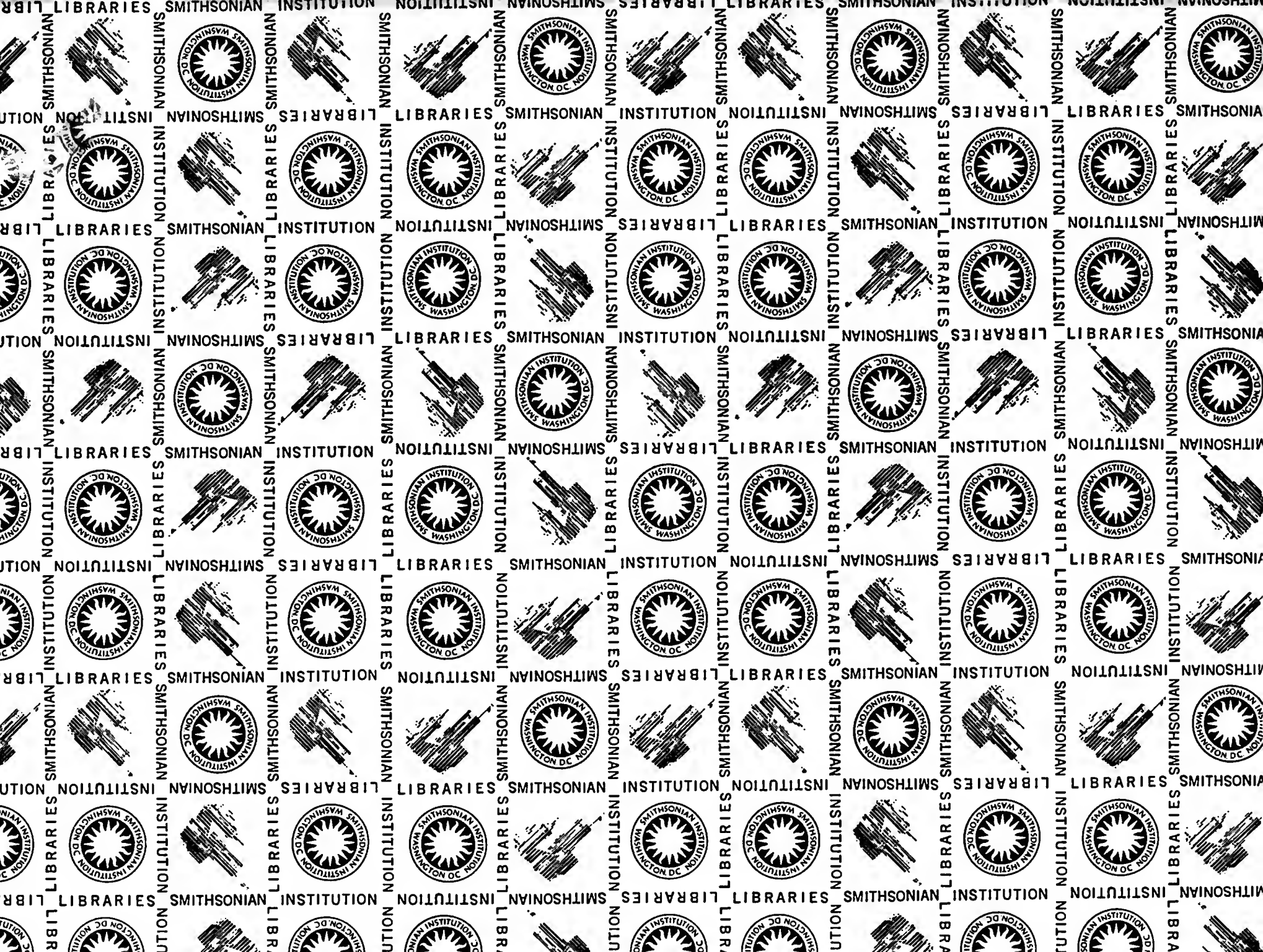
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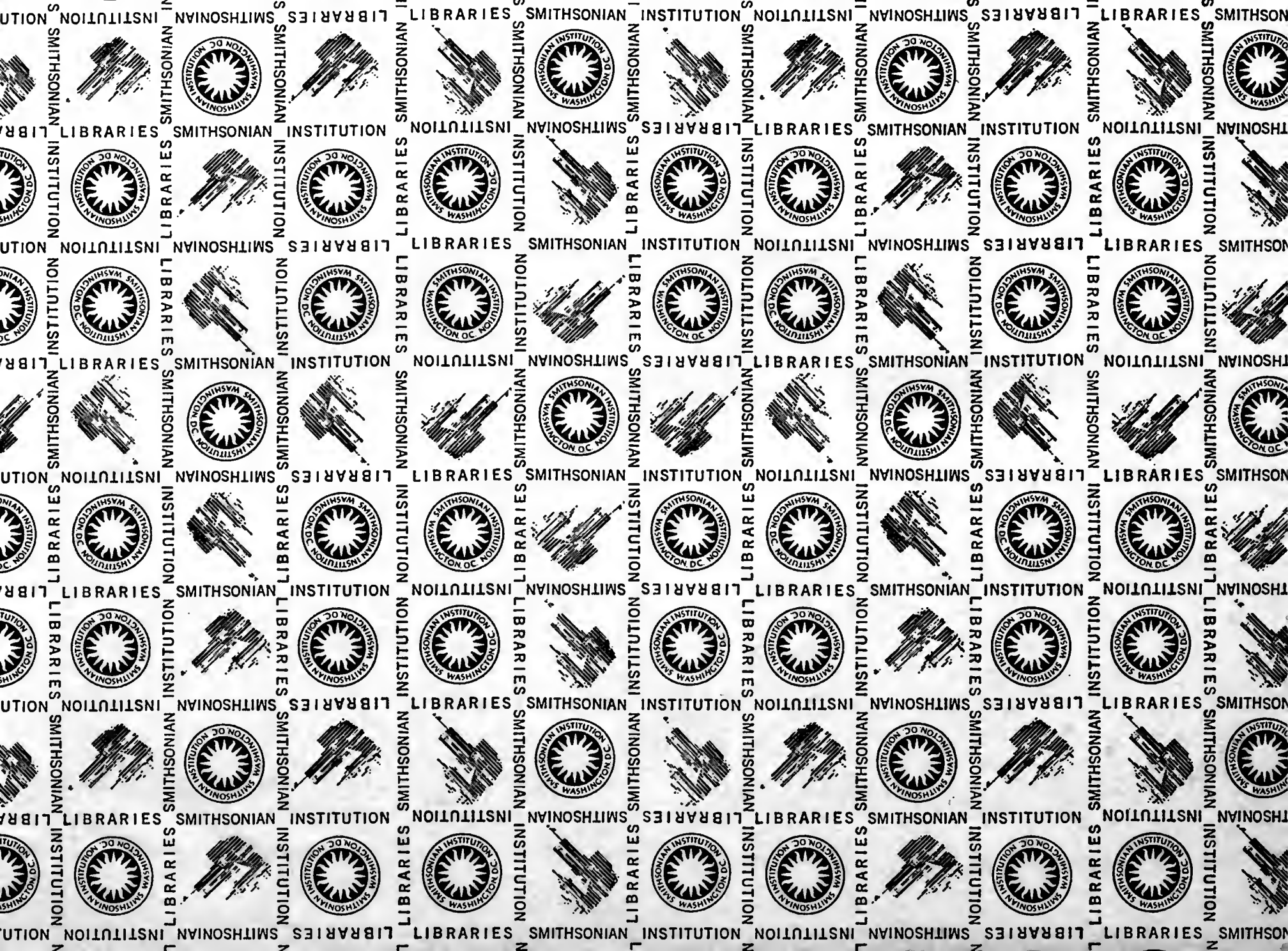
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SUPPLEMENT TO THE LITERATURE FOR THE "AMPHIBIANS AND REPTILES OF TEXAS" 1987

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SMITHSONIAN
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INTRODUCTION

Approximately 675 new literature citations are included for Texas species of amphibians and reptiles since Dixon's "Amphibians and Reptiles of Texas" in 1987. I have surveyed these publications for their content and the Texas species they include. Fossil citations are appended at the end of the species accounts under the general term "Fossil Literature". The literature citations below each species account consists of a series of coded numbers. These numbers refer to articles that are referenced in the "literature cited" section following the species accounts. The numbers are sequential and the author citations alphabetical. If I have not included an article concerning Texas amphibians and reptiles that you are aware of, please send the reference to me.

Several name changes have been proposed for amphibian and reptile species occurring in Texas since the publication of "Amphibians and Reptiles of Texas" in 1987. I have included these changes. I have retained the "old" name in parentheses, preceding the current proposed name.

I am also aware that some name changes have not been accepted by the herpetological community. Some of these changes are based on the evolutionary species concept, rather than the biological species concept. Perhaps Smith and Smith (1993) have the most appropriate solution, I quote.. ""in summary, then, populational individuality of given magnitude, both genetic and phyletic, is a prerequisite for taxonomic recognition at either specific or subspecific levels; reproductive integrity is required, in addition, for recognition at the species level. Since both species and subspecies are involved in application of biological and phyletic criteria of taxonomic validity, we suggest the term "biophyletic taxonomic concept" as a compromising alternative to the terms "biological" or "evolutionary" species concepts that are too readily interpreted as conflicting rather than complimentary."".

SPECIES ACCOUNTS

Order CAUDATA (SALAMANDERS)

Siren intermedia lesser siren
0231.010, 0340.050, 0622.208, 0625.404, 0626.510, 0718.100, 0718.105.

Ambystoma maculatum spotted salamander
0231.010, 0454.338, 0718.100, 0718.105, 1072.125.

Ambystoma opacum marbled salamander

0231.010, 0718.100, 0718.105, 1072.125

Ambystoma talpoideum mole salamander
0231.010, 0340.050, 0718.100, 0718.105, 1072.125

Ambystoma texanum smallmouth salamander
0198.605, 0216.610, 0231.010, 0622.260, 0718.100, 0718.105, 0732.117, 0802.311.

Ambystoma tigrinum tiger salamander
0231.010, 0458.500, 0495.085, 0522.200, 0529.550, 0611.115, 0626.510, 0718.100, 0718.105, 0720.232, 0720.233.

Amphiuma tridactylum three-toed amphiuma
0231.010, 0626.510, 0718.100, 0718.105.

Desmognathus auriculatus southern dusky salamander
0231.010, 0718.100, 0718.105

Eurycea latitans Cascade Caverns salamander
0231.010, 0340.050, 0718.100. 0718.105, 0746.307.

Eurycea nana San Marcos salamander
0231.010, 0312.141, 0340.050, 0391.002, 0718.100, 0718.105, 0746.307.

Eurycea neotenes Texas salamander
0231.010, 0312.141, 0391.002, 0622.123, 0622.170, 0718.100, 0718.105, 0746.307.

Eurycea quadridigitata dwarf salamander
0231.010, 0312.141, 0391.002, 0718.100, 0718.105, 1072.125.

Eurycea tridentifera Blanco blind salamander
0231.010, 0312.141, 0340.050, 0718.100, 0718.105, 0746.307.

Eurycea troglodytes Valdina Farms salamander
0231.010, 0312.141, 0391.002, 0718.100, 0718.015.

(Typhlomolge) Eurycea rathbuni Texas blind salamander
0059.430, 0231.010, 0312.141, 0391.002, 0718.100, 0718.105, 0746.307.

(Typhlomolge) Eurycea robusta Comal blind salamander
0231.010, 0312.141, 0340.050, 0391.002, 0718.100, 0718.105.

Plethodon glutinosus slimy salamander
0231.010, 0312.141, 0391.002, 0481.002, 0611.130, 0718.100, 0718.105.

Necturus beyeri Gulf Coast waterdog
0231.010, 0312.141, 0391.002, 0718.100, 0718.105.

Notophthalmus meridionalis black-spotted newt
0231.010, 0312.141, 0340.050, 0391.002, 0718.100, 0718.105, 0784.020.

Notophthalmus viridescens red-spotted newt
0231.010, 0312.141, 0391.002, 0718.100, 0718.105.

Order SALIENTIA (FROGS AND TOADS)

Rhinophrynus dorsalis Mexican burrowing toad
0231.010, 0312.141, 0340.050, 0391.002, 0718.100, 0718.105.

Scaphiopus bombifrons Plains spadefoot
0231.010, 0312.141, 0391.002, 0611.115, 0718.100, 0718.105, 1081.175.

Scaphiopus couchii Couch's spadefoot
0231.010, 0312.141, 0391.002, 0611.115, 0626.510, 0707.100, 0707.101, 0707.102, 0718.100, 0718.105, 0747.141, 1081.175.

Scaphiopus holbrookii eastern spadefoot
0205.002, 0231.010, 0312.141, 0391.002, 0718.100, 0718.105, 0860.030, 1072.125.

Scaphiopus multiplicatus New Mexico spadefoot
0231.010, 0312.141, 0391.002, 0602.516, 0718.100, 0718.105.

(Hylactophryne) Eleutherodactylus augusti barking frog
0231.010, 0312.141, 0391.002, 0718.100, 0718.105, 0720.233.

Leptodactylus (fragilis) labialis white-lipped frog
0231.010, 0312.141, 0430.050, 0391.002, 0718.100, 0718.105.

(Syrrhophus) Eleutherodactylus cystignathoides
Rio Grande chirping frog
0049.100, 0139.650, 0231.010, 0312.141, 0340.050, 0391.002, 0470.010, 0622.171, 0718.100, 0718.105.

(Syrrhophus) Eleutherodactylus guttilatus spotted chirping frog
0231.010, 0312.141, 0340.050, 0391.002, 0626.510, 0718.100, 0718.105.

(Syrrhophus) Eleutherodactylus marnockii Cliff chirping frog
0231.010, 0312.141, 0391.002, 0718.100, 0718.105, 0720.232, 0720.233, 0860.030.

Acris crepitans northern cricket frog
0231.010, 0312.141, 0391.002, 0602.514, 0622.150, 0718.100, 0718.105, 0720.232, 0791.045, 0791.055, 0791.056, 1048.541, 1050.165, 1072.125.

Hyla chrysoscelis Cope's gray treefrog
0231.010, 0312.141, 0391.002, 0718.100, 0718.105, 1072.125.

Hyla cinerea green treefrog
0056.100, 0222.005, 0321.010, 0312.141, 0391.002, 0718.100, 0718.105, 0786.100, 0860.030.

(Hyla) Pseudacris crucifer spring peeper
0231.010, 0312.141, 0391.002, 0626.510, 0718.100, 0718.105, 1072.125.

Hyla squirella squirrel treefrog
0231.010, 0312.141, 0391.002, 0718.100, 0718.105, 0780.050.

Hyla versicolor gray treefrog
0231.010, 0312.141, 0391.002, 0617.510, 0718.100, 0718.105, 0786.215.

Pseudacris clarkii spotted chorus frog
0231.010, 0312.141, 0391.002, 0622.150, 0718.100, 0718.105, 0732.115, 0802.311.

Pseudacris streckeri Strecker's chorus frog
0231.010, 0312.141, 0391.002, 0622.112, 0622.150, 0626.510, 0699.301, 0718.100, 0718.105, 0860.030.

Pseudacris triseriata striped chorus frog
0231.010, 0312.141, 0391.002, 0718.100, 0718.105, 0732.730, 1072.125.

Smilisca baudinii Mexican treefrog
0231.010, 0312.141, 0340.050, 0391.002, 0718.100, 0718.105.

Bufo americanus American toad
0231.010, 0312.141, 0391.002, 0718.100, 0718.105, 0797.101.

Bufo cognatus Great Plains toad
0231.010, 0312.141, 0384.210, 0391.002, 0573.501, 0602.512, 0611.115, 0718.100, 0718.105, 0720.239.

Bufo debilis green toad
0231.010, 0312.141, 0391.002, 0611.115, 0622.150, 0622.180, 0718.100, 0718.105, 1040.200.

Bufo houstonensis Houston toad
0231.010, 0312.141, 0340.050, 0384.264, 0391.002, 0622.150, 0718.100, 0718.105, 0725.401, 0746.308, 0797.101.

Bufo marinus giant toad
0231.010, 0312.141, 0340.050, 0391.002, 0718.100, 0718.105.

Bufo punctatus red-spotted toad
0231.010, 0312.141, 0391.002, 0611.115, 0626.510, 0718.100, 0718.105, 0802.311.

Bufo speciosus Texas toad
0231.010, 0312.141, 0391.002, 0611.115, 0718.100, 0718.105, 0720.238.

Bufo valliceps Gulf Coast toad
0205.002, 0231.010, 0312.141, 0384.262, 0391.002, 0622.150, 0718.100, 0718.105, 0732.105, 0780.050, 0791.050, 0797.101, 1040.200, 1048.548, 1072.125.

Bufo (woodhousii) velatus east Texas toad
0231.010, 0312.141, 0391.002, 0718.100, 0718.105, 0797.101.

Bufo woodhousii Woodhouse's toad
0056.100, 0204.318, 0205.002, 0216.631, 0231.010, 0384.210, 0391.002, 0602.514, 0602.515, 0622.150, 0718.100, 0718.105, 0780.050, 0791.050, 0797.101, 0974.501, 0974.502, 1040.200, 1072.125.

Rana areolata crawfish frog
0231.010, 0312.141, 0391.002, 0626.510, 0718.100, 0718.105.

Rana berlandieri Rio Grande leopard frog
0231.010, 0312.141, 0384.210, 0391.002, 0611.115, 0622.150, 0718.100, 0718.105, 0732.710, 1040.200

Rana blairi Plains leopard frog
0170.361, 0231.010, 0312.141, 0391.002, 0529.550, 0622.150, 0718.100, 0718.105, 0720.238, 1040.200.

Rana catesbeiana bullfrog
0231.010, 0312.141, 0384.210, 0391.002, 0432.012, 0611.115, 0622.150, 0625.401, 0625.403, 0625.404, 0626.510, 0718.100, 0718.105, 1072.125.

Rana clamitans green frog
0231.010, 0312.141, 0391.002, 0432.011, 0718.100, 0718.105, 0789.300, 1072.125.

Rana grylio pig frog

0231.010, 0312.141, 0391.002, 0718.100, 0718.105, 0780.050.

Rana palustris pickerel frog
0231.010, 0312.141, 0391.002, 0718.100, 0718.105.

Rana pipiens northern leopard frog
0231.010, 0312.141, 0391.002, 0611.115, 0718.100, 0718.105, 0720.232, 0720.238.

Rana sphenocephala southern leopard frog
0231.010, 0312.141, 0391.002, 0622.150, 0718.100, 0718.105, 0720.238, 0780.051, 0789.300, 1040.200, 0172.125.

Gastrophryne carolinensis eastern narrowmouth frog
0231.010, 0312.141, 0391.002, 0626.510, 0718.100, 0718.105, 0780.050, 1072.125.

Gastrophryne olivacea Great Plains narrowmouth frog
0231.010, 0312.141, 0391.002, 0611.115, 0622.150, 0622.261, 0718.100, 0718.105, 0802.311, 1040.200.

Hypopachus variolosus sheep frog
0231.010, 0312.141, 0340.050, 0391.002, 0718.100, 0718.105.

Orders CROCODYLIA and TESTUDINES

ALLIGATORS AND TURTLES

Alligator mississippiensis American alligator
0231.010, 0312.141, 0340.050, 0391.002, 0528.100, 0545.710, 0622.266, 0625.403, 0625.404, 0718.100, 0718.105, 0822.041, 0860.030, 1050.169, 1050.501, 1063.520, 1063.540.

Chelydra serpentina common snapping turtle
0231.010, 0312.141, 0391.002, 0399.205, 0510.535, 0573.516, 0622.188, 0624.401, 0626.510, 0681.180, 0718.100, 0718.105, 0860.030, 1046.050. 1050.169.

Macroclemys temmincki alligator snapping turtle
0231.010, 0312.141, 0340.050, 0391.002, 0510.535, 0681.180, 0718.100, 0718.105, 0746.501, 1050.169.

Kinosternon flavescens yellow mud turtle
0205.002, 0231.010, 0312.141, 0391.002, 0495.085, 0510.533, 0510.533, 0545.535, 0545.710,

0573.510, 0602.511, 0611.115, 0622.264, 0622.277, 0718.100, 0718.105, 0720.238, 0786.334, 1042.181, 1046.050, 1050.169.

Kinosternon hirtipes Mexican mud turtle
0231.010, 0312.141, 0340.050, 0391.002, 0510.533, 0510.535, 0545.710, 0718.100, 0718.105, 1050.169.

Kinosternon subrubrum eastern mud turtle
0231.010, 0312.141, 0391.002, 0510.533, 0510.535, 0545.710, 0625.401, 0625.403, 0718.100, 0718.105, 1046.050, 1050.169.

Sternotherus carinatus razorback musk turtle
0231.010, 0312.141, 0355.700, 0391.002, 0432.010, 0510.533, 0545.710, 0626.510, 0718.100, 0718.105, 1042.181, 1050.169. 1100.080.

Sternotherus odoratus stinkpot
0222.005, 0231.010, 0312.141, 0391.002, 0510.533, 0545.710, 0625.403, 0625.404, 0718.100, 0718.105, 1046.050, 1100.080.

Chrysemys picta painted turtle
0231.010, 0312.141, 0391.002, 0510.535, 0718.100, 0718.105, 1050.169.

Deirochelys reticularia chicken turtle
0231.010, 0312.141, 0391.002, 0480.305, 0510.535, 0545.710, 0718.100, 0718.105, 1050.169.

Graptemys caglei Cagle's map turtle
0231.010, 0312.141, 0391.002, 0510.535, 0545.606, 0545.607, 0545.608, 0545.710, 0622.277, 0718.100, 0718.105, 1046.050, 1050.169.

Graptemys kohnii Mississippi map turtle
0231.010, 0312.141, 0391.002, 0510.535, 0626.510, 0718.100, 0718.105, 1050.169.

Graptemys pseudogeographica false map turtle
0231.010, 0312.141, 0391.002, 0462.200, 0510.535, 0545.710, 0718.100, 0718.105, 1050.169.

Graptemys versa Texas map turtle
0205.002, 0231.010, 0312.141, 0391.002, 0510.535, 0545.710, 0548.020, 0622.277, 0632.005, 0718.100, 0718.105, 1050.169.

Malaclemys terrapin diamondback terrapin
0231.010, 0312.141, 0340.050, 0391.002, 0510.535, 0718.100, 0718.105, 1050.169.

Pseudemys concinna river cooter
0205.002, 0231.010, 0312.141, 0391.002, 0480.306, 0510.535, 0625.401, 0626.510, 0718.100,

0718.105, 1050.169.

Pseudemys texana Texas river cooter
0149.308, 0205.002, 0231.010, 0312.141, 0353.915, 0391.002, 0510.535, 0545.605, 0622.200, 0622.264, 0622.267, 0626.510, 1042.181, 1046.050, 1050.169.

Terrapene carolina eastern box turtle
0205.002, 0231.010 0312.141, 0353.826, 0384.210, 0388.800, 0391.002, 0495.085, 0510.535, 0545.710, 0622.264, 0625.401, 0718.100, 0718.105, 1046.050, 1050.169, 1072.125.

Terrapene ornata ornate box turtle
0205.002, 0231.010, 0312.141, 0391.002, 0510.532, 0510.535, 0611.115, 0622.263, 0625.401, 0626.510, 0718.100, 0718.105, 0786.340, 0860.030, 1046.050, 1050.169, 1072.125.

Trachemys gaigeae Big Bend slider
0231.010, 0312.141, 0353.503, 0391.002, 0510.535, 0718.100, 0718.105, 1050.169.

