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Spiders (Arachnida: Araneae) of Saba Island, Lesser Antilles: Unusually high species richness indicates the Caribbean Biodiversity Hotspot is woefully undersampled

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Abstract. Saba Island (Caribbean Netherlands) is one of the northernmost islands of the Lesser Antilles. It is only 13 square kilometers but contains a wide variety of potential spider habitats including dry, moist, and elfin forests. As part of a collaborative effort between Conservation International and Saba Conservation Foundation, during a several week period in March and May 2008 we briefly surveyed the island for spiders and other arthropods. This survey, the first for spiders of Saba, resulted in the identification of 18 families and 76 spider species, including six new species that will be described elsewhere and may be endemic to Saba. The species richness of Saba's spider fauna is considerably higher than that reported from other small Caribbean islands. We conclude this is probably a combined result of undersampling and lower habitat diversity on these other islands.

Keywords. Araneae, Biodiversity Hotspot, Caribbean, Species list.

Introduction

Saba Island (17°38'N, 63°14'W) is one of the northernmost volcanic islands among the Lesser Antilles island arc chain. Geologically the island has undergone many periods of volcanic activity and lava flows followed by dense revegetation (Defant et al. 2001) since its presumed origin above sea level sometime between 500,000 and 10,000 years ago (Westermann and Kiel 1961). With relevance to the island's biogeographic history, Saba was never connected to any extant island but was possibly connected to a large island, now submerged, four kilometers to the southwest known as the Saba Bank (Westermann 1957). Although small (13 km^2), Saba has a variety of plant communities including subtropical dry-forest scrub, moist forest, palm breaks, and elfin woodland (Stoffers 1956). The center of the island is a volcanic cone, Mt. Scenery, reaching 877 m in elevation, and characterized by steep hillsides, bluffs and narrow valleys. The rugged topography of the island has limited human expansion, although an airport and dock now exist. No previously published records for spiders could be located for Saba although the island has had its larger organisms such as plants and vertebrates, and some invertebrates inventoried (Rojer 1997 and citations therein).

Saba is found within what has been defined as the Caribbean Island Hotspot (CIH) (Smith et al. 2005). This area, which includes the Bahamas, the Greater Antilles, and the Lesser Antilles, shows high levels of endemism for the available surface area in many of the taxa occurring on the islands. Remarkably high endemism in the CIH has been found in the reptiles (468 of 499 species are endemic) and amphibians (162 of 164 species are endemic) (Smith et al. 2005). High species' extinctions in the hotspot are mainly due to western-style developments and agriculture, as well as from the introduction of invasive species. It is estimated that 36 vertebrate species have gone extinct in the area since 1500 A.D. (Smith et al. 2005).

