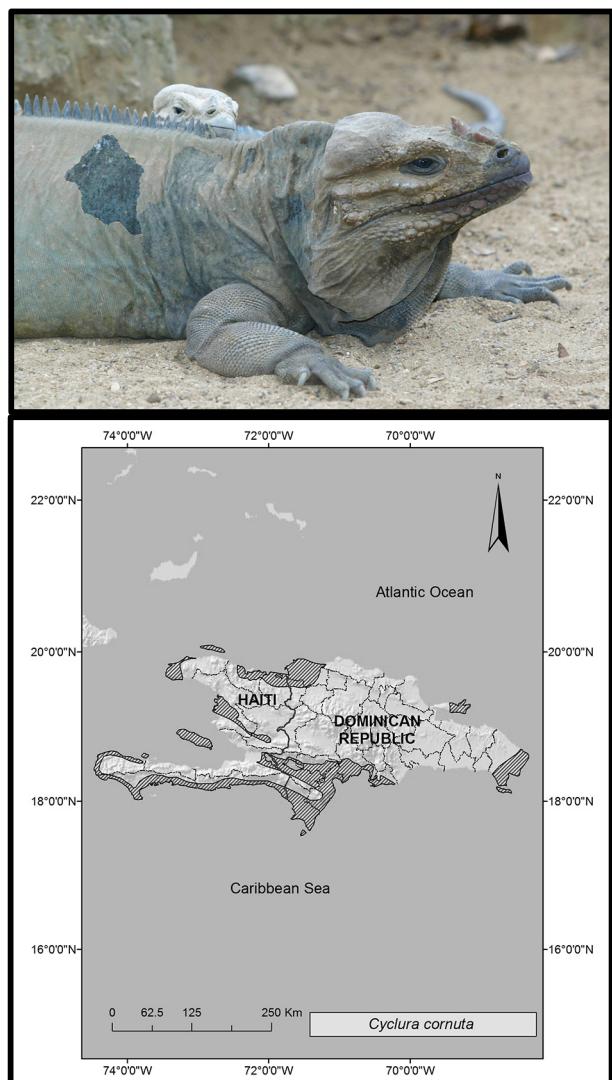


FIGURE 29. Hispaniolan Rhinoceros Iguana, *Cyclura cornuta* (Photographed by John Binns).

2012, and references therein). However, Powell (1999), Glor et al. (2000), Powell and Glor (2000), Hollingsworth (2004), Henderson and Powell (2009), and Hedges (Hedges, S.B. 2015. Caribherp, Amphibians and Reptiles of Caribbean Islands. Available from <http://www.caribherp.org> [Accessed 15 September 2014]) have recommended recognizing all three taxa as species. We follow the latter taxonomy here, recognizing that Malone et al. (2000) found little difference (relative to other sister species comparisons) between the two living taxa based on mitochondrial DNA sequences. Fig. 29.

#### ***Cyclura cychlura* (Cuvier) [Northern Bahamian Rock Iguanas].**

—Other names: Allen Cays Rock Iguana, Exuma Island Ground Iguana, Northern Bahamas Rock Iguana (Wrobel 2004). Original name: *I.[guana] cychlura* Cuvier 1829, Le Règne Animal, Ed. 2, Paris 2:45. Holotype: MNHN 2367. Type locality: "Carolina." Corrected type locality: "Andros Island, Bahama Islands" (Schwartz and Thomas 1975). Distribution: Bahamas Archipelago, Great Bahama Bank on Andros Island (including North Andros, Mangrove Cay, and South Andros), and northern, central, and southern Exuma Islands (Henderson and Powell 2009). Fossils and archeological remains likely representing this species are known from New Providence (Pregill 1982) and Abaco (Steadman et al. 2014). Additional literature: Hines (2016).

***Cyclura cychlura cychlura* (Cuvier) [Andros Rock Iguanas].**—Original name: *I.[guana] cychlura* Cuvier. See species account. Distribution: Andros Island, The Bahamas (Henderson and Powell 2009). Fig. 30.

***Cyclura cychlura figginsi* Barbour [Exuma Rock Iguanas].**—Original name: *Cyclura figginsi* Barbour 1923, Proceedings of the New England Zoological Club 8:108. Holotype: MCZ 17745. Type locality: "Bitter Guana Cay, near Great Guana Cay, Exuma Group, Bahama Islands." Distribution: central and southern Exuma Islands, The Bahamas (Henderson and Powell 2009). Comment: genetic studies by Malone et al. (2000, 2003) found evidence for two phylogeographically distinct groups within *C. cychlura*: one corresponding to *C. cychlura cychlura* and the other to *C. cychlura figginsi* plus *C. cychlura inornata*, which were not clearly differentiated from one another. Further work is needed to clarify the status of the latter two taxa. Fig. 30.

#### ***Cyclura cychlura inornata* Barbour and Noble [Allen Cays Rock Iguanas].**

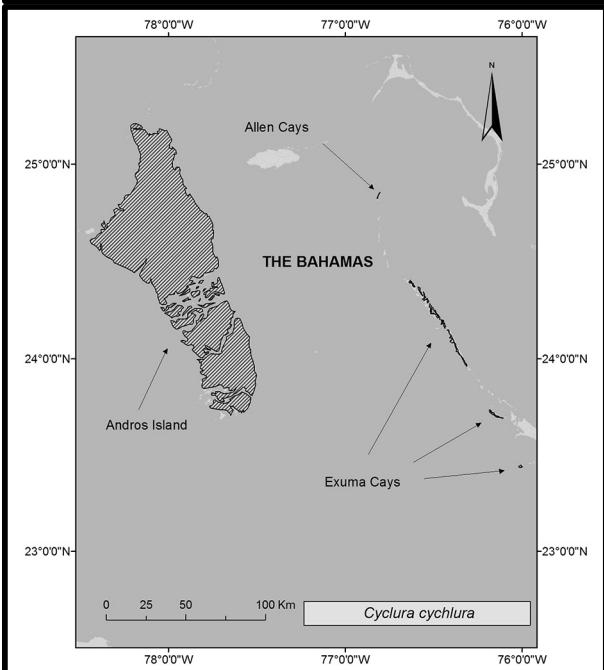
—Original name: *Cyclura inornata* Barbour and Noble 1916, Bulletin of the Museum of Comparative Zoology 60(4):151. Holotype: MCZ 11602. Type locality: "U Cay in Allan's Harbor, near Highborn Cay, Bahamas." Distribution: Allen Cays, Exuma Island group, The Bahamas (Henderson and Powell 2009); also introduced to several additional islands in the northern



Exumas, including Alligator Cay in the Exuma Cays Land and Sea Park (Knapp 2001). Comment: based on microsatellite data, Aplasca et al. (2016) identified significant differences between the two known natural populations of *C. cychlura inornata* on Leaf Cay and U Cay in the Allen Cays, but declined to make any taxonomic recommendations. Unfortunately, unauthorized movements of iguanas between these cays threaten their genetic integrity (Aplasca et al. 2016). Additional literature: Iverson et al. (2006); Smith and Iverson (2016). Fig. 30.

***Cyclura lewisi* Grant [Grand Cayman Blue Rock Iguanas].**—Other names: Blue Iguanas (Grand Cayman); Blue Rock Iguana, Grand Cayman Ground Iguana, Grand Cayman Iguana (Wrobel 2004). Original name: *Cyclura macleayi lewisi* Grant 1940, Bulletin of the Institute of Jamaica, Science Series 2:35. Holotype: BMNH 1939.2.3.68 = BMNH RR 1946.8.9.321 (Etheridge 1982). Type locality: "Battle Hill, east end of Grand Cayman." Distribution: Grand Cayman (Burton 2004; Henderson and Powell 2009; Echternacht et al. 2011). Comment: previously regarded as a subspecies of *Cyclura nubila* (Schwartz and Carey 1977), *C. lewisi* was considered a separate species by Burton (2004) based on morphological data as well as molecular data in Malone et al. (2000); however, additional study (including nuclear and mitochondrial genes) is sorely needed, and will require broad geographic sampling across Cuba (Starostová et al. 2010). Additional literature: Burton and Rivera-Milán (2014). Fig. 31.

***Cyclura nubila* (Gray) [Clouded Rock Iguanas].**—Other names: Iguanas (Cuba); Cayman Islands Ground Iguana, Cuban Ground Iguana, Cuban Iguana, Cuban Rock Iguana, Rock Iguana (Wrobel 2004). Original name: *Iguana (Cyclura) Nubila* Gray 1830, In Griffith and Pidgeon, Cuvier's Animal Kingdom, London 9:39. Holotype BMNH XXII. 8.a = 1946.8.29.88 (Etheridge 1982). Type locality: "South America?". Restricted type locality: "Cuba" (Schwartz and Thomas 1975). Distribution: Cuba, including many offshore islands; lesser Cayman Islands, including Cayman Brac and

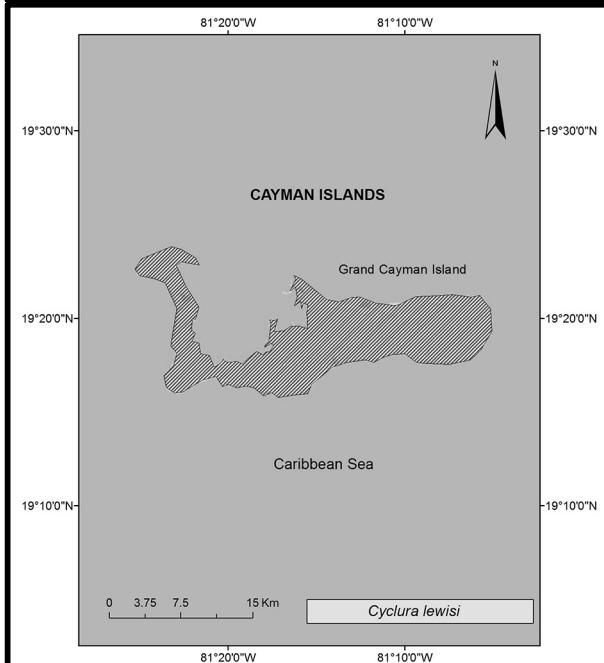


**FIGURE 30.** Andros Rock Iguana, *Cyclura cychlura cychlura* (top left; photographed by Joseph Burgess). Exuma Rock Iguana, *Cyclura cychlura figginsi* (top right; photographed by Charles Knapp). Allen Cays Rock Iguana, *Cyclura cychlura inornata* (middle; photographed by Charles Knapp).

## Iguana Taxonomy Working Group—Checklist of the Iguanas of the World.

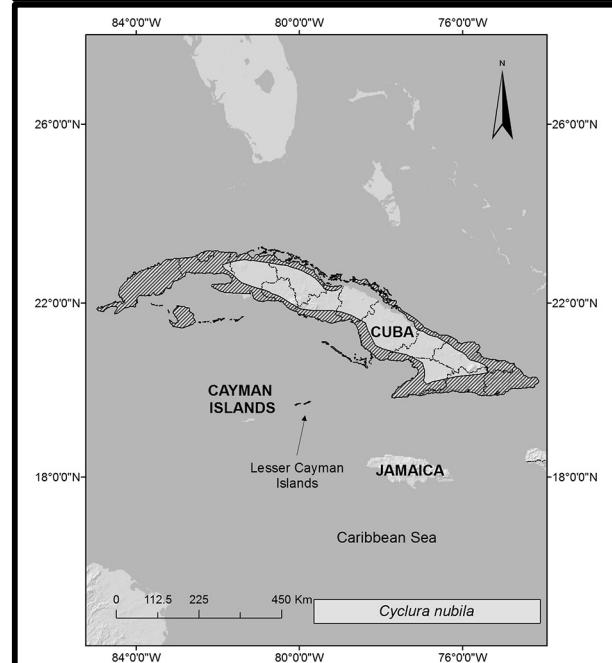
Little Cayman (Henderson and Powell 2009; González Rossell et al. 2012). Introduced to Isla Magueyes off southwestern Puerto Rico (Kraus 2009). Comment: Starostová et al. (2010) have demonstrated that mitochondrial DNA haplotypes of Cuban *C. nubila* are diverse and paraphyletic relative to those from Cayman and Bahamian iguana populations currently recognized as different species (*lewisii* and *cyclura*).

***Cyclura nubila nubila* (Gray) [Cuban Rock Iguanas].**—Other names: Cuban Ground Iguanas, Cuban Iguanas (IUCN. 2014. *op. cit.*). Original name: *Iguana (Cyclura) Nubila* Gray. See species account. Distribution: Cuba (Henderson and Powell 2009; González Rossell et al. 2012). Introduced to Isla Magueyes off southwestern Puerto Rico (Kraus 2009). Additional literature: García and Gerber (2016); González et al. (2016). Fig. 32.



**FIGURE 31.** Grand Cayman Blue Rock Iguana, *Cyclura lewisi* (Photographed by John Binns).

***Cyclura nubila caymanensis* Barbour and Noble [Sister Islands Rock Iguanas].**—Other names: Sister Isles Rock Iguana (Cayman Islands); Cayman Islands Ground Iguanas, Lesser Caymans Rock Iguanas (IUCN.



**FIGURE 32.** Cuban Rock Iguana, *Cyclura nubila nubila* (top; photographed by Allison Alberts, Guantánamo Bay, Cuba). Sister Islands Rock Iguana, *Cyclura nubila caymanensis* (middle; photographed by John Binns).

2014. *op. cit.*); Sister Isles Iguanas (Lemm and Alberts 2012). Original name: *Cyclura caymanensis* Barbour and Noble 1916, Bulletin of the Museum of Comparative Zoology 60(4):148. Holotype: MCZ 10534. Type locality: "Cayman Islands, probably Cayman Brac." Distribution: Cayman Brac and Little Cayman Islands (Henderson and Powell 2009). Comment: relative to the nominotypical subspecies, *caymanensis* is allopatric and diagnosable (Schwartz and Carey 1977); without explanation, Echternacht (2012) recognized it as a separate species from *C. nubila*. We retain it as a subspecies pending further study. Additional literature: Goetz (2008). Fig. 32.

***Cyclura onchiopsis*<sup>†</sup> Cope [Navassa Rhinoceros Iguanas].**—Other names: Navassa Island Iguanas, Navassa Rock Iguanas (IUCN. 2014. *op. cit.*). Original name: *Cyclura* [*Cyclura*] *onchiopsis* Cope 1885, American Naturalist 19:1006. Syntypes: USNM 9977, 12239, MCZ

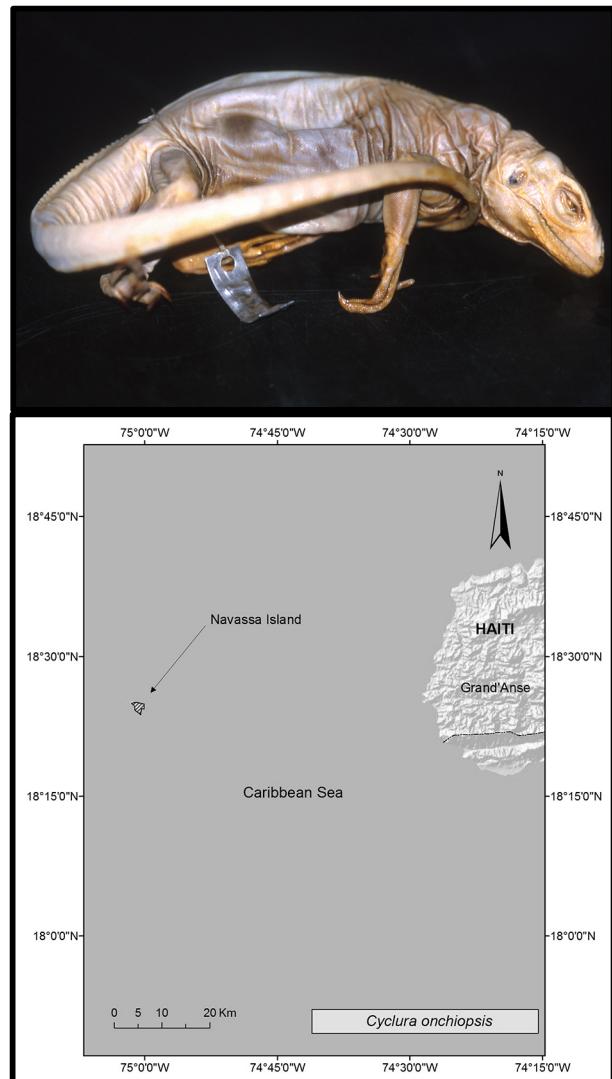


FIGURE 33. Navassa Rhinoceros Iguana, *Cyclura onchiopsis* (Photographed by Robert Powell).

4717. Type locality: "from an unknown locality." Restricted type locality: "Island of Navassa" (Cope 1886). Distribution: Navassa Island, off the southwest coast of Hispaniola (Powell 2000), but now extinct (Powell 1999; Henderson and Powell 2009). Comment: see Comment for *C. cornuta*. Sequencing of DNA from the type series of *C. onchiopsis* would be helpful for determining relationships within the *Cyclura cornuta* species group (including *C. onchiopsis* and *C. stejnegeri*). Fig. 33.

***Cyclura pinguis* Barbour [Anegada Rock Iguanas].**—Other names: Stout Iguana (García and Gerber 2016); Anegada Ground Iguanas (IUCN. 2014. *op. cit.*). Original name: *Cyclura pinguis* Barbour 1917, Proceedings of the Biological Society of Washington 30:100. Holotype: MCZ 12082. Type locality: "Anegada, British Virgin Islands." Distribution: Anegada Island (Henderson and Powell 2009); formerly occurred on Puerto Rico and Saint Thomas (Pregill 1981).