Trachemys scripta slider
0060.180, 0149.200, 0205.002, 0231.010, 0312.141, 0391.002, 0509.230, 0510.535, 0522.200, 0545.710, 0602.100, 0611.115, 0622.160, 0622.262, 0622.264, 0622.277, 0625.401, 0625.403, 0625.404, 0626.510, 0718.100, 0718.105, 0720.232, 1046.050, 1050.169.

Gopherus berlandieri Texas tortoise
0198.400, 0231.010, 0312.141, 0391.002, 0510.535, 0529.461, 0545.710, 0602.530, 0714.141, 0718.100, 0718.105, 0786.340, 1046.050, 1050.169.

(Trionyx muticus) Apalone mutica smooth softshell
0231.010, 0312.141, 0391.002, 0510.535, 0545.710, 0718.100, 0718.105, 1050.169, 1061.122.

(Trionyx spiniferus) Apalone spinifera spiny softshell
0205.002, 0231.010, 0312.141, 0391.002, 0510.535, 0622.129, 0622.264, 0622.280, 0625.401, 0718.100, 0718.105, 0720.232, 1046.050, 1050.169, 1061.122.

Caretta caretta loggerhead sea turtle
0005.210, 0205.002, 0231.010, 0312.141, 0315.201, 0510.535, 0585.210, 0718.100, 0718.105, 1050.169, 1071.800.

Chelonia mydas green sea turtle
0005.210, 0231.010, 0312.141, 0340.050, 0391.002, 0510.535, 0718.100, 0718.105, 0819.005, 1050.169, 1071.800.

Eretmochelys imbricata hawksbill sea turtle
0231.010, 0312.141, 0340.050, 0391.002, 0510.535, 0718.100, 0718.105, 1050.169, 1071.800.

Lepidochelys kempii Kemp's ridley sea turtle
0004.005, 0005.210, 0204.050, 0204.053, 0205.002, 0231.010, 0312.141, 0375.985, 0391.002, 0510.535, 0545.220, 0545.825, 0573.680, 0602.150, 0718.100, 0718.105, 0819.020, 1050.169, 1071.800, 1072.165, 1084.160.

Dermochelys coriacea leatherback sea turtle
0005.210, 0231.010, 0312.141, 0340.050, 0391.002, 0718.100, 0718.105, 1050.169, 1071.800.

Order SQUAMATA

LIZARDS

Coleonyx brevis Texas banded gecko
0231.010, 0296.121, 0296.400, 0312.141, 0391.002, 0434.150, 0498.228, 0611.115, 0718.100, 0718.105, 1046.050, 1050.169.

Coleonyx reticulatus reticulated gecko
0231.010, 0296.121, 0296.400, 0312.141, 0391.002, 0434.150, 0522.200, 0718.100, 0718.105, 1050.169.

(Cyrtodactylus scaber) Cyrtopodion scabrum rough-scaled gecko
0231.010, 0312.141, 0391.002, 0622.175, 0718.100, 0718.105, 1050.169.

Hemidactylus turcicus Mediterranean gecko
0113.710, 0204.080, 0216.281, 0231.010, 0312.141, 0391.002, 0498.228, 0622.275, 0718.100, 0718.105, 0722.015, 0780.050, 0786.050, 0802.311, 0817.001, 0817.002, 0817.003, 0817.004, 1040.230, 1040.235, 1046.050, 1050.169.

Anolis carolinensis green anole
0231.010, 0312.141, 0391.002, 0393.080, 0532.220, 0714.160, 0718.100, 0718.105, 0780.050, 0860.030, 1042.184, 1046.050, 1050.169, 1072.125.

Anolis sagrei brown anole
0231.010, 0312.141, 0391.002, 0545.806, 0718.100, 0718.105, 1050.169.

Cophosaurus texanus greater earless lizard
0026.179, 0231.010, 0312.141, 0391.002, 0393.080, 0495.615, 0532.001, 0611.115, 0622.115, 0718.100, 0718.105, 0736.500, 1046.050, 1050.169, 1072.115.

Crotaphytus collaris collared lizard
0026.177, 0149.110, 0204.318, 0205.002, 0231.010, 0312.141, 0384.210, 0391.002, 0393.080, 0522.200, 0611.115, 0622.109, 0718.100, 0718.105, 0736.500, 0860.030, 1046.050, 1050.169.

Crotaphytus reticulatus reticulated collared lizard
0026.178, 0231.010, 0312.141, 0391.002, 0495.085, 0522.200, 0714.160, 0718.100, 0718.105, 1050.169.

Ctenosaura pectinata western spiny-tailed iguana
0231.010, 0312.141, 0391.002, 0718.100, 0718.105, 1050.169

Gambelia wislizenii leopard lizard
0231.010, 0312.141, 0391.002, 0611.115, 0718.100, 0718.105, 1050.169

Holbrookia lacerata spot-tailed earless lizard
0149.300, 0231.010, 0312.141, 0391.002, 0718.100, 0718.105, 1046.050, 1050.169.

Holbrookia maculata lesser earless lizard
0231.010, 0312.141, 0391.002, 0611.115, 0718.100, 0718.105, 0736.500, 1050.169.

Holbrookia propinqua keeled earless lizard
0000.010, 0231.010, 0233.401, 0233.402, 0233.425, 0233.426, 0233.501, 0312.141, 0391.002, 0714.160, 0718.100, 0718.105, 1046.050, 1050.169.

Phrynosoma cornutum Texas horned lizard
0149.110, 0231.010, 0312.141, 0391.002, 0611.115, 0622.110, 0625.403, 0714.160, 0718.100, 0718.105, 0720.233, 0723.100, 0736.500, 0746.306, 0819.501, 1046.050, 1050.169.

Phrynosoma douglassii short-horned lizard
0231.010, 0312.141, 0391.002, 0611.115, 0718.100, 0718.105, 0819.501, 1050.169.

Phrynosoma modestum roundtail horned lizard
0026.175, 0231.010, 0312.141, 0391.002, 0611.115, 0718.100, 0718.105, 0819.501, 1050.169.

Sceloporus (cyanogenys) serrifer blue spiny lizard
0026.171, 0205.002, 0231.010, 0312.141, 0391.002, 0714.142, 0714.160, 0718.100, 0718.105, 1050.16

Sceloporus graciosus sagebrush lizard
0026.174, 0231.010, 0312.141, 0391.002, 0611.115, 0718.100, 0718.105, 0820.225, 1050.169.

Sceloporus grammicus mesquite lizard
0026.176, 0231.010, 0312.141, 0391.002, 0439.210, 0714.160, 0718.100, 0718.105, 0820.235, 1050.169.

Sceloporus magister desert spiny lizard
0026.180, 0231.010, 0312.141, 0391.002, 0522.200, 0611.115, 0718.100, 0718.105, 1050.169.

Sceloporus merriami canyon lizard

0059.610, 0231.010, 0312.141, 0323.238, 0391.002, 0427.190, 0427.200, 0427.201, 0498.220, 0498.225, 0622.122, 0643.515, 0708.300, 0718.100, 0718.105, 0789.150, 1050.169.

Sceloporus olivaceus Texas spiny lizard
0026.181, 0149.110, 0198.605, 0205.002, 0231.010, 0312.141, 0391.002, 0495.085, 0522.200, 0532.001, 0609.400, 0622.115, 0622.117, 0626.510, 0643.515, 0718.100, 0718.105, 0860.011, 1046.050, 1050.169.

Sceloporus poinsettii crevice spiny lizard
0026.172, 0149.110, 0205.002, 0231.010, 0312.141, 0391.002, 0522.200, 0611.115, 0714.160, 0718.100, 0718.105, 1046.050, 1050.169.

Sceloporus undulatus eastern fence lizard
0149.110, 0218.100, 0231.010, 0233.420, 0312.141, 0391.002, 0393.080, 0495.085, 0609.400, 0622.122, 0663.515, 0714.160, 0718.100, 0718.105, 0860.010, 0860.011, 1046.050, 1050.169, 1072.125.

Sceloporus variabilis rosebelly lizard
0026.173, 0231.010, 0312.141, 0391.002, 0714.160, 0718.100, 0718.105, 1046.050, 1050.169.

Urosaurus ornatus tree lizard
0231.010, 0312.141, 0391.002, 0718.100, 0718.105, 1046.050, 1050.169.

Uta stansburiana side-blotched lizard
0231.010, 0312.141, 0359.210, 0391.002, 0611.115, 0718.100, 0718.105, 1050.169.

Eumeces anthracinus coal skink
0231.010, 0312.141, 0391.002, 0718.100, 0718.105, 1050.169, 1072.125.

Eumeces fasciatus five-lined skink
0231.010, 0312.141, 0391.002, 0393.080, 0495.085, 0718.100, 0718.105, 0720.232, 0780.050, 1040.240, 1050.169, 1072.125.

Eumeces laticeps broadhead skink
0231.010, 0233.403, 0312.141, 0391.002, 0718.100, 0718.105, 0802.311, 1050.169, 1072.125.

Eumeces multivirgatus many-lined skink
0231.010, 0312.141, 0391.002, 0622.236, 0718.100, 0718.105, 1050.169.

Eumeces obsoletus Great Plains skink
0231.010, 0312.141, 0391.002, 0391.007, 0393.080, 0480.300, 0495.085, 0611.115, 0626.510, 0718.100, 0718.105, 1046.050, 1050.169.

Eumeces septentrionalis prairie skink

0231.010, 0312.141, 0391.002, 0622.114, 0718.100, 0718.105, 0860.030, 1042.181, 1046.050, 1050.169.

Eumeces tetragrammus four-lined skink
0231.010, 0312.141, 0391.002, 0393.080, 0532.400, 0588.371, 0718.100, 0718.105, 1046.050, 1050.169.

Scincella lateralis ground skink
0198.605, 0231.010, 0312.141, 0391.002, 0718.100, 0718.105, 0780.050, 1040.240, 1046.050, 1050.169, 1072.125.

Cnemidophorus dixoni gray-checkered whiptail
0231.010, 0312.141, 0391.002, 0622.156, 0622.233, 0718.100, 0718.105, 0746.305, 0860.030, 1049.245, 1050.169.

Cnemidophorus exsanguis Chihuahuan spotted whiptail
0231.010, 0293.875, 0312.141, 0391.002, 0611.115, 0622.121, 0718.100, 0718.105, 0822.031, 0968.100, 1050.169.

Cnemidophorus gularis Texas spotted whiptail
0149.110, 0231.010, 0257.190, 0312.141, 0388.805, 0388.810, 0391.002, 0487.610, 0622.113, 0622.122, 0622.156, 0622.220, 0622.230, 0718.100, 0718.105, 0721.045, 0721.050, 0822.031, 1027.251, 1042.181, 1046.050, 1049.201, 1049.202, 1049.203, 1049.210, 1049.213, 1049.214, 1049.225, 1049.226, 1049.230, 1049.234, 1049.250, 1050.169, 1072.100.

Cnemidophorus inornatus little striped whiptail
0231.010, 0233.175, 0259.500, 0312.141, 0391.002, 0611.115, 0622.122, 0622.156, 0718.100, 0718.105, 1050.169, 1072.100.

Cnemidophorus laredoensis Laredo striped whiptail
0231.010, 0293.875, 0312.141, 0391.002, 0622.118, 0622.122, 0718.100, 0718.105, 0721.040, 0721.045, 0721.050, 0721.051, 1049.201, 1049.202, 1049.203, 1049.210, 1049.213, 1049.214, 1049.226, 1049.230, 1049.234, 1049.250, 1050.169.

Cnemidophorus (marmoratus) tigris western whiptail
0231.010, 0312.141, 0391.002, 0473.431, 0473.432, 0611.115, 0622.118, 0622.122, 0622.156, 0622.233, 0718.100, 0718.105, 0721.050, 0816.121, 1042.195, 1049.195, 1049.230, 1050.169.

Cnemidophorus neomexicanus New Mexico whiptail
0223.175, 0231.010, 0257.191, 0257.210, 0312.141, 0391.002, 0611.115, 0622.120, 0718.100, 0718.105, 1050.169.

Cnemidophorus septemvittatus plateau spotted whiptail
0223.175, 0231.010, 0257.190, 0312.141, 0391.002, 0622.122, 0622.156, 0622.233, 0718.100,

0718.105, 0816.121, 1050.169.

Cnemidophorus sexlineatus six-lined racerunner
0223.175, 0231.010, 0257.175, 0312.141, 0391.002, 0622.122, 0622.136, 0622.233, 0718.100, 0718.105, 0721.050, 0802.311, 0860.030, 1027.252, 1046.050, 1049.202, 1049.203, 1049.215, 1049.226, 1050.169, 1072.115, 1072.125.

Cnemidophorus tesselatus Colorado checkered whiptail
0231.010, 0293.875, 0312.141, 0391.002, 0611.115, 0622.118, 0622.122, 0622.156, 0622.190, 0622.233, 0718.100, 0718.105, 0746.305, 0816.121, 1050.169, 1072.100.

Cnemidophorus uniparens desert grassland whiptail
0231.010, 0259.500, 0293.875, 0312.141, 0391.002, 0611.115, 0718.100, 0718.105, 1050.169.

Gerrhonotus liocephalus Texas alligator lizard
0149.110, 0205.008, 0231.010, 0257.200, 0312.141, 0391.002, 0393.080, 0426.250, 0532.001, 0622.128, 0718.100, 0718.105, 0720.233, 1046.050, 1050.169.

Ophisaurus attenuatus slender glass lizard
0231.010, 0312.141, 0391.002, 0393.080, 0480.301, 0718.100, 0718.105, 0720.238, 0860.030, 1042.181, 1046.050, 1050.169.

SNAKES

Leptotyphlops dulcis Texas blind snake
0052.500, 0149.110, 0198.605, 0231.010, 0312.141, 0393.080, 0394.005, 0564.089, 0626.510, 0718.100, 0718.105, 1040.202, 1046.100, 1050.169.

Leptotyphlops humilis western blind snake
0137.010, 0231.010, 0312.141, 0718.100, 0718.105, 1050.169.

Arizona elegans glossy snake
0204.318, 0205.002, 0231.010, 0312.141, 0315.270, 0377.270, 0522.200, 0626.510, 0718.100, 0718.105, 0720.233, 0720.237, 1046.100, 1050.169.

Carphophis amoenus worm snake
0231.010, 0312.141, 0718.100, 0718.105, 1050.169.

Cemophora coccinea scarlet snake
0231.010, 0312.141, 0377.130, 0626.510, 0718.100, 0718.105, 0860.030, 1050.169.

Coluber constrictor racer

0204.318, 0231.010, 0312.141, 0372.005, 0377.130, 0377.135, 0529.550, 0625.402, 0625.404, 0718.100, 0718.105, 0720.237, 0720.238, 0802.421, 1040.202, 1046.100, 1050.169, 1072.125.

Coniophanes imperialis black-striped snake
0231.010, 0312.141, 0718.100, 0718.105, 1050.169.

Diadophis punctatus ringneck snake
0231.010, 0312.141, 0393.080, 0480.307, 0718.100, 0718.105, 0720.237, 1046.100, 1050.169.

Drymarchon corais indigo snake
0231.010, 0312.141, 0718.100, 0718.105, 1046.100, 1050.169.

Drymobius margaritiferus speckled racer
0231.010, 0312.141, 0718.100, 0718.105, 1050.169.

Elaphe bairdi Baird's rat snake
0231.010, 0312.141, 0522.200, 0579.215, 0718.100, 0718.105, 1046.100, 1050.169.

Elaphe guttata corn snake
0222.005, 0231.010, 0312.141, 0393.080, 0495.085, 0522.200, 0529.550, 0622.111, 0622.126, 0718.100, 0718.105, 0720.233, 0720.237, 0720.238, 1040.202, 1046.100, 1050.169.

Elaphe obsoleta rat snake
0149.110, 0204.318, 0231,010, 0312.141, 0377.125, 0377.135, 0384.261, 0393.080, 0522.200, 0529.550, 0579.215, 0625.401, 0625.403, 0626.510, 0643.520, 0718.100, 0718.105, 0720.233, 0720.238, 0780.050, 0789.305, 0860.030, 1040.202, 1046.100, 1050.169, 1072.125.

(Elaphe) Bogertophis subocularis Trans-Pecos rat snake
0231.010, 0312.141, 0319.101, 0532.001, 0532.002, 0611.115, 0718.100, 0718.105, 0720.237, 0746.480, 1050.169.

Farancia abacura mud snake
0231.010, 0312.141, 0377.135, 0625.402, 0625.403, 0625.404, 0626.510, 0718.100, 0718.105, 1050.169.

Ficimia streckeri Mexican hooknose snake
0231.010, 0312.141, 0454.331, 0718.100, 0718.105, 1050.169.

Gyalopion canum western hooknose snake
0137.010, 0231.010, 0312.141, 0718.100, 0718.105, 0720.237, 1050.169.

Heterodon nasicus western hognose snake
0222.005, 0231.010, 0312.141, 0377.135, 0529.550, 0718.100, 0718.105, 0720.232, 0720.238, 1046.100, 1050.169.

Heterodon platyrhinos eastern hognose snake
0026.170, 0149.110, 0231.010, 0312.141, 0377.130, 0377.135, 0625.402, 0625.403, 0718.100, 0718.105, 0780.050, 1040.202, 1046.100, 1050.169, 1072.125.

Hypsiglena torquata night snake
0231.010, 0312.141, 0312.180, 0393.080, 0480.310, 0718.100, 0718.105, 0720.237, 1040.202, 1046.100, 1050.169.

Lampropeltis alterna gray-banded kingsnake
0231.010, 0312.141, 0522.200, 0718.100, 07618.105, 1050.169.

Lampropeltis calligaster prairie kingsnake
0204.318, 0231.010, 0312.141, 0384.210, 0480.302, 0529.550, 0564.090, 0718.100, 0718.105, 0860.030, 1040.202, 1046.100, 1050.169, 1072.125.

Lampropeltis getulus common kingsnake
0204.318, 0205.002, 0231.010, 0312.141, 0315.271, 0495.085, 0522.200, 0529.550, 0625.401, 0625.403, 0718.100, 0718.105, 0720.233, 0720.237, 0720.238, 0816.350, 1040.202, 1046.100, 1050.169, 1072.125.

Lampropeltis triangulum milk snake
0216.632, 0231.010, 0312.141, 0391.005, 0495.085, 0522.200, 0529.550, 0622.297, 0718.100, 0718.105, 0720.231, 0720.233, 0720.237, 1046.100, 1050.169.

Leptodeira septentrionalis cat-eyed snake
0231.010, 0312.141, 0718.100, 0718.105, 1050.169.

Masticophis flagellum coachwhip
0149.110, 0204.318, 0205.002, 0231.010, 0232.200, 0312.141, 0315.250, 0377.130, 0377.135, 0393.080, 0522.200, 0529.550, 0622.154, 0625.401, 0625.402, 0625.403, 0625.404, 0687.505, 0718.100, 0718.105, 0720.237, 0736.500, 0977.435, 1040.202, 1046.100, 1050.169, 1072.125.

Masticophis taeniatus striped whipsnake
0149.110, 0205.002, 0231.010, 0312.141, 0393.080, 0626.510, 0718.100, 0718.105, 0720.237, 1046.100, 1050.169.

Nerodia cyclopion green water snake
0231.010, 0312.141, 0718.100, 0718.105, 1050.169.

Nerodia erythrogaster plainbelly water snake
0231.010, 0312.141, 0377.130, 0377.135, 0529.550, 0579.210, 0622.265, 0625.401, 0626.510, 0630.002, 0718.100, 0718.105, 0720.232, 0720.237, 0780.050, 1042.181, 1046.100, 1050.169, 1072.125.

Nerodia fasciata southern water snake
0231.010, 0312.141, 0377.130, 0377.135, 0495.085, 0579.210, 0579.217, 0718.100, 0718.105, 0860.030, 1050.169.

Neroodia harteri Harter's water snake
0231.010, 0312.141, 0315.272, 0340.050, 0579.210, 0616.260, 0622.265, 0718.100, 0718.195, 0786.330, 0786.350, 0813.490, 0820.200, 0878.100, 1040.235, 1050.169.

Nerodia rhombifer diamondback water snake
0149.110, 0231.010, 0312.141, 0315.261, 0377.125, 0377.130, 0480.303, 0625.401, 0718.100, 0718.105, 1050.169.

Nerodia sipedon northern water snake
0231.010, 0312.141, 0718.100, 0718.105, 1050.169.

Opheodrys aestivus rough green snake
0149.110, 0231.010, 0312.141, 0377.125, 0377.130, 0377.135, 0480.308, 0718.100, 0718.105, 0720.237, 0802.311, 2040.202, 1042.182, 1046.100, 1050.169, 1072.125.

Opheodrys vernalis smooth green snake
0231.010, 0312.141, 0438.101, 0718.100, 0718.105, 1050.169.

Pituophis melanoleucus bullsnake
0204.318, 0205.002, 0231,010, 0312.141, 0384.210, 0393.080, 0522.200, 0532.001, 0605.800, 0605.803, 0718.100, 0718.105, 0720.233, 0720.237, 0720.238, 0976.260, 1040.202, 1046.100, 1050.169.

Regina grahamii Graham's crayfish snake
0231.010, 0312.141, 0626.510, 0718.100, 0718.105, 1046.100, 1050.169.

Regina rigida glossy crayfish snake
0231.010, 0312.141, 0377.135, 0718.100, 0718.105, 1050.169.

Rhinocheilus lecontei longnose snake
0231.010, 0312.141, 0393.080, 0522.200, 0718.100, 0718.105, 1050.169.

Salvadora deserticola Big Bend patchnose snake
0231.010, 0312.141, 0718.100, 0718.105, 1050.169.

Salvadora grahamiae mountain patchnose snake
0149.110, 0198.605, 0231.010, 0312.141, 0718.100, 0718.105, 1040.202, 1050.169.

Sonora semiannulata ground snake
0149.110, 0231.010, 0312.141, 0393.080, 0622.235, 0626.510, 0718.100, 0718.105, 1040.202,

1046.100, 1050.169.

Storeria dekayi brown snake
0205.001, 0231.010, 0257.150, 0312.141, 0377.130, 0377.135, 0625.404, 0718.100, 0718.105, 1040.202, 1046.100, 1050.169.

Storeria occipitomaculata redbelly snake
0231.010, 0312.141, 0377.130, 0377.135, 0718.100, 0718.105, 1050.169.

Tantilla atriceps Mexican blackhead snake
0231.010, 0312.141, 0718.100, 0718.105, 1050.169.

Tantilla gracilis flathead snake
0149.110, 0222.001, 0231.010, 0312.141, 0377.135, 0622.127, 0718.100, 0718.105, 0822.001, 1040.245, 1050.169.

Tantilla hobartsmithi southwestern blackhead snake
0231.010, 0312.141, 0718.100, 0718.105, 1050.169.

Tantilla nigriceps Plains blackhead snake
0216.630, 0231.010, 0312.141, 0718.100, 0718.105, 1050.169.

Tantilla rubra Big Bend blackhead snake
0231.010, 0312.141, 0718.100, 0718.105, 0860.030, 1050.169.

Thamnophis cyrtopsis blackneck garter snake
0149.110, 0231.010, 0312.141, 0718.100, 0718.105, 0820.200, 0860.030, 1046.100, 1050.169.

Thamnophis marcianus checkered garter snake
0149.110, 0231.010, 0312.141, 0377.101, 0377.110, 0377.125, 0643.520, 0718.100, 0718.105, 0720.237, 0723.020, 0736.500, 0816.805, 0820.200, 1040.100, 1050.169.

