

is the lack of a conservation section as many are threatened (e.g., Vulnerable: *Hemicordylus nebulosus* and *Smaug giganteus*; Near Threatened: *Cordylus inkeae*, *C. macropholis*, *C. niger*, *C. oelofseni*, *Pseudocordylus langi*, *P. spinosus*, and *P. transvaalensis*).

A comprehensive (40-page) section on Keeping and Breeding these fascinating lizards follows the Natural History section. It has lots of practical advice for captive husbandry and terrarium design, but would benefit from at least some suggestions for disease treatment and control. Admittedly these are technical and complex issues, but the reader would benefit from direction to at least relevant and accessible literature. Finally the book finishes with a one-page list of Museum Details, which lists 14 examples. These are somewhat arbitrary, as it is not obvious why in the USA the Centennial Museum and Gardens, University of Texas should be included in preference to the American Museum of Natural History, New York, while in South Africa, the KwaZulu Natal Museum, Pietermaritzburg is listed (when it has only a minor collection and no herpetologist) in preference to the National Museum, Bloemfontein (with a thriving Herpetology Department, and the fourth largest herpetological collection in the subcontinent!). More useful is Table 4, a synopsis of variation in scalation of all species discussed. A six-page Bibliography gives direction for the major literature on the topic.

With the current intensity of revisionary and phylogenetic studies on southern African reptiles it is little wonder that a number of taxonomic adjustments have occurred in the year subsequent to the release of *Girdled Lizards*. These include a revision of the *Smaug warreni* complex (Stanley and Bates 2014), with the elevation of the three subspecies of *S. warreni* to specific status; i.e., *S. warreni* (Boulenger, 1908), *S. barbertonensis* (Van Dam, 1921), and *S. depressus* (FitzSimons, 1930). A putative new species within *S. warreni* has been signaled (Stanley and Bates 2014), as have additional new lineages within the East African and Angolan *Cordylus* radiations (Branch, Bates, and Stanley, unpubl. obs.). A consequence of the reevaluation of *S. warreni* material previously assigned to other taxa within the complex is that some maps in the *Girdled Lizards* species accounts, and those in the recently launched *Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland* (Bates et al. 2014), need readjustment. Stanley and Bates (2014) noted that early records from Blouberg/Makgabeng and farm New York (Jacobsen 1989), previously considered as isolated populations of *S. vandami*, are referable to *S. breyeri* despite confusing coloration in some cases. Sympatry between these two species, therefore, remains unconfirmed as their presently understood ranges do not overlap.

In summary, and despite its constrained coverage, *Girdled Lizards* is a very useful reference. It covers most cordylid genera and documents the diversity and distribution of some of Africa's most interesting and popular lizards. The author, his photographic collaborators, and the publishers are to be congratulated on the preparation of this useful, beautifully illustrated, and informative book.

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Amphibians and Reptiles of Guyana, South America: Illustrated Keys, Annotated Species Accounts, and a Biogeographic Synopsis

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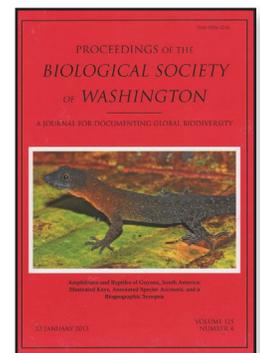
MacCulloch, and Amy Lathrop. 2013. Proceedings of the Biological Society of Washington 125(4):i–iii, 317–620. Paperback. US \$10.00. Also available from the Allen Press online bookstore as an e-book (EPUB or Kindle format), or from BioOne as a five-day access for US \$25.00.

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Guyana is one of these countries that some may find hard to locate on a map. “Is it in Africa?” or “is it an island?” are common questions when Guyana is mentioned in a casual conversation. Guyana is part of the Caribbean Community and Common Market (CARICOM), which makes things even more confusing because geographically the country is not related to the Caribbean. The Co-operative Republic of Guyana—not to be confounded

with French Guiana (northern South America) or Guinea (western Africa)—is a former British colony that gained its independence in 1966. The country lies along the Atlantic Coast of north-eastern South America, between Suriname to the east, Venezuela to the west, and Brazil to the south, and is part of the Guiana Shield biogeographical region. Guyana is fascinating in many ways, from its rich ethnic and cultural diversity (e.g., Levinson 1998) to its extensive pristine forest cover (ca. 18.39 million ha, thus about 85% of the country; Bholanath et al. 2012) and still—but for how long?—well-preserved biodiversity.