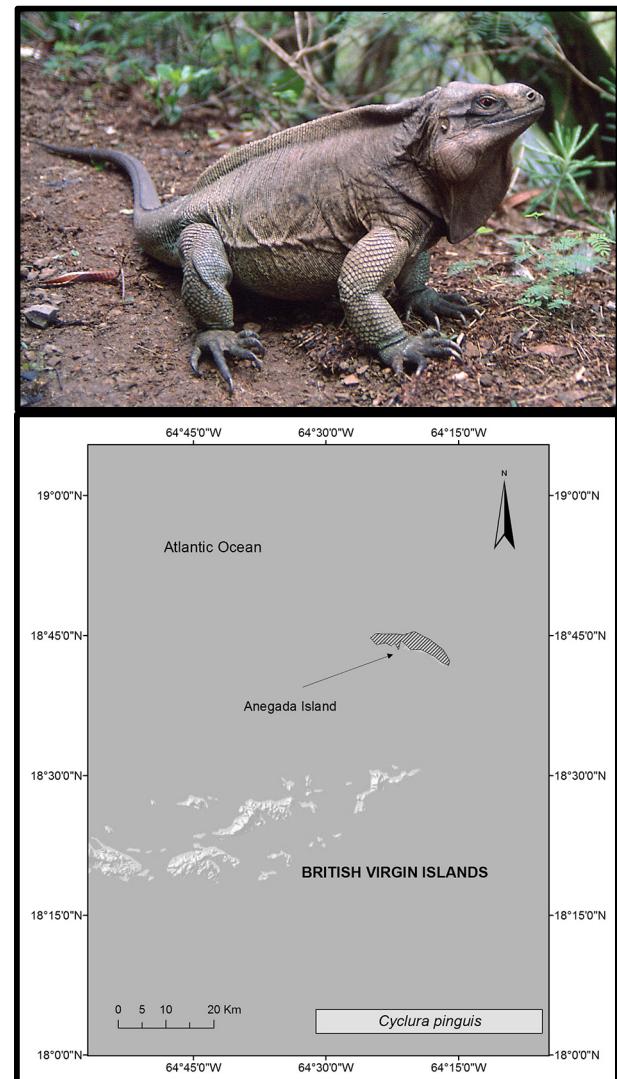


FIGURE 34. Anegada Rock Iguana, *Cyclura pinguis* (Photographed by Glenn Mitchell).

## Iguana Taxonomy Working Group—Checklist of the Iguanas of the World.

Introduced: Guana, Little Thatch, Moskito, Necker, and Norman Islands, British Virgin Islands (Anonymous 2004; Perry and Gerber 2006, 2011; Perry and Powell 2009). Comment: this species is sister to all other *Cyclura* (Malone et al. 2000). Additional literature: García and Gerber (2016). Fig. 34.

***Cyclura ricordii* (Duméril and Bibron) [Ricord's Rock Iguanas].**—Other names: Cyclures de Hispaniola, Cyclures de Ricord, Las Iguanas Ricordi, Ricord's Ground Iguanas (IUCN. 2014. *op. cit.*); Banded Rock Agama (Wrobel 2004). Original name: *Aloponotus Ricordii* Duméril and Bibron 1837, Erpétologie Générale, Paris 4:190. Holotype: MNHN 8304. Type locality: "Sainte-Domingue." Distribution: Southwestern Dominican Republic (Valle de Neiba and the Peninsula de Barahona), and southeastern Haiti (Henderson and Powell 2009; Rupp and Accimé 2011). Comment: this species is sister to *C. carinata* (Malone et al. 2000). Fig. 35.

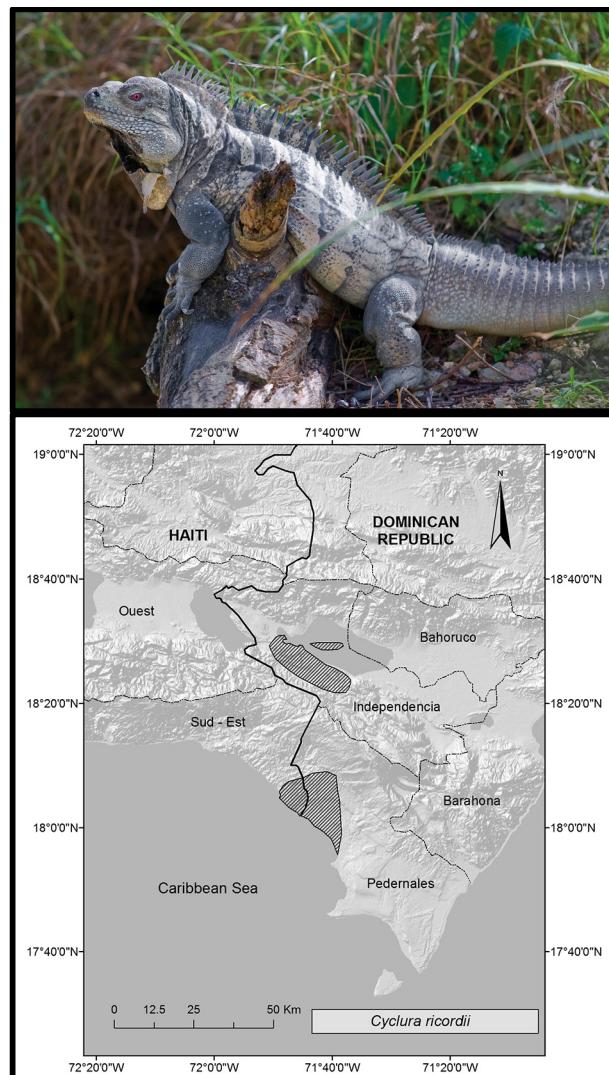


FIGURE 35. Ricord's Rock Iguana, *Cyclura ricordii* (Photographed by John Binns).

***Cyclura rileyi* Stejneger [Central Bahamian Rock Iguanas].**—Other names: Central Bahamas Rock Iguana, Watling Island Ground Iguana, White Cay Ground Iguana (Wrobel 2004). Original name: *Cyclura rileyi* Stejneger 1903, Proceedings of the Biological Society of Washington 16:130. Holotype: USNM 31969. Type locality: "Watlings Island, Bahamas." Distribution: Bahamas Archipelago, San Salvador and adjacent Cays, in the extreme southern Exumas on Sandy (= White) Cay, and in the Acklins Cays on Fish and North Cays (Henderson and Powell 2009). Comment: Malone et al. (2000) found no variation in one segment of mitochondrial DNA, which was polymorphic in other *Cyclura*, among the currently recognized subspecies of *C. rileyi*; further work is needed to test their validity. This species is sister to the clade comprising *C. cychlura*, *C. lewisi*, and *C. nubila* (Malone et al. 2000).

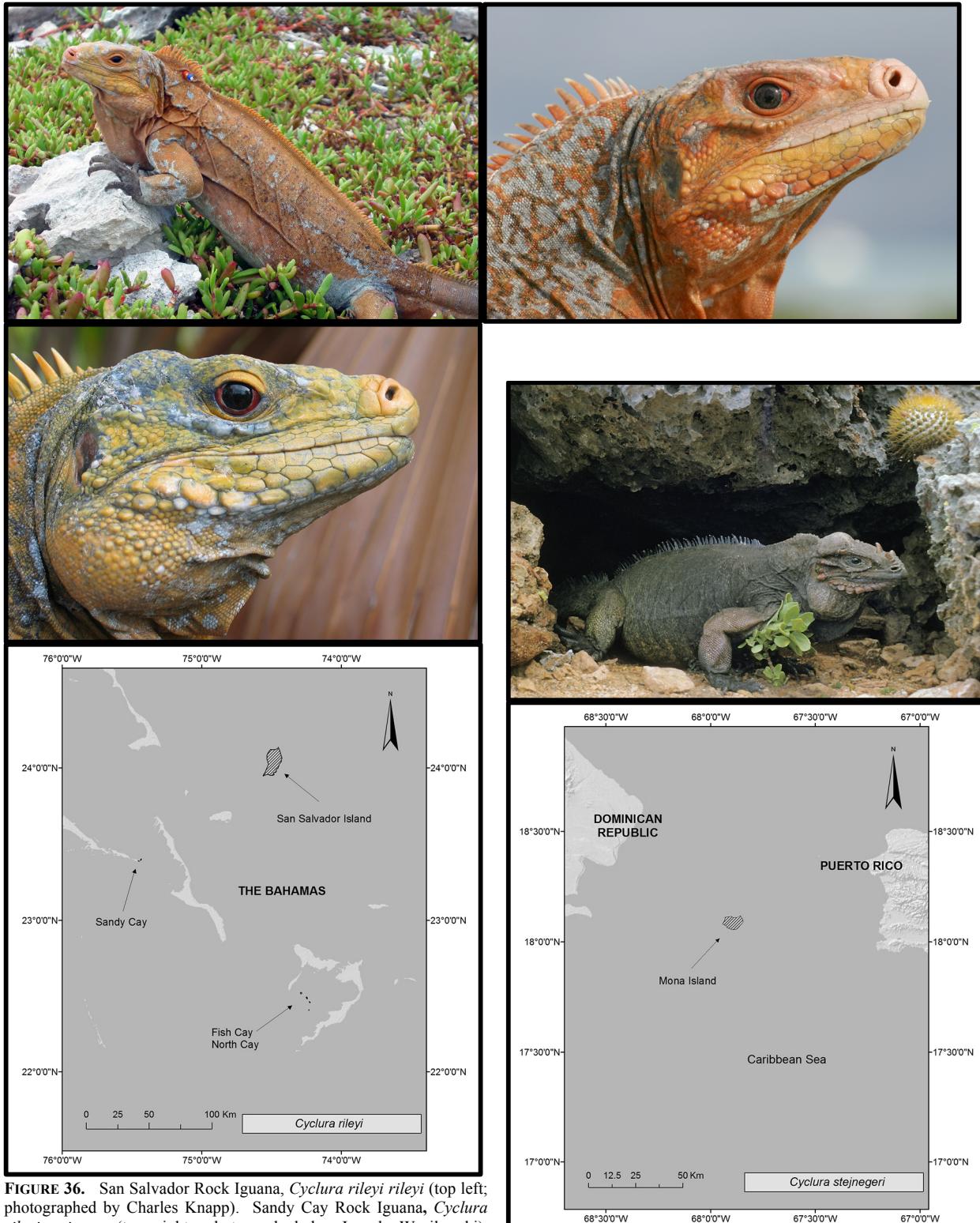
***Cyclura rileyi rileyi* Stejneger [San Salvador Rock Iguanas].**—Other name: Watling Island Iguanas (IUCN. 2014. *op. cit.*). Original name: *Cyclura rileyi* Stejneger. See species account. Distribution: San Salvador and nearby islands, The Bahamas (Henderson and Powell 2009; Buckner et al. 2012). Additional literature: Hayes et al. (2016a). Fig. 36.

***Cyclura rileyi cristata* Schmidt [Sandy Cay Rock Iguanas].**—Other name: White Cay Rock Iguanas (IUCN. 2014. *op. cit.*). Original name: *Cyclura cristata* Schmidt 1920, Proceedings of the Linnaean Society of New York 33:6. Holotype: AMNH 7238. Type locality: "White Cay [Exuma Islands], Bahama Islands". Distribution: known only from the type locality (Henderson and Powell 2009). Additional literature: Hayes et al. (2016b). Fig. 36.

***Cyclura rileyi nuchalis* Barbour and Noble [Acklins Rock Iguanas].**—Original name: *Cyclura nuchalis* Barbour and Noble 1916, Bulletin of the Museum of Comparative Zoology 60(4):156. Holotype: ANSP 11985. Type locality: "Fortune Island [= Long Cay off Crooked Island in the Acklins Islands], Bahamas." Distribution: Fish Cay and North Cay in the Acklins Islands, The Bahamas, but no longer found on Long Cay (Hayes et al. 2004); introduced to Bush Hill Cay in the Exuma Cays Land and Sea Park (Hayes et al. 2004; Buckner et al. 2012). Additional literature: Iverson et al. (2016). Fig. 36.

***Cyclura stejnegeri* Barbour and Noble [Mona Rhinoceros Iguanas].**—Other names: Mona Iguanas, Mona Island Iguanas (Puerto Rico); Mona Rock Iguana (Wrobel 2004). Original name: *Cyclura stejnegeri* Barbour and Noble 1916, Bulletin of the Museum of Comparative Zoology 60(4):163. Holotype: USNM 29367. Type locality: "Mona Island." Distribution: Isla Mona, situated

## Herpetological Conservation and Biology



## Iguana Taxonomy Working Group—Checklist of the Iguanas of the World.

between Hispaniola and Puerto Rico (Henderson and Powell 2009). Comment: see Comment for *C. cornuta*. Additional literature: Perotto-Baldvieso et al. (2009); García and Gerber (2016); Pérez-Buitrago et al. (2016). Fig. 37.

### **DIPSOSAURUS HALLOWELL [DESERT IGUANAS]**

Other names: Crested Lizards, Dipsosaures (Wrobel 2004). Original name: *Dipso-saurus* Hallowell 1854, Proceedings of the Academy of Natural Sciences of Philadelphia 7:92. Type species (by monotypy): *Crotaphytus dorsalis* Baird and Girard 1852. Distribution: Southwestern United States to northwestern México, including Baja California (Hollingsworth 2004). Comment: a detailed phylogeographic study of *Dipsosaurus* is needed.

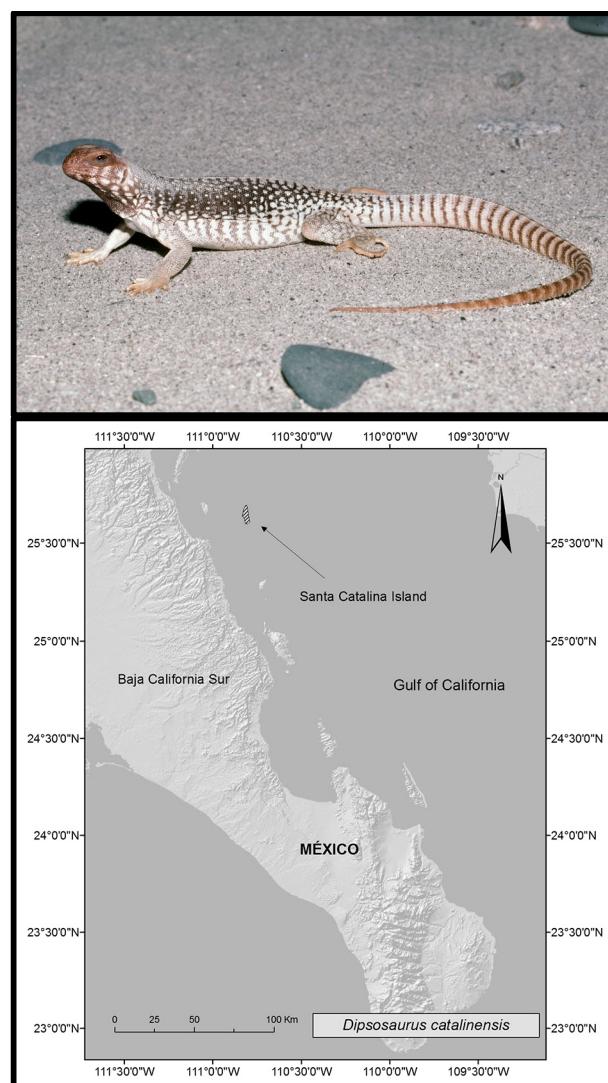
***Dipsosaurus catalinensis* Van Denburgh [Santa Catalina Desert Iguanas].**—Other name: Cachorones de Isla Santa Catalina (Liner and Casas-Andreu 2008). Original

name: *Dipsosaurus catalinensis* Van Denburgh 1922, Occasional Papers of the California Academy of Sciences 10(1):83. Holotype: CAS 50505. Type locality: "Santa Catalina Island, Gulf of California, Mexico." Distribution: Isla Santa Catalina, Baja California Sur, México (Grismar 1999a, b). Comment: formerly considered a subspecies of *D. dorsalis* (Soulé and Sloan 1966) this taxon was recognized as a species by Grismar (1999b). Fig. 38.

***Dipsosaurus dorsalis* (Baird and Girard) [Common Desert Iguanas].**—Other names: Cachorones Güero (Liner and Casas-Andreu 2008); Desert Iguana, Dipsosaure du desert, Iguane du désert, Keeled-back Iguana, Northern Crested Lizard, Pygmy Iguana (Wrobel 2004). Original name: *Crotaphytus dorsalis* Baird and Girard 1852, Proceedings of the Academy of Natural Sciences of Philadelphia 6:126. Holotype: USNM 2699 (Cochran 1961). Type locality: "Desert of Colorado, Cal.[ifornia]". Restricted type locality: "Winterhaven (= Fort Yuma), Imperial County", California (Smith and Taylor 1950), without justification (de Queiroz 1995). Distribution: Southwestern United States (in southern Nevada, southwestern Utah, southeastern California, and western Arizona), southward to northwestern México (in western Sonora and northwestern Sinaloa), the peninsula of Baja California, and islands of the Gulf of California (Hollingsworth 2004).