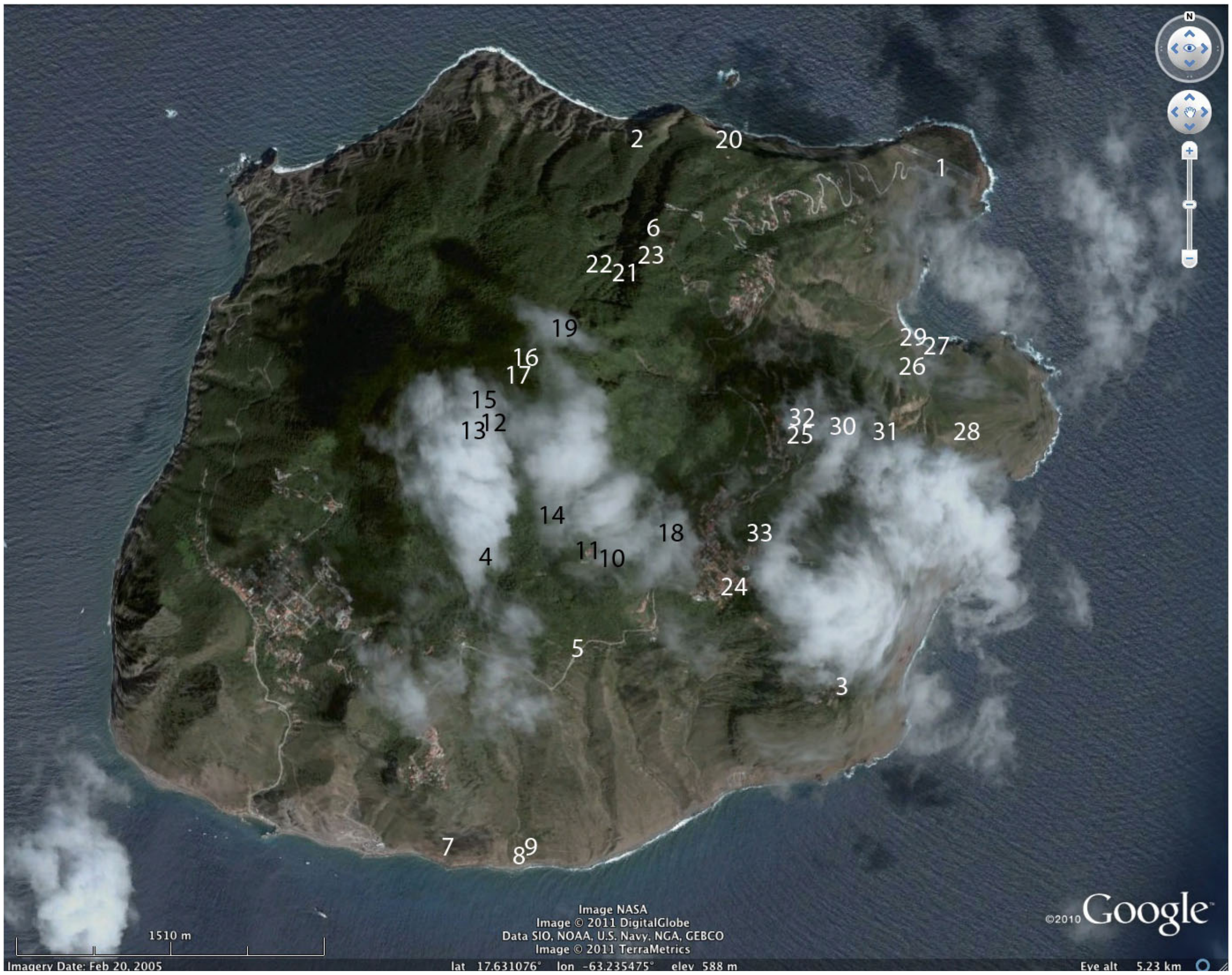

Figure 1. Saba Island (17°38'N, 63°14'W), Lesser Antilles. Thirty-three collection sites mapped using Google Earth. Numbers correspond to sites listed in Table 1.

Methods

Specimens were collected from 33 sites in 11 macrohabitats (Fig. 1, Table 1) primarily from 9-16 March 2008. Various collection methods were employed, these included sweep net, beat sheet, pitfall trap (10 cm diam.), flight intercept trap, blacklight, and hand collecting at night with the aid of a headlamp. Sampling effort involved, on average, 6-8 hours per day of active collection. Sweep net and beat sheet effort was not recorded and varied depending on the habitat of the collection site. Transects were also not employed, rather, collections were made within a 20 m area of the recorded location. Night collecting was limited to close proximity of roadways for easy access.

Spiders were collected primarily by the first author. Pitfall traps were allowed to remain active for a period of three weeks and were collected by the second author during 18-26 May 2008. Additional specimens were collected by Gary Alpert who surveyed ants, Piotr Naskrecki who targeted orthopteroids, and Michael Ivie who, along with the second author, focused on beetles. Vouchers of ants and orthopteroids are deposited in the Museum of Comparative Zoology, Harvard University, and beetles are in the WIBF (West Indies Beetle Fauna Collection) Montana State University. Spiders were collected in 75% ethanol, transferred to 95% propylene glycol for travel, then rinsed and returned to 75% ethanol. Identifications were made primarily by the first author using the Denver Museum of Nature and Science arachnological collection. Additional identifications were made by Darrell Ubick (California Academy of Sciences), Dr. Herb Levi (Harvard University, retired), Dr. Sarah Crews (University of California), and Dr. G. B.