Thamnophis proximus western ribbon snake
0149.110, 0231.010, 0312.141, 0377.130, 0377.135, 0384.210, 0522.200, 0529.550, 0626.510, 0718.100, 0718.105, 0720.235, 0720.237, 0820.200, 1040.202, 1046.100, 1050.169, 1072.125.

Thamnophis radix Plains garter snake
0231.010, 0312.141, 0717.100, 0718.105, 1050.169.

Thamnophis sirtalis common garter snake
0231.010, 0312.141, 0529.550, 0622.119, 0718.100, 0718.105, 0720.235, 1040.202, 1046.100, 1050.169, 1072.125.

Trimorphodon biscutatus Lyre snake

0231.010, 0312.141, 0718.100, 0718.105, 1050.169.

Tropidoclonion lineatum lined snake
0231.010, 0312.141, 0393.080, 0495.085, 0622.108, 0818.100, 0718.105, 0720.232, 0860.030, 1040.202, 1046.100, 1050.169.

Virginia striatula rough earth snake
0231.010, 0312.141, 0377.150, 0480.309, 0718.100, 0718.105, 0780.050, 0860.030, 1040.202, 1040.241, 1046.100, 1050.169.

Virginia valeriae smooth earth snake
0231.010, 0312.141, 0377.130, 0377.135, 0718.100, 0718.105, 0743.050, 1046.100, 1050.169.

Micrurus fulvius coral snake
0204.319, 0231.010, 0312.141, 0377.130, 0522.200, 0718.100, 0718.105, 1050.169, 1072.125.

Agkistrodon contortrix copperhead
0149.110, 0204.319, 0205.002, 0231.010, 0312.141, 0377.125, 0377.130, 0377.135, 0393.080, 0422.010, 0522.200, 0573.515, 0626.510, 0630.140, 0663.900, 0718.100, 0718.105, 0720.233, 1050.169, 1071.100, 1072.125.

Agkistrodon piscivorus cottonmouth
0216.280, 0231.010, 0312.141, 0377.130, 0377.135, 0422.010, 0522.200, 0625.401, 0625.402, 0625.403, 0625.404, 0718.100, 0718.105, 0860.030, 1050.169, 1071.100, 1072.125.

Crotalus atrox western diamondback rattlesnake
0149.110, 0204.318, 0204.319, 0231.010, 0312.141, 0384.210, 0495.085, 0522.200, 0529.550, 0532.001, 0605.800, 0622.124, 0625.401, 0625.402, 0625.404, 0663.900, 0718.100, 0718.105, 0819.521, 1003.500, 1040.202, 1046.100, 1050.169, 1050.500, 1063.510, 1063.530, 1071.100.

Crotalus horridus timber rattlesnake
0231.010, 0312.141, 0340.050, 0393.080, 0495.085, 0718.100, 0718.105, 1050.169, 1071.100.

Crotalus lepidus rock rattlesnake
0204.319, 0231.010, 0312.141, 0522.200, 0532.001, 0663.900, 0718.100, 0718.105, 1046.100, 1050.169, 1071.100.

Crotalus molossus blacktail rattlesnake
0204.319, 0231.010, 0312.141, 0532.001, 0663.900, 0718.100, 0718.105, 1046.100, 1050.169, 1071.100.

Crotalus scutulatus Mojave rattlesnake
0204.319, 0231.010, 0312.141, 0532.001, 0663.900, 0699.310, 0718.100, 0718.105, 1050.169, 1071.100.

Crotlaus viridis western rattlesnake
0204.318, 0204.319, 0231.010, 0312.141, 0529.550, 0663.900, 0699.310, 0718.100, 0718.105, 0736.500, 1003.500, 1050.169, 1071.100.

Sistrurus catenatus Massasagua
0204.319, 0231.010, 0312.141, 0393.080, 0480.304, 0522.200, 0630.001, 0718.100, 0718.105, 0906.500, 1040.202, 1050.169, 1071.100.

Sistrurus miliarius pigmy rattlesnake
0231.010, 0312.141, 0377.130, 0522.200, 0626.510, 0630.001, 0704.258, 0718.100, 0718.105, 1050.169, 1071.100.

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BIOGRAPHICAL SKETCH AND BIBLIOGRAPHY OF WILFRED T. NEILL

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INTRODUCTION

Although his last scientific publication in a herpetological journal appeared more than 25 years ago, the name of Wilfred T. Neill will be familiar to students of amphibians and reptiles. Over a span of twenty-six years (1940-1966), Neill was a voluminous contributor to the major herpetological journals (**Copeia**, **Herpetologica**), to many regional journals, and to his "own" **Publications of the Research Division of Ross Allen's Reptile Institute**. Moreover, Neill published many works in anthropology, mainly dealing with the native Indians of southeastern United States. In addition to this flood of scholarly writing, which included several books, Neill wrote hundreds of nature notes for a wide variety of popular outlets including the magazine **Florida Wildlife** and many newspapers.

This massive publication record has never been completely chronicled. The authors of this bibliography independently started compiling bibliographies of Neill's writings. When we discovered our mutual interest we pooled our respective lists and learned to our surprise that Neill was more prolific than any of us suspected. As a result, we decided to prepare a complete bibliography, not just a herpetological bibliography. In an earlier list prepared by Neill he included abstracts of his works from **Biological Abstracts**; these are not included. Also we have not included the various reprintings of booklets for Ross Allen's Reptile Institute, unless they were revised editions.

Neill wrote a weekly column for the 38th Bomb Group Newspaper, 5th Air Force called "Know Your Guinea" in 1943-1944 and "Around the Philippines" in 1945, while he was in military service. In 1950, 1951, and 1952, he supplied weekly drawings with captions called "Creatures in the Wild", which according to him ran in 120 Florida newspapers. Some articles included in "Creatures in the Wild" are articles on the diamondback rattlesnake, coral snake, cottonmouth, canebrake rattlesnake, copperhead, pigmy rattlesnake, alligators, American crocodile, wildcat, armadillo, blind lizard, Florida panther, black widow spider, ivory billed woodpecker, jaguarundi, king snake, alligator snapping turtle, Audubon's caracara, soft-shelled turtle, saltwater snakes, Key deer, Florida manatee, coachwhip, black snake, garter snake, Everglades ratsnake, red ratsnake, boa constrictor, woodchuck, tegu lizard, Allen secures rare specimens, Allen milks deadly bushmaster, raccoon, fox squirrel, toucan, bats, horned toads, jerboa marsupial, porcupine, tiger salamander, and horned owl. Possibly Neill got his artistic talent from his uncle, John R. Neill, a famous illustrator of books and magazines from the first half of this century, who is probably best known for having illustrated 35 of the Oz books beginning with the second in 1904.

In 1974, he wrote a weekly column on early life in Florida called "Pioneer Past" for the Pasco-Hernando edition of the St. Petersburg Times. Although these are noteworthy, and a credit to his productivity, they are not included in this bibliography and no effort has been made to trace them.

From what we have learned in gathering this bibliography Neill authored or co-authored about 272 papers and books, not including the numerous newspaper articles. He authored 165 papers and books alone, another 98 with E. Ross Allen and ten with other authors. Herpetological articles (186) account for the major part of this total followed by anthropology (35), mammalogy (25), ornithology (7), ichthyology (4), biogeography (2), invertebrates (2), botany (2), book reviews (2), and general (7). Some of these publications could be classified into two or more categories but for simplicity we have placed them only in one so as not to distort the figures. In the herpetological area, he published 127 papers and books alone, 56 with Allen, and 3 with other authors for a total of 186.

A diligent search of libraries and standard bibliographic sources including the interlibrary loan system has failed to produce any information on whether three historical novels, **Wildcat in the West**, **Birdwoman's Real Story**, **Quanna Parker's Magic Button**, he supposedly had written were published or copyrighted. In the absence of any hard evidence that they actually were published, they are not included in this bibliography.

During the National Library week of April 16-22, 1967 Neill was honored along with five other authors in New Port Richey, Florida. In October, 1974, The Pasco Times had a week-long series on the history of the New Port Richey area in celebration of the city's 50th birthday, written by Neill, and concluded the series with a special edition of The Pasco Times.

Neill described twelve taxa alone and two with E. Ross Allen. Of these fourteen taxa five are still recognized, the other seven being placed in synonomy (see Table I). Of the five taxa still recognized three have been listed by Florida (**Rare and Endangered Biota of Florida Volume III. Amphibians and Reptiles**, ed. by Paul E. Moler, 1992) as threatened, rare (Amphiuma pholeter); status undetermined and a candidate for listing at the Federal level (Pseudobranchus striatus lustricolus); and status undetermined (Farancia erytrogramma seminola). Two taxa were named for him and are still recognized (see Table II).

TABLE I

Taxa named by Neill and their present status

Hyla phaeocrypta ogechiensis Neill, 1948 = Hyla avivoca Viosca, 1928

Lampropeltis getulus goini Neill & Allen, 1949 = Lampropeltis g. getula (Linnaeus, 1766) X Lampropeltis g. floridana Blanchard, 1919

Plethodon glutinosus grobmani Allen & Neill, 1949 = Plethodon grobmani Allen & Neill, 1949

Elaphe obsoleta rossalleni Neill, 1949 = Elaphe o. rossalleni Neill, 1949

Desmognathus perlapsus Neill, 1950 = Desmognathus ochrophaeus Cope, 1859

Desmognathus fuscus carri Neill, 1951 = Desmognathus auriculatus (Holbrook, 1838)

Pseudobranchus striatus lustricolus Neill, 1951 = Pseudobranchus s. lustricolus Neill, 1951

Nyctimystes loveridgei Neill, 1954 = Litoria genimaculata (Horst, 1883)

Natrix septemvittata mabila Neill, 1963 = Regina septemvittata (Say, 1825)

Amphiuma pholeter Neill, 1964 = Amphiuma pholeter Neill, 1964

Farancia erytrogramma seminola Neill, 1964 = Farancia e. seminola Neill, 1964

Syrrhophus leprus cholorum Neill, 1965 = Eleutherodactylus leprus (Cope, 1879)

Ficimia publia wolffsohni Neill, 1965 = Ficimia publia Cope, 1866

Kinosternon mopanum Neill, 1965 = Kinosternon l. leucostomum (Dumeril & Bibron, in Dumeril & Dumeril, 1851)

TABLE II

Taxa named after Wilfred T. Neill and their present status
Tantilla relicta neilli Telford, 1966 = *Tantilla relicta neilli* Telford, 1966
Sibon neilli Henderson, Hoevers & Wilson, 1977 = *Sibon sanniola neilli* Henderson, Hoevers & Wilson, 1977

In 1991 a very appropriate paper by one of the authors (Auth) was published in the **Gainesville Herpetological Society Newsletter**, VII (8): 9-15. It is reproduced here in its entirety with slight changes.

WILFRED T. NEILL - FLORIDA'S PREMIER HERPETOLOGIST

by David L. Auth

One could get into quite a lively discussion trying to decide who has contributed most to our knowledge of Florida amphibians and reptiles. Some people who come to mind, Archie Carr, Coleman Goin, and Walter Auffenberg, have contributed mightily, but entered other areas of major interest: sea turtles, Colombian amphibians and textbook writing, and tortoises and varanid lizards, respectively. Ross Allen certainly educated and entertained thousands of people with his showmanship, lectures, and publications (he published over 130 articles and papers as author or coauthor). Nonetheless, I believe Wilfred T. Neill qualifies for the title of Florida's premier herpetologist, contributing 143 papers and articles on Southeastern U. S. herpetology, with emphasis on Florida and Georgia. Overall, he wrote over 235 papers and articles, five scientific books, several historical novels, and approximately 800 newspaper articles.

Wilfred T. Neill was born in Augusta, Georgia on January 12, 1922. A true Georgia native, he did not really leave the state until the age of 28. He went to high school in Augusta and received his Bachelor of Science degree from the University of Georgia in Athens in May, 1941, at the age of 19. His first herpetological note, on *Eumeces*

egregius in Georgia, was published in **Copeia** in 1940. One of his first jobs was teaching German and zoology at Augusta Junior College. He traveled to Indonesia during summer break, learning one of the local languages. This early interest eventually resulted in his book **20th Century Indonesia**, published by Columbia University Press in 1973. In it Neill discussed the natural, political, social, and religious history of the country.

World War II interrupted Neill's teaching responsibilities. He joined the Army Air Corps and served from 1942 to 1945, in Indonesia, Luzon, New Guinea, and Okinawa. "I really enjoyed myself during the war!" Wilfred said recently in an interview. He managed to do some collecting, as the herps from Lingayan, Luzon, in the Florida Museum of Natural History's collection attest. The ERA-WTN Collection of Ensil Ross Allen and Wilfred Trammel Neill, assembled mostly by Neill over many years, was sold in part to Rutgers University and later transferred to the American Museum of Natural History (Gloyd & Conant, 1990). Although he was based in Florida from 1949 until now, Neill's experiences during military service greatly broadened his perspective, as foreign travel has done for many biologists.

Neill returned to Augusta after the war, teaching at Richmond Academy during 1946 and 1947. This military school was allied both physically and administratively with Augusta Junior College, to which Neill returned during 1947 to 1949, rising to the rank of professor of zoology. By the time he was hired by Ross Allen in 1949, Neill had already published thirty papers, in **Copeia** and **Herpetologica**, the two major herpetological journals in the United States.

In 1929, Ross Allen moved to Silver Springs, Florida, from Winter Haven and in 1931, with two partners, started a "reptile institute" at one of the most beautiful and biologically alive places on earth, the head springs of the Silver River east of Ocala. Allen was a handsome, muscular, energetic 24 years old (Neill was 10 at the time). By 1933, Allen became the sole manager of the business, but he continued to lease the land from one of his partners and never owned the institute which bore his name. Before World War II, Allen made his money through collecting and selling amphibians and reptiles and extracting snake venom. Although the public was admitted for a token fee, the institute was for many years a working affair rather than a tourist attraction. During World War

II, 72,000 poisonous snakes of twenty-seven different varieties were milked at "Ross Allen's Reptile Institute, Inc.," supplying 90 percent of all the venom used to produce antivenin for U. S. troops (Neill, 1950). To keep pace with changing times after the war, Allen converted part of the institute into a tourist attraction, with caged reptile exhibits, venom extraction shows, alligator shows, a mock-up of a Seminole Indian village, and a gift shop. He became a showman, lecturer, movie actor, and technical adviser to movie makers. The product-oriented work of the institute, including the venom extraction and the research, went on behind the scenes. The sale of the venom and gift shop curios, the admission fees, and Allen's other pursuits paid for the research effort.

Wilfred began buying reptiles from Ross Allen in 1932 and later, still a boy, "accompanied him on expeditions" (Neill, 1950). In 1949 Allen formed a research division at the institute. Always worrying about his lack of formal education, he hired the 28-year old Neill to be his research director. Neill brought an academic scientific expertise and additional writing and artistic skills to the operation, freeing Allen from some of his responsibilities. It was a professional relationship which would last fourteen years and have a profound impact on Florida herpetology.

Neill stayed mainly behind the scenes at the institute, maintaining the research animals, many at his home, collecting, writing, and developing academic ties, first with faculty and graduate students at the University of Florida and then more broadly, as President of the S. E. Division of the American Society of Ichthyologists and Herpetologists. He married in 1951, and his wife and he had one son, but the marriage soon ended in divorce. Wilfred never remarried. He published at least 91 articles and papers with Ross Allen from 1949 to 1962, an additional 91 on his own, and six with other authors, making this his most productive period herpetologically. Many young people visited, worked, and studied at the reptile institute. Neill instituted a seminar program with faculty and graduate students from the Biology Department at the University of Florida, including Archie Carr, Coleman Goin, and James Oliver. Interested parties would alternate seminars at the Biology Department in Gainesville and at Silver Springs. Partially as a result of these experiences at the institute, academic interest in herpetology blossomed. Neill became a mentor for many people during these years and for some time afterward.

In 1950, Neill started drawing wildlife cartoons for a local newspaper. Telling the story of Florida's reptiles and other life forms, these cartoons were quickly picked up by another 54 newspapers. Starting in 1950 and ending in 1968, Allen and Neill wrote over 60 articles on Florida's vertebrates in **Florida Wildlife**, the popular magazine of the Florida Game and Fresh Water Fish Commission. These two men did more to educate Floridians about reptiles than anyone to this day. No one has adequately filled the void since Allen's death and Neill's retirement (Wilfred now lives at the Lakeland Health Care Center in Lakeland, Florida), to the great detriment of Florida's herpetofauna.

Soon after arriving at the institute, Neill developed an additional academic interest in anthropology, sparked by the Seminole Indians and their village re-creation and enhanced by Wilfred's friendship with Ripley P. Bullen, Curator of Anthropology at the Florida State Museum. Starting in 1952, Neill wrote 20 anthropological papers and later, two books: **Reptiles and Amphibians in the Service of Man** (1974) and **Archeology and a Science of Man** (1978). He also became President of the Florida Anthropological society and organized anthropology and herpetology conferences at Silver Springs and Rainbow Springs.

Ross Allen first visited British Honduras (Belize) in 1937. Something about the country must have intrigued him, for in 1957 he initiated a series of five collecting trips to Belize, resulting in over 1,500 specimens added to the ERA-WTN Collection and another 12 papers written primarily by Neill between 1959 and 1965. The crew on the 1959 trip included ten people in addition to Allen and Neill. K. P. Schmidt's 1941 herptile list for the country was considerably expanded. The process continues to this day, with C. J. McCoy, Curator of Herpetology at the Carnegie Museum, working on revisions to the known herpetofauna of Belize.

Neill was the classic field naturalist and collector. He knew Florida habitats better than anyone in the state, and remembered where he found each specimen, as well as each individual's color pattern and external morphology. (He had a "photographic memory"). He described at least four new species and ten new subspecies of amphibians and reptiles, some of which are still considered valid. He carried a mattock (a heavy, pick-like hand tool with flattened blades), which he used to tear apart fallen logs.

Wilfred had quite a droll sense of humor. On field trips he would sometimes predict the presence of a specific species under a specific log, and find the species after a bit of ripping with his mattock. Some of his companions wondered whether he salted the site beforehand. During his graduate school days (see below), he would hand a fellow student a pickled Crotalis durissus or whatever from British Guiana (Guyana) and say "Look what I found in Polk County!" He fooled quite a few members of the younger generation with the ERA-WTN Collection. During his anthropological studies, Neill learned how to quickly fashion fluted points by the same method the native peoples used, by hitting one rock against another (Neill, 1952). One time a member of the Anthropology Department at the Florida State Museum had to perform a "patina test" on some Neill finds, to prove their antiquity was not quite what the discoverer professed!

Allen and Neill had a falling out in 1962 during the Belize period, resulting in Neill's permanently leaving Silver Springs and moving to New Port Richey, where he cared for his retired parents. Neill's financial status has been rather poor ever since. He worked in a gas station, but still managed to publish five papers in 1963.

In January of 1964 at the urging of Walter Auffenberg, the new Curator of Herpetology at the Florida State Museum, Wilfred, then 43 years old, moved to Gainesville to work in the Seagle Building in downtown Gainesville, identifying and cataloguing amphibians and reptiles. He soon decided to enter graduate school at the University of Florida, enrolling in the spring term to start work on his doctorate in zoology. 1964 was to be another productive year, with nine papers published, including the still standard work, "Taxonomy, Natural History, and Zoogeography of the Rainbow Snake, Farancia erytrogramma (Palisot de Beauvois)."

One day in the fall of 1964, after working in the Ichthyology Collection with Dr. Carter Gilbert, Wilfred abruptly disappeared and returned to New Port Richey. By the end of 1964, he had written or coauthored 228 articles and papers and had a long-standing regional reputation. Forced to take the standard class schedule of a beginning graduate student, Neill simply could not tolerate the major demotion in status. The zoology department waived the requirement for a research project for the Ph.D., but demanded Wilfred take the usual classes. In addition, Neill chose Pierce Brodkorb, with whom he had copublished a paper back in 1956, as his major professor. Neill and

Brodkorb soon developed a significant personality clash. In the view of Carl Gans, who was doing postdoctoral work at the Florida State Museum at the time and who presently is one of the most renowned herpetologists in the United States, it is a great sorrow that Neill was not quickly awarded his doctorate based on his proven productivity and obvious contributions to herpetology, rather than being forced to temporarily bottle up more than twenty years of independent thought. He could have secured a decent academic position, rather than returning to New Port Richey. Whether Wilfred would have fit into the quickly changing academic scene, with its new requirements for statistical data analysis and decreasing emphasis on descriptive biology, will never be known.

I will not detail Neill's life after leaving Gainesville, other than to briefly describe his continued productivity. During the years between 1965 and 1978, he wrote five books, including the classic **The Last of the Ruling Reptiles: Alligators, Crocodiles, and Their Kin** (1971). One book he wanted to write but never got to was "David in China," about the discoverer of the Chinese giant salamander, Andrias davidianus. Although his writing of scientific papers declined after 1966, he started writing for the Pasco-Hernando Edition of the St. Petersburg Times, creating a weekly column about early life in Florida called "Pioneer Past." He taught night classes at Pasco-Hernando Junior College in New Port Richey. And for a change of pace, he wrote several historical novels about the lives of western Indians, including **Wildcat in the West**, **Birdwoman's Real Story**, and **Quanna Parker's Magic Button.**

Wilfred T. Neill's contributions to Southeastern herpetology have been recognized by the scientific community, most recently in the introductions of Ray and Pat Ashton's three books on Florida's amphibians and reptiles. Kraig Adler plans to include Wilfred in his second volume on Contributions to the History of Herpetology, to be published eventually by the Society for the Study of Amphibians and Reptiles. But, to my knowledge, this present article, only a thumbnail sketch, represents the most extensive description of the breath of Neill's accomplishments. In the public's memory, he was largely overshadowed by Ross Allen. His scientific contributions have not been fully recognized, both because of his personality and because Ross Allen's Reptile Institute was a tourist attraction as well as a research facility. Neill's longer papers, especially "Historical

Biogeography of Present-day Florida" (1957) and "The Occurrence of Amphibians and Reptiles in Saltwater Areas, and a Bibliography" (1958), are still cited extensively and represent synthetic works ahead of their time.

Since I discovered last year that, contrary to a rumor circulated among herpetologists for many years, Wilfred was not dead, he has had visits by myself, Fred Antonio, Ray Ashton, and Paul Moler and would like to talk with others interested in Florida herpetology. Call first to let him know you are coming.

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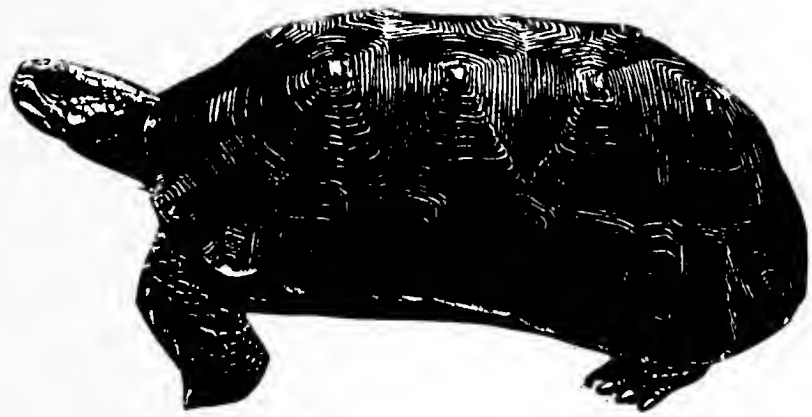
ON THE DISTRIBUTION OF CERTAIN SOUTH AMERICAN TURTLES (TESTUDINES: TESTUDINIDAE & CHELIDAE)



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COVER ILLUSTRATION. Geochelone carbonaria, from Pritchard and Trebbau, 1984, 'The Turtles of Venezuela'; reproduced with permission of the Society for the Study of Amphibians and Reptiles.