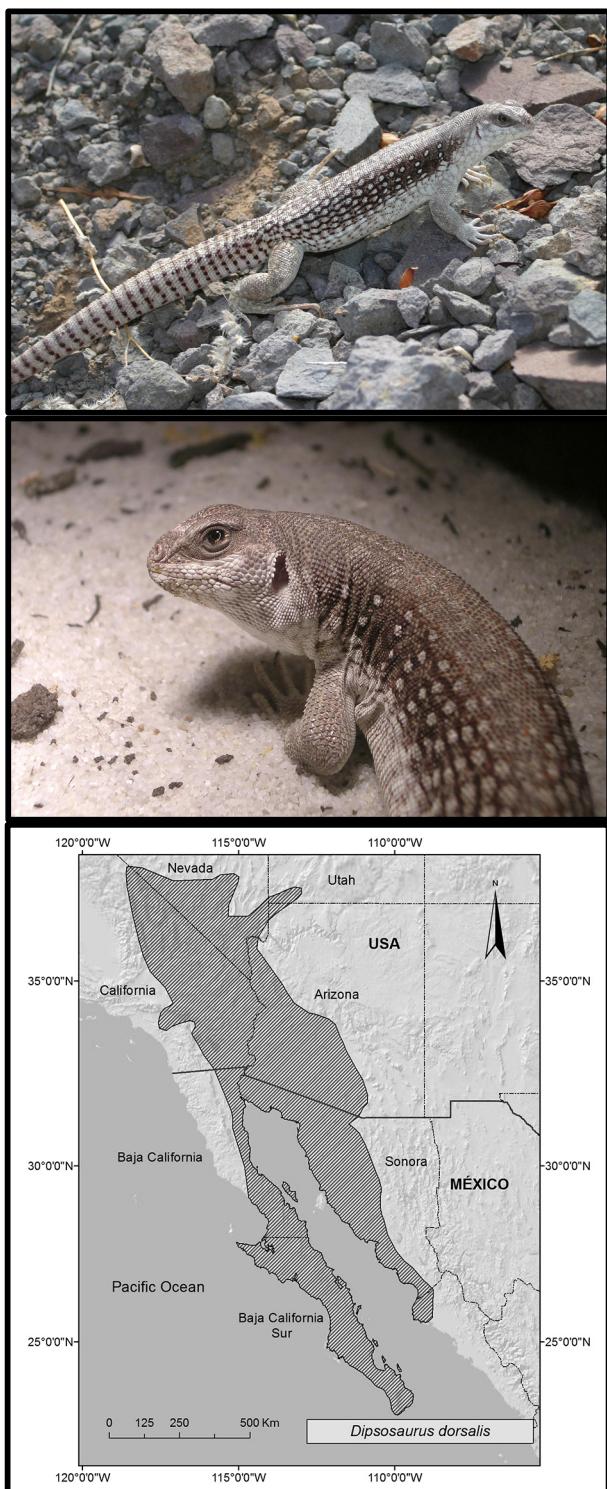
***Dipsosaurus dorsalis dorsalis* (Baird and Girard) [Western Desert Iguanas].**—Other names: Iguanas del Desierto (Liner and Casas-Andreu 2008); Desert Iguana, Northern Desert Iguana (Wrobel 2004). Original name: *Crotaphytus dorsalis* Baird and Girard. See species account. Distribution: Southwestern United States in southeastern California, southern Nevada, extreme southwestern Utah, and western Arizona; México in northwestern Sonora and Baja California east of the Sierra de Juárez and Sierra San Pedro Martir south to the end of the peninsula, as well as the islands of Encantada Grande Ángel de la Guarda, San Marcos, Coronado, Carmen, Monserrate, San José, Espíritu Santo, and Cerralvo in the Gulf of California, and the islands of Magdalena and Santa Margarita in the Pacific Ocean (de Queiroz 1995). Comment: includes *D. carmenensis* VanDenburgh 1922 (according to Soulé and Sloan 1966) and *D. dorsalis lucasensis* (according to Grismar et al. 1994). Fig. 39.

***Dipsosaurus dorsalis sonoriensis* Allen [Sonoran Desert Iguanas].**—Other name: Iguana del Desierto Sonora (Liner and Casas-Andreu 2008). Original name: *Dipso-saurus dorsalis sonoriensis* Allen 1933, Occasional Papers of the Museum of Zoology, University of Michigan 259:4. Holotype: UMMZ 72121. Type locality: "Hermosillo, Sonora, Mexico." Distribution: Western Sonora from at least as far north as Puerto (30°11'N)



**FIGURE 38.** Santa Catalina Desert Iguana, *Dipsosaurus catalinensis* (Photographed by Lee Grismar).

southward to extreme northwestern Sinaloa (Bahía de Topolobampo), México (de Queiroz 1995). Fig. 39.



**FIGURE 39.** Western Desert Iguana, *Dipsosaurus dorsalis dorsalis* (top; Eastern Arizona, USA). Sonoran Desert Iguana, *Dipsosaurus dorsalis sonoriensis* (middle; both photographs by Joseph Burgess).

#### ***IGUANA LAURENTI [GREEN IGUANAS]***

Other name: Common Iguanas (Wrobel 2014). Original name: *Iguana Laurenti* 1768, Specimen Medicum, Exhibens Synopsin Reptilium, Wein: 47. Type species (by tautonomy): *Lacerta iguana* Linnaeus 1758. Distribution: Northeastern México to Brazil and the Lesser Antilles (Lazell 1973; Henderson and Breuil 2012). Comment: a preliminary phylogenetic hypothesis of *Iguana* populations appeared in Malone and Davis (2004), and Stephen et al. (2013) presented evidence that *I. iguana* and *I. delicatissima* are reciprocally monophyletic.

***Iguana delicatissima Laurenti [Lesser Antillean Iguanas].***—Other names: Lezas (Guadeloupe); Iguanes de Petites Antilles (IUCN. 2014. *op. cit.*); Iguanes Délicat (Lesser Antilles); Lizas (Martinique); Groene Leguaanes (Saba and Bonaire); Antillean Iguana, Iguane des Antilles, Iguane tuberculeux, Lesser Antillean Green Iguana, West Indian Iguana (Wrobel 2014). Original name: *Iguana delicatissima* Laurenti 1768, Specimen Medicum, Exhibens Synopsin Reptilium, Wein: 48. Holotype: assumed by Lazell (1973) and Etheridge (1982) to be in the Musei di Zoologia e Anatomia Comparata, Torino, but never located; however, Michel Breuil (pers. comm.) reported that Laurenti's material was actually in the collection of the Comte [Count] de Turn in Vienna and is now lost. Type locality: "Indiis." Restricted type locality: "island of Terre de Bas, Les Iles de Saintes, Département de la Guadeloupe, French West Indies" (Lazell 1973). Distribution: Lesser Antilles from: Anguilla; Saint-Martin/Sint Maarten (extirpated); Saint Barthélemy, including Île Fourchue and its satellites (Îlet au Vent and Petite Islette), Îlet Frégate [probably extirpated] and Îlet Chevreau (or Bonhomme) [probably extirpated]; St. Eustatius; Antigua (extirpated) and Barbuda (extirpated); St. Kitts (extirpated) and Nevis (extirpated); Guadeloupe (including Grande-Terre [likely extirpated via hybridization], Basse Terre, La Désirade, Îles de la Petite Terre, Les Îles des Saintes [likely extirpated via hybridization], and Marie-Galante [extirpated]); Dominica; and Martinique (including Îlet Chancel and Îlet à Ramiers [introduced]) (Pasachnik et al. 2006; Henderson and Powell 2009; Breuil et al. 2010; Powell and Henderson 2012). Comment: although Laurenti's (1768) diagnosis of *Iguana delicatissima* distinguishes that taxon from *I. iguana*, the plates in Seba associated with that description are of *Iguana iguana*, or in the case of Fig. 95.5, a hybrid between *I. iguana* and *I. delicatissima* (Pasachnik et al. 2006; Breuil 2013). See also Comment under *Iguana iguana*. This species is known to hybridize with *I. iguana* (Breuil 2013). Additional literature: Breuil (2011); Hodge et al. (2011); Lorvelec et al. (2011); Malhotra et al. (2011); Powell (2011); Knapp et al. (2016). Fig. 40.

## Iguana Taxonomy Working Group—Checklist of the Iguanas of the World.

***Iguana iguana* (Linnaeus) [Common Green Iguanas].**—Other names: Iguanas Verdes, Iguanes Communes, Iguanes Vert (local names, throughout range); Garrobo (local name for males, various parts of range); Guachos (Costa Rica); Iguanas de Agua, Iguanas Doradas, Shilianas (Guatemala); Iguanas de Ribera (Liner and Casas-Andreu 2008); Gallinas de Palo (Panamá); Gwo Zandolois, Kwéyòl, Lézas (Saint Lucia); Common Iguana, Green Iguana, Green Mexican Iguana, Iguane vrai (Wrobel 2014). Original name: *Lacerta iguana* Linnaeus 1758, *Systema Naturae*, Ed. 10, Stockholm 1:206. Syntypes: NHRM [one specimen, no number given]; ZMUU [one specimen, no number given] (Lönnberg 1896; Andersson 1900; Hoogmoed 1973; de Queiroz 1995). Type locality: "Indiis." Restricted type locality: "island of Terre de Haut, Les Iles des Saintes, Département de la Guadeloupe, French West Indies" (Lazell 1973), inappropriate restriction (de Queiroz 1995); "confluence of the Cottica River and Perica Creek,

Surinam" (Hoogmoed 1973); however, Duellman (2012) argued that the type locality was most likely the "vicinity of Paramaribo, Surinam". Distribution: Northern México, from Sinaloa and Veracruz, southward through Central America and into northeastern South America to the Tropic of Capricorn in Paraguay and southeastern Brazil. The species also occurs on numerous islands, including Cozumel, Útila, Roatán, Guanaja, the Corn Islands, Providencia, San Andres, Aruba, Trinidad, Tobago, and others in the Lesser Antilles (Henderson and Powell 2009). It has been introduced to Anguilla, Antigua, Barbuda, British Virgin Islands, Canary Islands, Cayman Islands, Dominican Republic, Fiji, Guadeloupe, Japan, Marie Galante, Martinique, Puerto Rico, Saint-Martin/Sint Maarten, The Bahamas, U.S. Virgin Islands, and the USA (Florida, Hawaii) (Kraus 2009; Henderson and Powell 2009; Lindsay and Mussington 2009; Harlow and Thomas 2010; Hailey et al. 2011; Thomas et al. 2011; Arce-Nazario and Carlo 2012; Falcón et al. 2012, 2013; Pasachnik et al.

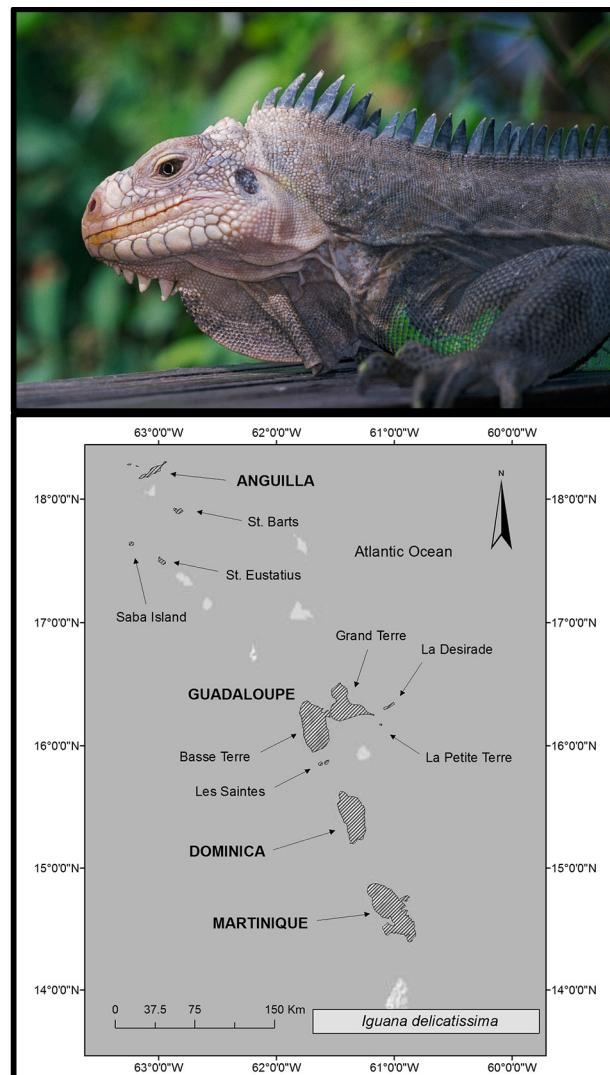


FIGURE 40. Lesser Antillean Iguana, *Iguana delicatissima* (Photographed by Robert Powell, St. Eustatius).

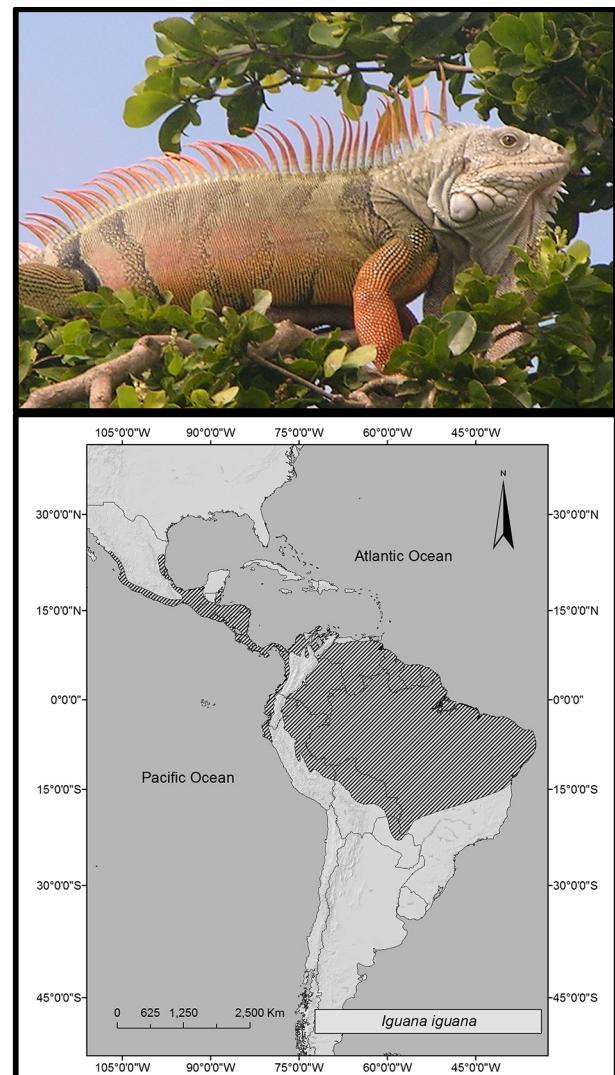


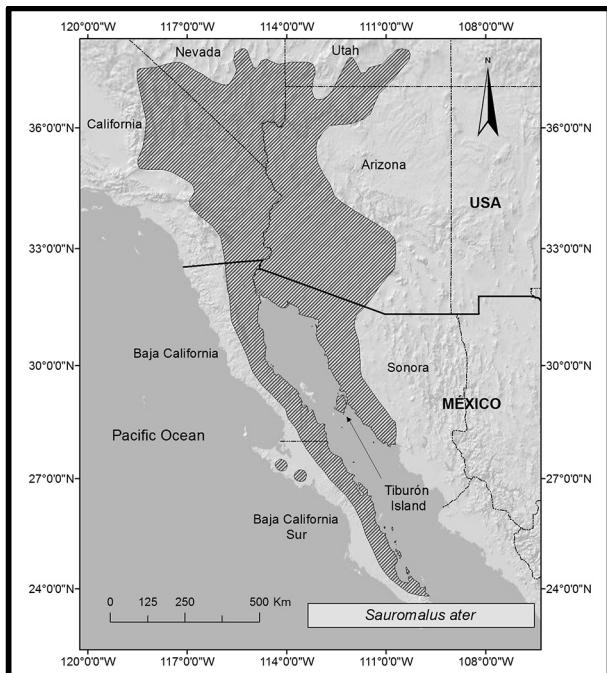
FIGURE 41. Common Green Iguana, *Iguana iguana* (Photographed by Steve Conners).

# Herpetological Conservation and Biology

2012a; Powell and Henderson 2012). Comment: although Lazell (1973) synonymized the formerly recognized subspecies *I. iguana iguana* (South America) and *I. iguana rhinolopha* (Central America), Breuil (2013) argued for their recognition. Based on mitochondrial and nuclear DNA data, Stephen et al. (2013) recognized two well-supported genetic groups as evolutionarily significant units: Central America (México to Panamá) and South America (including Curaçao and the Lesser Antilles), but they declined to propose any taxonomic changes pending further sampling across Panamá and South America. Should the two groups be recognized as separate species, the name *I. iguana* would apply to the South American populations, and Wiegmann's (1834) name *rhinolophus(a)* (presumably from México: Etheridge 1982; de Queiroz 1995) is available for the Central American and Mexican populations. Finally, based on morphological comparisons, Breuil (2013) demonstrated significant differences among populations on St. Lucia, Saba, and mainland South America, but did not propose any taxonomic changes. Additional literature: López-Torres et al. (2011); Bock et al. (2016). Fig. 41.

## **SAUROMALUS DUMÉRIL [CHUCKWALLAS]**

Original name: *Sauromalus* Duméril 1856, Archives du Museum d'Histoire Naturelle, Paris 8:535. Type species (by monotypy): *Sauromalus ater* Duméril 1856. Distribution: Southwestern United States and northwestern México. Comment: although several phylogenetic hypotheses for Chuckwalla populations have been published (Petren and Case 1997, 2002; Hollingsworth 1998), there are significant differences among them.



**FIGURE 42.** Common Chuckwalla, *Sauromalus ater* (Photographed by Bradford Hollingsworth; top: Joshua Tree National Park, California, USA; second row: Baja California Sur, México; third row: Mountain Spring, Imperial County, California, USA; bottom: Sonora, México).

***Sauromalus ater* Duméril [Common Chuckwallas].**—Other names: Northern Chuckwallas (IUCN. 2014. *op. cit.*); Cachorones de Roca (Liner and Casas-Andreu 2008); Peninsula Chuckwalla (*S. australis*), Glen Canyon Chuckwalla (*S. obesus multiforminatus*), Great Basin Chuckwalla and Western Chuckwalla (*S. obesus obesus*), Arizona Chuckwalla (*S. obesus tumidus*) (Wrobel 2004). Original name: *Sauromalus ater* Duméril 1856, Archives du Muséum d'Histoire Naturelle, Paris 8:536. Holotype: MNHN 813. Type locality: not given. Restricted type locality: "one of the following islands in the Gulf of California: Espíritu Santo, Isla Partida, San Marcos, San Diego, Santa Cruz, or San Francisco" (Shaw 1945); further restricted to "Espíritu Santo Island" (Smith and Taylor 1950), without justification (de Queiroz 1995), and "southern coastal Sonora" (Hollingsworth 1998; but see Montanucci 2000); further restricted to "the vicinity of Guaymas Bay" (Montanucci 2008). Distribution: Southwestern United

States (in southern Nevada, southwestern Utah, southeastern California, and western Arizona), southward to northwestern México (in western Sonora), the peninsula of Baja California, and the following islands in the Gulf of California: Alcatraz (possibly introduced), Ballena, El Coyote, Espíritu Santo, Gallo, Partida Sur, San Cosme, San Diego, San Francisco, San Jose, San Marcos, Santa Cruz, Tiburon, and Willard (Hollingsworth 1998) and Isla Párajos across from Guaymas Bay (Ventura-Trejo et al. 2008). Comment: Hollingsworth (1998) synonymized the names *Sauromalus ater* and *S. obesus*, and applied the name *ater* to the species. Although the International Commission on Zoological Nomenclature (ICZN) was petitioned to suppress the name *ater* in favor of *obesus* (Montanucci et al. 2001), that petition was rejected by the ICZN (2004). Petren and Case (2002) suggested the possibility that *Sauromalus ater* (as currently recognized) is composed of multiple species. Fig. 42.