Table 1. Collection locations of spider specimens on Saba Island (17°38'N, 63°14'W), Lesser Antilles. Geocoordinates obtained via a Garmin GPS unit in the field under the WGS 84 Datum with errors ranging from 20m to 100m. Macrohabitat data taken from flora classification map by Stoffers (1956).

Site	Location	N	W	elev. (m)	macrohabitat
1	Airport	17.6446	63.2206	33	*Croton* thickets (dry evergreen)
2	All too Long and North Coast Trail Jct	17.6449	63.2346	191	woodland derived from seasonal forest
3	Below Windwardside	17.6232	63.2267	359	woodland derived from seasonal forest
4	Bud's Hill Trail, Past Ecolodge	17.6282	63.2404	449	woodland derived from seasonal forest
5	Dancing Place Trailhead	17.6245	63.2371	291	*Croton* thickets (dry evergreen)
6	E. Trailhead Sandy Cruz Trail	17.6401	63.2341	463	secondary rainforest
7	Giles Quarter Trail, ~1km up	17.6151	63.2432	13	*Croton* thickets (dry evergreen)
8	Giles Quarter Trail, ~2km up	17.6143	63.2401	0	woodland derived from dry evergreen forest
9	Giles Quarter Trail, ~2km up	17.6150	63.2397	4	*Croton* thickets (dry evergreen)
10	Maskehome Trail	17.6283	63.2357	507	woodland derived from seasonal forest
11	Mt. Road, Mt Scenery Parking	17.6284	63.2365	481	woodland derived from seasonal forest
12	Mt. Scenery and Bud's Hill Trail Jct	17.6327	63.2398	671	tree-fern brake
13	Mt. Scenery and Bud's Hill Trail Jct	17.6327	63.2400	684	tree-fern brake
14	Mt. Scenery Trail	17.6297	63.2379	574	woodland derived from seasonal forest
15	Mt. Scenery Trail	17.6334	63.2397	760	tree-fern brake
16	Mt. Scenery Trail	17.6343	63.2385	819	palm brake / elfin woodlands
17	Mt. Scenery Trail, low pt nr top	17.6344	63.2385	775	elfin woodlands
18	Mt. Scenery Trailhead	17.6289	63.2334	341	woodland derived from seasonal forest
19	Mt. Scenery, NW Peak	17.6355	63.2372	828	elfin woodlands
20	North Coast Sulfur Mine Trailhead	17.6445	63.2309	224	woodland derived from seasonal forest
21	Sandy Cruz Trail, ~1km	17.6380	63.2353	500	secondary rainforest
22	Sandy Cruz Trail, ~2km	17.6383	63.2361	535	secondary rainforest
23	Sandy Cruz Trailhead area	17.6389	63.2343	470	secondary rainforest
24	Scout's Place, Windwardside	17.6270	63.2310	342	woodland derived from seasonal forest
25	Spring Bay	17.6333	63.2281	311	woodland derived from dry evergreen forest
26	Spring Bay	17.6359	63.2220	40	*Croton* thickets (dry evergreen)
27	Spring Bay	17.6370	63.2210	0	beach
28	Spring Bay and Old Boobie Hill Jct	17.6330	63.2200	63	woodland derived from seasonal forest
29	Spring Bay beach	17.6374	63.2213	0	beach
30	Spring Bay Trail, ~1.5km in	17.6329	63.2260	193	woodland derived from dry evergreen forest
31	Trail to Spring Bay, ~2km in	17.6330	63.2240	191	woodland derived from dry evergreen forest
32	Trail to Spring Bay, Trailhead	17.6330	63.2280	311	woodland derived from dry evergreen forest
33	Windwardside	17.6289	63.2300	350	woodland derived from seasonal forest

Edwards (Florida Division of Plant Industry). Arachnid specimens from this study have been deposited in the Florida State Collection of Arthropods under the curation of Dr. G. B. Edwards.