INTRODUCTION

It is a truism that no study of geographical distribution can be better than its primary data. In this respect South American herpetology has not been fortunate. Few papers published in recent years are based on ample, correctly interpreted locality records.

Difficulties with foreign languages contribute to the problem at all stages, from the first spelling of the locality in the field, to transcribing handwritten or printed names, to refereeing, and to proofreading. Lack of historical knowledge and of collateral reading add their share of errors. In some cases, unawareness of distributional patterns on a subcontinental scale and lack of personal acquaintance with ecological features lead zoologists familiar with a given corner of South America to uncritical extrapolations.

I find it necessary to discuss some recent cases of more than trivial relevance. Unfortunately, these are but examples of problems that continue to arise.

THE DISTRIBUTION OF *GEOCHELONE CARBONARIA* AND *G. DENTICULATA*

Pritchard and Trebbau (1984), in their "The Turtles of Venezuela" have attempted to place the fauna of that country in a continent-wide context. They have, among other things, compiled very extensive locality lists. These lists are certain to become standard references, but their very uneven quality has led to some unsound conclusions.

In what I consider the most important case, Pritchard and Trebbau state (*loc.cit*: 4) that "... in the discussion of *Geochelone carbonaria*, for which subspecies, though definable, have not yet been recognized, we have indulged in a more detailed geographic analysis of the entire species." It is my point that their discussion is not well grounded.

Their problems begin with the type locality (*loc. cit.*: 207): "Type locality: 'Capitary' (?), Rio Amazonas, Brazil." Spix's (1824: 23) actual statement is: "Habitat, sub cognomine 'Capitary' (?) ad flumen Amazonum" or translated: inhabits, under the appellation Capitari (?) the vicinity of the river of the Amazon. There is no place called "Capitary" in the Spix and Martius itinerary (Vanzolini, 1981). The question mark most probably refers to the application to a tortoise of the name "capitari", usually restricted to male *Podocnemis expansa*, but not infrequently applied to large males of other species. There is good reason

(Vanzolini, 1981: xxv) to consider Spix's "flumen Amazonum" as the stretch of the Rio Amazonas between the mouth of the Negro, at 03°08'S, 59°55'W, and the mouth of the Furo do Tajapuru, at 01°02'S, 51°2'W. Until sound reasons justify a restriction, I believe the type locality should be left as vague as that.

The distribution of the species in Brasil is treated by Pritchard and Trebbau in two places. First (loc.cit.: 213), as part of the general discussion: "G. carbonaria appears to be absent from the middle and upper Rio Amazon. There are no records for Peru or Ecuador, nor for the western states of Brasil (Acre, Rondônia, and Amazonas), apart from a single specimen (MZUSP 2275) from Nova Olinda, Amazonas. Conceivably, this locality refers instead to Nova Olinda in the state of Ceará, rather than Amazonas."

Second, in Appendix A, "Locality records", they say (loc. cit.: 391): "Note: All Amazonas records are suspect. There are no recent records for Manaus, and Manaus was for years an exporting center for wildlife from a very large area of Brasil. Villa Bella is a town in Departmento Beni, Bolivia. "Amazonas" probably refers to the river system rather than the state. MZUSP 2275, reportedly from Nova Olinda, Amazonas, is probably from Nova Olinda, Ceará."

MZUSP 2275 was bought by me on 21 February 1972, for the expedition's (EPA: Expedição Permanente da Amazônia) kitchen, at Nova Olinda, on the Rio Madeira (03°53'S, 59°06'W). Its field number is 72.0417. Routinely questioned, the seller said that he had caught the animal in his own plot of land, near the town. Were he lying, the possibility is still remote that the specimen was imported from Nova Olinda, Ceará, more than 2,500 km to the east and not on the Amazon river system.

I find it curious that Pritchard and Trebbau (who could have settled the matter with a letter to me) chose to question the locality, rather than the identification. According to them, denticulata would be normal in the Madeira; as a matter of form, I checked the identification.

MZUSP 2275 consists of the shell and head, the latter in alcohol; this is our routine for chelonians used as food. The original identification was made by Regina Lucia Spieker, who curates our chelonians. There are at times difficult specimens of Geochelone, but the present one, examined against Williams's 1960 paper, came out as perfect carbonaria on all counts, even to the constriction of the carapace characteristic of males.

At the same station on 20 February 1972, we collected a specimen of Phrynops nasutus wermuthi, MZUSP 2639. This specimen is cited by Pritchard and Trebbau (loc. cit.: 388) with no reservations as to the locality. In fairness, I do not think they would advocate the presence of P. n. wermuthi in Nova Olinda, Ceará.

We have another specimen of G. carbonaria from the same general area. MZUSP 2896 (field number 75.0899) was also bought by myself for the kitchen on October 30, 1975, from Mundurucu Indians, at their village Coatá (also spelled Quatá, 04°13'S, 59°16'W) on the Rio Canumã. It is a female and had nine large and six small eggs. Again the head and shell are preserved, and they perfectly fulfill Williams' criteria for carbonaria.

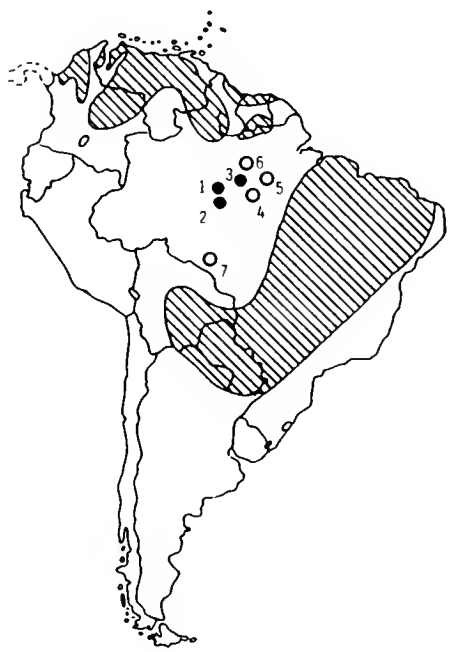
On November 17, 1984, a Museum party collected one female G. carbonaria (MZUSP 3086) crossing the road close to the town of Colorado d'Oeste (13°06'S, 61°24'W) in Rondônia.

Considering the extraordinary growth of the city of Manaus in the last 30 years, this locality will not be discussed here, but it remains to consider the MCZ specimen from Villa Bella cited by Williams (1960). Villa Bella, as Pritchard and Trebbau very properly state, is the name of a town in Bolivia. Meaning approximately "Pleasantville", it is also the name of a few dozen other localities in Latin America. Thus, the path of its identification should be not through simple reference to current gazetteers, but through the pedigree of the specimen. This specimen was donated by the Rev. J.C. Fletcher (E.E. Williams, pers. comm.), therefore the locality is in the Lower Amazon (see text and notes in Kidder and Fletcher, 1941). The locality, an important one, then known as Villa Bella is now Parintins (02°37'S, 56°44'W).

There are thus at least three specimens of Geochelone carbonaria, both old and recent, from the state of Amazonas, and one from Rondônia; Pritchard and Trebbau's tenet cannot be upheld. One wonders what would have led them to take such an extreme position, dismissing so readily data from two collections known as reliable. It would seem that only a strong theoretical point or a very ample empirical basis would justify such an action. A theoretical approach is of course justified in the case of restricted distributions in Amazonia, but none is expounded in the text. On the other hand, an examination of the locality records indicates that the empirical basis is poor.

I have plotted (Map 1) over Pritchard and Trebbau's figure 36,

"Distribution of Geochelone carbonaria in South America", the four localities discussed above, plus eleven others, of specimens in the MZUSP collection accepted and cited by Pritchard and Trebbau as proper G. carbonaria. It is easy to see that figure 36 does not correctly portray the evidence contained in the text. These eleven localities, not challenged by the authors, fall outside the area they assign to G. carbonaria, but fit very well with the questioned records.



MAP 1. Distribution of Geochelone carbonaria. Base map, Pritchard and Trebbau's (1984) figure 36. Solid circle, localities cited by Pritchard & Trebbau. Open circle, new localities: 1, Nova Olinda; 2, Aldeia Coatá; 3, Parintins, (former Villa Bella); 4, Monte Cristo, Aveiro & Fordlandia; 5, Santarém & Taperinha; 6, Lago Jacaré, As Pedras & Boca do Cuminá-Miri; 7, Colorado d'Oeste.

This disturbing conclusion, i.e, that Pritchard and Trebbau did not make proper use of their own distributional data, is strengthened by an examination of their Appendix A, the list of all localities used in preparing the distributional maps. This appendix is extremely heterogeneous, and errors of all types abound. Taking into account substance rather than form, I shall leave aside mistakes in accentuation (e.g. "Orteguazá"), cedille (e.g. "Araça" for Araca), change of letters (e.g. "Placida de Castro" for Plácido; "Araca" for Araçu), which annoy the orderly mind and undermine confidence in the work, but do not really cause excessive trouble in identifying the locality. I shall leave out also mistakes that prevent the precise identification of the locality, but not of the general area. For instance, "Outian Rio Uneuixi, near Tapurucuara (EPA 73.0854)" (Podocnemis expansa) contains a misreading of a handwritten name: Outian is actually Antran. But the Uneuixi is a short river and, on the geographical scale used, the information is valid.

Taking into account, then, only errors that really put at risk the mapping of species distribution, I still find too many of them in Pritchard and Trebbau's list. Here are some examples:

"Brasil, Goiás. Basily Lampiere (MN 53)". (Podocnemis expansa). Basily Lampiéri is the collector (U. Caramaschi, in

litt.). The mistaking of collectors' names for localities is too common an error in specimen lists. For instance, Raul de los Rios, a Peruvian who contributed to the collections of the American Museum of Natural History, has been more than once honored as a place name.

"Brasil: Goiás: Rio Panauá, Rio Acati-Paraná (R. Mittermeier, pers. comm.)". The Paraná do Panauá runs into the Auati-paraná at 02°00'S, 66°11'W in the state of Amazonas, not Goiás. (Podocnemis unifilis).

"Brasil, Pará: Igarapé, Belém (MZUSP 2693)". This is not, as suggested, an igarapé (creek) in or near the city of Belém, Para. It is an igarapé called Belém, at 03°55'S, 69°37'W, in the state of Amazonas, near the Colombian border, about 21 degrees of longitude from Belém. (Platemys platycephala).

"Brasil, Amazonas: Lagoa Silva, Saracu (MCZ 2601)". The correct locality is Lago Saracá, Silves (Dick, 1977). (Rhinoclemmys punctularia).

"Brasil, Goiás: Maripasoula (ZSM unnumbered)". Maripasoula (03°38'N, 54°02'W) is in French Guiana, on the right bank of the river Marouini (=Marowijne).

"Brasil, Pernambuco: Pacao (UMMZ 103242)". The locality is Poção (08°11'S, 36°43'W). (Kinosternon scorpioides).

The faulty map of G. carbonaria and these mistakes in the general list of localities make it necessary to examine the treatment of denticulata by Pritchard and Trebbau. In this regard there are also serious problems. Three localities cited on the list are omitted from the respective map (their figure 40): Anápolis in Goiás, Descalvado in Mato Grosso and Nioaque (old spelling Nioac) in Mato Groso do Sul. As it can be seen in my Map 2, and will be commented below, the inclusion of these localities considerably changes the general picture.

Pritchard and Trebbau (loc. cit: 226) state that the "easternmost limit of the Amazonian distribution appears to be reached at the Serra do Tiracambú, Edo. Maranhão, and the Serra Dourada, Goiás".

In fact, the easternmost limit of the distribution of G. denticulata coincides with the easternmost limit at the hylaea itself, a little to the east of the Rio Gurupi, on the Pará-Maranhão border, close to two MZUSP localities cited by Pritchard

and Trebbau: Aldeia Araçu (not "Araca", 02°35'S 46°05'W), on the Igarapé Gurupi-Una, and Chatão (02°18'S, 46°21'W) on the Rio Gurupi. The Serra do Tiracambu (03°15'S, 46°30'W) is an unimportant mesa, some 40 km long and 300 m high, not known to play any biogeographical role. I do not know that it has ever been explored zoologically.

MAP 2. Distribution of Geochelone denticulata. Base map, Pritchard and Trebbau's (1984) figure 40. Localities: 1, Descalvado; 2, Anápolis; 3, Noaque.

As to the Serra Dourada, it is hard to understand how it ever entered the picture. It is some 300 km north of Anápolis and is not known for any biogeographical peculiarities. Additionally, neither locality has anything to do with Amazonia, both being located in the heartland of the savanna-like cerrados (Ab'Saber, 1977).

Descalvado (16°43'S, 57°42'W) is on the northern reaches of the Mato Grosso Pantanal, a seasonally flooded complex tectonic depression of peculiar ecology (Correia-Filho, 1946; Schaller, 1983). Nioaque (21°14'S, 55°49'W), the southernmost record, is on the southwestern edge of the cerrados, approaching the southern Pantanal.

Finally, the citation of Barra do Corda, Maranhão, is a mistake. The good series (23 specimens) that I collected there in 1955 contains all G. carbonaria.

Summarizing, I have the impression that Pritchard and Trebbau did not actually try to plot their non-Venezuelan localities. If they had, the too numerous errors would have become evident and would not have been used as support for sweeping statements. As it is, the distributional maps and the respective comments contradict one another, Pritchard and Trebbau wrongly criticize responsible locality records and, most importantly, they fail to emphasize the main point in the distribution of the two species.

This point is that they are not bound to major morphoclimatic domains, but that the two tortoises occur in both open and forested formations and that there are no other apparent regularities. This

point was first stressed by Williams in his 1960 paper, and no novel contribution has been made since to the matter. There are thus two problems to consider: the topo-ecological distribution of the forms in the open formations and the rationale of their overall distributions. Whether both species of Geochelone follow an Iguana iguana model (Trajano and Ghiringhello, 1978), equally at home and with no apparent morphological differentiation in the forest and in open, even semiarid situations, or are limited in the latter to gallery forest or wooded enclaves, is a matter to be settled by so far nonexistent field work.

On the other hand, this independence from morphoclimatic domains has been well discussed by Heyer (1979) for species of Leptodactylus. These have been shown by serological methods (Heyer and Maxson, 1982) to be old, mid-Tertiary species, immune to Quaternary cycles of speciation related to climatic events. I would guess that the two Geochelone in question tend to follow this model. However, a study of their geographical differentiation demands collections covering the entire area with samples amenable to statistical treatment. This is clearly not the present situation.

PHRYNOPS GEOFFROANUS IN AMAZONIA

Pritchard and Trebbau (loc. cit.: 115) in their figure 19, "Distribution of Phrynops geoffroanus", show a wide hiatus in Brasilian Amazonia. We have one specimen, MZUSP 2682, collected (19 September 1969) at Alter do Chão (02°32'S, 54°57'W), Pará on the Rio Tapajós (Map 3). I captured this specimen at night on a beach; the late Fred Medem, my companion on that field trip, autopsied the turtle, a female with ripe eggs, and kept notes.

The importance of this find is not so much the range extension itself, but the indication that the species is rare or hard to find. The Tapajós has been very thoroughly collected by many herpetologists, and this is the only specimen so far. In these conditions, negative distributional evidence must be used with much discretion.

TYPE LOCALITY OF PLATEMYS RADIOLATA AND COMMENT ON P. SPIXII

Rhodin, Silva and Mittermeier (1984), in a study of the distribution of Platemys radiolata and spixii (both now Acanthochelys) cite the type locality of the former as São Paulo: Sebastianopolis (= São Sebastião) (23°45'S, 45°25'W)". This

interpretation is a grave error. "Sebastianopolis" used to be the erudite name of the city of São Sebastião do Rio de Janeiro, Rio de Janeiro, in the state of the same name, and the latter is the proper type locality of type locality of Emys radiolata Mikan, 1820.

MAP 3. Distribution of Phrynops geoffroanus. Base map, Pritchard and Trebbau's (1984) figure 19.

Another confusion, though with no taxonomic or nomenclatural consequence, occurs with regard to an A. spixii locality: "São Paulo: Rio Ypanema, near Moji-Guaçu Lake (22°20'S, 46°55'W): Siebenrock, 1904: 28".

The actual Siebenrock quotation, in his paper on the Brasilian turtles in Vienna, is: "Rio Ypanema, aus den Seen bei Mogiguaiú, Provinz São Paulo". Both Rio Ipanema (modern spelling) and Mogi Guaçu (corrected spelling) are good Natterer localities, but they are 135 km apart. I consulted Dr. Franz Tiedemann, Naturhistorisches Museum Wien, who gave as his opinion that "Rio Ypanema", "aus den Seen bei Mogi Guaiu" and "Provinz Sao Paulo" are three independent localities. In fact, examination of Siebenrock's table (loc. cit.) shows that indeed he used commas to separate individual place names; e.g., "Rio Negro bei Marabitanos, Barra do Rio Negro, Rio Solimões", are undoubtedly three localities, not an explicitation of a single locality (Hydraspis rufipes). His use of the indication Provinz in the case of A. spixii, however, makes it probable that only two localities are involved, both in the then Province, now State, of São Paulo: the Rio Ipanema (enters the Sorocaba from the south at 23°34'S, 47°36'W) and some pond near the city of Mogi Guaçu (coordinates of the city correctly given by Rhodin et al.).

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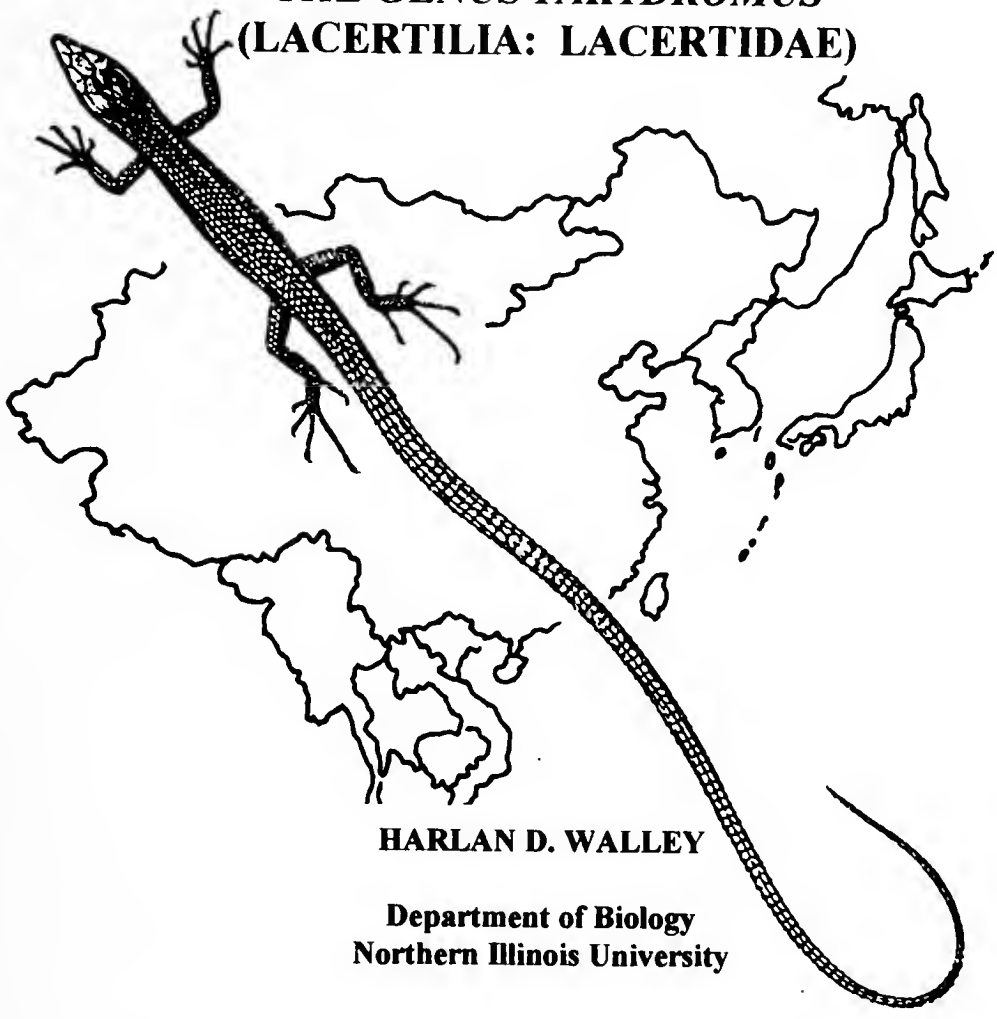

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INTRODUCTION

The present bibliography arose of a literature search for a revision of the genus Takydromus. The literature is diverse in topic coverage, and with the recent surge of field work, and publications from the Orient, I felt that a cross-referenced bibliography of the genus would be a valuable contribution to the field of herpetology. So many publications are from obscure journals, not readily obtainable, and easily overlooked in revisions. Biological Abstracts and Zoological Records were the major source of information, although bibliographies and symposium volumes wee also valuable sources of information. All aspects of the biology of Takydromus are cited in the following bibliography. The cross referenced index is somewhat general, although the species index should be complete. Literature searching ceased on January 1, 1993.

Under each subject heading is listed an author's name followed by the date for reference to a more complete citation in the literature section at the end of the bibliography. A reference may refer to a paper containing an extensive discussion of a specific topic, or merely a brief statement or abstract. In a recent letter from Dr. F.J. Obst, I was informed of the loss of all type material of Takydromus (Tachydromus) in the Dresden Museum during World War II.

I am especially grateful to Theodore Papenfuss, Hidetoshi Ota, and Ermi Zhao for supplying a number of references I had not previously encountered. I am also especially grateful to Wolfgang Boehme who was particularly helpful during the final stages of preparing this manuscript.

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CHECKLIST AND BIBLIOGRAPHY OF THE AMPHIBIANS AND REPTILES OF PANAMA

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INTRODUCTION

Many amphibians and reptiles dispersed between North and South America along the Isthmus of Panama during the "Great American Biotic Interchange," after the Pliocene closure of the isthmian gap. The results of nterchanges before the gap formed are also in evidence today, but involve fewer species (Vanzolini and Heyer, 1990). Panama's herpetological significance goes beyond being a land bridge between continents, however. The country has distributional continuities with North, Middle and South America, and border to border from both directions. The country also has a significant number of endemics (14 percent of the amphibians; 7 percent of the reptiles; 10 percent overall). With an area of only 77,082 km^2, about half (50.8%) the size of Florida, Panama has approximately 2.8 times more native amphibians and reptiles than Florida, 5.7 times expectation based on area alone.

There is no published checklist and bibliography for just the herpetofauna of Panama. Partial lists are available: Dunn, 1931a and b; Myers and Rand, 1969; Rand and Myers, 1990; and Smith, 1958. Peters and Orejas-Miranda (1970), Peters and Donoso-Barros (1970), and Vanzolini (1986) cover a much larger area for the snakes and lizards. Campbell and Lamar (1989) have done the same for the poisonous snakes, Iverson (1992) for turtles, King and Burke (1989) for turtles and crocodilians, Frost (1985) for amphibians, and Villa, Wilson, and Johnson (1988) for the herpetofauna of Middle America.

The checklist documents 395 native species of amphibians and reptiles described from 1756 through 1992 (Table 1). This taxonomic effort can be divided into four periods based on four different average rates of species description. The average rate was second highest between 1756 and 1766 during the time of Linnaeus (2.9 described species a year for 32 species). The slowest period spanned from 1767 to 1849, with only 42 new species described (0.5 a year). The highest rate of discovery (3.8 species a year) occurred between 1850 and 1899, when 188 species were described. The rate from 1900 through 1992 has dropped to 1.4 a year (133 species). The latter two rates are almost linear. Since the latest rate is not approaching an asymptote, it isn't possible to estimate total Panamanian amphibian and reptile diversity. With only about twenty percent of the country's primary forests relatively intact, many species undoubtedly are already extinct or on the verge of extinction. Panama's complete pre-European herpetofaunal diversity will probably never be known, even after unexploited material in museum collections is analyzed.