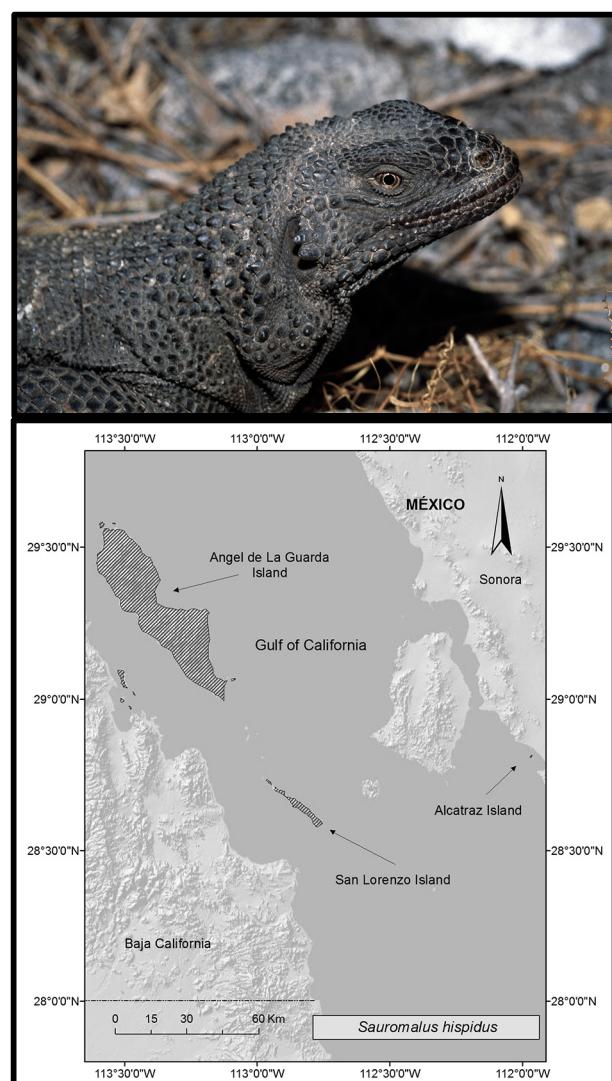


FIGURE 43. Spiny Chuckwalla, *Sauromalus hispidus* (Photographed by Bradford Hollingsworth; Isla San Lorenzo Sur, Baja California, México).

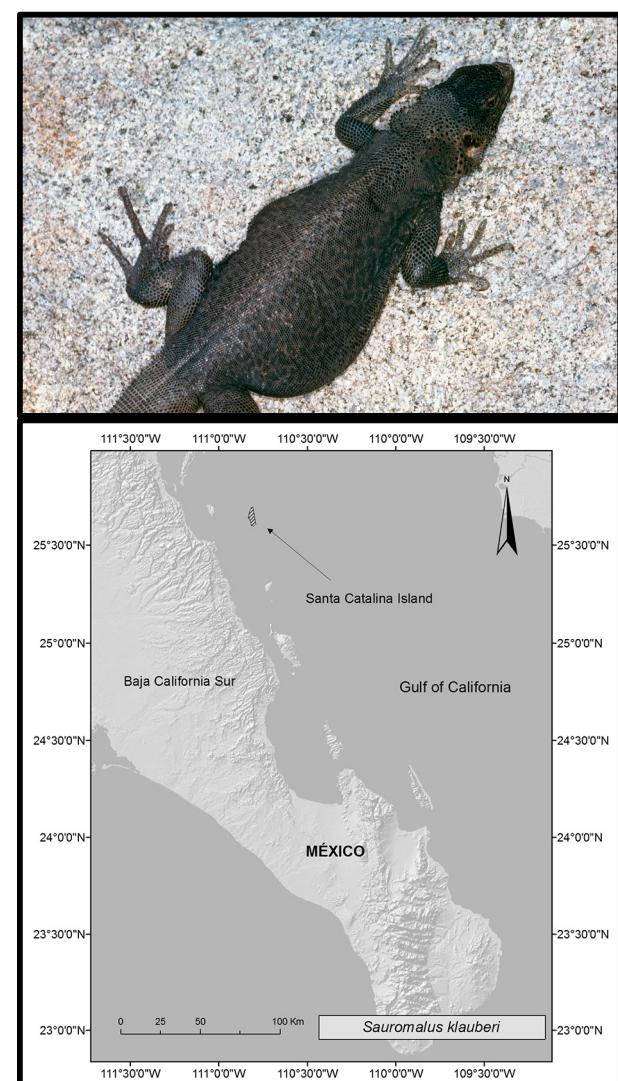


FIGURE 44. Catalina Chuckwalla, *Sauromalus klauberi* (Photographed by Bradford Hollingsworth).

***Sauromalus hispidus* Stejneger [Spiny Chuckwallas].—** Other names: Black Chuckwallas (IUCN. 2014. *op. cit.*); Iguanas Espinosas de Pared (Liner and Casas-Andreu 2008). Original name: *Sauromalus hispidus* Stejneger 1891, Proceedings of the United States National Museum 14(864):409. Holotype: USNM 8563. Type locality: "Angel de la Guardia [Guarda] Island, Gulf of California." Distribution: the islands of Angel de La Guarda, Granito, Mejia, Pond, San Lorenzo Norte, San Lorenzo Sur, numerous islands in Bahía de Los Ángeles, and Alcatraz Island (possibly introduced), Gulf of California, México (Hollingsworth 1998). A single specimen has been reported from Isla Rasa (Velarde et al. 2008). Fig. 43.

***Sauromalus klauberi* Shaw [Catalina Chuckwallas].—** Other names: Iguanas de Pared Manchada (sic: Liner and Casas-Andreu 2008; Iguanas Manchadas de Pared); Klauber's Chuckwalla, Spotted Chuckwalla (Wrobel

2004). Original name: *Sauromalus klauberi* Shaw 1941, Transactions of the San Diego Society of Natural History 9(28):285. Holotype: SDNHM 6859. Type locality: "Santa Catalina Island, Gulf of California, Mexico." Distribution: Isla Santa Catalina, Baja California Sur, México (Hollingsworth 1998). Fig. 44.

***Sauromalus slevini* Van Denburgh [Slevin's Chuckwallas].—** Other names: Iguanas de Pared de Monserrat (Liner and Casas-Andreu 2008); Monserrat Chuckwalla (Wrobel 2004). Original name: *Sauromalus slevini* Van Denburgh 1922, Occasional Papers of the California Academy of Sciences 10(1):97. Holotype: CAS 50503. Type locality: "South end of Monserrate Island, Gulf of California, Mexico." Distribution: Islas Carmen, Danzante, Los Coronados, and Monserrate, Baja California Sur, México (Hollingsworth 1998; Murphy and Aguirre-Léon 2002; Montanucci 2004). Fig. 45.

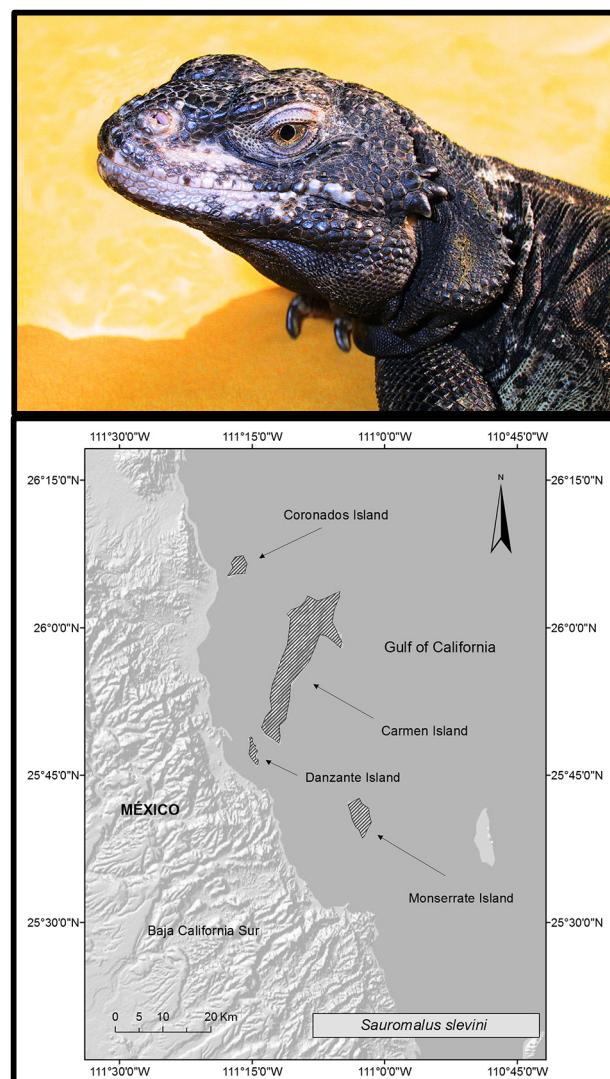


FIGURE 45. Slevin's Chuckwalla, *Sauromalus slevini* (Photographed by Joseph Burgess).

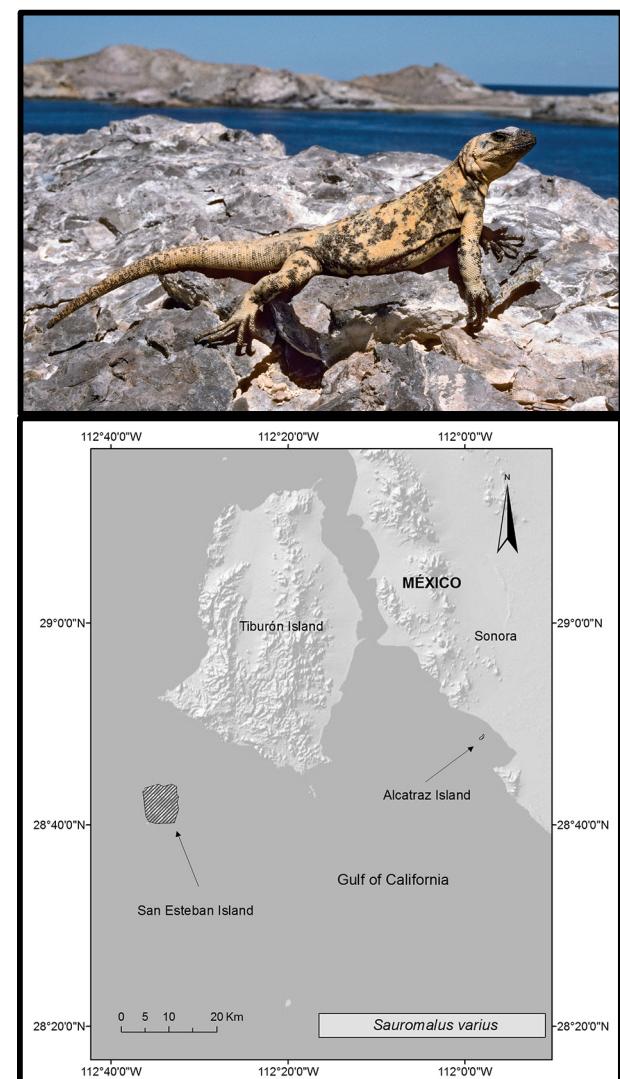


FIGURE 46. Piebald Chuckwalla, *Sauromalus varius* (Photographed by Bradford Hollingsworth).

- Sauromalus varius* Dickerson [Piebald Chuckwallas].**—Other name: Iguanas de Pared de Piebald (sic: Liner and Casas-Andreu 2008; Iguanas Picazas de Pared); San Esteban Island Chuckwalla (Wrobel 2004). Original name: *Sauromalus varius* Dickerson 1919, Bulletin of the American Museum of Natural History 41(10):464. Holotype: AMNH 5633 (= USNM 64441, Cochran 1961). Type locality: "San Esteban Island, Gulf of California, Mexico." Distribution: Isla San Esteban and Isla Alcatraz (possibly introduced), Sonora, and Isla Roca Lobos, Baja California, México (Hollingsworth 1998). Fig. 46.

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#### LITERATURE CITED

- Acevedo, M. 2006. Anfibios y reptiles de Guatemala: una breve síntesis con bibliografía. Pp. 487–524 *In* Biodiversidad de Guatemala. Cano, E. (Ed.). Universidad de Valle de Guatemala, Guatemala.
- Ali, J.R., and J.C. Aitchison. 2014. Exploring the combined role of eustasy and oceanic island thermal subsidence in shaping biodiversity on the Galápagos. *Journal of Biogeography* 41:1227–1241.
- Allen, M.J. 1933. Report on a collection of amphibians and reptiles from Sonora, México, with the description of a new lizard. *Occasional Papers of the Museum of Zoology*, University of Michigan 259:1–15.
- Alvarez del Toro, M. 1960. Los Reptiles de Chiapas. Instituto Zoológico de Estado, Tuxtla Gutiérrez, Chiapas, México.
- Alvarez del Toro, M. 1983. Los Reptiles de Chiapas. 3ra ed. Instituto Zoológico de Estado, Tuxtla Gutiérrez, Chiapas, México.
- Andersson, L.G. 1900. Catalogue of Linneaus' Reptilia in the Royal Museum in Stockholm. *Bihang till Kongliga Svenska Vetenskaps-Akademiens Handlingar*, Stockholm 26:1–29.
- Anonymous. 2004. Iguana newsbriefs: Stout Iguana conservation. *Iguana (Journal of the International Iguana Society)* 11:129.
- Aplasca, A.C., J.B. Iverson, G. Colosimo, E. Welch, and E.R. Hekkala. 2016. Genetic diversity and structure of the endangered Allen Cays Rock Iguana, *Cyclura cychlura inornata*. [PeerJ 4:e1793](https://doi.org/10.7717/peerj.1793). doi.org/10.7717/peerj.1793
- Arce-Nazario, J.A., and T.A. Carlo. 2012. *Iguana iguana* invasion in Puerto Rico: facing the evidence. *Biological Invasions* 14:1981–1984.
- Ariano-Sánchez, D., and S.A. Pasachnik. 2011. *Ctenosaura palearis*. The IUCN Red List of Threatened Species. Version 2014.4. Available from <http://www.iucnredlist.org/details/44192/0> [Accessed on 14 September 2014].
- Avery, M.L., E.A. Tillman, C. Spurfeld, R.M. Engeman, K.P. Maciejewski, J.D. Brown, and E.A. Fetzer. 2014. Invasive Black Spiny-tailed Iguanas (*Ctenosaura similis*) on Gasparilla Island, Florida, USA. *Integrative Zoology* 9:590–597.
- Bailey, J.W. 1928. A revision of the lizards of the genus *Ctenosaura*. *Proceedings of the United States National Museum* 73:1–55.
- Baird, S.F., and C.F. Girard. 1852. Characteristics of some new reptiles in the Museum of the Smithsonian Institution. Part II. *Proceedings of the Academy of Natural Sciences of Philadelphia* 6:125–129.
- Barbour, T. 1917. Notes on the herpetology of the Virgin Islands. *Proceedings of the Biological Society of Washington* 30:97–104.
- Barbour, T. 1923. Another new Bahamian iguana. *Proceedings of the New England Zoological Club* 8:107–109.
- Barbour, T., and G.K. Noble. 1916. A revision of the lizards of the genus *Cyclura*. *Bulletin of the Museum of Comparative Zoology* 60:140–164.
- Barbour, T., and B. Shreve. 1934. A new race of Rock Iguana. *Occasional Papers of the Boston Society of Natural History* 8:197–198.
- Bell, T. 1825. On a new genus of Iguanidae. *Zoological Journal*, London 2:204–208.
- Bock, B.C., V.P. Páez, A.S. Rand, and G.M. Burghardt. 2016. Life table and stochastic matrix projection analysis for a population of Green Iguanas (*Iguana iguana*): implications for conservation and control. Pp. 47–60 *In* Iguanas: Biology, Systematics, and Conservation. Iverson, J.B., T.D. Grant, C.R. Knapp, S.A. Pasachnik (Eds.). Herpetological Conservation and Biology 11(Monograph 6).
- Bonnaterre, P.J. 1789. *Tableau Encyclopédique et Méthodique des Trois Règnes de la Nature, Erpétologie*. Panckouke, Paris, France.
- Boulenger, G.A. 1885. Catalogue of the Lizards in the British Museum (Natural History). London: Printed by Order of the Trustees, 2<sup>nd</sup> Edition 2:1–497.
- Breuil, M. 2011. The terrestrial herpetofauna of Martinique: past, present, future. Pp. 311–338 *In* Conservation of Caribbean Island Herpetofaunas. Volume 2: Regional Accounts of the West Indies. Hailey, A., B.S. Wilson, and J.A. Horrocks (Eds.). Brill Academic Publishers, Leiden, The Netherlands.
- Breuil, M. 2013. Caractérisation morphologique de l'Iguane Commun *Iguana iguana* (Linnaeus, 1758), de l'Iguane des Petites Antilles *Iguana delicatissima* Laurenti, 1768 et de leurs hybrides. *Bulletin de la Société Herpétologique de France* 147:309–346.