Results

In all, 286 spiders were collected from 18 families, representing 76 species (see 'Records' below). Of these, six are undescribed, and 27 could only be identified to generic or family level. Records are sorted alphabetically by family. Location of collection on Saba is also noted (Fig. 1, Table 1). Nomenclature follows the World Spider Catalog Version 11.5 (Platnick 2011).

Discussion

Caribbean spider diversity is poorly known. This survey identified six new species but many more new species may exist because revisionary work on many Caribbean genera has not been undertaken. Moreover, taxonomic expertise does not exist for many genera found in this survey, resulting in identifications being limited at the generic or family level. One possible cause of this high number of unidentifiable specimens may be due to the possible endemic nature of some Caribbean spider genera (Crews et al. 2009, Crews and Gillespie 2010, Huber et al. 2010). This endemicity may be responsible for the four unidentifiable species of *Modisimus* Simon 1893 (Pholcidae), six of *Thymoites* Keyserling 1884 and two of

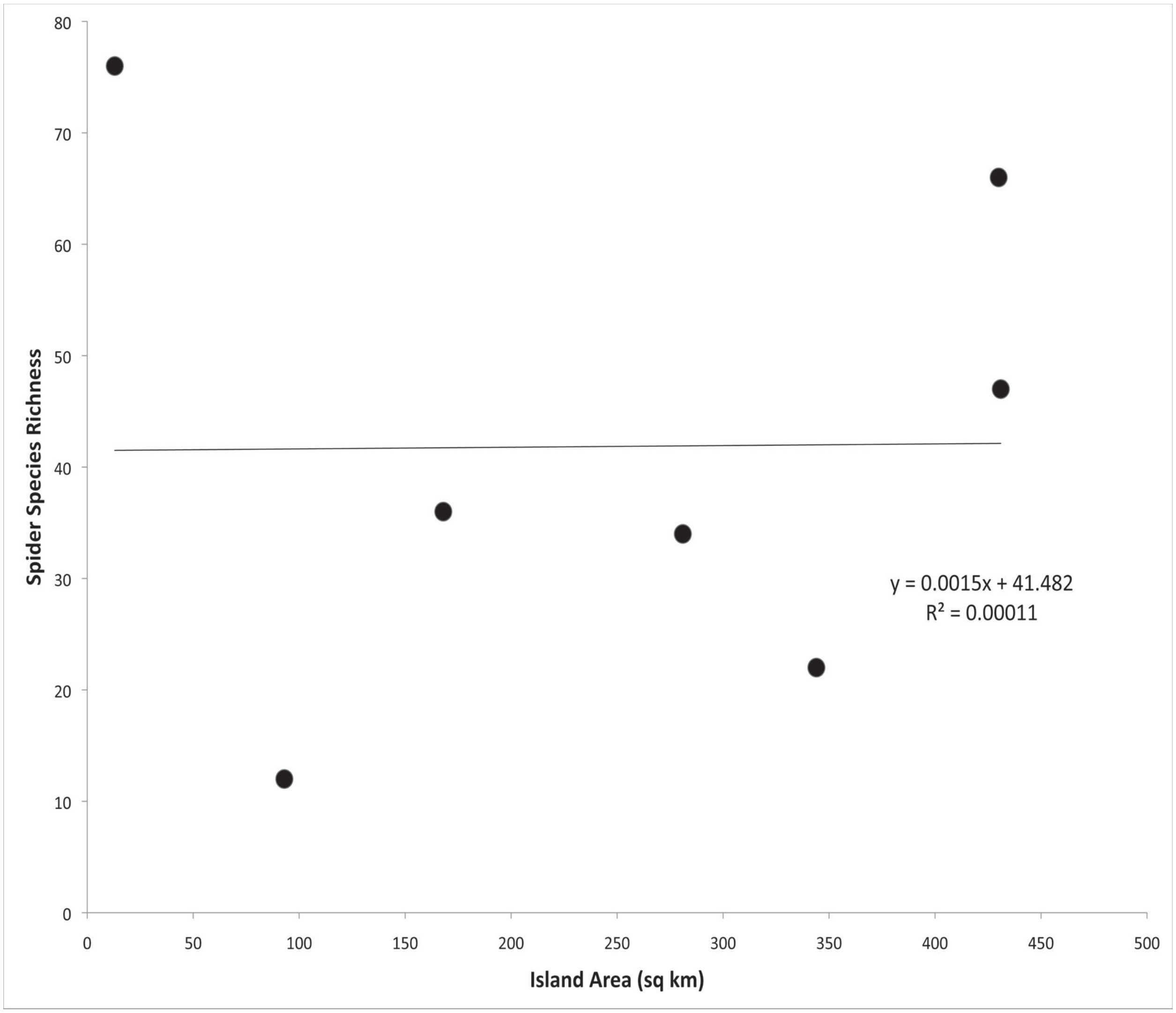

Figure 2. Spider species richness by island area showing dramatic undersampling of most islands and lack of expected positive species-area relationship. Islands are ordered by size from smaller to larger as follows: Saba, Nevis, St. Kitts, Antigua, Grenada, Turks and Caicos, Barbados. See text for data sources.

Styposis Simon 1894 (both Theridiidae). It is interesting to note that several forms of well revised genera, *Tetragnatha* Latreille 1804 (Tetragnathidae)*, Misumenops* F. O. Pickard-Cambridge 1900*, Tmarus* Simon 1875 (both Thomsidae)*,* and *Eustala* Simon 1895(Araneidae), could not be identified and may also be new species. *Heteroonops saba* Platnick and DuPérré (2010) is the first new species to be described from specimens of this survey as part of a Planetary Biodiversity Inventory project focused on goblin spiders (Oonopidae). Additional new species listed as such in this paper will be described in subsequent publications.