Approximately two-thirds of the known native amphibians and reptiles of Panama were described before 1900 (10.4% prior to 1800, 55.9% in the 1800's). Edward Drinker Cope (80 species) and Wilhelm C. H. Peters (29 species) alone described slightly over one-fourth of the known fauna from 1860 to 1899. Linnaeus described 31 native species, Boulenger 26, Dunn 28, Taylor 20, and Dumeril, Bibron, and Dumeril 16. Thus, only nine taxonomists described 58 percent of Panama's known herpetofauna.

Table 1. Summary of the Number of Species by Family for the Amphibians and Reptiles of Panama

GROUP	NUMBER OF SPECIES	GROUP	NUMBER OF SPECIES
AMPHIBIA	170 (2)*	**AMPHIBIA**-Cont.	170 (2)
ANURA	140 (2)	ANURA-Cont.	140 (2)
Bufonidae	15	Pipidae	1
Centrolenidae	12	Ranidae	4
Dendrobatidae	14	CAUDATA	21
Hylidae	46	Plethodontidae	21
Leptodactylidae	44 (2)	GYMNOPHIONA	9
Microhylidae	4	Caeciliaidae	9
REPTILIA	225 (6)	**REPTILIA**-Cont.	225 (6)
AMPHISBAENIA	3	SERPENTES-Cont.	132
Amphisbaenidae	3	Boidae	6
CROCODYLIA	2	Colubridae	99
Alligatoridae	1	Elapidae	10
Crocodylidae	1	Leptotyphlopidae	2
LACERTILIA	74 (6)	Viperidae	11
Anguidae	5	TESTUDINES	14
Gekkonidae	9 (6)	Cheloniidae	4
Iguanidae	41	Chelydridae	1
Scincidae	2	Dermochelyidae	1
Teiidae	16	Emydidae	1
Xantusiidae	1	Kinosternidae	3
SERPENTES	132	Testudinidae	4
Anomalepididae	4	**TOTAL**	395(8)

* Introduced species in parentheses. Also marked with an asterisk in the checklist.

Country geographic ranges are included for each species, often with more detailed ranges inside Panama. Ranges were taken from the literature and from direct examination of museum specimens at the National Museum of Natural History, Museum of Comparative Zoology at Harvard, and Florida Museum of Natural History. The geographic range of none of the 395 native species listed in the checklist is thoroughly known.

The first section of the bibliography consists of complete citations of the 395 native and 8 introduced original species descriptions. A compilation of other works on Panamanian herpetology forms the second part of the bibliography. Due to space limitation, this resource is far from complete, but at least may decrease initial search time.

The checklist and bibliography will need to be continually revised, due to ongoing taxonomic and survey work. To illustrate this I have included six species (bold lettering) which are known from near the Panamanian border, but have not been documented inside the country as yet. These species are not included in Figure 1 nor in the checklist tallies. To help keep the checklist up to date and remove errors, please write me at the

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I. A CHECKLIST OF THE AMPHIBIANS AND REPTILES OF PANAMA

AMPHIBIA (170 native species; 2 introduced)

I. ANURA (140 native species; 2 introduced)

A. Bufonidae (15 species)

Atelopus certus Barbour, 1923. Panama (Darien Province).
Atelopus chiriquiensis Shreve, 1936. Costa Rica, Panama (Bocas del Toro, Chiriqui Provinces).
Atelopus glyphus Dunn, 1931. Panama (Darien Province), Colombia.
Atelopus varius (Lichtenstein, 1856). Costa Rica, Panama, Colombia.
Atelopus zeteki Dunn, 1933. Panama (western; Cerro Campana, Valle de Anton area). CITES Appendix I/USFWS Endangered.
Bufo coccifer Cope, 1866. Mexico to Panama (western Pacific versant).
Bufo coniferus Cope, 1862. Nicaragua, Costa Rica, Panama (Atlantic and Pacific versants), Colombia, Ecuador.
Bufo fastidiosus Cope, 1875. Costa Rica, Panama (western).
Bufo granulosus Spix, 1824. Panama to Argentina.
Bufo haematiticus Cope, 1862. Honduras to Ecuador.
Bufo marinus (Linnaeus, 1758). United States (Texas) to Peru. Introduced to many Caribbean, southeast Asian, and Pacific basin islands.
Bufo peripatetes Savage, 1972. Panama (known from the type locality in Chiriqui Province, above Boquete on Almirante Trail, elevation 1500 m and from the border of Bocas del Torro and Chirique Provinces border at Cerro Bollo, 80 km ESE of the type locality).
Bufo typhonius (Linnaeus, 1758). Panama, South America.
Crepidophryne epiotica (Cope, 1875). Costa Rica, Panama (western).

Rhamphophryne acrolopha Trueb, 1971. Panama (eastern), Colombia.

B. Centrolenidae (12 species)

Centrolene ilex (Savage, 1967). Nicaragua, Costa Rica, Panama (Atlantic versant), Colombia.
Centrolene prosoblepon (Boettger, 1892). Nicaragua to Ecuador.
Cochranella albomaculata (Taylor, 1949). Costa Rica, Panama (Pacific versant), Colombia.
Cochranella euknemos (Savage and Starrett, 1967). Costa Rica to Colombia.
Cochranella granulosa (Taylor, 1949). Nicaragua, Costa Rica, Panama.
Cochranella spinosa (Taylor, 1949). Costa Rica, Panama (Pacific versant), Colombia, Ecuador.
Hyalinobatrachium chirripoi (Taylor, 1958). Costa Rica to Colombia.
Hyalinobatrachium colymbiphyllum (Taylor, 1949). Costa Rica, Panama (Colon Province).
Hyalinobatrachium fleischmanni (Boettger, 1893). Mexico to Ecuador, Surinam.
Hyalinobatrachium pulveratum (Peters, 1873). Nicaragua, Costa Rica, Panama (Pacific versant).
Hyalinobatrachium valerioi (Dunn, 1931). Costa Rica to Ecuador.
Hyalinobatrachium vireovittatum (Starrett and Savage, 1973). Costa Rica, Panama.

C. Dendrobatidae (14 species)

Colostethus chocoensis (Boulenger, 1912). Panama (eastern), Colombia, Ecuador.
Colostethus flotator (Dunn, 1931). Panama.
Colostethus inguinalis (Cope, 1868). Panama (eastern, west-central), Colombia.
Colostethus latinasus (Cope, 1863). Panama (Darien Province), Colombia, Ecuador.
Colothethus nubicola (Dunn, 1924). Costa Rica, Panama (Chiriqui Province), Colombia.
Colostethus pratti (Boulenger, 1899). Panama (western), Colombia, Ecuador.
Colostethus talamancae (Cope, 1875). Costa Rica, Panama, Colombia.
Dendrobates arboreus Myers, Daly, and Martinez, 1984. Panama (Chiriqui, Bocas del Toro Provinces). CITES Appendix II.
Dendrobates auratus (Girard, 1855). Nicaragua to Colombia. CITES Appendix II.
Dendrobates pumilio O. Schmidt, 1857. Nicaragua, Costa Rica, Panama (Bocas del Toro, Chiriqui Provinces). CITES Appendix II.
Dendrobates speciosus O. Schmidt, 1857. Panama (Bocas del Toro, Chiriqui Provinces). CITES Appendix II.
Epipedobates maculatus (Peters, 1873). Panama (Bocas del Toro, Chiriqui Provinces). CITES Appendix II.
Minyobates minutus (Shreve, 1935). Panama (Colon Province) to

Colombia. CITES Appendix II.
Phyllobates lugubris (O. Schmidt, 1857). Panama (Bocas del Toro, Chiriqui Provinces). CITES Appendix II.

D. Hylidae (46 species)

Agalychnis calcarifer Boulenger, 1902. Costa Rica, Panama (Caribbean slopes), Colombia, Ecuador.
Agalychnis callidryas (Cope, 1862). Mexico to Panama (central Atlantic versant, eastern Pacific versant).
Agalychnis litodryas (Duellman and Trueb, 1967). Panama (eastern), Ecuador.
Agalychnis spurrelli Boulenger, 1913. Costa Rica, Panama, Colombia, Ecuador.
Anotheca spinosa (Steindachner, 1864). Mexico, Costa Rica, Panama (western).
Duellmanohyla lythrodes (Savage, 1968). Costa Rica, Panama (western Atlantic versant).
Duellmanohyla rufioculis (Taylor, 1952). Costa Rica, Panama (western?).
Duellmanohyla uranochroa (Cope, 1875). Costa Rica, Panama (western mountains).
Gastrotheca cornuta (Boulenger, 1898). Costa Rica, Panama (eastern, western Atlantic versant), Colombia, Ecuador.
Gastrotheca nicefori Gaige, 1933. Panama (eastern and central highlands), Colombia, Venezuela.
Hemiphractus fasciatus Peters, 1862. Panama, Colombia, Ecuador.
Hyla angustilineata Taylor, 1952. Costa Rica, Panama (western).
Hyla boans (Linnaeus, 1758). Panama (eastern), Trinidad, Colombia, the Guianas, Amazon and Orinoco Basins.
Hyla colymba Dunn, 1931. Costa Rica, Panama (western Atlantic versant; central and eastern Pacific versant).
Hyla crepitans Wied-Neuwied, 1824. Honduras, Panama (eastern), Colombia, Ecuador, the Guianas, Brazil.
Hyla debilis Taylor, 1952. Costa Rica, Panama (southwestern Pacific versant).
Hyla ebraccata Cope, 1874. Mexico to Colombia.
Hyla fimbrimembra Taylor, 1948. Costa Rica, Panama (western).
Hyla graceae Myers and Duellman, 1982. Panama (western mountains).
Hyla lancasteri Barbour, 1928. Costa Rica, Panama (Atlantic versant).
Hyla microcephala Cope, 1886. Mexico to Brazil.
Hyla miliaria (Cope, 1886). Nicaragua, Costa Rica, Panama, Colombia.
Hyla palmeri Boulenger, 1908. Panama (central), Colombia, Ecuador.
Hyla phlebodes Stejneger, 1906. Nicaragua, Costa Rica, Panama (Caribbean lowlands, Pacific eastern lowlands), Colombia.
Hyla picadoi Dunn, 1937. Costa Rica and Panama (western mountains).
Hyla pictipes Cope, 1875. Costa Rica, Panama (western

mountains).
Hyla pseudopuma Gunther, 1901. Costa Rica, Panama (western mountains).
Hyla pugnax Schmidt, 1857. Panama (central), Colombia.
Hyla rivularis Taylor, 1952. Costa Rica, Panama (western mountains).
Hyla rosenbergi Boulenger, 1898. Costa Rica, Panama, Colombia, Ecuador.
Hyla rufitela Fouquette, 1961. Nicaragua, Costa Rica, Panama (Atlantic versant).
Hyla subocularis Dunn, 1934. Panama (eastern), Colombia.
Hyla thysanota Duellman, 1966. E. Panama (Darien Province-Serrania de Darien).
Hyla tica Starrett, 1966. Costa Rica, Panama (western mountains).
Hyla zeteki Gaige, 1929. Costa Rica, Panama (western mountains).
Phrynohyas venulosa (Laurenti, 1768). Mexico to Argentina.
Phyllomedusa lemur Boulenger, 1882. Costa Rica, Panama (moderate elevations).
Phyllomedusa venusta Duellman and Trueb, 1967. Panama (Darien Province).
Ptychohyla legleri (Taylor, 1958). Costa Rica, Panama (western Pacific versant).
Scinax boulengeri (Cope, 1887). Nicaragua, Costa Rica, Panama (Caribbean lowlands, eastern Pacific lowlands).
Scinax elaeochroa (Cope, 1875). Nicaragua, Costa Rica, Panama (western Caribbean lowlands, Pacific lowlands).
Scinax rostrata (Peters, 1863). Panama (central), Colombia, Venezuela, French Guiana.
Scinax rubra (Laurenti, 1768). Panama (eastern), Colombia, Ecuador, Venezuela, the Guianas, Trinidad, St. Lucia, Tobago, Brazil.
Scinax staufferi (Cope, 1865). Mexico to Panama (central).
Smilisca baudinii (Dumeril and Bibron, 1841). United States (Texas)to Panama (western?).
Smilisca phaeota (Cope, 1862). Nicaragua, Costa Rica, Panama, Colombia, Ecuador.
Smilisca sila Duellman and Trueb, 1966. Costa Rica, Panama (Caribbean and Pacific lowlands), Colombia (northwestern).
Smilisca sordida (Peters, 1863). Costa Rica, Panama (western).

E. Leptodactylidae (44 native species; 2 introduced)

Eleutherodactylus achatinus (Boulenger, 1898). Panama (Darien and San Blas Provinces), Colombia, Ecuador.
Eleutherodactylus andi Savage, 1974. Costa Rica, Panama (extreme western).
Eleutherodactylus altae Dunn, 1942. Costa Rica, Panama (Bocas del Toro Province).
*Eleutherodactylus antillensis (Reinhardt and Lutken, 1863). Islands of Puerto Rico Bank. * = Introduced in Panama.

Eleutherodactylus azueroensis. Savage, 1975. Panama (Peninsula de Azuero).
Eleutherodactylus biporcatus (Peters, 1863). Guatemala to Colombia.
Eleutherodactylus bransfordii (Cope, 1886). Honduras to Panama (eastern).
Eleutherodactylus bufoniformis (Boulenger, 1896). Costa Rica, Panama, Colombia.
Eleutherodactylus caryophyllaceus (Barbour, 1928). Costa Rica, Panama, Colombia.
Eleutherodactylus cerasinus (Cope, 1875). Nicaragua, Costa Rica, and Panama (western and central; Atlantic and Pacific versants).
Eleutherodactylus crassidigitus Taylor, 1952. Costa Rica, Panama.
Eleutherodactylus cruentus (Peters, 1873). Costa Rica, Panama (western and central), Colombia, Ecuador.
Eleutherodactylus diastema (Cope, 1875). Nicaragua to Ecuador.
Eleutherodactylus emcelae Lynch, 1985. Panama (western).
Eleutherodactylus fitzingeri (Schmidt, 1858). Nicaragua, Costa Rica, Panama (both Atlantic and Pacific versants), Colombia.
Eleutherodactylus fleischmanni (Boettger, 1892). Costa Rica Panama (western).
Eleutherodactylus gaigeae (Dunn, 1931). Costa Rica, Panama, Colombia.
Eleutherodactylus gollmeri (Peters, 1863). Nicaragua, Costa Rica, Panama.
*Eleutherodactylus johnstonei Barbour, 1914. Lesser Antilles. * = Introduced on Bermuda, Bequia (Grenadines), Curacao, Jamaica, Panama (Panama City), Venezuela, Guyana.
Eleutherodactylus jota Lynch, 1980. Panama (Bocas del Toro Province).
Eleutherodactylus latidiscus (Boulenger, 1898). Panama, Colombia, Ecuador.
Eleutherodactylus longirostris (Boulenger, 1898). Panama (Darien Province), Colombia, Ecuador.
Eleutherodactylus melanostictus (Cope, 1875). Costa Rica, Panama (western).
Eleutherodactylus monnichorum Dunn, 1940. Panama (Chiriqui Province).
Eleutherodactylus moro Savage, 1965. Costa Rica, Panama, Colombia.
Eleutherodactylus noblei Barbour and Dunn, 1926. Honduras, Nicaragua, Costa Rica, Panama.
Eleutherodactylus pardalis (Barbour, 1928). Costa Rica, Panama.
Eleutherodactylus podiciferus (Cope, 1875). Costa Rica, Panama.
Eleutherodactylus punctariolus (Peters, 1863). Costa Rica, Panama.
Eleutherodactylus raniformis (Boulenger, 1896). Panama (east-central and east), Colombia.

Eleutherodactylus rayo Savage and DeWeese, 1979. Costa Rica (southwestern), Panama.
Eleutherodactylus ridens (Cope, 1866). Honduras, Nicaragua, Costa Rica, Panama (Atlantic and Pacific versants), Colombia, Ecuador.
Eleutherodactylus rugulosus (Cope, 1869). Mexico to Panama(western).
Eleutherodactylus stejnegerianus (Cope, 1893). Costa Rica, Panama (extreme western Pacific drainages).
Eleutherodactylus taeniatus (Boulenger, 1912). Panama (central), Colombia, Ecuador.
Eleutherodactylus talamancae Dunn, 1931. Nicaragua, Costa Rica, Panama (Atlantic versant).
Eleutherodactylus taurus Taylor, 1958. Costa Rica, Panama.
Eleutherodactylus vocator Taylor, 1955. Costa Rica, Panama, Colombia.
Leptodactylus fuscus (Schneider, 1799). Panama to Argentina.
Leptodactylus insularum Barbour, 1906. Mexico to Colombia, Venezuela.
Leptodactylus labialis (Cope, 1877). Texas to Colombia, Venezuela.
Leptodactylus melanonotus (Hallowell, 1861). Mexico to Ecuador.
Leptodactylus pentadactylus (Laurenti, 1768). Honduras to Peru, Brazil.
Leptodactylus poecilochilus (Cope, 1862). Costa Rica to Colombia, Venezuela.
Physalaemus pustulosus (Cope, 1864). Mexico to Colombia, Venezuela, Trinidad, Tobago.
Pleurodema brachyops (Cope, 1869). Panama, Colombia, Venezuela, Netherland Antilles, Brazil.

F. Microhylidae (4 species)

Chiasmocleis panamensis Dunn, Trapido, and Evans, 1948. Panama, Colombia.
Elachistocleis ovalis (Schneider, 1799). Panama, Trinidad, South America east of Andes to Argentina.
Nelsonophryne aterrimum (Gunther, 1900). Costa Rica, Panama, Colombia, Ecuador.
Relictivomer pearsei (Ruthven, 1914). Panama, Colombia.

G. Pipidae (1 species)

Pipa myersi Trueb, 1984. Panama (Darien Province), Colombia.

H. Ranidae (4 species)

Rana "pipiens" Hillis, 1988 (undescribed species "E"). Costa Rica, Panama (western, to the canal).
Rana vaillanti Brocchi, 1877. Mexico to Panama.
Rana vibicaria (Cope, 1894). Costa Rica, Panama (western).
Rana warschewitschii (Schmidt, 1857). Honduras, Nicaragua,

Costa Rica, Panama (eastern).

II. CAUDATA (21 species)

Plethodontidae (21 SPECIES)

Bolitoglossa biseriata Tanner, 1962. Panama (Bocas del Toro, Cocle, Panama, San Blas, Darien Provinces), Colombia.
Bolitoglossa colonnea (Dunn, 1924). Costa Rica, Panama (western to Colon Province-Barro Colorado Island).
Bolitoglossa compacta Wake, Brame, and Duellman, 1973. Panama (Bocas del Toro Province).
Bolitoglossa cuna Wake, Brame, and Duellman, 1973. Panama (San Blas Province).
Bolitoglossa lignicolor (Peters, 1873). Costa Rica, Panama (Chiriqui and Veraguas Provinces, Azuero Peninsula).
Bolitoglossa marmorea (Tanner and Brame, 1961). Panama (known from the type locality only- Chiriqui Province, Volcan Chiriqui).
Bolitoglossa medemi Brame and Wake, 1972. Panama (Darien Province), Colombia.
Bolitoglossa minutula Wake, Brame, and Duellman, 1973. Panama (area of type locality only-Bocas del Toro Province, north Slope of Cerro Pando).
Bolitoglossa nigrescens (Taylor, 1949). Costa Rica, Panama (Chiriqui Province).
Bolitoglossa phalarosoma Wake and Brame, 1962. Panama (Darien Province), Colombia.
Bolitoglossa robusta (Cope, 1894). Costa Rica, Panama (Bocas del Toro Province).
Bolitoglossa schizodactyla Wake and Brame, 1966. Panama (central and northwestern).
Bolitoglossa subpalmata (Boulenger, 1896). Costa Rica, Panama (Chiriqui Province).
Bolitoglossa taylori Wake, Brame, and Myers, 1970. Panama (Darien Province).
Oedipina alfaroi Dunn, 1921. Costa Rica, Panama (Bocas del Toro Province).
Oedipina collaris (Stejneger, 1907). Nicaragua, Costa Rica, Panama (Atlantic versant).
Oedipina complex (Dunn, 1924). Costa Rica, Panama, Colombia, Ecuador.
Oedipina cyclocauda Taylor, 1952. Honduras, Nicaragua, Costa Rica, Panama (northwest).
Oedipina grandis Brame and Duellman, 1970. Panama (known from the type locality only-Bocas del Toro Province, north slope of Cerro Pando).
Oedipina parvipes (Peters, 1879). Costa Rica, Panama, Colombia.
Oedipina uniformis Keferstein, 1868. Costa Rica, Panama (western).

III. GYMNOPHIONA (9 species)

Caeciliaidae (9 species)

Caecilia leucocephala Taylor, 1968. Panama (Darien Province), Colombia, Brasil.
Caecilia nigricans Boulenger, 1902. Panama (Atlantic versant), Colombia, Ecuador.
Caecilia tentaculata Linnaeus, 1758. Panama, South America east of the Andes, south to Peru.
Caecilia volcani Taylor, 1969. Panama (known from the type locality-Cocle Province, El Valle de Anton and from Bocas del Toro and Chiriqui Provinces at the continental divide).
Dermophis mexicanus (Dumeril and Bibron, 1841). Mexico to Panama (western Pacific versant).
Dermophis parviceps (Dunn, 1924). Panama (Bocas del Toro Province).
Gymnopis multiplicata Peters, 1874. Honduras to Panama.
Oscaecilia elongata (Dunn, 1942). Panama (known from the type locality only-Darien Province, Yaviza).
Oscaecilia ochrocephala (Cope, 1866). Panama (Atlantic versant of Darien Province).

REPTILIA (225 native species; 6 introduced)

I. AMPHISBAENIA (3 species)

Amphisbaenidae (3 species)

Amphisbaena alba Linnaeus, 1758. Panama, Colombia, Venezuela, the Guianas, Trinidad, Peru, Brazil, Bolivia, Paraguay.
Amphisbaena fuliginosa Laurenti, 1768. Panama, Colombia, Ecuador, Venezuela, Peru, Brazil, Bolivia, Argentina.
Amphisbaena spurrelli Boulenger, 1915. Panama, Colombia (northern).

II. CROCODYLIA (2 species)

A. Alligatoridae (1 species)

Caiman crocodilus (Linnaeus, 1758). CITES Appendix II. Mexico to Argentina, Trinidad, Tobago.

B. Crocodylidae (1 species)

Crocodylus acutus (Cuvier, 1807). CITES Appendix I/USFW Endangered. South Florida, Cuba, Isla de Juventud, Jamaica, Hispaniola, Atlantic coastal drainages from Mexico to Venezuela, Pacific coastal drainages from Mexico to Peru.

III. LACERTILIA (74 native species; 6 introduced)

A. Anguidae (5 species)

Coloptychon rhombifer (Peters, W.C.H., 1877). Costa Rica, Panama (Chiriqui Province).
Diploglossus bilobatus (O'Shaughnessy, 1874). Costa Rica, Panama (Bocas del Toro Province).
Diploglossus monotropis (Kuhl, 1820). Nicaragua, Costa Rica, Panama, Colombia, Ecuador.
Diploglossus montisilvestris Myers, 1973. Panama (known from the type locality only-Serrania de Pirre; extreme eastern).
Mesaspis monticola (Cope, 1877). Costa Rica, Panama (to Chiriqui Province).