## Herpetological Conservation and Biology

- Breuil, M., M. Day, and C. Knapp. 2010. *Iguana delicatissima*. The IUCN Red List of Threatened Species. Version 2014.3. Available from <http://www.iucnredlist.org/details/10800/0> [Accessed on 14 September 2014].
- Bronniart, A.T. 1800. Essai d'une classification naturelle des reptiles. II Partie. Bulletin des Sciences, par la Société Philomathique, Paris 2:89–91.
- Bryan, J.J., G.P. Gerber, M.E. Welch, and C.L. Stephen. 2007. Re-evaluating the taxonomic status of the Booby Cay Iguana, *Cyclura carinata bartschi*. *Copeia* 2007:734–739.
- Buckley, L.J., and R.W. Axtell. 1997. Evidence for the specific status of the Honduran lizards formerly referred to *Ctenosaura palearis* (Reptilia: Squamata: Iguanidae). *Copeia* 1997:138–150.
- Buckner, S., R. Franz, and R.G. Reynolds. 2012. Bahama Islands and Turks and Caicos Islands. Pp. 93–110 *In Island Lists of West Indian Amphibians and Reptiles*. Powell, R., and R.W. Henderson (Eds.). *Bulletin of the Florida Museum of Natural History* 51:85–166.
- Burns, E.L., B.H. Costello, and B.A. Houlden. 2006. Three evolutionarily significant units for conservation in the iguanid genera *Brachylophus*. *Pacific Conservation Biology* 12:64–77.
- Burton, F.J. 2004. Revision to species of *Cyclura nubila lewisi*, the Grand Cayman Blue Iguana. *Caribbean Journal of Science* 40:198–203.
- Burton, F.J., and F.F. Rivera-Milán. 2014. Monitoring a population of translocated Grand Cayman Blue Iguanas: assessing the accuracy and precision of distance sampling and repeated counts. *Animal Conservation* 17:40–47.
- Cayot, L.J., and R. Menoscal. 1992. Land Iguanas return to Baltra. *Noticias de Galápagos* 51:11–13.
- Cayot, L.J., H.L. Snell, W. Llerena, and H.M. Snell. 1994. Conservation biology of Galápagos reptiles: twenty-five years of successful research and management. Pp. 297–305 *In Captive Management and Conservation of Amphibians and Reptiles*. Murphy, J.B., K. Adler, and J.T. Collins (Eds.). Society for the Study of Amphibians and Reptiles, Ithaca, New York.
- Cochran, D.M. 1931. New Bahaman reptiles. *Journal of the Washington Academy of Sciences* 21:39–41.
- Cochran, D.M. 1961. Type specimens of the reptiles and amphibians in the U.S. National Museum. United States National Museum Bulletin 220:1–291.
- Conrad, J.L. 2008. Phylogeny and systematics of Squamata (Reptilia) based on morphology. *Bulletin of the American Museum of Natural History* 310:1–182.
- Cope, E.D. 1863. Descriptions of new American Squamata. *Proceedings of the Academy of Natural Sciences of Philadelphia* 15:100–106.
- Cope, E.D. 1866. Fourth contribution to the herpetology of tropical America. *Proceedings of the Academy of Natural Sciences of Philadelphia* 18:123–132.
- Cope, E.D. 1885. The large iguanas of the Greater Antilles. *American Naturalist* 19:1006–1007.
- Cope, E.D. 1886. On the species of Iguanidae. *Proceedings of the American Philosophical Society* 23:261–271.
- Crother, B. (Ed.). 2012. Scientific and standard English names of amphibians and reptiles of North America north of México with comments regarding confidence in our understanding. 7<sup>th</sup> Edition. Society for the Study of Amphibians and Reptiles, *Herpetological Circular* 39:1–68.
- Cryder, M.R. 1999. Molecular systematics and evolution of the *Ctenosaura hemilopha* complex (Squamata: Iguanidae). M.Sc. Thesis, Loma Linda University, Loma Linda, California, USA. 57 p.
- Cuvier, G.L.C.F.D. 1829. *Le Règne Animal Distribué d'Après son Organisation, pour Servir de Base à l'Histoire Naturelle des Animaux et d'Introduction à l'Anatomie Comparée*. Nouvelle Edition, Revue et Augmentée par P.A. Latreille. Volume 2. Deterville, Paris, France.
- Davy, C.M., F.R. Méndez de la Cruz, A. Lathrop, and R.W. Murphy. 2011. Seri Indian traditional knowledge and molecular biology agree: no express train for island-hopping Spiny-tailed Iguanas in the Sea of Cortés. *Journal of Biogeography* 38:272–284.
- de Queiroz, K. 1987a. Phylogenetic systematics of iguanine lizards: a comparative osteological study. *University of California Publications in Zoology* 118:1–203.
- de Queiroz, K. 1987b. A new Spiny-tailed Iguana from Honduras, with comments on relationships within *Ctenosaura* (Squamata: Iguania). *Copeia* 1987:892–902.
- de Queiroz, K. 1995. Checklist and key to the extant species of Mexican iguanas (Reptilia: Iguaninae). *Publicaciones Especiales del Museo de Zoología (UNAM)* 9:1–48.
- de Queiroz, K., and J. Gauthier. 1990. Phylogeny as a central principle in taxonomy: phylogenetic definitions of taxon names. *Systematic Zoology* 39:307–322.
- Dickerson, M.C. 1919. Diagnoses of twenty-three new species and a new genus of lizards from lower California. *Bulletin of the American Museum of Natural History* 41:461–477.
- Donegan, T.M. 2009. Type specimens, samples of live individuals, and the Galápagos Pink Land Iguana. *Zootaxa* 2201:12–20.
- Duellman, W.E. 2012. Linnaean names in South American herpetology. *Bibliotheca Herpetologica* 9:87–97.
- Duellman, W.E., and A.S. Duellman. 1959. Variation, distribution, and ecology of the iguanid lizard *Enyaliosaurus clarki* of Michoacan, México. *Occasional Papers of the Museum of Zoology, University of Michigan* 598:1–10.
- Duméril, A.H.A. 1856. Description des reptiles nouveaux ou imparfaitement connus de la collection du Muséum d'Histoire Naturelle et remarques sur la classification et les caractères des reptiles. *Archives du Muséum d'Histoire Naturelle, Paris* 8:437–588.

## Iguana Taxonomy Working Group—Checklist of the Iguanas of the World.

- Duméril, A.M.C., and G. Bibron. 1837. Erpétologie Générale ou Historie Naturelle Complete des Reptiles. Volume 4. Histoire de Quarante-six Genres et de Cent Quarante-six Espèces de la Famille des Iguaniens, de l'Ordre des Sauriens. Librairie Encyclopédique de Roret, Paris, France.
- Echternacht, A.C. 2012. Cayman Islands. Pp. 111–112 In Island lists of West Indian Amphibians and Reptiles. Powell, R., and R.W. Henderson (Eds.). Bulletin of the Florida Museum of Natural History 51:85–166.
- Echternacht, A.C., F.J. Burton, and J.M. Blumenthal. 2011. The amphibians and reptiles of the Cayman Islands: conservation issues in the face of invasions. Pp. 129–147 In Conservation of Caribbean Island Herpetofaunas. Volume 2: Regional Accounts of the West Indies. Hailey, A., B.S. Wilson, and J.A. Horrocks (Eds.). Brill Academic Publishers, Leiden, The Netherlands.
- Eibl-Eibesfeldt, I. 1956. Eine neue Rasse der Merrechse, *Amblyrhynchus cristatus venustissimus*, nebst einigen Bemerkungen über *Amblyrhynchus cristatus cristatus*. Senckenbergiana Biologica 37:87–100.
- Eibl-Eibesfeldt, I. 1962. Neue Unterarten der Meerechse, *Amblyrhynchus cristatus*, nebst weiteren Angaben zur Biologie der Art. Senckenbergiana Biologica 43:177–199.
- Etheridge, R.E. 1964. The skeletal morphology and systematic relationships of sceloporine lizards. Copeia 1964:610–631.
- Etheridge, R.E. 1982. Checklist of the iguanine and Malagasy iguanid lizards. Pp. 7–37 In Iguanas of the World: Their Behavior, Ecology, and Conservation. Burghardt, G.M., and A.S. Rand (Eds.). Noyes Publications, Park Ridge, New Jersey, USA.
- Fabiani, A., E. Trucchi, S. Rosa, C. Marquez, H.L. Snell, W. Tapia Aguilera, and G. Gentile. 2011. Conservation of Galápagos Land Iguanas: genetic monitoring and predictions of a long-term program on the island of Santa Cruz. Animal Conservation 14:419–429.
- Falcón, W., J.D. Ackerman, and C.C. Daehler. 2012. March of the Green Iguana: non-native distribution and predicted geographic range of *Iguana iguana* in the Greater Caribbean Region. IRCF Reptiles and Amphibians: Conservation and Natural History 19:150–160.
- Falcón, W., J.D. Ackerman, W. Recart, and C.C. Daehler. 2013. Biology and impacts of Pacific Island invasive species. 10. *Iguana iguana*, the Green Iguana (Squamata: Iguanidae). Pacific Science 67:157–186.
- Fisher, R., P. Harlow, H. Davis, L. Chemnick, O. Ryder, and S. Keogh. 2009. Another new *Brachylophus* iguana from Fiji? New genetic evidence and further use of morphology to discriminate among the described living species. Abstract. Joint annual meetings of ASIH, HL, and SSAR. Portland, Oregon. Available from [http://library.iucn-isg.org/biblio\\_display\\_info.php?id=3017&q=](http://library.iucn-isg.org/biblio_display_info.php?id=3017&q=)
- Fisher, R., P. Harlow, J. Niukula, P. Biciloa, T. Osborne, N. Thomas, L. Chemnick, H. Davis, and O. Ryder. 2012. Further assessment of Fijian Iguana (*Brachylophus* sp.) populations in the Fijian Islands and development of a microsatellite library. Report to International Iguana Foundation.
- Fitzinger, L.J.F.J. 1843. Systema Reptilium. Fasciculus Prima. Braumüller et Seidel, Wien, Austria.
- Frost, D.R., R.E. Etheridge, D. Janies, and T. Titus. 2001. Total evidence, sequence alignment, the evolution of polychrotid lizards, and a reclassification of the Iguania (Squamata: Iguania). American Museum Novitates 3343:1–38.
- García, M.A., and G.P. Gerber. 2016. Conservation and management of *Cyclura* iguanas in Puerto Rico. Pp. 61–67 In Iguanas: Biology, Systematics, and Conservation. Iverson, J.B., T.D. Grant, C.R. Knapp, S.A. Pasachnik (Eds.). Herpetological Conservation and Biology 11(Monograph 6).
- Garman, S. 1892. The reptiles of the Galápagos Islands. Bulletin of the Essex Institute 24:73–87.
- Gentile, G., and H. Snell. 2009. *Conolophus marthae* sp. nov. (Squamata, Iguanidae), a new species of Land Iguana from the Galápagos archipelago. Zootaxa 2201:1–10.
- Gentile, G., M. Ciambotta, and W. Tapia. 2013. Illegal wildlife trade in Galápagos: molecular tools help the taxonomic identification of confiscated iguanas and guide their repatriation. Conservation Genetics Resources 5:867–872.
- Gentile, G., A. Fabiani, C. Marquez, H.L. Snell, H.M. Snell, W. Tapia, and V. Sbordoni. 2009. An overlooked pink species of land iguana in the Galápagos. Proceedings of the National Academy of Science 106:507–511.
- Gibbons, J.R.H. 1981. The biogeography of *Brachylophus* including the description of a new species, *B. vitiensis* from Fiji. Journal of Herpetology 15:255–273.
- Glor, R.E., R. Powell, and J.S. Parmerlee, Jr. 2000. *Cyclura cornuta*. Catalogue of American Amphibians and Reptiles 709:1–6.
- Goetz, M. 2008. The Cayman Sister Isles Iguana project: identifying the conservation needs of *Cyclura nubila caymanensis*. Iguana: Conservation, Natural History, and Husbandry of Reptiles 15:13–19.
- González, A., V. Berovides, D. Cobián, L. Espinosa, J. Milián, G. Abad, E. Palacio, M. Alonso-Tabet, M. López, and Y. Alonoso. 2016. Monitoring the density of the Cuban Rock Iguana (*Cyclura nubila nubila*) from protected areas in southern Cuba. Pp. 68–78 In Iguanas: Biology, Systematics, and Conservation. Iverson, J.B., T.D. Grant, C.R. Knapp, S.A. Pasachnik (Eds.). Herpetological Conservation and Biology 11(Monograph 6).

## Herpetological Conservation and Biology

- González Rossell, A., V. Berovides Álvarez, M. Alonso Tabet, and D. Cobián Rojas. 2012. *Cyclura nubila* Gray, 1831. Pp. 99–102 In Libro Rojo de los Vertebrados de Cuba. González Alonso, H., L. Rodríguez Schettino, A. Rodríguez, C.A. Mancina, and I. Ramos García (Eds.). Instituto de Ecología y Sistemática, Havana, Cuba.
- Goode, A.B.C., S.A. Pasachnik, and T. Maple. 2016. Habitat utilization of Roatán Spiny-tailed Iguanas (*Ctenosaura oedirhina*) and its implications for conservation. Pp. 79–89 In Iguanas: Biology, Systematics, and Conservation. Iverson, J.B., T.D. Grant, C.R. Knapp, S.A. Pasachnik (Eds.). Herpetological Conservation and Biology 11(Monograph 6).
- Grant, C. 1940. The herpetology of the Cayman Islands, with an appendix on the Cayman Islands and marine turtles by C. Bernard Lewis. Bulletin of the Institute of Jamaica. Science Series 2:1–65.
- Gray, J.E. 1830. A synopsis of the species of the Class Reptilia. Pp. 1–110 In The Animal Kingdom Arranged in Conformity with its Organization, by the Baron Cuvier, with Additional Descriptions of all the Species Hitherto Named, and of Many not before Noticed, by Edward Griffith. Volume 9. Supplement. The Class Reptilia Arranged by the Baron Cuvier with Specific Descriptions by Edward Griffith, F.L.S., A.S., & c. and Edward Pigeon, Esq. Griffith, E. (Ed.). Whittaker, Treacher, and Comppny, London, England.
- Gray, J.E. 1831. Description of a new species of *Amblyrhynchus* of Mr. Bell, in the British Museum. Zoological Miscellany 1831:6.
- Gray, J.E. 1842. Description of some new species of reptiles, chiefly from the British Museum collection. Zoological Miscellany, London 1842:57–59.
- Gray, J.E. 1845. Catalogue of the Specimens of Lizards in the Collection of the British Museum. Printed by Order of the Trustees, Edward Newman, London, England.
- Grismer, L.L. 1994. Geographic origins for the reptiles on islands in the Gulf of California, México. Herpetological Natural History 2:17–40.
- Grismer, L.L. 1999a. Checklist of amphibians and reptiles on islands in the Gulf of California, México. Bulletin of the Southern California Academy of Sciences 98:45–56.
- Grismer, L.L. 1999b. An evolutionary classification of reptiles on islands in the Gulf of California, México. Herpetologica 55:446–469.
- Grismer, L.L. 2002. Spiny-tailed Iguanas, insular evolution, and Seri Indians: how long does it take to make a new species and does it matter who makes it? Iguana Times (Journal of the International Iguana Society) 9:3–8.
- Grismer, L.L., J.A. McGuire, and B.D. Hollingsworth. 1994. A report on the herpetofauna of Vizcaíno Peninsula, Baja California, México, with a discussion of its biogeographic and taxonomic implications. Bulletin of the Southern California Academy of Sciences 93:45–80.
- Guérin-Méneville, F.E. 1829–1838. Iconographie du Règne Animal de G. Cuvier ou Représentation d'Après Nature de l'une des Espèces les plus Remarquables et Souvent non Encore Figurées, et Chaque Genre d'Animaux, avec un Texte Descriptif mis au Courant de la Science. Tome I. Reptiles. J.B. Baillière, Libraire de l'Académie Royale Médecine, Paris, France.
- Gutsche, A., and F. Köhler. 2008. Phylogeography and hybridizaton in *Ctenosaura* species (Sauria, Iguanidae) from Caribbean Honduras: insights from mitochondrial and nuclear DNA. Zoosystematics and Evolution 84:245–253.
- Gutsche, U., and W.J. Streich. 2009. Demography and endangerment of the Útila Island Spiny-tailed Iguana, *Ctenosaura bakeri*. Journal of Herpetology 43:105–113.
- Hailey, A., B.S. Wilson, and J.A. Horrocks (Eds.). 2011. Conservation of Caribbean Island Herpetofaunas. Volume 2: Regional Accounts of the West Indies. Brill Academic Publishers, Leiden, The Netherlands.
- Hallowell, E. 1854. Descriptions of new reptiles from California. Proceedings of the Academy of Natural Sciences of Philadelphia 7:91–97.
- Harlan, R. 1824. Description of two species of Linnean *Lacerta*, not before described, and construction of the new genus *Cyclura*. Journal of the Academy of Natural Sciences of Philadelphia 4:242–251.
- Harlow, P.S., and N. Thomas. 2010. American Iguana Eradication Project: Herpetologists' Final Report. Unpublished report to the Department of Environment, Fiji, and NatureFiji-MareqetiViti. 16 p.
- Harlow, P.S., M. Fisher, M. Tuiwawa, P.N. Biciloa, J.M. Mersai, S. Naidu, A. Naikatini, B. Thaman, J. Niukula, and E. Strand. 2007. The decline of the endemic Fijian Crested Iguana *Brachylophus vitiensis* in the Yasawa and Mamanuca archipelagos, western Fiji. Oryx 41:44–50.
- Hasbún, C.R., and G. Köhler. 2001. On the identity of the holotype of *Ctenosaura quinquecarinata* (Gray 1842) (Reptilia, Squamata, Iguanidae). Senckenbergiana Biologica 81:247–255.
- Hasbún, C.R., and G. Köhler. 2009. New species of *Ctenosaura* (Squamata, Iguanidae) from southeastern Honduras. Journal of Herpetology 43:1972–204.
- Hasbún, C.R., A. Gómez, G. Köhler, and D.H. Lunt. 2005. Mitochondrial DNA phylogeography of the Mesoamerican spiny-tailed lizards (*Ctenosaura quinquecarinata* complex): historical biogeography, species status, and conservation. Molecular Ecology 14:3095–3107.
- Hayes, W.K., R.L. Carter, S. Cyril, Jr., and B. Thornton. 2004. Conservation of an endangered Bahamian Rock Iguana, I. Population assessments, habitat restoration, and behavioral ecology. Pp. 232–257 In Iguanas: Biology and Conservation. Alberts, A.C., R.L. Carter, W.K. Hayes, and E.P. Martins (Eds.). University of California Press, Berkeley and Los Angeles, California, USA.