Recent surveys of smaller Caribbean islands over similar short periods of time have resulted in far fewer numbers of species being collected [Nevis, 93 km^2, 12 species (Sewlal and Starr 2007); St. Kitts, 168 km^2, 36 species (Sewlal 2008); Grenada, 344 km^2, 22 species (Sewlal 2009a); Antigua, 281 km^2, 34 species (Sewlal 2009b); Barbados, 431 km^2, 47 species (Alayon-Garcia and Horrocks 2004); Turks and Caicos, 430 km^2, 66 species (S. Crews unpublished data)]. The observation that species richness increases with area sampled has been called one of the few laws of ecology (Rosenzweig 1995, Tjørve 2003, Sizling and Storch 2004). The higher number of species (76) listed from Saba, a mere 13 km^2 (Fig. 2), may be explained by greater collecting effort, and most likely, more diverse habitats being located in closer proximity to each other, allowing for relatively more extensive sampling per unit time. These results are far fewer than the potential diversity of species on larger Caribbean islands [Cuba, 602 species (Alayón-Garcia 1995)] or island chains [St. Vincent and the Grenadines, 181 species (de Silva et al. 2006)].

The slope of the species-area line (Fig. 2) suggests little to no relationship between species richness and area for these islands. This resembles the "small island effect" noticed by earlier workers and explained by Brown and Lomolino (1998) and Lomolino (2000). This effect describes a lack of relationship between size and species numbers for the smallest of areas sampled due to richness being more strongly driven by factors other than area, such as habitat characteristics, disturbance (e.g. volcanism), patch shape, and degree of isolation (Lomolino 2000). However, we argue that undersampling on other islands and relatively high habitat diversity on Saba are probably the dominant factors in this case.