Prior to the publication of *Amphibians and Reptiles of Guyana* there was no book or field guide treating the herpetological diversity of Guyana as a whole. The very few existing compendia merely covered amphibians from restricted areas, e.g., Kaieteur National Park (Kok and Kalamandeen 2008) and Mount Ayan-ganna (MacCulloch and Lathrop 2009). The opus by Cole et al. is, therefore, a long-awaited handbook, not only for researchers working in Guyana, but also for naturalists interested in the region, as well as locals interested in their herpetofauna. Because the authors have all been working on the herpetofauna of Guyana for a long time (sometimes decades), we started reading *Amphibians and Reptiles of Guyana* with great expectations. We are pleased that they were satisfactorily met.

Although *Amphibians and Reptiles of Guyana* can be obtained as a paperback book, it actually is a long article published in Volume 125(4) of the *Proceedings of the Biological Society of Washington*. At the time it was downloaded by PJRK (16 February 2013), the PDF available from BioOne did not include the Contents (pages i–ii) or the Dedication (page iii). The lack of a table of contents in the PDF makes it less easy to use than the printed version. The one-page Dedication was downloadable for an additional \$10.00, which sounds quite prohibitive for a less than half-page paragraph. Guyana is the third poorest country of South America (after Bolivia and Paraguay), and \$25.00 could be crippling to most Guyanese who are interested in identifying their herpetofauna and want to learn more about it. We heard from the authors that making the PDF free was not possible for copyright reasons, but that several tens of hard copies were sent to Guyana by Charles J. Cole (hereafter CJC) in order to be distributed to students, scientists, and other interested people, including ones in other countries in South America (CJC, pers. comm. to PJRK, Feb. 2013).

Amphibians and Reptiles of Guyana is printed on high quality paper and should resist some mistreatments while being carried out into the field, except maybe for the binding, which is of lower quality. The book is written in very clear English and is readily accessible even to the uninitiated, maybe except for the Key section. The number of misspellings is extremely low for such a long text.

After a two-page abstract, the book offers a 14-page introductory section, which contains four main sections, as follows: Introduction, Methods, Abbreviations of Scientific Collections Used, and Identification of Specimens. These sections provide the reader with a good overview of what the book is offering, and how to use it properly.

The introductory section is followed by a 37-page section containing dichotomous identification keys. High-quality drawings, arranged in five figures (figs. 5–9), are used to highlight characters that could be difficult to visualize for some less experienced readers. The key was extensively used in the field and in the laboratory by several of PJRK's students, and these drawings proved to be useful for those not yet acquainted with all the

terms used. In addition to the drawings, some characters are briefly described within the key (e.g., apical pits, ventral scales). This proved to be useful most of the time, but we sometimes regretted the lack of precision in the description of some characters. Ventral scales for instance are described as “wide belly scales from neck to vent,” which in our opinion is too imprecise to allow unambiguous comparisons. It would have been better to provide a drawing showing exactly how ventral scales should be counted (e.g., following the method of Dowling 1951).

Some text is added to provide the reference(s) on which a specific identification key section is based, occasionally to provide additional helpful advice to the reader. The Key section proved to be helpful, we only found a few mistakes or weak points in that part of the book:

Key step 6 (p. 332): the possession of “conspicuous toad-like parotoid glands” leads to *Atelopus spumarius*, which lacks such glands.

Key step 21a (p. 335): the possession of a “translucent to transparent belly skin in adults” leads to Centrolenidae or Allohryniidae, while this character is also shared with *Hypsiboas cinerascens* (Spix, 1824) and *H. ornattissimus* (Noble, 1923), which are in Hylidae. An additional step should have been added here to avoid confusion.