## Iguana Taxonomy Working Group—Checklist of the Iguanas of the World.

- Hayes, W.K., S. Cyril, Jr., T. Crutchfield, J.A. Wasilewski, T.A. Rothfus, and R.L. Carter. 2016b. Conservation of the endangered San Salvador Rock Iguanas (*Cyclura rileyi rileyi*): population estimation, invasive species control, translocation, and headstarting. Pp. 90–105 *In* Iguanas: Biology, Systematics, and Conservation. Iverson, J.B., T.D. Grant, C.R. Knapp, S.A. Pasachnik (Eds.). Herpetological Conservation and Biology 11(Monograph 6).
- Hayes, W.K., R.A. Escobar III, S.K. Fry, E.M. Fortune, J.A. Wasilewski, D.M. Tuttle, K.S. West, J.B. Iverson, S.D. Buckner, and R.L. Carter. 2016a. Conservation of the endangered Sandy Cay Rock Iguanas (*Cyclura rileyi cristata*): invasive species control, population response, pirates, poaching, and translocation. Pp. 106–120 *In* Iguanas: Biology, Systematics, and Conservation. Iverson, J.B., T.D. Grant, C.R. Knapp, S.A. Pasachnik (Eds.). Herpetological Conservation and Biology 11(Monograph 6).
- Heller, E. 1903. Papers from the Hopkins Stanford Galápagos Expedition, 1898–1899. XIV. Reptiles. Proceedings of the Washington Academy of Sciences 5:39–98.
- Henderson, R.W., and M. Breuil. 2012. Lesser Antilles. Pp. 148–159 *In* Island Lists of West Indian Amphibians and Reptiles. Powell, R., and R.W. Henderson (Eds.). Bulletin of the Florida Museum of Natural History 51:85–166.
- Henderson, R.W., and R. Powell. 2009. Natural History of West Indian Reptiles and Amphibians. University Press Florida, Gainesville, Florida, USA.
- Hines, K.N. 2016. Food habits of Northern Bahamian Rock Iguanas (*Cyclura cychlura*) in the Exuma Islands, with a dietary review of Rock Iguanas (genus *Cyclura*). Pp. 121–138 *In* Iguanas: Biology, Systematics, and Conservation. Iverson, J.B., T.D. Grant, C.R. Knapp, S.A. Pasachnik (Eds.). Herpetological Conservation and Biology 11(Monograph 6).
- Hodge, K.V.D., R. Powell, and E.J. Censky. 2011. Conserving the herpetofauna of Anguilla. Pp. 3–15 *In* Conservation of Caribbean Island Herpetofaunas. Volume 2: Regional Accounts of the West Indies. Hailey, A., B.S. Wilson, and J.A. Horrocks (Eds.). Brill Academic Publishers, Leiden, The Netherlands.
- Hoffmann, M., C. Hilton-Taylor, A. Angulo, M. Böhm, T.M. Brooks, S.H.M. Butchart, K.E. Carpenter, J. Chanson, B. Collen, N.A. Cox, et al. 2010. The impact of conservation on the status of the world's vertebrates. Science 330:1503–1509.
- Hollingsworth, B.D. 1998. The systematics of Chuckwallas (*Sauromalus*) with a phylogenetic analysis of other iguanid lizards. Herpetological Monographs 12:39–191.
- Hollingsworth, B.D. 2004. The evolution of iguanas: an overview of relationships and a checklist of species. Pp. 19–44 *In* Iguanas: Biology and Conservation. Alberts, A.C., R.L. Carter, W.K. Hayes, and E.P. Martins (Eds.). University of California Press, Berkeley and Los Angeles, California, USA.
- Hoogmoed, M.S. 1973. Notes on the Herpetofauna of Surinam. IV. The Lizards and Amphisbaenians of Surinam. W. Junk, The Hague, The Netherlands.
- ICZN. 2004. Opinion 2072 (Case 3143). Bulletin of Zoological Nomenclature 61:74–75.
- Iguana Taxonomy Working Group (ITWG). 2011. Iguanas of the World Taxonomic Checklist. Version 2011.1. IUCN SSC Iguana Specialist Group. Available from <http://www.iucn-isg.org/species/iguana-taxonomy>
- Iverson, J.B., S.J. Converse, G.R. Smith, and J.M. Valiulis. 2006. Long-term trends in the demography of the Allen Cays Rock Iguana (*Cyclura cychlura inornata*): human disturbance and density-dependent effects. Biological Conservation 132:300–310.
- Iverson, J.B., G.R. Smith, S.A. Pasachnik, K.N. Hines, and L. Pieper. 2016. Growth, coloration, and demography of an introduced population of the Acklins Rock Iguana (*Cyclura rileyi nuchalis*) in the Exuma Islands, The Bahamas. Pp. 139–153 *In* Iguanas: Biology, Systematics, and Conservation. Iverson, J.B., T.D. Grant, C.R. Knapp, S.A. Pasachnik (Eds.). Herpetological Conservation and Biology 11(Monograph 6).
- Johnson, J.D. 1989. A biogeographic analysis of the herpetofauna of northwestern nuclear Central America. Milwaukee Public Museum Contributions in Biology and Geology 76:1–66.
- Johnson, J.D. 1990. Biogeographic aspects of the herpetofauna of the Central Depression of Chiapas, México, with comments on surrounding areas. Southwestern Naturalist 35:268–278.
- Keogh, J.S., D.L. Edwards, R.N. Fisher, and P.S. Harlow. 2008. Molecular and morphological analysis of the critically endangered Fijian Iguana reveals cryptic diversity and a complex biogeographic history. Philosophical Transactions of the Royal Society B 363(1508):3413–3426.
- Knapp, C.R. 2001. Status of a translocated *Cyclura* iguana colony in The Bahamas. Journal of Herpetology 35:239–245.
- Knapp, C.R., and P. Gomez-Zlatar. 2006. Iguanidae or Iguaninae? A taxonomic summary and literature-use analysis. Herpetological Review 37:29–34.
- Knapp, C.R., J.B. Iverson, S.D. Buckner, and S.V. Cant. 2011. Conservation of amphibians and reptiles in The Bahamas. Pp. 53–88 *In* Conservation of Caribbean Island Herpetofaunas. Volume 2: Regional Accounts of the West Indies. Hailey, A., B.S. Wilson, and J.A. Horrocks (Eds.). Brill Academic Publishers, Leiden, The Netherlands.
- Knapp, C.R., L. Prince, and A. James. 2016. Movements and Nesting of the Lesser Antillean Iguana (*Iguana delicatissima*) from Dominica, West Indies: Implications for Conservation. Pp. 154–167 *In* Iguanas: Biology, Systematics, and Conservation. Iverson, J.B., T.D. Grant, C.R. Knapp, S.A. Pasachnik (Eds.). Herpetological Conservation and Biology 11(Monograph 6).

## Herpetological Conservation and Biology

- Köhler, G. 1995. Eine neue Art der Gattung *Ctenosaura* (Sauria: Iguanidae) aus dem südlichen Campeche, México. *Salamandra* 31:1–14.
- Köhler, G. 2003. Reptiles of Central America. Herpeton, Offenbach, Germany.
- Köhler, G., and C.R. Hasbún. 2001. A new species of Spiny-tailed Iguana from México formerly referred to *Ctenosaura quinquecarinata* (Gray 1842). *Senckenbergiana Biologica* 81:257–267.
- Köhler, G., and K. Klemmer. 1994. Eine neue Schwarzleguanart der Gattung *Ctenosaura* aus La Paz, Honduras. *Salamandra* 30:197–208.
- Köhler, G., W. Schroth, and B. Streit. 2000. Systematics of the *Ctenosaura* group of lizards (Reptilia: Sauria: Iguanidae). *Amphibia-Reptilia* 21:177–191.
- Kraus, F. 2009. Alien Reptiles and Amphibians: a Scientific Compendium and Analysis. Invading Nature – Springer Series in Invasion Ecology 4:1–563.
- Lanterbecq, D., S. Glaberman, K.N. Vitousek, S. Steinfartz, E. Benavides, M. Wikelski, and A. Caccone. 2010. Genetic differentiation between Marine Iguanas from different breeding sites on the island of Santa Fé (Galápagos Archipelago). *Journal of Heredity* 101:663–675.
- Laurenti, J.N. 1768. Specimen Medicum, Exhibens Synopsin Reptilium Emendatam cum Experimentis Circa Venena et Antidota Reptilium Austriacorum. J.T. de Trattern, Wein, Austria.
- Lazell, J.D., Jr. 1973. The lizard genus *Iguana* in the Lesser Antilles. *Bulletin of the Museum of Comparative Zoology* 145:1–28.
- Lemm, J.M., and A.C. Alberts. 2012. *Cyclura*: Natural History, Husbandry, and Conservation of West Indian Rock Iguanas. Academic Press, San Diego, California, USA.
- Lindsay, K., and J. Mussington. 2009. *Iguana iguana* in Antigua and Barbuda, West Indies. *Applied Herpetology* 6:189–190.
- Liner, E.A., and G. Casas-Andreu. 2008. Nombres estándar en Español en Inglés y nombres científicos de los anfibios y reptiles de México. Standard Spanish, English, and scientific names of the amphibians and reptiles of México. 2<sup>nd</sup> Edition. SSAR Herpetological Circular 38:1–162.
- Linnaeus, C. 1758. *Systema Naturae per Regna Tria Naturae, Secundum Classes, Ordines, Genera, Species, cum Characteribus, Differentiis, Synonymis, Locis*. 10<sup>th</sup> Edition. Volume 1. Holmiae, Stockholm, Sweden.
- Lönnberg, E. 1896. Linnean type-specimens of birds, reptiles, batrachians, and fishes in the Zoological Museum of the Royal University of Uppsala. *Bihang till Kongliga Svenska Vetenskaps-Akademiens Handlingar*, Stockholm 22:1–45.
- López-Torres, A.L., H.J. Claudio-Hernández, C.A. Rodríguez-Gómez, A.V. Longo, and R.L. Joglar. 2011. Green Iguanas (*Iguana iguana*) in Puerto Rico: is it time for management? *Biological Invasions* 14:35–45.
- Lorvelec, O., M. Pascal, C. Pavis, and P. Feldmann. 2011. Amphibians and reptiles of the French West Indies: inventory, threats, and conservation. Pp. 205–237 *In Conservation of Caribbean Island Herpetofaunas. Volume 2: Regional Accounts of the West Indies*. Hailey, A., B.S. Wilson, and J.A. Horrocks (Eds.). Brill Academic Publishers, Leiden, The Netherlands.
- MacLeod, A., A. Rodríguez, M. Vences, P. Orozco-terWengel, C. García, F. Trillmich, G. Gentile, A. Caccone, G. Quezada, and S. Steinfartz. 2015. Hybridization masks speciation in the evolutionary history of the Galápagos Marine Iguana. *Proceedings of the Royal Society B: Biological Sciences* 282:20150425. doi:10.1098/rspb.2015.0425
- MacLeod, A., and S. Steinfartz. 2016. The conservation status of the Galápagos Marine Iguanas, *Amblyrhynchus cristatus*: a molecular perspective. *Amphibia-Reptilia* 37:91–109.
- Malhotra, A., R.S. Thorpe, E. Hypolite, and A. James. 2011. A report on the status of the herpetofauna of the Commonwealth of Dominica, West Indies. Pp. 149–166 *In Conservation of Caribbean Island Herpetofaunas. Volume 2: Regional Accounts of the West Indies*. Hailey, A., B.S. Wilson, and J.A. Horrocks (Eds.). Brill Academic Publishers, Leiden, The Netherlands.
- Malone, C.L., and S.K. Davis. 2004. Genetic contributions to Caribbean iguana conservation. Pp. 45–57 *In Iguanas: Biology and Conservation*. Alberts, A.C., R.L. Carter, W.K. Hayes, and E.P. Martins (Eds.). University of California Press, Berkeley and Los Angeles, California, USA.
- Malone, C.L., C.R. Knapp, J.F. Taylor, and S.K. Davis. 2003. Genetic consequences of Pleistocene fragmentation: isolation, drift, and loss of diversity in Rock Iguanas (*Cyclura*). *Conservation Genetics* 4:1–15.
- Malone, C.L., T. Wheeler, J.F. Taylor, and S.K. Davis. 2000. Phylogeography of the Caribbean Rock Iguana (*Cyclura*): implications for conservation and insights on the biogeographic history of the West Indies. *Molecular Phylogenetics and Evolution* 17:269–279.
- Márquez B., C.M., E.A. Muñoz H., G. Gentile, W.H. Tapia A., F.J. Zabala, S.A. Naranjo L., and A.J. Llerena. 2010. Estado poblacional de las iguanas terrestres (*Conolophus subcristatus*, *C. pallidus* y *C. marthae*; Squamata, Iguanidae), Islas Galápagos. *Boletín Técnico* 9, Serie Zoológica 6:19–37.
- Mendoza Quijano, F., S. de M.A. Mejenes López, M. Hernández Aquino, and G. Köhler. 2002. *Ctenosaura acanthura* (Shaw, 1802). An addition to the known fauna of the Mexican state of Hidalgo. *Herpetozoa* 15:91–92.
- Meyer, J.R., and L.D. Wilson. 1973. A distributional checklist of the turtles, crocodilians, and lizards of Honduras. *Contributions in Science, Natural History Museum of Los Angeles County* 244:1–39.

## Iguana Taxonomy Working Group—Checklist of the Iguanas of the World.

- Montanucci, R.R. 2000. Comments on the restriction of the type locality and nomenclature of the Chuckwalla, *Sauromalus ater* Duméril 1856. *Herpetological Review* 31:138–142.
- Montanucci, R.R. 2004. A note on the identity of Chuckwallas inhabiting Isla Danzante, Baja California Sur. *Herpetological Review* 35:223–224.
- Montanucci, R.R. 2008. Historical evidence for the type locality of *Sauromalus ater* Duméril, 1856. *Herpetological Review* 39:326–328.
- Montanucci, R.R., H.M. Smith, K. Adler, D.L. Auth, R.W. Axtell, T.J. Case, D. Chiszar, J.T. Collins, R. Conant, R. Murphy, et al. 2001. *Euphyrine obesus* Baird, 1858 (Reptilia, Squamata): proposed precedence of the specific name over that of *Sauromalus ater* Duméril, 1856. *Bulletin of Zoological Nomenclature* 58:37–40.
- Montgomery, C.E., S.A. Pasachnik, L.E. Ruyle, J.A. Frazier, and S.E.W. Green. 2014. Natural history of the Black-chested Spiny-tailed Iguanas, *Ctenosaura melanosterna* (Iguanidae), on Cayos Cochinos Menor, Honduras. *The Southwestern Naturalist* 59:280–285.
- Morales-Mávil, J.E., E.A. Bello-Sánchez, and C.R. Corona-López. 2016b. Distribution and natural history of the Campeche Spiny-tailed Iguanas (*Ctenosaura alfredschmidti*). Pp. 168–176 *In* Iguanas: Biology, Systematics, and Conservation. Iverson, J.B., T.D. Grant, C.R. Knapp, S.A. Pasachnik (Eds.). Herpetological Conservation and Biology 11(Monograph 6).
- Morales-Mávil, J.E., E.A. Suárez-Domínguez, and C.R. Corona-López. 2016a. Biology and conservation of the Gulf Spiny-tailed Iguanas (*Ctenosaura acanthura*). Pp. 177–186 *In* Iguanas: Biology, Systematics, and Conservation. Iverson, J.B., T.D. Grant, C.R. Knapp, S.A. Pasachnik (Eds.). Herpetological Conservation and Biology 11(Monograph 6).
- Murphy, R.W., and G. Aguirre-Léon. 2002. Distributional checklist of nonavian reptiles and amphibians on the islands in the Sea of Cortés. Pp. 580–594 *In* A New Island Biogeography of the Sea of Cortes. Case, T.J., M.L. Cody, and E. Ezcurra (Eds.). Oxford University Press, Oxford, United Kingdom.
- Nabhan, G.P. 2002. Cultural dispersal of plants and reptiles. Pp. 407–416 *In* A New Island Biogeography of the Sea of Cortes. Case, T.J., M.L. Cody, and E. Ezcurra (Eds.). Oxford University Press, Oxford, United Kingdom.
- Nemesio, A. 2009. On the live holotype of the Galápagos Pink Land Iguana, *Conolophus marthae* Gentile & Snell, 2009 (Squamata: Iguanidae): is it an acceptable exception? *Zootaxa* 2201:21–25.
- Olson, S. 2014. The early scientific history of Galápagos iguanas. *Archives of Natural History* 41:141–153.
- Pasachnik, S.A. 2013. Growth, reproduction, and diet of Roatán Spiny-tailed Iguanas, *Ctenosaura oedirhina*, with notes on the status of the species. *Herpetological Conservation and Biology* 8:191–198.
- Pasachnik, S.A., and S. Hudman. 2016. Conservation genetics of Roatán Spiny-tailed Iguanas, *Ctenosaura oedirhina*. Pp. 187–196 *In* Iguanas: Biology, Systematics, and Conservation. Iverson, J.B., T.D. Grant, C.R. Knapp, S.A. Pasachnik (Eds.). Herpetological Conservation and Biology 11(Monograph 6).
- Pasachnik, S., D. Ariano-Sánchez, J. Burgess, C.E. Montgomery, and G. Köhler. 2015. *Ctenosaura oedirhina*. The IUCN Red List of Threatened Species. Version 2015.2. Available from <http://www.iucnredlist.org/details/44191/0> [Accessed on 1 July 2015].
- Pasachnik, S.A., M. Breuil, and R. Powell. 2006. *Iguana delicatissima*. Catalogue of American Amphibians and Reptiles 811:1–14.
- Pasachnik, S.A., R. Carreras de Leon, V.H. Reynoso, Y.M. León, and S.J. Incháustegui. 2012a. Green Iguanas (*Iguana iguana*) in the Dominican Republic. IRCP Reptiles and Amphibians: Conservation and Natural History 19:132–134.
- Pasachnik, S.A., J.A. Danoff-Burg, E.E. Antúnez, and J.P. Corneil. 2014. Local knowledge and use of the Valle de Aguán Spiny-tailed Iguana, *Ctenosaura melanosterna* in Honduras. *Herpetological Conservation and Biology* 9:436–447.
- Pasachnik, S.A., A.C. Echternacht, and B.M. Fitzpatrick. 2010. Gene trees, species, and species trees in the *Ctenosaura palearis* clade. *Conservation Genetics* 11:1767–1781.
- Pasachnik, S.A., A.C. Echternacht, and B.M. Fitzpatrick. 2011a. Population genetics of the Honduran Spiny-tailed Iguana *Ctenosaura melanosterna*: implication for conservation and management. *Endangered Species Research* 14:113–126.
- Pasachnik, S.A., B.M. Fitzpatrick, T.J. Near, and A.C. Echternacht. 2009. Gene flow between an endangered endemic iguana, and its wide spread relative, on the island of Útila, Honduras: when is hybridization a threat? *Conservation Genetics* 10:1247–1254.
- Pasachnik, S.A., A. Martínez, and M.S. Pérez. 2011b. *Ctenosaura bakeri*. The IUCN Red List of Threatened Species. Version 2014.3. Available from <http://www.iucnredlist.org/details/44181/0> [Accessed on 14 September 2014].
- Pasachnik, A., C.E. Montgomery, A. Martínez, N. Belal, S. Clayson, and S. Faulkner. 2012b. Body size, demography, and body condition in Útila Spiny-tailed Iguanas, *Ctenosaura bakeri*. *Herpetological Conservation and Biology* 7:391–398.
- Pasachnik, S.A., C.E. Montgomery, L.E. Ruyle, J.P. Corneil, and E.E. Antúnez. 2012c. Morphological and demographic analyses of *Ctenosaura melanosterna* across its range: implications for population level management. *Herpetological Conservation and Biology* 7:399–406.