A remote and intriguing possibility exists that Saba might have far more species than predicted by island biogeographic theory for an island of its size and isolation, as a result of its possible former association with the now submerged, and much larger, Saba Bank. This land mass is ~2,200 km^2, about 4 km to the southeast of Saba (Etnoyer et al. 2010), and was an island until about 5,000 years ago (Van der Land 1977). However, until all the small islands in the region have had their spider faunas more thoroughly sampled it is premature to attribute our results to the Saba Bank.

Conclusion

This preliminary survey has provided some information as to the potential diversity found on Saba and the surrounding islands. This information is useful in conservation planning for not only invertebrates but all members of the island's ecosystems. Arthropods comprise the majority of any ecosystem's animal biodiversity. Knowing the diversity provides managers with information that allows for habitat distinction and the assessment of overall ecosystem health (Kremen et al. 1993). Nowhere is this more important than in biodiversity hotspots. Conservation efforts in these areas should make use of all available data ensuring correctly allocated efforts (Myers et al. 2000). That other islands' spider counts are far lower per unit area than Saba indicates survey efforts should be substantially increased throughout the Caribbean Biodiversity Hotspot. A solid understanding of the species area relationships for these islands would enable managers to predict richness for incompletely sampled islands and predict extinctions as habitable island area is reduced. This approach has already been undertaken with the beetle fauna of the Lesser Antilles (Peck 2009) based on the relatively thorough sampling of Montserrat by Ivie et al. (2008).

Acknowledgments

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Literature Cited

Alayón-Garcia, G. 1995. Lista de las arañas (Arachnida: Araneae) de Cuba. Cocuyo 4: 16-26.

Alayón-Garcia, G., and J. A. Horrocks. 2004. An annotated check-list of the spiders (Araneae) of Barbados. Journal of the Barbados Museum and Historical Society 50: 1-8.

Brown, J. H., and M. V. Lomolino. 1998. Biogeography. Sinauer Associates, Inc.; Massachusetts. 158 p.

Crews, S. C., and R. G. Gillespie. 2010. Molecular systematics of *Selenops* spiders (Araneae: Selenopidae) from North and Central America: implications for Caribbean biogeography. Biological Journal of the Linnean Society 101: 288-322.

Crews, S. C., A. R. Puente-Rolón, E. Rutstein, and R. G. Gillespie. 2009. A comparison of populations of island and adjacent mainland species of Caribbean *Selenops* (Araneae: Selenopidae) spiders. Molecular Phylogenetics and Evolution 54: 970-983.

Defant, M. J., S. Sherman, R. C. Maury, H. Bellon, J. de Boer, J. Davidson, and P. Kepezhinskas. 2001. The geology, petrology, and petrogensis of Saba Island, Lesser Antilles. Journal of Volcanology and Geothermal Research 107: 87-111.

Etnoyer, P. J., H. H. Wirshing, and J. A. Sánchez. 2010. Rapid assessment of octocoral diversity and habitat on Saba Bank, Netherlands Antilles. PLoS ONE 5(5): 1-9 e10668. doi:10.1371/journal.pone.0010668

Huber, B. A., N. Fischer, and J. J. Astrin. 2010. High level of endemism in Haiti's last remaining forests: a revision of *Modisimus* (Araneae: Pholcidae) on Hispaniola, using morphology and molecules. Zoological Journal of the Linnean Society 158: 244-299.

Ivie, M. A., K. A. Marske, I. A. Foley, K. A. Guerrero, and L. L. Ivie. 2008. Invertebrates of the Centre Hills and Montserrat, with an emphasis on beetles. p. 56-89. *In*: R. P. Young (ed.). A biodiversity assessment of the Centre Hills, Montserrat. Durrell Conservation Monograph no. 1. Durrell Wildlife Conservation Trust; Jersey, Channel Islands. 319 p. Available from: http://www.kew.org/science/directory/projects/annex/Durrell_Cons_Monogra.pdf (Last accessed 8 April 2011)

Kremen, C., R. K. Colwell, T. L. Erwin, D. D. Murphy, R. F. Noss, and M.A. Sanjayan. 1993. Terrestrial arthropod assemblages – their use in conservation planning. Conservation Biology 7: 796–808.