Key step 19 (p. 343), step 3 (p. 346) and step 9 (p. 347): maximum body length of adult frogs. This is obviously a useless character when only a juvenile is at hand, and this proved to be a weak point of the key in the field when used by students.

Key step 40b (p. 345) mentions “maximum adult body length 37–50 mm.” However, to reach step 40, one has to go through step 38a (p. 345) that specifies “maximum adult body length 32–42 mm.”

The Key section is followed by the largest segment of the book, the species accounts (approximately 160 pages). Seven of the 324 amphibian and reptile species reported from the country were added after completion of the text and are listed in the Appendix 1 (p. 574). We found the way each species is presented very clear and the information provided highly valuable. Each taxon account begins with the scientific name of the species, the authorship, and the number of the plate(s) illustrating the species, when available. This is followed by a few paragraphs named as follows: Type Material (which we found very handy), Distribution (global), Vouchers for Guyana (again a very useful section referring to all Guyanese material identified in collections by the authors), Coloration in Life, and sometimes an additional paragraph named Comments where the authors provide some additional information, e.g., on the taxonomic status of the species, its ecology, or its peculiar morphology.

The exotic invasive *Trachemys scripta* (Thunberg in Schoepff, 1792) is not listed for the country although the species has been reported from Guyana by Lever (2006) (see comment in Meilink et al. 2013).

At least three taxonomic rearrangements appeared before the book was published and were not followed, nor commented upon, by Cole et al. (2013). We heard from the authors that these changes actually occurred after the manuscript was finalized and going to press (CJC, pers. comm. to PJRK, 17 Jan. 2015). These rearrangements are:

The erection of a new genus, *Amazophrynella* Fouquet, Recorder, Teixeira, Cassimiro, Amaro, Camacho, Damasceno, Carnaval, Moritz, and Rodrigues, 2012, for the Amazonian species formerly in *Dendrophryniscus* Jiménez de la Espada, 1870 by Fouquet et al. (2012a, b). *Dendrophryniscus minutus* (Melin, 1941) (p. 375)

should thus have been better treated as *Amazophrynella minuta* (Melin, 1941).

The revalidation by Hedges and Conn (2012) of the genus *Copeoglossum* Tschudi, 1845 and the family Mabuyidae Mittleman, 1952, in which *C. nigropunctatum* (Spix, 1825) is placed on the basis of morphological and molecular data. The species is still treated as *Mabuya nigropunctata* (Spix, 1825) in the family Scincidae Opper, 1811 in Cole et al. (2013: 463).

The synonymization of *Bothriopsis* Peters, 1861 with *Bothrops* Wagler, 1824 by Fenwick et al. (2009), who confirmed *Bothrops* to be paraphyletic with respect to the genus *Bothriopsis*. *Bothriopsis bilineatus* (Wied-Neuwied, 1821) and *B. taeniatus* (Wagler, 1824) (p. 519) should therefore be treated as *Bothrops bilineatus* and *Bothrops taeniatus*, respectively.

We detected a few taxonomic issues that are not mentioned in the species accounts (some for the same reason explained above):

Oreophrynella dendronastes Lathrop and MacCulloch, 2007 (p. 376) was shown by Kok et al. (2012, in their suppl. info.) to likely be a synonym of *O. macconnelli* Boulenger, 1900.

Stefania ackawaio MacCulloch and Lathrop, 2002 (p. 395) was shown by Kok et al. (2012, in their suppl. info.) to likely be a synonym of *S. roraimae* Duellman and Hoogmoed, 1984. Specimens of *S. ackawaio* have apparently been misidentified with *S. roraimae* and *S. woodleyi*, as shown in the phylogenetic tree provided in Kok et al. (2012, suppl. info.).

The mention of *Stefania scalae* Rivero, 1970 (p. 398) from Guyana is based on a single specimen collected on Mount Ayan-ganna at 1550 m elevation (ROM 39470, MacCulloch and Lathrop 2002). However, Kok et al. (2012, suppl. info.) showed that ROM 39470 was misidentified, and is actually *Stefania evansi* (Boulenger, 1904). Therefore, although *Stefania scalae* is likely present in western Guyana, its actual presence in the country still needs to be confirmed.