B. Gekkonidae (9 native species; 6 introduced)

Coleonyx mitratus (Peters, W.C.H., 1863). Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, Panama.
Gonatodes albogularis (Dumeril and Bibron, 1836). Mexico to Colombia, Venezuela, Aruba, Cuba, Hispaniola, Jamaica, Grand Cayman, Curacao, Tortuga, Orchila, Gorgona, lower Florida Keys.
Gonatodes annularis Boulenger, 1887. Panama, Colombia, Venezuela, Guyana, Surinam, French Guiana, Brazil (Amapa).
*Hemidactylus brookii Gray, 1845. India, Sri Lanka, Burma. * = Introduced in Indonesia, Malaysia, Philippines, Cuba, Hispaniola, Panama (Panama Province, Tocumen), Puerto Rico.
*Hemidactylus frenatus Dumeril and Bibron, 1836. S.E. Asia. * = Introduced in S.E. Mexico, Guatemala, Panama (Panama City, Chepo, Tucuman area), Africa, Oceania.
*Hemidactylus mabouia (Moreau de Jonnes, 1818). South Africa north to Liberia, Madagascar and neighboring islands. * = Introduced in Mexico (Veracruz), Panama (old Canal Zone), Colombia, Venezuela, Guyana, Surinam, Brazil, Uruguay, Ecuador, Peru, Cuba, Hispaniola, Barbados, Martinique, Trinidad, Tobago, Little Tobago, St. Lucia.
*Hemidactylus turcicus (Linnaeus, 1758). Borders of the Mediterranean basin, Red Sea, and Arabian Sea to Pakistan. * = Introduced in southern United States, Mexico, Cuba, Panama (old Canal Zone).
Lepidoblepharis sanctaemartae (Ruthven, 1916). Panama (eastern, from old Canal Zone to Sapo Mountains), Colombia (Santa Marta Mountains).
Lepidoblepharis xanthostigma (Noble, 1916). Nicaragua, Costa Rica, Panama, Colombia.
*Lepidodactylus lugubris (Dumeril and Bibron, 1836). India, Ceylon, Nicobars, Andamans, Burma, Malay Archipelago, Philippines, Indo-Australian Archipelago, Oceania. * = Introduced in Nicaragua, Costa Rica, Panama, Colombia, Ecuador, Brazil.
*Sphaerodactylus argus Gosse, 1850. Jamaica. * = Introduced in Cuba, San Andres Island (Colombia), Corn Islands (Nicaragua), Bahamas, Florida (Key West), Mexico (Yucatan), Nicaragua, Costa Rica, Panama (Bocas del Toro, San Blas

Provinces).
Sphaerodactylus graptolaemus Harris and Kluge, 1984. Costa Rica, Panama (western).
Sphaerodactylus homolepis Cope, 1886. Nicaragua, Costa Rica, and Panama (western, central; all Atlantic versants).
Sphaerodactylus lineolatus Lichtenstein, 1856. Panama (western, Pacific versant), Colombia (northwest).
Thecadactylus rapicauda (Houttyuyn, 1782). Mexico (S.E., Yucatan), Belize, Guatemala, Honduras, Nicaragua, Costa Rica, Panama, Colombia, Ecuador, Venezuela, Guyana, Surinam, French Guiana, Trinidad, Lesser Antilles, Brazil.

C. Iguanidae (41 species)
Anolis altae Dunn, 1930. Costa Rica, Panama (Bocas del Toro, Chiriqui Provinces).
Anolis aquaticus Taylor, 1956. Costa Rica (Puntarenas Province), Panama (western).
Anolis auratus Daudin, 1802. Panama (eastern and central), Colombia, Ecuador, Venezuela, the Guianas, Brazil.
Anolis biporcatus (Wiegmann, 1834). Mexico (southeast, Yucatan), Guatemala, Belize, El Salvador, Honduras, Nicaragua, Costa Rica, Panama, Colombia, Ecuador.
Anolis capito Peters, 1863. Mexico (southeast, Yucatan), Guatemala, Belize, Honduras, Nicaragua, Costa Rica, Panama.
Anolis carpenteri Echelle, Echelle, and Fitch, 1971. Nicaragua, Costa Rica, Panama.
Anolis casildae Arosemena, Ibanez, and Sousa, 1991. Panama (western, central cordillera).
Anolis chloris Boulenger, 1898. Panama (Darien Province), Colombia (Pacific versant), Ecuador (Pacific versant).
Anolis chocorum Williams and Duellman, 1967. Costa Rica, Panama, Colombia, Ecuador.
Anolis frenatus Cope, 1899. Costa Rica, Panama, Colombia (northern, central).
Anolis fungosus Myers, 1971. Costa Rica, Panama (Bocas del Toro Province, Cordillera de Talamanca, north slope Cerro Pando).
Anolis fuscoauratus D'Orbigny, 1837 (see Dumeril and Bibron, 1837). Panama, Colombia, Ecuador, Venezuela, the Guianas, Brazil, Bolivia, Peru.
Anolis humilis Peters, 1863. Guatemala, Belize, Honduras, Nicaragua, Costa Rica, Panama.
Anolis insignis Cope, 1871. Costa Rica, Panama (Pacific versant to Darien Province).
Anolis intermedius Peters, 1863. Nicaragua, Costa Rica, Panama.
Anolis kemptoni Dunn, 1940. Panama (known only from the type locality-Chiriqui Province, Finca Lerida, above Boquete, 5399 ft).
Anolis latifrons Berthold, 1846. Panama, Colombia (Choco), Ecuador (northwest).
Anolis lemurinus Cope, 1861. Mexico (southeast, Yucatan), Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica, Panama.
Anolis limifrons Cope, 1862. Mexico (Isthmus of Tehuantepec),

Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica, Panama.
Anolis lionotus Cope, 1861. Panama (central).
Anolis microtus Cope, 1871. Costa Rica, Panama (Chiriqui Province, extreme southwest, 1000-1500 m).
Anolis oxylophus Cope, 1875. Nicaragua, Costa Rica, Panama (western).
Anolis pachypus Cope, 1875. Costa Rica, Panama (Chiriqui Province, Volcan Chiriqui).
Anolis pentaprion Cope, 1862. Mexico (southeast, Yucatan), Nicaragua, Costa Rica, Panama, Colombia (northwest).
Anolis poecilopus Cope, 1862. Panama (Darien Province), Colombia (extreme northwest).
Anolis polylepis Peters, 1874. Costa Rica, Panama.
Anolis procellaris Myers, 1971. Panama (Veraguas Province).
Anolis tropidogaster Hallowell, 1856. Panama, Colombia (Pacific versant), Ecuador (Pacific versant), Venezuela (western).
Anolis vociferans Myers, 1971. Costa Rica, Panama (Chiriqui Province).
Anolis woodi Dunn, 1940. Costa Rica, Panama (Chiriqui Province, higher elevations).
Basiliscus basiliscus (Linnaeus, 1758). Nicaragua, Costa Rica, Panama, Colombia (Pacific versant), Ecuador (northwest), Venezuela (to Merida State).
Basiliscus galeritus Dumeril and Dumeril, 1851. Panama (eastern), Colombia and Ecuador (Pacific versants).
Basiliscus plumifrons Cope, 1875. Honduras, Nicaragua, Costa Rica, Panama.
Basiliscus vittatus Wiegmann, 1828. Mexico (Jalisco, Tamaulipas), Belize, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, Panama, Colombia.
Corytophanes cristatus (Merrem, 1820). Mexico (Veracruz), Belize, Guatemala, Honduras, Nicaragua, Costa Rica, Panama, Colombia (northwest).
Ctenosaura similis (Gray, 1831). Mexico (Isthmus of Tehuantepec), Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica, Panama (at least to old Canal Zone, beaches on both sides), Old Providence and San Andres Islands.
Enyalioides heterolepis (Bocourt, 1874). Panama, Colombia, Ecuador (northwest).
Iguana iguana (Linnaeus, 1758). Mexico (Sinaloa, Veracruz), Belize, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, Panama, Colombia, Venezuela, the Guianas, Ecuador, Peru, Brazil, Bolivia, Paraguay, Argentina, Uruguay(?). CITES Appendix II.
Morunasaurus groi Dunn, 1933. Panama (El Valle de Anton), Ecuador (Amazonian side).
Polychrus gutturosus Berthold, 1846. Honduras, Nicaragua, Costa Rica, Panama, Colombia, Ecuador.
Sceloporus malachiticus Cope, 1864. Mexico (Veracruz, Chiapas), Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, Panama.

D. Scincidae (2 species)

Mabuya unimarginata (Cope, 1862) Mexico (southeast) to Panama.
Sphenomorphus cherriei (Cope, 1893). Mexico (southeast) to Panama.

E. Teiidae (16 species)

Ameiva ameiva (Linnaeus, 1758). Panama, Colombia, Venezuela, Guyana, Surinam, French Guiana, Ecuador, Peru, Brazil, Trinidad, Tobago, Margarita Islands.
Ameiva festiva (Lichtenstein, 1856). Mexico (southeast) to Panama, Colombia.
Ameiva leptophrys (Cope, 1893). Costa Rica, Panama.
Ameiva quadrilineata (Hallowell, 1861). Nicaragua, Costa Rica, Panama.
Anadia ocellata Gray, 1845. Costa Rica, Panama, Colombia, Ecuador.
Anadia vittata Boulenger, 1913. Panama, Colombia.
Bachia blairi (Dunn, 1940). Costa Rica, Panama (Chiriqui Province).
Bachia pallidiceps (Cope, 1862). Panama, Colombia (west-central).
Cnemidophorus lemniscatus (Linnaeus, 1758). Guatemala, Honduras, Costa Rica, Nicaragua, Panama, Colombia, Venezuela, the Guianas, islands of Trinidad, Tobago, Pato, Margarita, Coche, Cubagua, Old Providence, Swan, Milford, Aruba, Los Roques Archipelago, Aves, Orchila, Blanquilla, San Andres, Santa Catalina.
Echinosaura horrida (Boulenger, 1890). Panama, Colombia, Ecuador.
Gymnophthalmus speciosus (Hallowell, 1861). S.E. Mexico, Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica, Panama, Colombia, Venezuela (east to Margarita Island). Introduced on Grenada.
Leposoma rugiceps (Cope, 1869). Panama (Canal eastward), Colombia (north and east of the Andes).
Leposoma southi Ruthven and Gaige, 1924. Costa Rica, Panama (to Panama Canal).
Prionadactylus vertebralis (O'Shaughnessy, 1879). Panama (Darien Province), Colombia (Pacific versant), Ecuador (Pacific versant and Zamora (City)).
Ptychoglossus festae (Peracca, 1896). Panama (San Blas Province), Colombia.
Ptychoglossus plicatus (Taylor, 1949). Costa Rica, Panama.

F. Xantusiidae (1 species)

Lepidophyma flavimaculatum Dumeril and Dumeril, 1851. Mexico (Tamaulipas and Veracruz) to Panama (old Canal Zone).

IV. SERPENTES (132 species)

A. Anomalepididae (4 species)

Anomalepis mexicanus Jan, 1860. Nicaragua, Costa Rica, Panama.
Helminthophis frontalis Peters, 1860. Costa Rica, Panama.
Liotyphlops albirostris (Peters, 1857). Costa Rica, Panama, Colombia, Venezuela, Ecuador, Curacao.
Liotyphlops rowani Smith and Grant, 1958. Panama.

B. Boidae(6 species)

Boa constrictor Linnaeus, 1758. Mexico to Argentina, Trinidad, Tobago. CITES Appendix II.
Corallus annulatus (Cope, 1875). Nicaragua to Ecuador. CITES Appendix II.
Corallus enydris (Linnaeus, 1758). Nicaragua to Ecuador and Peru, Trinidad, Windward Islands. CITES Appendix II.
Epicrates cenchria (Linnaeus, 1758). Costa Rica to Argentina, Trinidad, Tobago. CITES Appendix II.
Trachyboa boulengeri Peracca, 1910. Panama, Colombia, Ecuador. CITES Appendix II.
Ungaliophis panamensis Schmidt, 1933. Nicaragua, Costa Rica, Panama, Colombia. CITES Appendix II.

C. Colubridae (99 species)

Amastridium veliferum Cope, 1861. Atlantic and Pacific slopes of Mexico (from Neuvo Leon and Chiapas), Guatemala, Belize, Honduras, Nicaragua, Costa Rica, Panama.
Atractus clarki Dunn and Bailey, 1939. Panama (known from the type locality only-Darien Province, Santa Cruz de Cana mine).
Atractus crassicaudatus Dumeril, Bibron, and Dumeril, 1854. Panama, Colombia, Venezuela.
Chironius carinatus (Linnaeus, 1758). Nicaragua to Brazil and Argentina, Trinidad, Guadalupe, San Vicenti I.
Chironius exoletus (Linnaeus, 1758). Costa Rica, Panama, Colombia, Brazil, Argentina (northeast).
Chironius fuscus (Linnaeus, 1758). Panama, Colombia, Venezuela, Surinam, Brazil, Bolivia (northern), Peru (eastern), Ecuador (eastern).
Chironius grandisquamis (Peters, 1868). Honduras, Nicaragua, Costa Rica, Panama, Colombia, Ecuador (northeast).
Clelia clelia (Daudin, 1803). Mexico to Ecuador (northwest), Argentina (northern).
Clelia equatoriana (Amaral, 1924). Panama, Colombia, Ecuador.
Clelia scytalina (Cope, 1866). Mexico to Colombia.
Coniophanes bipunctatus (Gunther, 1858). Mexico to Panama (Darien)
Coniophanes fissidens (Gunther, 1858). Mexico to Ecuador.
Coniophanes joanae Myers, 1966. Panama (eastern highlands).
Conophis lineatus (Dumeril, Bibron, and Dumeril, 1854). Mexico to Panama (Cocle Province), Colombia (?).
Dendrophidion nuchale (Peters, 1863). Belize to Colombia, Venezuela, Ecuador.
Dendrophidion paucicarinatum (Cope, 1894). Costa Rica, Panama

(western).
Dendrophidion percarinatum (Cope, 1893). Honduras, Nicaragua, Costa Rica, Panama.
Dentrophidion vinitor Smith, 1941. Mexico to Panama, Colombia (northwestern).
Diaphorolepis wagneri Jan, 1863. Panama (Darien Province), Colombia, Ecuador (western).
Dipsas articulata (Cope, 1868). Costa Rica, Panama.
Dipsas temporalis (Werner, 1909). Panama (Atlantic versant), Colombia, Ecuador (Pacific versant).
Dipsas tenuissima Taylor, 1954. Panama, Costa Rica.
Dipsas variegata (Dumeril, Bibron, and Dumeril, 1854). Panama, Colombia, Venezuela, Trinidad, Brazil, Ecuador, Peru.
Dipsas viguieri (Bocourt, 1884). Panama (Pacific versant).
Dryadophis melanolomus (Cope, 1868). Mexico to Bolivia, Brazil (western), Tobago.
Dryadophis pleei Dumeril, Bibron, and Dumeril, 1854. Panama, Colombia, Venezuela, Margarita and Testigos Islands.
Drymarchon corais (Boie, 1827). United States to Argentina (northern).
Drymobius chloroticus (Cope, 1886). Mexico to Panama.
Drymobius margaritiferus (Schlegel, 1837). Texas (southern) to Colombia.
Drymobius rhombifer (Gunther, 1860). Nicaragua, Panama, Colombia, Venezuela (eastern), Ecuador, Peru, Bolivia.
Enulius flavitorques (Cope, 1869). Mexico (southern) to Colombia.
Enulius sclateri (Boulenger, 1894). Nicaragua to Colombia.
Erythrolamprus bizonus Jan, 1863. Costa Rica, Panama, Colombia, Venezuela.
Erythrolamprus mimus (Cope, 1869). Honduras to Ecuador, Peru.
Geophis brachycephalus (Cope, 1871). Costa Rica, Panama, Colombia.
Geophis championi Boulenger, 1894. Panama (Chiriqui Province; Chiriqui and Boquete).
Geophis godmani Boulenger, 1894. Costa Rica, Panama.
Geophis hoffmanni Peters, 1859. Honduras to Panama.
Hydromorphus concolor Peters, 1859. Guatemala to Panama (central).
Hydromorphus dunni Slevin, 1942. Panama (known from the type locality only-Chiriqui Province, north of Boquete).
Imantodes cenchoa (Linnaeus, 1758). Mexico to Argentina (northern).
Imantodes gemmistratus (Cope, 1861). Mexico (Sonora, Veracruz) to Colombia (northern).
Imantodes inornatus (Boulenger, 1896). Nicaragua, Costa Rica, Panama, Colombia, Ecuador (northwest).
Imantodes phantasma Myers, 1982. Panama (eastern Darien Province-Serrania de Pirre).
Lampropeltis triangulum (Lacepede, 1789). United States to Colombia, Ecuador.
Leptodeira annulata (Linnaeus, 1758). Mexico to Argentina.
Leptodeira nigrofasciata Gunther, 1868. Mexico to Panama.
Leptodeira septentrionalis (Kennicott, 1859). United States (Texas) to Peru, excluding Venezuela, Brazil.

Leptophis ahaetulla (Linnaeus, 1758). S.E. Mexico to Argentina, Brazil, Guyana, Trinidad, Tobago.
Leptophis depressirostris (Cope, 1861). Atlantic versant of Nicaragua, Costa Rica, Panama, Colombia and Ecuador (Pacific versants).
Leptophis riveti Despax, 1910. Costa Rica, Panama, Colombia, Ecuador, Peru, Trinidad.
Liophis epinephelus (Cope, 1862). Costa Rica, Panama, Colombia, Venezuela, Ecuador, Peru.
Liophis lineatus (Linnaeus, 1758). Panama, Colombia, Venezuela, the Guianas, Brazil, Ecuador.
Masticophis mentovarius (Dumeril, Bibron and Dumeril, 1854). Mexico to Colombia, Venezuela.
Ninia atrata (Hallowell, 1845). Honduras, El Salvador, Costa Rica, Panama, Colombia, Venezuela, Ecuador, Trinidad.
Ninia maculata (Peters, 1861). Guatemala to Panama (Darien Province).
Ninia psephota (Cope, 1875). Costa Rica (Cordillera de Talamanca), Panama (to Chiriqui Province-Volcan de Chiriqui).
Nothopsis rugosus Cope, 1871. Honduras, Nicaragua, Costa Rica, and Panama (Atlantic versants), Colombia and Ecuador (Pacific versants).
Oxybelis aeneus (Wagler, 1824). United States (Arizona) to Peru, Bolivia, Paraguay, Argentina (northern).
Oxybelis brevirostris (Cope, 1861). Nicaragua, Costa Rica, and Panama (Atlantic versants), Colombia and Ecuador (Pacific versants).
Oxybelis fulgidus (Daudin, 1803). Mexico to Surinam, Brazil, Argentina.
Oxyrhopus petola (Linnaeus, 1758). Mexico to Colombia, Venezuela, Surinam, Trinidad, Brazil, Ecuador (northwest), Peru, Bolivia.
Phimophis guianensis (Troschel, 1848). Panama (Cocle Province), Colombia, Venezuela, Surinam.
Pliocercus euryzonus Cope, 1862. Guatemala, Honduras, Nicaragua, Costa Rica, Panama, Colombia, Ecuador, Brazil.
Pseudoboa neuwiedii (Dumeril, Bibron, and Dumeril, 1854). Panama (Pacific versant, just W of Panama Canal), Colombia, Surinam Trinidad, Tobago, Brazil.
Pseustes poecilonotus (Gunther, 1858). Mexico (Isthmus of Tehuantepec and Yucatan) to Colombia, Venezuela, Guyana, Surinam, French Guiana, Trinidad, Brazil, Ecuador, Peru, Bolivia.
Pseustes shropshirei (Barbour and Amaral, 1924). Panama, Colombia and Ecuador (Pacific versants).
Rhadinaea calligaster (Cope, 1875). Costa Rica, Panama (extreme western-Cordillera de Talamanca).
Rhadinaea decipiens (Gunther, 1893). Costa Rica, Panama, Colombia (northern).
Rhadinaea decorata (Gunther, 1858). Mexico (Veracruz) to Colombia, Ecuador (northern).
Rhadinaea fulviceps Cope, 1886. Panama (central and eastern lowlands), Colombia, Ecuador.

Rhadinaea godmani (Gunther, 1865). Mexico to Panama (western).
Rhadinaea guentheri Dunn, 1938. Nicaragua, Costa Rica, Panama (to Panama Canal).
Rhadinaea pachyura (Cope, 1875). Costa Rica, Panama (western).
Rhadinaea pulveriventris Boulenger, 1896. Costa Rica, Panama (extreme western).
Rhadinaea sargenti Dunn and Bailey, 1939. Panama (central, east of Panama Canal in Rio Chagres and Rio Pequeni watersheds).
Rhadinaea vermiculaticeps (Cope, 1860). Panama (west, central).
Rhinobothryum bovallii Andersson, 1916. Guatemala, Honduras, Nicaragua, Costa Rica, Panama, Colombia (northwest), Ecuador (northwest).
Scaphiodontophis annulatus (Dumeril, Bibron, and Dumeril, 1854). Mexico (southeast) to Panama, Colombia.
Sibon annulatus (Gunther, 1872). Costa Rica, Panama (western Atlantic versant, western Pacific versant at El Valle de Anton, eastern Pacific versant).
Sibon argus (Cope, 1875). Costa Rica, Panama (eastern Pacific versant and western Pacific at El Valle de Anton).
Sibon longifrenis (Stejneger, 1909). Costa Rica and Panama (Atlantic versants).
Sibon nebulatus (Linnaeus, 1758). Mexico to Colombia, Venezuela, Trinidad, Tobago, Ecuador, Brazil.
Siphlophis cervinus (Laurenti, 1768). Panama (Panama Canal) to Colombia, Ecuador, Trinidad, Brazil, Peru, Bolivia.
Spilotes pullatus (Linnaeus, 1758). Mexico (southern) to Brazil, Argentina (northern), Trinidad, Tobago.
Stenorrhina degenhardtii (Berthold, 1846). Mexico (southeast) to Colombia, Venzuela, Ecuador (Pacific versant).
Stenorrhina freminvillei (Dumeril, Bibron, and Dumeril, 1854). Mexico (Guerrero) to Panama.
Tantilla albiceps Barbour, 1925. Panama (known only from the type locality-Barro Colorado Island in Gatun Lake in Panama Canal).
Tantilla alticola (Boulenger, 1903). Nicaragua, Costa Rica, Panama (?), Colombia.
Tantilla melanocephala (Linnaeus, 1758). Guatemala to Colombia, Venezuela, Guyana, Surinam, Trinidad, Tobago, Brazil, Ecuador, Peru, Bolivia, Argentina (northern). Not east of Andes.
Tantilla reticulata Cope, 1860. Nicaragua, Costa Rica, Panama (Atlantic versant), Colombia (northwest Pacific versant).
Tantilla schistosa (Bocourt, 1883). Mexico (southeast) to Panama (Panama Canal).
Tantilla supracincta (Peters, 1863). Nicaragua (extreme southeast), Costa Rica, Panama (Atlantic and Pacific versants to central), Ecuador.
Tretanorhinus mocquardi Bocourt, 1891. Panama (Atlantic and Pacific versants of the Panama Canal area only).
Tretanorhinus nigroluteus Cope, 1861. Mexico (southeast, Yucatan) to Panama (Atlantic versant), Colombia (to City of Bogota).
Trimetopon barbouri Dunn, 1930. Panama (known from the type locality only-Pedro Miguel in the old Canal Zone).