Lomolino, M. V. 2000. Ecology's most general, yet protean pattern: the species-area relationship. Journal of Biogeography 27: 17-26.

Myers, N., R. A. Mittermeier, C. G. Mittermeier, G. A. B. da Fonseca, and J. Kent. 2000. Biodiversity hotspots for conservation priorities. Nature 403: 853–858.

Peck, S. B. 2009. Beetle species diversity in the Lesser Antilles islands: How many species are really there? Insecta Mundi 0078: 1-5.

Platnick, N. 2011. The world spider catalog, Version 11.5. American Museum of Natural History; New York. http://research.amnh.org/entomology/spiders/catalog/index.html. (Last accessed 2 April 2011)

Platnick, N., and N. Dupérré. 2010. The goblin spider genera *Stenoonops* and *Australoonops* (Araneae, Oonopidae), with notes on related taxa. Bulletin of the American Museum of Natural History 340: 1-111.

Rojer, A. 1997. Biological inventory of Saba. Unpubl. report 96-10. Carmabi Foundation; Curaçao, Netherlands Antilles. http://www.mina.vomil.an/Pubs/RojerSaba-index.html (Last accessed 4 January 2011)

Rosenzweig, M. L. 1995. Species diversity in space and time. Cambridge University Press; New York. 460 p.

Sewlal, J. N. 2008. Preliminary survey for spiders on St. Kitts, West Indies with comparative notes on Nevis. Living World: Journal of the Trinidad Tobago Field Naturalist Club 2008: 66-69.

Sewlal, J. N. 2009a. Preliminary survey for spiders on Grenada, West Indies. Living World: Journal of the Trinidad Tobago Field Naturalist Club 2009: 37-39.

Sewlal, J. N. 2009b. Preliminary survey for spiders on Antigua, West Indies. The College of the Bahamas Research Journal 15: 8-11.

Sewlal, J. N., and C. K. Starr. 2007. Preliminary survey for spiders on Nevis, West Indies. Living World: Journal of the Trinidad Tobago Field Naturalist Club 2007: 86-87.

de Silva, M., J. A. Horrocks, and G. Alayón. 2006. The spiders and their relatives of St. Vincent and the Grenadines. Mayreau Environmental Development Organization; Mayreau Island, St. Vincent and the Grenadines. 129 p.

Smith, M. L., S. B. Hedges, W. Buck, A. Hemphill, S. Inchaustegui, M. Ivie, D. Martina, M. Maunder, and J. F. Ortega. 2005. Caribbean Islands. p. 112-118. *In*: R. A. Mittermeier, P. R. Gil, M. Hoffman, J. Pilgrim, T. Brooks, C. G. Mittermeier, J. Lamoreux, and G. A. B. da Fonseca (eds.). Hotspots revisited: Earth's biologically richest and most endangered terrestrial ecoregions. CEMEX; Mexico City. 392p.

Sizling, A. L., and D. Storch. 2004. Power-law species–area relationships and self-similar species distributions within finite areas. Ecology Letters 7: 60–68.

Stoffers, A.L. 1956. Studies on the Flora of Curacao and other Caribbean Islands Vol. I. The vegetation of the Netherlands Antilles. Utrecht. Naturwetenschappelijke Studiekring voor Suriname en de Nederlandse Antillen 15: 1-142.

Tjørve, E. 2003. Shapes and functions of species–area curves: a review of possible models. Journal of Biogeography 30: 827–835.

Van der Land, J. 1977. The Saba Bank – A large atoll in the northeastern Caribbean. FAO Fisheries Report 200: 469-481.

Westermann, J. H. 1957. De Geologische Geschiedenis der drie Bovenwindse eilanden St. Martin, Saba en St. Eustatius. Natuurwetensch. Werkgroep Nederlandse Antillen. 7: 127-168.