Hypsiboas sp. (Kok and Kalamandeen 2008: 176) is not treated in the book although it is a valid taxon, even if still undescribed. *Hypsiboas* sp. could have been treated in the species accounts as the authors did with *Microcaecilia* sp., and the species should be added to the country list.

Some taxonomic changes occurred after the book was published. These mostly concern:

Allobates spumaponens Kok and Ernst, 2007 (p. 370): the species was considered a synonym of *A. sumtuosus* (Morales, 2002) by Simões et al. (2013). *Allobates spumaponens* should therefore be removed from the list of species endemic to Guyana (p. 546).

Ceuthomantis Heinicke, Duellman, Trueb, Means, MacCulloch and Hedges, 2009 and Ceuthomantidae Heinicke, Duellman, Trueb, Means, MacCulloch and Hedges, 2009 (p. 385): Padial et al. (2014a) revised the systematics of terraranas and transferred *Ceuthomantis* to Pristimantinae Ohler and Dubois, 2012 (subfamily of Craugastoridae). Shortly thereafter, Padial et al. (2014b) realized that Ceuthomantidae actually has priority over Pristimantinae. Therefore, Ceuthomantinae is the correct subfamily name for *Ceuthomantis*.

Osteocephalus cabrerai (Cochran and Goin, 1970) (p. 410): the correct name for that species in Guyana is *O. helenae* (Ruthven, 1919) as demonstrated by Jungfer et al. (2013).

"*Hyla*" *warreni* Duellman and Hoogmoed, 1992 (p. 402): this taxon belongs to the genus *Tepuihyla* as shown in Kok et al. (2012, suppl. info.) and confirmed by Jungfer et al. (2013). The correct species name is therefore *Tepuihyla warreni* (Duellman and Hoogmoed, 1992).

Osteocephalus exophthalmus Smith and Noonan, 2001 (p. 410): this taxon belongs to the genus *Tepuihyla* as shown in Jungfer et al. (2013). The correct name for that species is thus *Tepuihyla exophthalma* (Smith and Noonan, 2001).

Osteocephalus phasmatus MacCulloch and Lathrop, 2005 (p. 412): this taxon belongs to the genus *Tepuihyla* as shown in Jungfer et al. (2013), who demonstrate that it is a synonym of *Tepuihyla exophthalma* (Smith and Noonan, 2001). *Osteocephalus phasmatus* should therefore be removed from the list of species endemic to Guyana (p. 546).

Scinax trilineatus (Hoogmoed and Gorzula, 1979) (p. 417): the species was synonymized with *S. fuscomarginatus* (Lutz, 1925) by Brusquetti et al. (2014).

Tepuihyla talbergae Duellman and Yoshpa, 1996 (p. 418): the species was synonymized with *T. rodriguezii* (Rivero, 1968) by Jungfer et al. (2013). *Tepuihyla talbergae* should therefore be removed from the list of species endemic to Guyana (p. 546).

Chiasmocleis jimi Caramaschi and Cruz, 2001 (p. 430): the species is considered a synonym of *C. hudsoni* Parker, 1940 by Peloso et al. (2014).

Caecilita iwokramaie Wake and Donnelly, 2010 (p. 438): the species, originally described as lungless, was later shown to have lungs, and the genus *Caecilita* was synonymized with *Microcaecilia* Taylor, 1968 by Wilkinson et al. (2014). The correct name for that species is thus *Microcaecilia iwokramaie* (Wake and Donnelly, 2010).

Riolama leucosticta (Boulenger, 1900) (p. 457): Cole et al. (2013) emphasized that the type locality of that species is in Venezuela, not in Guyana, and that voucher specimens having localities unambiguously located in Guyana are lacking. Kok (2015) formally reports the species from Guyana based on populations from Wei-Assipu-tepui and Maringma-tepui, Cuyuni-Mazaruni District.

Pseustes sulphureus (Wagler, 1824) (p. 506): the species was re-allocated to the genus *Spilotes* by Jadin et al. (2013). The correct name for that taxon is therefore *Spilotes sulphureus* (Wagler, 1824).