## Herpetological Conservation and Biology

- Pérez-Buitrago, N., and A. Sabat. 2007. Natal dispersal, home range, and habitat use of hatchlings of the Mona Island Iguana (*Cyclura cornuta stejnegeri*). *Applied Herpetology* 4:365–376.
- Pérez-Buitrago, N., A.M. Sabat, and W.O. McMillan. 2016. Nesting migrations and reproductive biology of the Mona Rhinoceros Iguana, *Cyclura stejnegeri*. Pp. 197–213 *In* Iguanas: Biology, Systematics, and Conservation. Iverson, J.B., T.D. Grant, C.R. Knapp, S.A. Pasachnik (Eds.). Herpetological Conservation and Biology 11(Monograph 6).
- Perotto-Baldivieso, H.L., E. Melendez-Ackerman, M.A. Garcia, P. Leimgruber, S.M. Cooper, A. Martinez, P. Calle, O.M. Ramos Gonzales, M. Quinones, C.A. Christen, and G. Pons. 2009. Spatial distribution, connectivity, and the influence of scale: habitat availability for the endangered Mona Island Rock Iguana. *Biodiversity and Conservation* 18:905–917.
- Perry, G., and G.P. Gerber. 2006. Conservation of amphibians and reptiles in the British Virgin Islands: status and patterns. *Applied Herpetology* 3:237–256.
- Perry, G., and G.P. Gerber. 2011. Conservation of amphibians and reptiles of the British Virgin Islands: status and patterns. Pp. 105–128 *In* Conservation of Caribbean Island Herpetofaunas. Volume 2: Regional Accounts of the West Indies. Hailey, A., B.S. Wilson, and J.A. Horrocks (Eds.). Brill Academic Publishers, Leiden, The Netherlands.
- Perry, G., and R. Powell. 2009. The herpetofauna of Guana Island: an annotated checklist and travelogue. *IRCF Reptiles and Amphibians: Conservation and Natural History* 16:42–47.
- Petren, K., and T.J. Case. 1997. A phylogenetic analysis of body size evolution and biogeography in Chuckwallas (*Sauromalus*) and other iguanines. *Evolution* 51:206–219.
- Petren, K., and T.J. Case. 2002. Updated mtDNA phylogeny for *Sauromalus* and implications for the evolution of gigantism. Pp. 574–579 *In* A New Island Biogeography of the Sea of Cortes. Case, T.J., M.L. Cody, and E. Ezcurra (Eds.). Oxford University Press, Oxford, United Kingdom.
- Phillips, R.B., B.D. Cooke, K. Campbell, V. Carrion, C.M. Marquez B., and H.L. Snell. 2005. Eradicating feral cats to protect Galápagos Land Iguanas: methods and strategies. *Pacific Conservation Biology* 11:257–267.
- Pough, F.H., R.M. Andrews, J.E. Cadle, M.C. Crump, A.H. Savitsky, and K.D. Wells. 2004. *Herpetology*. Pearson Prentice Hall, Upper Saddle River, New Jersey, USA.
- Powell, R. 1999. Herpetology of Navassa Island, West Indies. *Caribbean Journal of Science* 35:1–13.
- Powell, R. 2000. *Cyclura onchiopsis*. Catalogue of American Amphibians and Reptiles 710:1–3.
- Powell, R. 2011. Conservation of the herpetofauna on the Dutch Windward Islands: St. Eustatius, Saba, and St. Maarten. Pp. 189–204 *In* Conservation of Caribbean Island Herpetofaunas. Volume 2: Regional Accounts of the West Indies. Hailey, A., B.S. Wilson, and J.A. Horrocks (Eds.). Brill Academic Publishers, Leiden, The Netherlands.
- Powell, R., and R.E. Glor. 2000. *Cyclura stejnegeri*. Catalogue of American Amphibians and Reptiles 711:1–4.
- Powell, R., and R.W. Henderson (Eds.). 2012. Island lists of West Indian amphibians and reptiles. *Bulletin of the Florida Museum of Natural History* 51:85–166.
- Pregill, G.K. 1981. An appraisal of the vicariance hypothesis of Caribbean biogeography and its application to West Indian terrestrial vertebrates. *Systematic Zoology* 30:147–155.
- Pregill, G.K. 1982. Fossil amphibians and reptiles from New Providence Island, Bahamas. *Smithsonian Contributions in Paleobiology* 48:8–21.
- Pregill, G.K., and D.W. Steadman. 2004. South Pacific iguanas: human impacts and a new species. *Journal of Herpetology* 38:15–21.
- Pyron, R.A., F.T. Burbrink, and J.J. Wiens. 2013. A phylogeny and revised classification of Squamata, including 1,461 species of lizards and snakes. *BMC Evolutionary Biology* 13:93.
- Radachowsky, J., R.G. Anleu, and G. Köhler. 2003. First record of *Ctenosaura alfredschmidti* Köhler, 1995 in Guatemala. *Salamandra* 39:11–13.
- Rassmann, K., D. Tautz, F. Trillmich, and C. Glidon. 1997a. The microevolution of the Galápagos Marine Iguana *Amblyrhynchus cristatus* assessed by nuclear and mitochondrial genetic analyses. *Molecular Ecology* 6:437–452.
- Rassmann, K., F. Trillmich, and D. Tautz. 1997b. Hybridization between the Galápagos Land and Marine Iguana (*Conolophus subcristatus* and *Amblyrhynchus cristatus*) on Plaza Sur. *Journal of Zoology* 242:729–739.
- Reynolds, R.G. 2011. Status, conservation, and introduction of amphibians and reptiles in the Turks and Caicos Islands, British West Indies. Pp. 377–406 *In* Conservation of Caribbean Island Herpetofaunas. Volume 2: Regional Accounts of the West Indies. Hailey, A., B.S. Wilson, and J.A. Horrocks (Eds.). Brill Academic Publishers, Leiden, The Netherlands.
- Rioja, T., A. Carillo-Reyes, E. Espinoza-Medinilla, and S. López-Mendoza. 2012. Basic ecology of the Oaxacan Spiny-tailed Iguana *Ctenosaura oaxacana* (Squamata: Iguanidae), in Oaxaca, México. *Revista de Biología Tropical* 60:1613–1619.
- Rothschild, W., and E. Hartert. 1899. A review of the ornithology of the Galápagos Islands with notes on the Webster-Harris expedition. *Novitates Zoologicae* 6:85–205.

## Iguana Taxonomy Working Group—Checklist of the Iguanas of the World.

- Rupp, E., and M. Accimé. 2011. Discovery of Ricord's Iguana (*Cyclura ricordii*) in Haiti. IRCF Reptiles and Amphibians: Conservation and Natural History 18:148–153.
- Sabaj Pérez, M.H. (Ed.). 2010. Standard Symbolic Codes for Institutional Resource Collections in Herpetology and Ichthyology: an Online Reference. Version 2.0. American Society of Ichthyologists and Herpetologists, Washington D.C. Available from <http://www.asih.org/>
- Schmidt, K.P. 1920. A new *Cyclura* from White Cay. Proceedings of the Linnaean Society of New York 33:6–7.
- Schulte, J.A., J.P. Valladares, and A. Larson. 2003. Phylogenetic relationships within Iguanidae inferred using molecular and morphological data and a phylogenetic taxonomy of iguanian lizards. *Herpetologica* 59:399–419.
- Schulte, U., and G. Köhler. 2010. Microhabitat selection in the Spiny-tailed Iguana *Ctenosaura bakeri* on Útila Island, Honduras. *Salamandra* 46:141–146.
- Schwartz, A., and M. Carey. 1977. Systematics and evolution in the West Indian iguanid genus *Cyclura*. Studies on the Fauna of Curaçao and other Caribbean Islands 173:15–97.
- Schwartz, A., and R. Thomas. 1975. A check-list of West Indian Amphibians and Reptiles. Special Publications of the Carnegie Museum of Natural History 1:1–216.
- Schwenk, K. 1994. Systematics and subjectivity: the phylogeny and classification of iguanian lizards. *Herpetological Review* 25:53–57.
- Shaw, C.E. 1941. A new Chuckwalla from Santa Catalina Island, Gulf of California, México. *Transactions of the San Diego Society of Natural History* 9:285–288.
- Shaw, C.E. 1945. The Chuckwallas, genus *Sauromalus*. *Transactions of the San Diego Society of Natural History* 10:269–306.
- Shaw, G. 1802. General Zoology or Systematic Natural History. Volume III, Part 1. Amphibia. Thomas Davidson, London, England.
- Smith, G.R., and J.B. Iverson. 2016. Effects of tourism on body size, growth, condition, and demography in the Allen Cays Iguana, *Cyclura cychlura inornata*, on Leaf Cay, The Bahamas. Pp. 214–221 In Iguanas: Biology, Systematics, and Conservation. Iverson, J.B., T.D. Grant, C.R. Knapp, S.A. Pasachnik (Eds.). Herpetological Conservation and Biology 11(Monograph 6).
- Smith, H.M. 1972. The Sonoran subspecies of the lizard *Ctenosaura hemilopha*. *Great Basin Naturalist* 32:104–111.
- Smith, H.M., and E.H. Taylor. 1950. An annotated checklist and key to the reptiles of México exclusive of the snakes. *United States National Museum Bulletin* 199:1–253.
- Smith, K.T. 2009. Eocene lizards of the clade *Geiseltaliellus* from Messel and Geiseltal, Germany, and the early radiation of Iguanidae (Reptilia, Squamata). *Bulletin of the Peabody Museum of Natural History* 50:219–306.
- Snell, H.L., H.M. Snell, and C.R. Tracy. 1984. Variation among populations of Galápagos Land Iguanas (*Conolophus*): contrasts of phylogeny and ecology. *Biological Journal of the Linnean Society* 21:185–207.
- Soulé, M., and A.J. Sloan. 1966. Biogeography and distribution of the reptiles and amphibians on islands in the Gulf of California, México. *Transactions of the San Diego Society of Natural History* 14:137–156.
- Starostová, Z., I. Réhak, and D. Frynta. 2010. New haplotypes of *Cyclura nubila* from Cuba changed the phylogenetic tree of Rock Iguanas: a challenge for conservation strategies. *Amphibia-Reptilia* 31:134–143.
- Steadman, D.W., N.A. Albury, P. Maillis, J.I. Mead, J. Slapcinsky, K.L. Krysko, and H.M. Singleton. 2014. Late-Holocene faunal and landscape change in The Bahamas. *The Holocene* 24:220–230.
- Steadman, D.W., T.W. Stafford, Jr., D.J. Donahue, and A.J.T. Jull. 1991. Chronology of Holocene vertebrate extinction in the Galápagos Islands. *Quaternary Research* 36:126–133.
- Steinfartz, S., S. Glaberman, D. Lanterbecq, M.A. Russello, S. Rosa, T.C. Hanley, C. Marquez, H.L. Snell, H.M. Snell, G. Gentile, et al. 2009. Progressive colonization and restricted gene flow shape island-dependent population structure of the Galápagos Marine Iguanas (*Amblyrhynchus cristatus*). *BMC Evolutionary Biology* 9:297.
- Stejneger, L. 1891. Description of a new North American lizard of the genus *Sauromalus*. *Proceedings of the United States National Museum* 14:409–411.
- Stejneger, L. 1899. Description of a new species of Spiny-tailed Iguana from Guatemala. *Proceedings of the United States National Museum* 21:381–383.
- Stejneger, L. 1901. On a new species of Spiny-tailed Iguana from Utila [sic] Island, Honduras. *Proceedings of the United States National Museum* 23:467–468.
- Stejneger, L. 1903. A new species of large iguana from the Bahama Islands. *Proceedings of the Biological Society of Washington* 16:129–132.
- Stephen, C.L., V.H. Reynoso, W.S. Collett, C.R. Hasbun, and J.W. Breinholt. 2013. Geographical structure and cryptic lineages within Common Green Iguanas, *Iguana iguana*. *Journal of Biogeography* 40:50–62.
- Taylor, E.H. 1969. Wiegmann and the herpetology of México. Pp. iii–vi In *Herpetologica Mexicana*. Society for the Study of Amphibians and Reptiles. Facsimile Reprint in Herpetology, Athens, Ohio.

## Herpetological Conservation and Biology

- Thomas, N., K. Macedru, W. Mataitoga, J. Surumi, S. Qeteqete, J. Niukula, A. Naikatini, A. Heffernan, R. Fisher, and P. Harlow. 2011. *Iguana iguana* – a feral population in Fiji. *Oryx* 45:321–323.
- Townsend, T.M., A. Larson, E. Louis, and J.R. Macey. 2004. Molecular phylogenetics of Squamata: the position of snakes, amphisbaenians, and dibamids, and the root of the squamate tree. *Systematic Biology* 53:735–757.
- Tzika, A.C., S.F.P. Rosa, A. Fabiani, H.L. Snell, H.M. Snell, C. Marquez, W. Tapia, K. Rassmann, G. Gentile, and M.C. Milinkovitch. 2008. Population genetics of the Galápagos Land Iguana (genus *Conolophus*) remnant populations. *Molecular Ecology* 17:4943–4952.
- Van Denburgh, J. 1922. Reptiles of western North America. Volume 1. Lizards. Occasional Papers of the California Academy of Sciences 10:1–611.
- Velarde, E., B.D. Hollingsworth, and J.P. Rebman. 2008. Geographic distribution. *Sauromalus hispidus* (Spiny Chuckwalla). *Herpetological Review* 39:368.
- Ventura-Trejo, J., J.H. Valdez-Villavicencio, and B.D. Hollingsworth. 2008. *Sauromalus ater* (Common Chuckwalla). *Herpetological Review* 39:239–240.
- Vitt, L.J., and J.P. Caldwell. 2009. *Herpetology*. Academic Press, San Diego, California, USA.
- Wiegmann, A.F.A. 1828. Beyträge zur Amphibiengkunde. *Isis von Oken*, Leipzig 21:364–383.
- Wiegmann, A.F.A. 1834. *Herpetologica Mexicana seu descriptio amphibiorum Novae Hispaniae quae itineribus comitis de Sack, Ferdinandi Deppe et Chr. Guil. Schiede in Museum Zoologicum Berolinense pervenerunt. Pars prima, Saurorum species amplectens, adiecto Systematis Saurorum Prodrom, additisque multis in hunc amphibiorum ordinem observationibus*. Lüderitz, Berlin, Germany.
- Wiens, J.J., and B.D. Hollingsworth. 2000. War of the iguanas: conflicting molecular and morphological phylogenies and long-branch attraction in iguanid lizards. *Systematic Biology* 49:143–159.
- Wikelski, M. 2005. Evolution of body size in Galápagos Marine Iguanas. *Proceedings of the Royal Society B, Biological Sciences* 272:1985–1993.
- Wikelski, M., S.S. Steiger, B. Gall, and K.N. Nelson. 2005. Sex, drugs, and mating role: testosterone-induced phenotype-switching in Galápagos Marine Iguanas. *Behavioral Ecology* 16:260–268.
- Wilson, B.S. 2011. Conservation of Jamaican amphibians and reptiles. Pp. 273–310 *In Conservation of Caribbean Island Herpetofaunas. Volume 2: Regional Accounts of the West Indies*. Hailey, A., B.S. Wilson, and J.A. Horrocks (Eds.). Brill Academic Publishers, Leiden, The Netherlands.
- Wilson, B.S., T.D. Grant, R. van Veen, R. Hudson, D. Flechhaus, O. Robinson, and K. Stephenson. 2016. The Jamaican Iguana (*Cyclura collei*): a report on 25 years of conservation effort. Pp. 237–254 *In Iguanas: Biology, Systematics, and Conservation*. Iverson, J.B., T.D. Grant, C.R. Knapp, S.A. Pasachnik (Eds.). *Herpetological Conservation and Biology* 11(Monograph 6).
- Wilson, L.D., and D.E. Hahn. 1973. The herpetofauna of the Islas de la Bahía, Honduras. *Bulletin of the Florida State Museum, Biological Sciences* 17:93–150.
- Wrobel, M. (Ed.). 2004. Elsevier's Dictionary of Reptiles: In Latin, English, German, French and Italian. Elsevier, Amsterdam, The Netherlands.
- Zarza, E., V.H. Reynoso, and B.C. Emerson. 2008. Diversification in the northern neotropics: mitochondrial and nuclear DNA phylogeography of the iguana *Ctenosaura pectinata* and related species. *Molecular Ecology* 17:3259–3275.
- Zarza, E., V.H. Reynoso, and B.C. Emerson. 2011. Discordant patterns of geographic variation between mitochondrial and microsatellite markers in the Mexican Black Iguana (*Ctenosaura pectinata*) in a contact zone. *Journal of Biogeography* 38:1394–1405.
- Zarza, E., V.H. Reynoso, and B.C. Emerson. 2016. Genetic tools for assisting sustainable management and conservation of the spiny-tailed iguana, *Ctenosaura pectinata*. Pp. 255–264 *In Iguanas: Biology, Systematics, and Conservation*. Iverson, J.B., T.D. Grant, C.R. Knapp, S.A. Pasachnik (Eds.). *Herpetological Conservation and Biology* 11(Monograph 6).