Westermann, J. H., and H. Kiel. 1961. The geology of Saba and St. Eustatius, with notes on the geology of St. Kitts, Nevis and Montserrat (Lesser Antilles). Utrecht, Uitgaven van de Natuurwetenschappelijke Studierkring voor Suriname en de Nederlandse Antillen 24: 1-175.

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APPENDIX - Records

All specimens were identified by J. Slowik except as noted below. Numbers correspond to collection sites listed in Table 1 and Figure 1.

Anyphiidae

Hibana tenuis (L. Koch) 7, 20, 27, 28, 31

Araneidae

Argiope argentata (Fabricius) 28
Cyclosa caroli (Hentz) 10, 11, 18, 32
Cyclosa walckenaeri (O. P-Cambridge) 30, 31, 32
Eustala sp. – det. H. Levi 4, 11, 18, 23, 25, 32
Gasteracantha cancriformis (Linneaus) 2, 5, 30, 25
Metepeira labrinthea (Hentz) 32

Corinnidae

Erendira sp. – det. D. Ubick 13, 15, 17

Dictynidae

Thallumetis new sp. 2

Gnaphosidae

Camillina elegans (Bryant) 1
Camillina nevis Platnick and Shadab 31

Hahniidae

Hahnia naguaboi (Lehtinen) 13

Linyphiidae

Agyneta sp.1 16
Agyneta sp.2 12
Linyphiidae sp.1 17
Linyphiidae sp.2 17
Oaphantes sp.1 17

Lycosidae

Arctosa fusca (Keyserling) 31

Ochyroceridae
Ochyrocera new sp.1 .... 4, 17, 18
Ochyrocera new sp.2 .... 13, 16, 18, 23, 31

Oonopidae
Heteroonops saba Platnick and Dupérré – det. D. Ubick 12, 13, 31
Opopaea sp. 31
Scaphiella agocena Chickering – det. D. Ubick 31
Stenoonops nitens Bryant – det. D. Ubick 25, 31, 32
Stenoonops sp. – det. D. Ubick 2, 31
Triaeris stenaspis Simon – det. D. Ubick 12

Pholcidae
Modisimus montanus Petrunkevitch 10, 13, 17, 32
Modisimus sp.1 .... 13, 18, 17, 31, 32
Modisimus sp.2 .... 18, 32
Modisimus sp.3 21
Modisimus sp.4 8

Salticidae
Anicius sp. – det. G. Edwards 2
Beata octopunctata (Peckham and Peckham) – det. G. Edwards 31
Corythalia banksi Roewer – det. G. Edwards 26
Eris flava (Peckham and Peckham) – det. G. Edwards 20
Hentzia whitcombi Richman – det. G. Edwards 9, 28, 31
Hentzia antillana Bryant – det. G. Edwards 4, 6, 19
Hentzia sp. – det. G. Edwards 6
Jollas new sp. – det. G. Edwards 8
Lyssomanes portoricensis Petrunkevitch – det. G. Edwards 2, 22
Synemosyna ankeli Cutler and Miller – det. G. Edwards 17

Scytodidae
Scytodes dissimulans Petrunkevitch 5, 7, 18, 31, 33
Scytodes longipes Lucas 13, 14, 21

Selenopidae
Selenops new sp. – det. S. Crews 7, 8

Sparassidae
Olios bicolor Banks 28

Tetragnathidae
Agriognatha simoni Bryant 17
Alcimosphenus licinus Simon 32
Chrysometa eugeni Levi 11, 22
Homalometa nigritarsis Simon 20, 32
Leucauge regnyi Simon 2, 10, 11, 13, 18, 21, 22, 23, 25, 32
Leucauge sp. 13
Tetragnatha earmra Levi 32
Tetragnatha sp. 6, 10, 22, 23, 30

Theridiidae
Achaearanea porteri (Banks) 32

Thomisidae