Rhinobothryum Wagler, 1830 (p. 506): the genus is considered monotypic by Cole et al. (2013), who state that *R. bovallii* (Anderson, 1916) is recognized as a junior synonym of *R. lentiginosum* (Scopoli, 1788) (erroneously reported as Scopoli, 1785 in Cole et al. 2013). However, this was in error as there is no such statement in the literature (CJC, pers. comm. to PJRK, 7 January 2014).

Microcaecilia savagei Wake and Donnelly, 2013 was recently described from Iwokrama, Guyana (Donnelly and Wake 2013), and should be added to the country list. It should also be added to the list of species endemic to Guyana (p. 546).

The authors frequently refer to McDiarmid et al. (1999) for snake taxonomy and/or geographic references, it should be noted that a more recent and comprehensive publication is now available (Wallach et al. 2014).

As the title suggests, the section following the species accounts mainly deals with biogeography. That Discussion section covers 17 pages. The authors mainly discuss sampling issues (most areas having been clearly undersampled) then compare sites within Guyana, based on elevation. Seven lowland sites are compared, as well as three isolated highland sites. Lowland versus isolated highland sites are compared as well. A list of endemic species is provided on pp. 546–547. That list actually represents the species having their type locality in Guyana; some of them have much wider distributions (e.g., *Allophryne ruthveni* Gage, 1926, *Leposoma guianense* Ruibal, 1952, and *Gonatodes annularis* Boulenger, 1887, to cite a few). After a few comments

about endangered species, the section ends with a useful Summary and Conclusions paragraph, stressing that much work still needs to be done in the area.

The next section, which follows the Acknowledgments (3 pages), the Literature Cited (22 pages), and the two appendices (5 pages), covers 41 pages and comprises the color plates. The book's Abstract (p. 317) and Plate Legends (p. 580) both mention that 62% of the amphibian and reptile species known to occur in Guyana are illustrated. However, we actually counted 192 species being illustrated, which corresponds to 59.3% of the total number of species. Photographs of 15 species (4.6% of the total number of species, 7.8% of the species illustrated) are from outside Guyana, in which case the exact locality is specified. This is important because some might later prove to be distinct species. Among the 229 color figures, about 1/4 are of obviously freshly euthanized animals, and 125 are taken on a white background (54.6%) instead of natural habitat. This is never problematic, and we found the vast majority of the photographs to be of very good to sufficient quality to help with species identification. However, the authors should have specified in the plate captions when the figure illustrates a juvenile specimen. Indeed, for some species there is an ontogenetic change in coloration (as mentioned in the species accounts) and the reader could be misled by the figure, e.g., *Chironius scurrulus* (Wagler, 1824), plate 30D, p. 610 (adult color pattern shown in Starace 2014); *Mastigodryas boddaerti* (Santzen, 1796), plate 32E, p. 612 (adult color pattern illustrated in Starace 2014); *Pseustes poecilonotus* (Günther, 1858), plate 34E, p. 614 (adult color pattern shown in Starace 2014). Mentioning the page number of the corresponding species account in the figure caption would have been helpful to readers who check the color photographs first.

In many cases we found the absence of any illustration, e.g., *Dendrobates tinctorius* (Cuvier, 1797), *Ceratophrys cornuta* (Linnaeus, 1758), *Clelia clelia* (Daudin, 1803), *Siphlophis cervinus* (Laurenti, 1768), or the lack of illustration of a specimen of Guyanese origin, surprising because either it seems very unlikely that such a photograph was not available, and some of these species are already illustrated by Guyanese specimens in the literature, e.g., *Anomaloglossus praderioi* (La Marca, 1998) (not 1997 as stated by the authors), *Hyalinobatrachium taylori* (Goin, 1968), *Scinax boesemanni* (Goin, 1966) and *Oxyrhopus occipitalis* (Wagler, 1824) to cite just a few (in Kok 2010; Kok and Castroviejo-Fisher 2008; Kok and Kalamandeen 2008; MacCulloch et al. 2009, respectively). It should, therefore, have been possible to provide one. But these are rather minor criticisms, and maybe the authors were limited by space. The caption of *Phimophis guianensis* does not mention any locality; it should be Dubulay (DUB) according to the text.