Trimetopon pliolepis Cope, 1894. Costa Rica, Panama.
Trimetopon slevini Dunn, 1940. Costa Rica, Panama (Chiriqui Province, near Boquete).
Tripanurgos compressus (Daudin, 1803). Costa Rica, Panama, Colombia, Venezuela, Trinidad, Ecuador, Brazil, Peru, Bolivia.
Xenodon rabdocephalus (Wied-Neuwied, 1824). Mexico (Guerrero, Veracruz) to Panama, Colombia, Ecuador, Brasil, Bolivia.

D. Elapidae (10 species)

Micrurus alleni Schmidt, 1936. Nicaragua, Costa Rica, Panama (northwest Bocas del Toro Province, extreme southwest Chiriqui Province, and one record from Darien Province).
Micrurus ancoralis (Jan, 1872). Panama (Darien Province), Colombia, Ecuador.
Micrurus clarki Schmidt, 1936. Costa Rica, Panama (southwest Pacific lowlands, Atlantic versant from central Panama to Darien Province, Darien Province), Colombia (Pacific versant).
Micrurus dissoleucus (Cope, 1860). Panama (Panama Canal) to Colombia (northern), Venezuela (northern).
Micrurus dumerilii (Jan, 1858). Panama (extreme border of Darien Province), Colombia, Venezuela (northwest), Ecuador (northern).
Micrurus mipartitus (Dumeril, Bibron, and Dumeril, 1854). Panama (Darien Province), Colombia, Venezuela, Ecuador.
Micrurus multifasciatus (Jan, 1858). Nicaragua, Costa Rica, and Panama (Atlantic versants).
Micrurus nigrocinctus (Girard, 1854). Mexico (Oaxaca, Chiapas) to Panama, Colombia (northwest).
Micrurus stewarti Barbour and Amaral, 1928. Guatemala, Panama (Cocle and Panama Provinces-El Valle de Anton; Colon Province- Cerro Bruja and uplands near Sabanita).
Pelamis platurus (Linnaeus, 1766). East coast of Africa, Indian Ocean, Indo-Australian Region, Pacific Ocean, coast of Central and South America from the Gulf of California to Northern Peru.

E. Leptotyphlopidae(2 species)

Leptotyphlops goudotii (Dumeril and Bibron, 1844). Mexico (Colima and Tehuantepec) to Colombia and Venezuela (Atlantic versants).
Leptotyphlops macrolepis (Peters, 1857). Panama, Colombia, Venezuela, Guyana, Surinam, French Guiana, Brazil (northern).

F. Viperidae (11 species)

Bothriechis lateralis Peters, 1863. Costa Rica, Panama (to Veraguas Province).
Bothriechis nigroviridis Peters, 1859. Costa Rica, Panama (Bocas del Toro Province).

Bothriechis schlegelii (Berthold, 1846). Mexico (southeast) to Colombia, Venezuela (western), Ecuador (northern).
Bothriopsis punctata (Garcia, 1896). Panama (Darien Province), Colombia (Pacific versant), Ecuador (northwest Pacific versant).
Bothrops asper (Garman, 1883). Mexico to Colombia (northern), Venezuela (northern), Trinidad, Ecuador (Pacific versant).
Lachesis muta (Linnaeus, 1766). Nicaragua (southern) to Colombia, Venezuela, Guyana, Surinam, French Guiana, Brazil, Ecuador, Peru, Bolivia (northern).
Porthidium godmani (Gunther, 1863). Mexico, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, Panama (Cordillera de Talamanca).
Porthidium lansbergii (Schlegel, 1841). Panama (Pacific versant of old Canal Zone to Darien Province), Colombia (northern), Venezuela (extreme northern).
Porthidium nasutum (Bocourt, 1868). Mexico (southeast) to Panama (Atlantic versant except for cross country range in the Panama Canal area and Darien Province), Colombia (Pacific versant), Ecuador (extreme northern Pacific versant).
Porthidium nummifer (Ruppel, 1845). Mexico (San Luis Potosi) to Panama (Atlantic versant of western Panama to the Canal, extreme southwestern Chiriqui Province).
Porthidium ophryomegas (Bocourt, 1868). Guatemala to Costa Rica, Panama (western?).
Porthidium picadoi (Dunn, 1939). Costa Rica, Panama (western Bocas del Toro Province).

V. TESTUDINES (14 species)

A. Cheloniidae (4 species)

Caretta caretta (Linnaeus, 1758). Globally in tropical and subtropical seas. CITES Appendix I/USFWS Threatened.
Chelonia agassizii Bocourt, 1868. Pacific (eastern) from California to Chile, east to the Galapagos and Papua New Guinea. CITES Appendix I/USFWS Threatened.
Chelonia mydas (Linnaeus, 1758). Globally in temperate and tropical seas. CITES Appendix I/USFWS Threatened.
Eretmochelys imbricata (Linnaeus, 1766). Globally in tropical seas, occasionally in temperate seas. CITES Appendix I/USFWS Endangered.
Lepidochelys kempii (Garman, 1880). Atlantic Ocean (northern) and Gulf of Mexico. Reported from Colombia and Venezuela. Panama? CITES Appendix I/USFWS Endangered.
Lepidochelys olivacea (Eschscholtz, 1829). Pacific and Indian Oceans, Caribbean Sea from Cuba and eastward from Cartagena, Colombia (Panama?), Atlantic Ocean south to Brazil, western central African coast. CITES Appendix I/USFWS Threatened.

B. Chelydridae (1 species)

Chelydra serpentina (Linnaeus, 1758). Canada to Ecuador.

C. Dermochelyidae (1 species)

Dermochelys coriacea (Vandelli, 1761). Globally in temperate to tropical seas. CITES Appendix I/USFWS Endangered.

D. Emydidae (1 species)

Trachemys scripta (Schoepf, 1792). United States to Colombia, Venezuela; isolated populations in Brazil, Argentina, Uruguay.

E. Kinosternidae (3 species)

Kinosternon angustipons Legler, 1965. Nicaragua, Costa Rica, Panama (western, Atlantic versant).
Kinosternon leucostomum Dumeril and Dumeril, 1851. Mexico to Colombia, Ecuador.
Kinosternon scorpioides (Linnaeus, 1766). Mexico to Argentina, Colombia, Venezuela, Guyana, Brazil, Trinidad.

F. Testudinidae (4 species)

Testudininae (1 Species)

Geochelone carbonaria (Spix, 1824). Panama (Darien Province) to Paraguay, Brazil. CITES Appendix II.

Batagurinae (3 Species)

Rhinoclemmys annulata (Gray, 1860). Honduras to Ecuador.
Rhinoclemmys funerea (Cope, 1875). Honduras-Nicaragua border (Atlantic versant) to Panama (Atlantic versant, central).
Rhinoclemmys melanosterna (Gray, 1861). Panama (eastern), Colombia, Ecuador.

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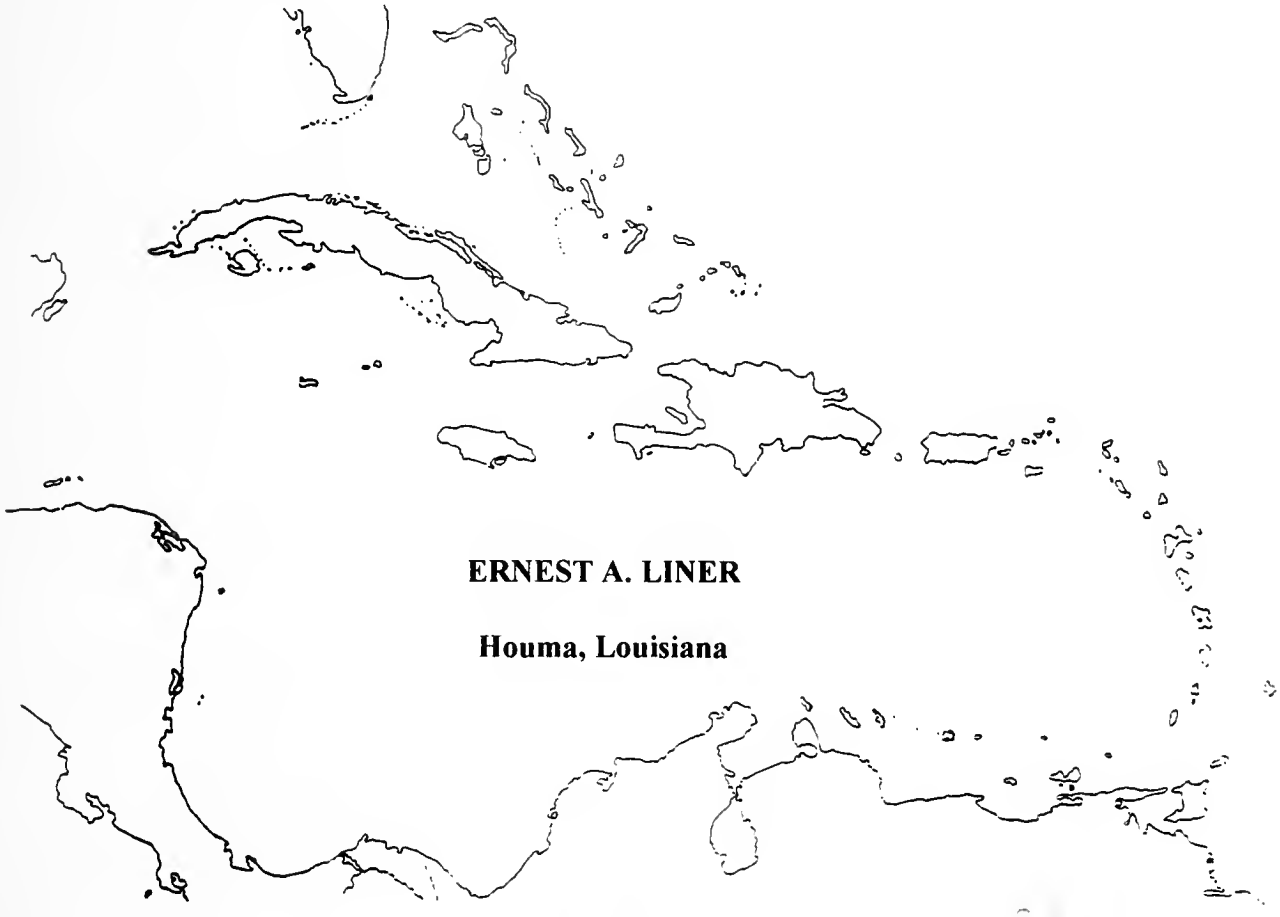

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INTRODUCTION

The present alphabetical listing by author(s) covers all the papers concerning herpetology that have appeared in the first twenty-five volumes of the Caribbean Journal of Science from 1961 through 1989.

All junior authors are listed alphabetically and cross referenced to the senior author. All articles in this bibliography can be located by knowing the author(s) or the title. All articles with original names are preceeded by an *.

While the journal was originally a quarterly it was issued irregularly, sometimes in different years to that given on the cover. The actual date of issue is stamped (or printed) on the cover. In those cases where this is indicated the original year is given followed by the actual year of issue. Sometimes two numbers were in one, sometimes four with continuous paging except for volume 4 which continued paging from Volume 3. Volumes 15 and 19 (1-2) (3-4) each begain with page 1. Volume 23 skipped pages 153-225 between numbers 1 and 2. Presently the journal is issued twice a year with two numbers in one. In Volumes 15 and 19 in the bibliography and scientific name index the issue number is included as well as the issue number thereby causing the seeming inconsistency.

All herpetological scientific names are listed alphabetically and referenced to the article(s) where they are mentioned. No scientific names in bibliographies are included. All original spellings have been maintained except those ending in i or ii.Double ii is used when both are used. The volume number and the first page number of the article where the name appears are given. All original names are **boldfaced** and the page number given identifies the article and not the page number of the name.

The author wishes to thank C. Gans for suggesting this project and to G. R. Zug and W. R. Heyer for suggesting the scientific name index.

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SCIENTIFIC NAME INDEX

A TRILOGY ON THE HERPETOLOGY OF LINNAEUS'S SYSTEMA NATURAE X

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SMITHSONIAN HERPETOLOGICAL INFORMATION SERVICE NO. 100

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The Linnaeus crest on the cover bears evidence of Linnaeus's botanical interest. The shoulders and sides bear strands of "ivy"; the top is capped by a pair of spiny leaves bracketing a single stem with two flowers. The shield contains three crowns, each with a different "morphology". Additional details on Linnaeus and the family crest are in Uggla's 1957 book *Linnaeus* (Swedish Institute, Stockholm). K. Adler generously provided SHIS with reference to the preceding book and other items relating to Linnaeus (signatures, p. 40; Methodus, p. 54). G.R.Z.

A TRILOGY ON THE HERPETOLOGY OF LINNAEUS'S SYSTEMA NATURAE X

by Kenneth Kitchell, Jr. & Harold A. Dundee

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FOREWORD

Several years ago one of us, (HAD) was preparing a manuscript on higher category systematics and discovered to his amazement that no translation of the l0th edition of the *Systema Naturae* had been done. Although he had studied two romance languages and could struggle through some translation of Linnaeus's Latin, Dundee realized that his interpretations could be in error, hence he sought some help in translations of parts of the the *Systema* that were essential to his work. Faced with the absence of members of the Classics Department at his institution during the summer he sought aid from a zoologist priest at another institution. Although the priest could read some Latin, he was not that skilled at the use of the language. In talking to an older priest friend, Dundee was informed that if you needed to get some Latin translation from a priest you would have to go to a person probably 55-60 years or older because the Catholic church had ceased to do masses in Latin and the younger priesthood no longer had to be proficient in Latin. Prior to 1850 zoologists usually were competent readers and users of Latin, but because Latin was no longer the language of any major country the language skills needed for reading technical papers shifted to active and productive languages. Today few zoologists can say that they took courses in Latin or Greek, the main languages of so much early science. The need therefore for a translation of a major classic in zoology became evident. Accordingly Dundee turned to Kenneth Kitchell, a scholar of Latin, to do the translation, with Dundee cooperating to finesse the translation in terms that would be used by zoologists. As the work progressed the need for a listing of current names for Linnaean species and for identification of the literature that he cited became obvious, and this area, being solely in the field of herpetology, has become a contribution by Dundee.

TRANSLATION AND ANNOTATION OF THE AMPHIBIAN AND REPTILE SECTION OF SYSTEMA NATURAE X

by

Kenneth Kitchell and **Harold A. Dundee**

INTRODUCTION

The tenth edition of *Systema Naturae* is one of the most significant and fundamental works in the science of biology -- it marked the beginning of orderliness to the chaotic and inconsistent methods of naming animals. Karl Linné, a Swedish naturalist, who latinized his name to Carolus Linnaeus, is the author of the *Systema Naturae*. He was enobled in 1761 as Carl von Linné , thus his name may appear as Linnaeus , Linné, or von Linné. In the *Systema* he used the system of binomial nomenclature, i.e., application of at least two names, the generic name and the specific epithet, for the scientific name of an animal. Binomial nomenclature was not actually a creation of Linnaeus's. The concept of genus and specific epithet had been used for hundreds of years before his time, but the use of such names in a uniform manner and under the same cover for all groups of animals emphasized the advantages of such a system, and biologists soon embraced the idea and the binomial system was considered to be the ideal form for nomenclature. Linnaeus had actually had the same effect on botanists via publication of his book *Species Plantarum* in 1753. The fundamental concept of nomenclature is based on priority for the oldest name; names applied by Linnaeus are often the inventions of earlier taxonomists, but the acceptance of Linnaeus' s l0th as the starting point forces us to give credit for many of the earlier names to him. By currently accepted rules, no names proposed prior to 1758 are granted priority.

Linnaeus did not propose any rules for animal nomenclature but did provide some rules for botanists in his *Critica Botanica* of 1737. Zoological taxonomists did not have any guiding principles for applications of priority until 1842 when the British Association for the Advancement of Science adopted a set of rulings known as the "Stricklandian Code". In 1889 the First International Zoological Congress discussed a set of rules proposed by Professor Raphael Blanchard and adopted them at the second Congress in 1892. But a need was seen for considering all rules and by l905 the Sixth Congress adopted the *Règles internationales de la Nomenclature zoologique* . The Règles were later replaced by the *International Code of Zoological Nomenclature*, which is the set of rules determined by the International Congress of Zoology and which is published by the International Commission on Zoological Nomenclature. In its articles the Code clearly states that Linnaeus' s 10th edition is the starting point for zoological nomenclature and is arbitrarily assigned a publication date of January l, 1758 and that any other work published in 1758 is to be treated as having been published after that edition. Many of the names used by Linnaeus still apply, albeit in many cases in different genera.

As we look at the expanded title of the *Systema Naturae*, we see that it refers to Classes, Orders, Genera, and Species. The concept of family, a hierarchy higher than genus but lower than Order, came after Linnaeus's work. Not surprisingly, then, later investigations have led to some Linnaean names being converted to different hierarchical levels. The taxonomists of Linnaeus's time were concerned with only a few thousand species, but today we are concerned with possibly two million or more species. We have endeavored to simply translate Linnaeus' s l0th; any further interpretations fall beyond this province and belong to the specialist systematists.

At present time many class and order names given by Linnaeus have no recognition because the International Code of Zoological Nomenclature, now in its third edition, does not use its regulations for any hierarchical category above superfamily.

This is not the first translation of the *Systema Naturae*. The 13th edition, published posthumously in 1789 by Johannes Friedrich Gmelin, was translated into English from 1802-1806 by William Turton. The 13th dealt with far more species than were known by Linnaeus and included plants. It consists of seven volumes. But any user of the translation of the 13th edition should be warned that names contained in it are not necessarily endowed with priority and more important, the translation is not specifically the words of Linnaeus or Gmelin. Much additional text has been included and the documentation is simply a gross listing of sources, not specific literature, and no detailed credits are given within the text.

In our translation of Linnaeus we have faced a singular challenge which is comparable to that which plagues the students of English literature, e.g., determination of the meanings of statements that appear in Shakespearean plays. But we must remember that science tries to be exact, thus we choose not to try to second guess what Linnaeus meant. If some suggested clue is there, we explore it in endnotes, but otherwise we have tried to project exact wording. A comment by a major scholar of Linnaeus's work , the late John L. Heller, reads "....I think it must be admitted that sometimes Linnaeus's Latin syntax was a bit shaky and that occasionally he did come up with the wrong word." (1980 *Bibliotheca Zoologica Linneana*. pp. 240-264 *In* G. Broberg [ed.] *Linnaeus: Progress and Prospects in Linnaean Research*. Almquist & Wiskell International, Stockholm, and Hunt Institute for Botanical Documentation, Pittsburgh). Indeed we also discerned flaws in the syntax and our translations may seem to reach a different context than what he perhaps meant to say. Obviously the thought processes of early scholars were of a different ilk than those of today's sophisticated students, and we have difficulty in trying to reach into the depths of the earlier workers' brain cells to understand their interpretations. As trained scholars in our fields, classical languages and zoology respectively, we were often brainwashed by the information contained in our texts and in our mentors' lectures. But as we have discovered, from the mouths of babes, our students, we often hear novel ideas, the spawn of innocence! Thus to avoid injection of bias we have tried to be as literal as possible unless we can show cause to be otherwise. Where we find or suspect a typographical error we so indicate in our annotations.

A final word should be said concerning consistency. Linnaeus employed a wide variety of words for closely connected ideas. To recreate the intention of the original and to facilitate its study, care has been taken to provide different English words for corresponding different Latin words. Thus, a dot (*punctum*) is not a spot (*macula*) and dark-black (*ater*) is to be differentiated from black (*niger*). A frequent term which could have several meanings is *striatus*. Although we think of "striated" as meaning grooved (but one interpretation in herpetology has been "streaked"), Linnaeus's application of striatus seems to have been used to indicate stripes or keels. In actual Latin "stria" can mean groove or ridge. Thus where he has used such a term we have examined descriptions of the animal and determined what actual connotation he must have meant.

Specialist systematists have not been able to unravel all of Linnaeus's 10th, thus many species that he named remain obscure and unrecognized. Some have been determined to be other than what was first accepted and appeals have been made to the International Commission on Zoological Nomenclature to use its jurisdiction to overrule the laws of priority contained in the Code so that name stability can be retained for often used though erroneously applied names.

In the use of terminology we have used both a mixture of technical and vernacular terms. This is not inconsistent with modern descriptive zoology. Terms such as verrucose and warty are synonymous and either word may appear in a description. Sometimes our Latin dictionaries do not reveal all of the meanings or connotations that might apply to a word, especially as used in specialty taxonomy. This is where our collaboration has been an essential tool, Kitchell to translate the Latin, Dundee to determine how words of phrases might actually be stated by a zoologist. Each of us has thus contributed to the endnotes in discussing the innuendos of the text.

Certain terms used by Linnaeus may not be everyday terms to specialists (e.g., muricate, which refers to a spinose appearance seen in sea shells of the genus *Murex,* is used frequently in application to reptiles, but it is not a term that modern day herpetologists, or for that matter even sea shell specialists, employ) . If the user of our translations encounters a problem of this nature, we recommend seeking definition in an unabridged dictionary. Many geographic names that were in use in Linnaeus' s time are now supplanted by newer names. In our appended list of current names for Linnaean species the approximate geographic ranges are given, thus preempting Linnaeus's often inaccurately stated distributions. Finally, we include a complete list of all the literature cited by Linnaeus.

Readers of this translation should be aware that Latin punctuation does not correspond to modern English punctuation, thus an exact translation phrase by phrase is not presented. In many cases we have modified Linnaeus's statements by using the telegraphic style of description so often used in taxonomic writings, but the meanings should be the same. But we have at least noted the original pagination and have tried to stay with the original paragraphing, thus comparison of Latin and English text is facilitated.

Footnotes appear at the bottom of the page as originally placed in *Systema Naturae.* Our own commentaries, represented by superscript numbers, appear at the end of the translated text.

The following is actual text translation. The term *Indiis,* which refers to the West Indies, appears to be a persistent error in Linnaeus's geography. The species alleged to live there usually are South American. We were also struck by the frequency of color references to white or whitish and are guessing that the preservation process of that day was of poor quality, thus resulting in considerable fading. Beginning on page 214 of the original text, readers will discover the male sign ♂ below the number (which is total of ventral + subcaudal scutes) for many snake species. This is not, however, intended to indicate sex, instead Linnaeus stated on p. 221 of the original text that it indicates that the species is venomous (see also our footnote 46). Re the ventral + subcaudal count, see also our footnote 45). The † is nowhere defined in Systema Naturae, but in the Ray Society's 1957 facsimile of Linnaeus's1753 *Species Plantarum,* in which the binomial system is introduced for plants, W.T. Stearn states in the introduction that the sign meant an imperfectly known species or some doubt or obscurity. Stearn also states that Linnaeus's 1754 *Genera Plantarum* used the sign for a genus that he had seen only as herbarium material. We can only surmise that in *Systema Naturae* he perhaps meant it to mean that he was unsure. For a comment on terms relating to epidermal scutes, see footnote 8.

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CLASS III
Amphibians

These most terrible and vile animals are distinguished by their unilocular and single chambered heart, arbitrary lungs, and a divided penis.

Most amphibians are rough, with a cold body, a ghastly color, cartilaginous skeleton, foul skin, fierce face, a meditative gaze, a foul odor, a harsh call, a squalid habitat, and terrible venom. Their Author has not, therefore, done much boasting on their account.[1]

A polymorphous nature has bestowed a double life on most of these amphibians: granting that some undergo metamorphosis and others cast off their old age. Some are born from eggs, whereas others bear naked young. Some live variously in dry or wet, whereas others hibernate half the year. Some overcome their prey with effort and cunning, whereas others lure the same prey to their jaws as if by magic.