## Iguana Taxonomy Working Group—Checklist of the Iguanas of the World.



**LARRY J. BUCKLEY** earned his Ph.D. in Zoology from Southern Illinois University (SIU) at Carbondale, his master's in Biology from SIU at Edwardsville, and his bachelor's in Biology at the University of Missouri, St. Louis. He held a postdoctoral fellowship at the National Museum of Natural History, Smithsonian Institution in the Herpetology Division of the Department of Vertebrate Zoology. He is now in life sciences at the Rochester Institute of Technology where he serves as Department Head. His research focus is on phylogenetics and vertebrate systematics especially reptiles and amphibians, with an emphasis on systematics and population genetics of iguanid lizards. He also enjoys development of courses in evolutionary biology, population genetics, biogeography, and comparative anatomy. (Photographed by Susan Tontaraski).



**KEVIN DE QUEIROZ** is a Research Zoologist and Curator of the collection of amphibians and reptiles at the National of Natural History, Smithsonian Institution. He did research for his M.Sc. on the phylogenetic systematics of iguanas at Diego State University and for his Ph.D. on the evolution of North American Sand Lizards at the University of California Berkeley. Afterwards, he continued his herpetological research as a Tilton Postdoctoral Fellow at the California Academy of Sciences. His primary research interests are in the systematics and evolutionary biology of reptiles and the theory a practice of systematic biology. Kevin is a member of the IUCN SSC Anoline Lizard Specialist Group and Iguana Specialist Group, and he has held various elected and appointed offices in the American Society of Ichthyologists and Herpetologists' League, the Society for the Study of Amphibians and Reptiles, the Society of Systematic Biologists, and the International Society for Phylogenetic Nomenclature. (Photographed by Molly R. Morris).



**TANDORA D. GRANT** received a bachelor's degree in Biochemistry and Molecular Biology from the University of California Santa Cruz. Currently a Research Coordinator at the San Diego Zoo Institute for Conservation Research, her work focused primarily on conservation recovery strategies for Caribbean iguanas, San Clemente Loggerhead Shrike, and Diego Coast Horned Lizard. Tandora serves as Program Officer for the IUCN SSC Iguana Specialist Group (ISG), Red List Authority evaluating the conservation status for all iguana species. She is the Species Coordinator and Population Management Advisor for the AZA Species Survival Plans for Jamaican and Grand Cayman Blue Iguanas. Having created studbooks for these species, she assesses genetic and demographic statistics to determine optimum captive breeding release candidates. She is incorporating molecular data in this analysis to further define the fitness of reintroduced populations and guide management actions. Most recently, she developed websites for the ISG, International Iguana Foundation, and the Save Goat Islands website providing information opposing development in Jamaican Iguana habitat. (Photographed by Jeffrey Lemm).

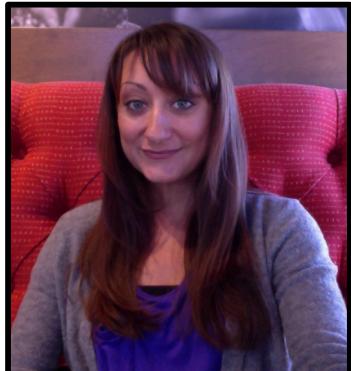


**BRADFORD D. HOLLINGSWORTH** is currently the Curator of Herpetology at the San Diego Natural History Museum (SDNHM) and an Adjunct Professor at San Diego State University (SDSU). He received his Bachelor and Masters of Science at SDSU and his doctorate at Loma Linda University, both located in southern California. He has been interested in the diversity of amphibian and reptiles for his entire life and his research focuses on the systematics and biogeography in California, the Baja California peninsula, and islands in the Pacific Ocean and Gulf of California. His most recent project is the Amphibian and Reptile Atlas of Peninsular California ([herpatlas.sdnhm.org](http://herpatlas.sdnhm.org)), which aims to document the distributions of species from this region. (Photographed by Maggie Reinbold).

## Herpetological Conservation and Biology



**JOHN B. IVERSON** holds a Ph.D. in Biology from the University of Florida and is Biology Research Professor at Earlham College in Richmond, Indiana. Because of his interests in the natural history, ecology, and evolution of iguanas and turtles, he is currently on the steering committees (and founding member) of the IUCN SSC Iguana Specialist Group, and the Tortoise and Freshwater Turtle Specialist Group. He has been involved with the Turtle Survival Alliance since its inception in 2001 (currently a board member), and serves on the board of the Turtle Conservation Fund. He has been active in several herp societies, serving as editor and president of the Herpetologists' League. He has maintained long-term field research sites since 1980 for Rock Iguanas in the Exumas in The Bahamas, and since 1981 for turtles at the Crescent Lake National Wildlife Refuge in western Nebraska. His hobby is restoring a 76-acre woodlot/cornfield (now in a conservation easement) to a mature hardwood forest. (Photographed by Rick Flamm).



**STESHA A. PASACHNIK** began her research career with iguanas as an undergraduate at Earlham College, in Richmond, Indiana. She received her Ph.D. from the University of Tennessee, Knoxville, in 2010. Her dissertation research focused on the conservation genetics of the *Ctenosaura palearis* complex in Honduras and Guatemala. After completing her Ph.D. she worked as Conservation Director for the Roatán Branch of the Bay Islands Foundation in Honduras, where she began a long-term research project on *C. oedirhina*. She is now a Postdoctoral Research Associate at the San Diego Zoo Institute for Conservation Research in San Diego, California, where she studies the *Cyclura* of Hispaniola. In general her research goals are to bring genetics, ecology, and education together to approach issues of conservation in a holistic way. She currently sits on the editorial advisory board of Biodiversity and Ecosystems Loss and is Co-chair of the IUCN SSC Iguana Specialist Group. (Photographed by Stesha Pasachnik).



**CATHERINE L. STEPHEN** received her Ph.D. in Genetics from Texas A & M University where she focused primarily on the evolutionary history of Caribbean Rock Iguanas and population genetics of Northern Bahamian Rock Iguanas. As a Postdoctoral Fellow at Purdue University, her attention turned for a short time to using population genetic data to guide management decisions in American Pronghorn Antelope. Currently an Associate Professor at Utah Valley University, Catherine teaches a variety of courses, always trying to foster in her students a deep appreciation and understanding of the beauty and complexity of the natural world. Her research with her collaborators and undergraduate students continues to focus on the use of genetic tools to address conservation concerns and explore evolution in iguanids. Throughout her career she has been an active member with the IUCN SSC Iguana Specialist Group and currently serves on the Steering Committee. (Photographed by Codi Lance).

### APPENDIX 1. Museum acronyms referencing specimens of Iguanidae (following Sabaj Pérez 2010).

AMNH	American Museum of Natural History, Central Park West at 79th Street, New York City, New York 10024, USA.
ANSP	Academy of Natural Sciences, 19th and the Parkway, Philadelphia, Pennsylvania 19103, USA.
BMNH	British Museum (Natural History), Department of Zoology, Cromwell Road, London SW7 5BD, United Kingdom.
CAS	California Academy of Sciences, Golden Gate Park, San Francisco, California 94118, USA.
FMNH	Field Museum of Natural History, Roosevelt Road and Lake Shore Drive, Chicago, Illinois 60605, USA.
KU	University of Kansas, Museum of Natural History, Lawrence, Kansas 66045, USA.
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts 02138, U.S.A
MNHN	Museum National d'Histoire Naturelle, 43 Rue Cuvier, 75231 Paris, France.
NHRM	Naturhistoriske Riksmuseum, Frescativagen 40, Stockholm 114 18, Sweden.
OUM	Oxford University Museum, Parks Road, Oxford, Oxfordshire, United Kingdom.
SDNHM	San Diego Natural History Museum, 1788 El Prado, San Diego, California 92101, USA.
SMF	Natur-Museum und Forschung-Institut Senckenberg, Senckenberg Anlage 25, 6000 Frankfurt-am-Main 1, Germany.
UCM	University of Colorado Museum of Natural History, Broadway between 15th and 16th Streets, Boulder, Colorado 80309, USA.
UF	Florida Museum of Natural History, University of Florida, Gainesville, Florida 32611, USA.
UMMZ	University of Michigan Museum of Zoology, Ann Arbor, Michigan 48109, USA.
USNM	U.S. National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560, USA.
ZMB	Museum für Naturkunde, Universitat Humboldt, Invalidenstrasse 43, 104 Berlin, Germany.
ZMUU	Zoologiska Museet, Uppsala Universitet, PO Box 561, S-751 22 Uppsala, Sweden.

## Iguana Taxonomy Working Group—Checklist of the Iguanas of the World.

**APPENDIX 2.** Abbreviated checklist of the iguanas, with IUCN Red List status, IUCN estimates of population size (UN, unknown), IUCN population trend (DE, decreasing; IN, increasing; ST, stable; UN, unknown; or NL, not listed), and year when last assessed by the IUCN. Status categories are: Extinct (EX), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD), and not listed (NL).

Taxon	IUCN Status	Pop. Estm.	Pop. Trend	Year Assessed
<i>Amblyrhynchus cristatus</i> [Marine Iguanas]	VU	UN	UN	2004
<i>Amblyrhynchus cristatus cristatus</i> [Fernandina Marine Iguanas]	VU	80,000–150,000	ST	2004
<i>Amblyrhynchus cristatus albemarlensis</i> [Isabela Marine Iguanas]	VU	20,500–40,000	UN	2004
<i>Amblyrhynchus cristatus hassi</i> [Santa Cruz Marine Iguanas]	VU	6,000–10,000	ST	2004
<i>Amblyrhynchus cristatus mertensi</i> [San Cristóbal Marine Iguanas]	EN	UN	UN	2004
<i>Amblyrhynchus cristatus nanus</i> [Genovesa Marine Iguanas]	EN	1,500	DE	2004
<i>Amblyrhynchus cristatus sielmanni</i> [Pinta Marine Iguanas]	VU	2,500–6,000	UN	2004
<i>Amblyrhynchus cristatus venustissimus</i> [Española Marine Iguanas]	VU	10,000–21,000	ST	2004
<i>Brachylophus bulabula</i> [Central Fijian Banded Iguanas]	EN	6,000 +	DE	2012
<i>Brachylophus fasciatus</i> [Lau Banded Iguanas]	EN	UN	DE	2012
<i>Brachylophus vitiensis</i> [Fijian Crested Iguanas]	CR	UN	DE	2012
<i>Conolophus marthae</i> [Pink Land Iguanas]	CR	192	UN	2012
<i>Conolophus pallidus</i> [Barrington Land Iguanas]	VU	UN	NL	1996
<i>Conolophus subcristatus</i> [Galápagos Land Iguanas]	VU	UN	NL	1996
<i>Ctenosaura acanthura</i> [Veracruz Spiny-tailed Iguanas]	NL			
<i>Ctenosaura alfredschmidti</i> [Campeche Spiny-tailed Iguanas]	NT	UN	UN	2004
<i>Ctenosaura bakeri</i> [Útila Spiny-tailed Iguanas]	CR	< 5,000	DE	2013
<i>Ctenosaura clarki</i> [Balsas Spiny-tailed Iguanas]	VU	< 2,500	UN	2004
<i>Ctenosaura conspicuosa</i> [San Esteban Spiny-tailed Iguanas]	NL			
<i>Ctenosaura defensor</i> [Yucatán Spiny-tailed Iguanas]	VU	< 2,500	UN	2004
<i>Ctenosaura flavidorsalis</i> [Yellow-backed Spiny-tailed Iguanas]	EN	< 2,500	DE	2004
<i>Ctenosaura hemilopha</i> [Baja California Spiny-tailed Iguanas]	NL			
<i>Ctenosaura macrolopha</i> [Sonoran Spiny-tailed Iguanas]	NL			
<i>Ctenosaura melanosterna</i> [Black-chested Spiny-tailed Iguanas]	EN	< 5,000	DE	2012
<i>Ctenosaura nolascensis</i> [Nolasco Spiny-tailed Iguanas]	VU	< 2,500	ST	2012
<i>Ctenosaura oaxacana</i> [Oaxaca Spiny-tailed Iguanas]	CR	< 2,500	DE	2004
<i>Ctenosaura oedirhina</i> [Roatán Spiny-tailed Iguanas]	EN	< 2,500	DE	2010
<i>Ctenosaura palearis</i> [Motagua Spiny-tailed Iguanas]	EN	< 2,000	DE	2013
<i>Ctenosaura pectinata</i> [Guerrero Spiny-tailed Iguanas]	NL			
<i>Ctenosaura praecocularis</i> [Southern Honduran Spiny-tailed Iguanas]	DD	UN	UN	2013
<i>Ctenosaura quinquecarinata</i> [Five-keeled Spiny-tailed Iguanas]	EN	< 2,500	DE	2004
<i>Ctenosaura similis</i> [Common Spiny-tailed Iguanas]	LC	UN	ST	2010
<i>Ctenosaura similis similis</i> [Common Spiny-tailed Iguanas]	NL			
<i>Ctenosaura similis multipunctata</i> [Providence Spiny-tailed Iguanas]	NL			
<i>Cyclura carinata</i> [Turks and Caicos Rock Iguanas]	CR	~ 30,000	DE	2004
<i>Cyclura collei</i> [Jamaican Rock Iguanas]	CR	UN	UN	2010
<i>Cyclura cornuta</i> [Hispaniolan Rhinoceros Iguanas]	VU	10,000–17,000	DE	1996
<i>Cyclura cychlura</i> [Northern Bahamian Rock Iguanas]	VU	< 5,000	DE	2004
<i>Cyclura cychlura cychlura</i> [Andros Rock Iguanas]	EN	2,000–5,000	DE	2004
<i>Cyclura cychlura figginsi</i> [Exuma Rock Iguanas]	CR	< 1,300	DE	2004
<i>Cyclura cychlura inornata</i> [Allen Cays Rock Iguanas]	EN	< 500	ST	2004
<i>Cyclura lewisi</i> [Grand Cayman Blue Rock Iguanas]	EN	443	IN	2012
<i>Cyclura nubila</i> [Clouded Rock Iguanas]	VU	UN	NL	2012
<i>Cyclura nubila nubila</i> [Cuban Rock Iguanas]	VU	40,000–60,000	DE	1996
<i>Cyclura nubila caymanensis</i> [Sister Islands Rock Iguanas]	CR	1,200–1,500	DE	2012
<i>Cyclura onchiopsis</i> [Navassa Rhinoceros Iguanas]	EX			
<i>Cyclura pinguis</i> [Anegrada Rock Iguanas]	CR	< 200	NL	1996
<i>Cyclura ricordii</i> [Ricord's Rock Iguanas]	CR	2,000–4,000	DE	1996
<i>Cyclura rileyi</i> [Central Bahamian Rock Iguanas]	EN	UN	NL	1996
<i>Cyclura rileyi rileyi</i> [San Salvador Rock Iguanas]	CR	< 1,000	DE	2000
<i>Cyclura rileyi cristata</i> [Sandy Cay Rock Iguanas]	CR	150–200	UN	1996
<i>Cyclura rileyi nuchalis</i> [Acklins Rock Iguanas]	EN	> 13,000	UN	2000
<i>Cyclura stejnegeri</i> [Mona Rhinoceros Iguanas]	EN	1,500–2,000	DE	2000
<i>Dipsosaurus catalinensis</i> [Santa Catalina Desert Iguanas]	NL			
<i>Dipsosaurus dorsalis</i> [Common Desert Iguanas]	LC	> 100,000	ST	2007
<i>Dipsosaurus dorsalis dorsalis</i> [Western Desert Iguanas]	NL			
<i>Dipsosaurus dorsalis sonoriensis</i> [Sonoran Desert Iguanas]	NL			
<i>Iguana delicatissima</i> [Lesser Antillean Iguanas]	EN	< 20,000	DE	2010
<i>Iguana iguana</i> [Common Green Iguanas]	NL			
<i>Sauromalus ater</i> [Common Chuckwallas]	LC	> 100,000	ST	2007
<i>Sauromalus hispidus</i> [Spiny Chuckwallas]	NT	< 10,000	UN	2010
<i>Sauromalus klauberi</i> [Catalina Chuckwallas]	NL			
<i>Sauromalus slevini</i> [Slevin's Chuckwallas]	NL			
<i>Sauromalus varius</i> [Piebald Chuckwallas]	NL			