To conclude, we found *Amphibians and Reptiles of Guyana* to be very well written, extremely useful, nicely illustrated, and we highly recommend it to anyone interested in the Neotropical herpetofauna.

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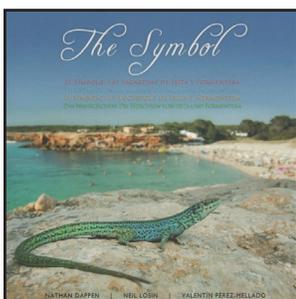
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The Symbol: Wall Lizards of Ibiza and Formentera

Nathan Dappen, Neil Losin, and Valentin Pérez-Mellado. 2013. Day's Edge Productions (www.daysedgeproductions.com/the_symbol/). Softcover. 128 pp. US \$19.99.



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The Symbol is a small, four-language book (Spanish, English, Italian, German) that sings the praises of the Ibizan Wall Lizard (*Podarcis pityusensis*). While perhaps not a household

name in America, this attractive lacertid is indeed emblematic of the islands of the Pityusic Archipelago (in the western Balearic Islands of Spain), of which Ibiza is the largest and most well-known. In addition to being conspicuous throughout the archipelago, it is the only native, non-volant vertebrate in the archipelago.

The book is beautifully illustrated by many images of this photogenic lizard and its equally attractive habitat. That the lizard is indeed a symbol of the islands is attested by photos of many lizard logos on everything from tee-shirts to shops to tattoos (although many seem to depict geckos!). In addition to nice portrait shots, there are wonderful images of male/male combat, copulation, as well as feeding (on everything, including plant material).

The text is quite short, as it needs to be given that it must be repeated in four languages (in four columns spread across facing pages). Some basic information about lizards in general is provided, but the majority of the book is devoted to *P. pityusensis*. The information is mostly relatively elementary and is organized by questions, the first of which is “What is the current classification of the species?” The geological backdrop to the evolution of the lizard is provided as is basic taxonomic information. Although subspecies are not widely accepted in North American herpetology today, they remain in use in Europe and are a legacy of both different ways of thinking about what a species is and of the in-depth study of a relatively limited fauna. The Pityusic wall lizard has had 45 subspecific forms named—the majority of which were described by German herpetologists, 23 of which are now generally recognized and listed in this book. The occurrence of these on the various islands in the group, most of which are tiny and cluster around Ibiza or the smaller Formentera, is shown on a map, although the island names are not given. At least five of the forms are illustrated, including the especially colorful lizards of Es Vedrà, with bright blue flanks and orange-yellow backs. In some cases the lizards are named, but in others one must guess or at least consult a map to see which species are on which island. The book is clearly not meant for systematists, but more for those wishing to appreciate the lizard they saw while living it up during Ibiza's raucous high season.

Other sections of the book treat thermoregulation, habitat, seasonal activity, communication, aggression, and reproduction. Some useful information is provided, but some questions, like “do these lizards have multiple clutches per year?” that might occur to readers are not addressed. There is a moderately extensive discussion of the role of color in sexual selection and the ontogeny of color, as one would expect with such extravagantly hued lizards. The book advocates for the conservation of these lizards, which are considered vulnerable. This might seem to be contradicted by the statement that the lizards occur at densities of thousands per hectare. However, the overall small area occupied by the species, and especially by the subspecies, if these are treated as separate conservation units, is the explanation for their conservation status.

In general the information provided is accurate and clearly presented. However, it is stated that male lizards (in general) are almost always larger than females (p. 28), whereas Fitch (1981) found that females were as large or larger than males in 36% of the 408 lizard taxa he considered. My only other minor quibbles are that the term “hemipene” is used in place of hemipenis (p. 28) and that the date of description of the focal species is variously given as 1883 (p. 46) and 1884 (p. 48)—it is actually 1883.

The book closes with a two-page spread of short biographies