REPTILES. Footed and have flat-nude ears without ear lobes. They pursue various lives depending on their structure. The turtles are protected by their shell. The dracos[2] fly on wings, whereas lizards flee on feet, and frogs are hidden by location. Nor do they all lack venom, for example the toad, salamander, and gecko.[3]

SERPENTES. Footless and, lacking ears, are deaf. Lungs separate them from the fish , as do eggs in a chain and a divided penis. In short, the resemblance of the serpents with the lizards and that of the lizards with the frogs is so great as to admit no boundaries. Nature the savior has armed these creatures, cast onto the bare ground, ignorant of the use of limbs, and exposed to every harm, with weaponry bristling with dreadful venom, each unto its own kind.

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These weapons are very like teeth, but they are located on the outside edge of the upper jaw and can be extended and retracted at will. They are equipped with a sack of poison which they inject into the blood through a wound-- the cause of dire results though in other respects it is inert.

And thus these Catonians[4] have a poisonous bite and threaten death with the tooth; the cups[5] lack death surely according to Redi[6]. He who was in charge armed (¡)[46] only a tenth of the species, but lest those who were deprived of the weapons the others posessed should be miserable and rage too much, he wished them to be similar in shape so that all of them, of dubious identification, would be feared by all. But man's Benefactor gave to the people of India the mongoose along with the *Ophiorhiza* [7], to the Americans the pig along with *Senega* [7] and to the Europeans the stork along with the olive.

Should one wish a diagnosis for these, let him take it from the presence or absence of feet and from abdominal and caudal scutes[8]. But lest the number, taken from one and added to another, should confuse, it is useful to have each one numbered (*Act. Stockh.* 1752, p. 296). The length should be given to and from the anus and in some cases it should be by color. Be careful, however, lest the tail, once cut off, has been regenerated.

NANTES, the aquatic finned ones.(Chondropterygios, or the so-called cartilaginous fishes). A class of amphibians that have arbitrary lungs* , although it is true that they are not to be seen. They do not breathe with free, but with joined gills. The males lie upon the females with a divided penis! The eggs are in a chain with young, the skin is foul, the bones and the rest are cartilaginous. Nor are they entirely unschooled in venom, as witness the sting ray and the electric ray.

AMPHIBIOLOGI are the smallest of them all, but none are true. Seba has collected and delineated a tremendous number of them unknown to himself, but he multiplied them and described them but minimally. Catesby sketched a few serpents more beautifully than he made notes about them.

* The lungs are pectinate, finned like those of fish but are joined to an arcate, cylindrical, bulbous passage way, lacking a bony rod, unlike that of a fish , except in external appearance.

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CHARACTERISTICS OF THE GENERA

1. REPTILES. Footed, air breathing
   - 103. *Testudo* : body protected in a shell
   - 104. *Draco* : winged flying body
   - 105. *Lacerta* : a body (shelled or winged) that is naked and tailed
   - 106. *Rana* : a body similarly naked and without a tail[9]

II. SERPENTES. Legless, air breathing
   - 107. *Crotalus* : abdominal and caudal scutes, with a rattle
   - 108. *Boa* : abdominal and caudal scutes, without a rattle
   - 109. *Coluber* : abdominal scutes, caudal scales
   - 110. *Anguis* : abdominal and caudal scales
   - 111. *Amphisbaena* : abdominal and caudal rings
   - 112. *Coecilia* [sic]: naked, lateral wrinkles

III. NANTES. Finned, breathing air through their sides
   - 113. *Petromyzon* : 7 spiracles
   - 114. *Raja* : 5 spiracles below ; body depressed.
   - 115. *Squalus* : 5 lateral spiracles; smooth, rounded body
   - 116. *Chimaera* : 1 spiracle; 2 front incisor teeth
   - 117. *Lophius* : 1 spiracle; pectoral fins inserted in the forelimb
   - 118. *Acipenser* : 1 spiracle; retractable mouth

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I. REPTILES

Air breathing, four feet

103. *TESTUDO.* Four-footed body; tailed; covered with a shell

Mydas. 1:Turtle with flipper-like feet, two claws on the front feet, single claws on the hind feet, oval shell.

Amoen. acad. 1. *p.* 138. Turtle with pointed claws, two on the front foot, one on the rear foot

Mus. Ad. Fr. 1. *p.* 50. Dark-black turtle.

Osb. iter. 293.

Gesn. quadr. 78. Marine turtle.

Aldr. quadr. 712. *t.* 714.

Grew mus. 38. *t.*3. *f.* 4[10]

Olear. mus. 27. *t.* 17. *f.* 1.

Bradl. natur. t. 4. *f.* 4

β. *Seb. mus.* I. *t.* 80. *f.* 9. American marine turtle called the Mydas.

Amoen. acad. 1. *p.* 137. The same turtle

Marcgr. bras. 241. The *jurucuja* to the people of Brazil

Raj. quadr. 256.

γ *Amoen. acad.* 1. *p.* 287. *n.* 7. A turtle with sharp claws, with single ones on the front and hind feet.

Mus. Ad. Fr. 1. *p.* 50. The same turtle

Seb. mus. 1. *t.* 79. *f.* 4. 5. 6.

It lives near the sea islands:Ascension Isle, etc. It buries its membranous eggs by night in calcareous sand.
Its flesh is greenish and edible. It sleeps on its back on the sea. It attacks as many men as pursue it. It does not get up when on its backl on land. Its shell was once used for shields and arches.[11]

Caretta. 2: Turtle with flipper-like feet . Two claws on its fore and hind feet; shell ovate and sharply serrated.
Gron. mus. 2. *p.* 85. *n.* 69. Turtle with swimming feet, two sharp claws.
Brown. jam. 465. Turtle with two sharp claws on each side, five gibbous scales on its back.

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Catesb. car. p. 39, t. 39. Testudo Caretta Rochef. [12]
Raj. quadr. 258. Testudo Caretta.
Lives near American islands.

orbicularis 3: Turtle with palmate feet, circular and flattish shell.
Raj. quadr. 254. Freshwater turtle?
Lives in southern Europe.
Small, very solid, rounded shell neither anteriorly nor posteriorly emarginate. The sternum is split posteriorly. The toes of the feet are connected by a membrane into a round sole.

scabra 4.Turtle with a flattish shell with all its small scutes in the middorsum.
Lives in the Indies.
The body and sides of the shell, below, are variably white and black. The sternum is truncated posteriorly.

lutaria 5. Turtle with subpalmate feet; tail shorter than half its body; subconvex shell, carinate to the rear; with three scutes.
Amoen. acad. 1. *p.* 139, *n.* 23.Turtle with sharp claws, four each on the fore and hind feet.*
Lives in Italy, Orient.
Forefeet more or less palmate, hind feet less so. Sternum posteriorly truncate.

graeca 6. Turtle with subdigitate feet, a gibbous shell with a very blunt lateral margin, flattish scutes.
The lesser, tessellated African turtle. *Edw. av.* 204. *t.* 204.
Lives in Africa.
Tailed body, five claws on its forefeet but four on the rear.

carolina 7. Turtle with digitate feet, a gibbous shell, no tail.
Tessellated lesser Carolinian turtle . *Edw. av.* 205. t 205.
Lives in Carolina.
Five-toed forefeet, four-toed hind feet.

carinata 8. Turtle with digitate feet, humped shell, four dorsal small scutes, front[13] scutes carinate. Solid, one-piece sternum.
Lives in warm regions.

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* This asterisk probably is a typographic error--no meaning can be ascertained.

Turtles often live 14 days with their heads cut off. In the colder regions the terrestrial types hibernate during winter. No animal is slower than a turtle. During copulation they often cling together for a month.

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geometrica 9. Turtle with hind feet palmate, small scutes of the shell elevated.
Mus. Ad. Fr. 1. *p.* 50. Turtle with sharp claws, five on the front foot, 4 on the hind foot.
Worm. mus. 317. Turtle painted,or marked with stellate forms.
Amoen. acad. 1. *p.* 139 *n.* 24
Grew. mus. 36. *t.*.3. *f.* 1,2. Greater turtle with tessellated shell
Seb. mus. 1. *t.* 80. *f.* 8. Lesser Amboinian turtle
Pis. bras. t. 105. Turtle with geometric shapes of blackish and yellowish color.
Raj. quadr. 259. Lesser tessellated turtle.
Lives in Asia.
Black shell with small, yellow scutes emitting yellow anastomosing rays.

pusilla 10. Turtle with hemispherical shell, convex trapezoidal small scutes, with punctate centers striated at the margins.
Grew. mus. 38. *t.* 3. *f.* 3. Virginia turtle.
Worm. mus. 313. Land turtle, small, from east India.
Raj. quadr. 259. The same turtle.
Lives in India.

serpentina 11. Turtle with digitate feet, subconvex shell, blunt and five-pointed posteriorly.
Lives in warm regions.

104. *DRACO.* Four-footed body, tailed, winged.

volans. 1. *Draco. Syst. nat.* 36. *Gron. mus.* 2. *p.* 73. *n.* 46.
Mus. Ad. Fr. 1. *p.* 40. Draco.
Amoen. acad. 1. p. 126. Lizard with a smooth tail, five-toed feet, wings connected to the thigh, triple crest on the throat.
Bont. jav. 57. *t.* 57. The flying lizard or little dragon.
Seb. mus. 2. *t.* 86. *f.* 3. The African flying lizard.

In turtles the front feet have five toes, the rear four, with the same number of claws. The marine types are exceptions, having flipper-like feet. The scutes of the shell are quite often of the same number and as a result diagnosis of species is very difficult.

All the other dracones [dragons] listed by authors are fictitious, like the HYDRA, Seb. mus. 1. *t.* 102. *f.* 1 which I saw at Hamburg, but which was an outstanding work, not of nature, but of art.

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*Brad.. natur. t.*9. *f.* 5. Flying lizard.
Lives in India and Africa.

105. *LACERTA.* Four-footed body, tailed, naked.

**Those with a compressed tail*

Crocodilus Lizard with a compressed tail, three-clawed feet, front feet five-toed, hind feet four- toed and palmate.
Amoen.. acad. 1. *p.*121. The same lizard.
Mus. Ad. Fr. 1. *p.* 40. The same lizard.
Gron. mus. 2. p. 74. *n.* 47. Crocodilus.
Bellon. aquat. 41. Crocodilus.
Gesn. quadr. 9. Crocodilus.
Aldr. aquat. 677. Crocodilus.

Jonst. quadr. t. 79. *f.* 3. Crocodilus.
Raj. quad. 261. Lacertus maximus.[14]
Bont. jav. t. 55. Crocodylus Cayman.
Marcgr. bras. 242. Jacare.
Olear. mus. 8. *t.* 7. *f.* 3. Crocodylus.
Bell. mus. 47. *t.* 13. Crocodilus niloticus.
Sloan. jam. 2. *p.* 332. Crocodilus.
Seb. mus. 1. *t.* 103. 104. Crocodilus.
Merian. sur. 49. *f.* 69. Crocodil.
Vallisn. nat. 1. *t.* 43.
Catesb. car. 2. *t.* 63. Lacertus maximus.[14]
Lives in the waters of Africa, Asia, and America.
Anatomy of the crocodile. *Hasselq.iter.* 292.
It lays one hundred eggs. These are dug up by the ichneumon, a small bird. [15]
When the young are hatched, the mother calls them forth onto her back and leads them to water. The male and female swallow down those who fall in the water. It eats under water. Joined together in a group, they disturb the aquatic animals. *Leviathan Jobi.* 40:20; 41:24.[16]
It is fierce to those fleeing it. Those who know how, leap onto its back and control it.[17]

Caudiverbera

2. Lizard with a depressed-flat, pinnate tail, palmate feet.
Fevill. peruv. 2. *p.* 319. *t.* 319.
Seb. mus. 2. *t.* 62. *f.* 9.
It lives in Peru.

superciliosa

3. Lizard with a carinate tail, back and eyebrows ciliate.
Mus. Ad. Fr. 1. *p.* 40. The same lizard.

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Seb. mus. 1. *t.* 109. *f.* 4.
Lives in the Indies.

scutata

4.Lizard with an average sized, subcompressed tail, toothed dorsal suture, bimucronate occiput.
Seb..mus. 1. *p.* 173. *t.* 109. *f.* 3. Huge, scuted , amboinian[18] salamander.
Lives in Asia.

Monitor

5. Lizard with a carinate tail and a shortened body.
Mus. Ad. Fr. 1. *p.* 41. Lizard with an entirely two-edged tail. five-toed feet, all toes clawed.
Seb. mus. 2. *t.* 86. *f.* 2
t. 105. *f.* 1.
1. *t.* 94. *f.* 1. 2.
Lives in the Indies.
The body is verticillated with white ocellate spots. Abdomen white, with interrupted linear bands.

principalis

6. Lizard with a subcarinate tail ; solid throat crest, smooth back.
Mus. Ad. Fr. 1. *p.* 43.

Amoen. acad. 1. *p.* 286. *t.* 14. *f.* 2.
Lives in the Indies.

bicarinata

7. Lizard with a compressed tail, moderately bicarinate; back carinate-keeled[19] four times.
Lives in the Indies.
Small, gray. The back has two raised ridges and each side of the back is carinate-striated with scales. The sides have convex tuberculate scales. The abdomen is covered with 24 transverse rows of scales, six in each. The tail is about 1 1/2 times as long as the body, is compressed, striated below, smooth on the sides, with a double angular ridge above. No crest.

palustris

8. Lizard with an insignificant tail, moderate size, with split, stubby feet. Four-toed front feet. *Fn. svec.* 256.
*Gron. mus.*2. *p.* 77. *n.* 51. Warty, unscaled salamander.
Raj. quad. 273. Aquatic salamander.
Seb. mus..1. *t.* 89. *f.* 4, 5. American lizard.
Lives in the fresh, stagnant waters of Europe. Perhaps a distinct species from *L. agilis* or the larva of another [20].

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** *Those with a verticillate tail*

Cordylus

9. Lizard with a short, verticillated tail, dentate scales, smooth body.
Amoen. acad. 1. *p.* 132. 292.
Gron. mus. 2. *p.* 79. *n.* 55. Cordylus.
Seb. mus. 1. *t.* 84. *f.* 3. 4. & 2. *t.* 62. *f.* 5.
Lives in Africa and Asia.
Body verticillated with truncate scales.

Stellio

10. Lizard with an average sized verticillate tail. Dentate scales, head and body spiny.
Hasselt. iter. 301. Spotted lizard.
Tournes. itin. 1. *p.* 119. *t.* 120. The lizard called Coslordilos.
Seb. mus. 2. *t.* 8. *f.* 7.
Lives in the Orient: Delos [21], Egypt, Africa.

mauritanica

11. Subverticillate tail, short, terete, with a spiny apex. Body spiny above, feet scaly below. It lives in Mauritania. E. Brander.
The body resembles *L. gecko* in bearing and shape, but is sickly yellow and, at the sides of the head, above the neck, back, and legs, is warty and spiked. The tail is shorter than the body, spiny in six places from its base to the middle. From there to the tip it is smooth. The toes of the feet, as in the gecko, lamellosely squamate below, with very small claws. Beneath, the entire body is smooth with very small scales.

azurea

12. Lizard with a short, verticillate tail, pointed scales.
Mus. Ad. Fr. 1. *p.* 42. The same lizard.
Seb. mus. 2. *t.* 62. *f.* 6.
Lives in Africa.

turcica 13. Lizard with a subverticillate, average tail, a gray, subverucose body.
Edw. av. 204. *t.* 204. Lesser lizard, ash-gray, spotted, Asiatic.

Lives in the Orient.

The tail is scarcely longer than the body, poorly verticillate. The body is small, gray, spattered with dark spots, uneven[22] and with scattered, ill-formed warts.

Ameiva. 14. Lizard with a long, verticillate tail, thirty abdominal scutes, a collar with a double wrinkle below.
Amoen. acad. 1. *p.* 127, 293. Lizard with a terete tail, twice the length of the body, five-toed feet, no crest, 30 abdominal scutes.

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Mus. Ad. Fr. 1. *p.* 45. The same lizard.
Gron. mus. 2. *p.* 80. *t.* 56. Lizard with a terete tail three times the length of the body, very smooth scales, oblong squarish[23] abdominal scales.
Clus. exot. 115. Lacerta indicus
Edw. av. 202. *t.* 202, 203. Greater green lizard.
Worm. mus. 313. *f.* 313.
Raj. quadr. 270. Indian lizard.
Seb. mus. 1. *t.* 85. *f.* 2, 3.
t. 88. *f.* 1,2.
Sloan. jam. 2. *p.* 333. *t.* 273. *f.* 3. The greater, ash-gray, spotted lizard.
ß *Amoen. acad.* 1. *p.* 130.Lizard with a terete tail 1 1/2 times the length of the body. Five-toed feet, back striated with longitudinal lines.
Lives in America.

agilis 15. Lizard with a longish, verticillate tail with sharp scales, a collar below composed of scales.
Faun. svec. 1352. Lizard with a terete verticillate tail the length of the body, five-toed clawed feet.
Syst. nat. 36. *n.* 6. Lizard with a terete, long, verticillate tail with sharp scales, five-toed clawed feet.
Mus. Ad. Fr. 1. *p.* 43. The same lizard.
Gron. mus. 2. *p.* 80. *n.* 57. Lizard with a tail a bit longer than the body, very smooth scales.
Raj. quadr. 264. Common lizard , black spotted belly
Seb. mus. 2. *t.* 79. *f.* 4. Lesser spotted indigenous lizard.
ß *Raj. quadr.* 264. Green lizard
Aldr. quadr. 634. Green lizard
Seb. mus. 2. *t.* 4. *f.* 4. 5. Green lizard.
Lives in Europe and India
In southern Europe it differs by its green color. The Indian one is more beautifully colored. The thigh is marked below with a line of hard dots, as is the case for *L. ameiva.*

algira 16. Lizard with a verticillate, rather long tail, body with two yellow lines on both sides.
Lives in Mauritania. *E. Brander.*
The body is barely longer than a finger, dusky above, yellowish below. Dorsal

scales are carinate and more pointed. A yellow line delineates the back on both sides and another distinguishes the abdomen on both sides from the sides.

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Seps 17. Lizard with a long, verticillate tail, a lateral, curved back suture, squared scales.
Amoen. acad. 1. p. 293. Lizard with a verticillate tail, subpentadactyl feet[24], squared scales.
It lives in southern areas.
Short feet, distant, suited for running. Flat abdomen.

angulata 18. Lizard with a long, hexagonal tail; carinate, pointed scales.
It lives in America. *Rolander.*
Small, with a dark back. All its scales, with the exception of the abdominal ones, are pointed, very carinate. Naked head, with various raised wrinkles. To the rear, where the neck scales begin, it is truncated and attached as it were. Beneath its throat are two large, rounded scales. The tail is 1 1/2 times longer than the body, hexagonal, very angular.

* * * *Tail terete and imbricate, longer than the body.*

chamaeleon 19. Lizard with a short, terete, incurved tail, with two and three toes joined together.
Amoen. acad. 1. *p.* 290, 501.The same lizard.
Mus. Ad. Fr. 1. *p.* 45. The same lizard.
Gron. mus. 2. *p.* 76. *n.* 50. Chamaeleon.
Olear. mus. 9. *t.* 8. *f.* 3. Chamaeleon.
Bellon. itin. l. 2. *c.* 60. Chamaeleon.
Besl. mus. t. 12. Chamaeleon.
Valent. mus. l. 3. *c.* 31. Chamaeleon.
Kircher. mus. 275. *t.* 293. *f.* 44. Chamaeleon.
Jonst. quadr. t. 79. Chamaeleon.
Seb. mus. 1. *t.* 82. *f.* 3. 4. 5. & *t.* 83. *f.* 5.
Aldr. quadr. 670. Chamaeleon.
It lives in Africa and Asia.
Chamaeleon anatomy. *Hasselq. iter. 297.*
It differs at the top by being flat and carinate. It slowly swells and shrinks its body. The eyes are covered, very brilliant, with a naked , golden pupil. Its gait is slow, with opposed, anomalous feet and with tail raised above. The tongue is lumbriciform, very long, and catches flies. It changes colors in warm places and is awake by night.

Salamandra 20. Lizard with a terete, short tail, stubby toes, and a naked, porous body
Amoen. acad. 1. *p.* 131. Lizard with a smooth, short tail, unarmed feet. Front feet are four-toed, hind feet five-toed.

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Mus. Ad. Fr. 1. *p.* 45. The same lizard.

Matth. diosc. 274. *f.* 274. Salamander.
Gesn. quadr. 80. Salamander.
Aldr. quadr. 641. Land salamander.
Jonst. quadr. t. 77. *f.* 10.
Olear. mus. t. 8. *f.* 4.
Seb. mus. 2. *t.* 12. *f.* 5.
Raj. quadr. 173. Land salamander
Lives in Europe.
The body is naked, without scales, perforated with pores. It was said in antiquity that it lived in fire, but Bartholinus has experimented on this. It exudes an oil from its pores that is used as a depilatory.

Gecko 21. Lizard with a terete, average tail; imbricate toes; body warty.
Amoen. acad. 1. *p.* 133. 292. Lizard with a smooth, average tail, five-toed feet. Toes crested and imbricate; body warty.
Mus. Ad. Fr. 1. *p.* 46. The same.
Hasselqv. iter. 306. Gecko lizard with a smooth, average tail, crested feet, with lamellae longitudinally.
Gron. mus. 2. *p.* 78. *n.* 53. Salamander.
Seb. mus. 1. *t.* 168. *f.* 2-8.
Bont. jav. 57. Indian salamander.
Lives in the Indies, often even in homes.
It exudes poison onto its food from its feet (or through its urine?).[25]
Hasselqv. Tame; uses a house as a place of refuge.

Stincus[26] 22. Lizard with a terete, average tail, compressed at its tip; with marginate, stubby toes.
Gron. mus. 2. *p.* 76. *n.* 49. Scincus.
Seb. mus. 2. *p.* 112. *t.* 105. *f.* 3.
Besl. mus. 1. 12. *f.* 1.
Olear. mus. 9. *t.* 8. *f.* 1.
Raj. quadr. 271. Scincus.
Amoen. acad. 1. *p.* 294.
Hasselqv. act. ups. 1750. *p.* 30.
- - - *itin.* 309. *n.* 58.
Lives in mountainous areas of Libya, Egypt, and Arabia Petraea.[27]
The body is sold as an aphrodisiac.[28]

hispida 23. Lizard with a terete average tail, triple-spined at tip.
Mus.Ad. Fr. 1. *p.* 44. The same lizard.

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page 206 *Seb. mus.* 1. *t.* 109. *f.* 6.
t. 83. *f.* 1. 2.
It lives in South America

orbicula-ris 24. Lizard with a terete, short tail, trunk subglobular and spiny above.
Seb. mus. 1. *p.* 134. *t.* 83. *f.* 1. 2. Orbicular spiny lizard
Hernand. mex. 327, 328. Orbicular lizard
Raj. quadr. 263. Orbicular lizard
Lives in Mexico.

vulgaris 25. Lizard with a terete, average tail; four-toed front feet; feet stubby.
Faun. svec. 254. Lizard with unarmed feet, four-toed hands[29] five-toed rear feet; livid body; dark double dorsal line.
Raj. quadr. 264. Common lizard.
Lives in Europe. Its larva is beneath the water.

aquatica 26. Lizard with a moderately terete, average tail; stubby, split feet; front feet four-toed.
Gron. mus. 2. *p.* 78. *n.* 52.Scaleless salamander, moderately terete tail.
Gesn. ovip. 31. Aquatic lizard
Seb. mus. 2. *p.* 15. *t.* 12. *f.* 7. Ceylon salamander.
It lives in fresh and stagnant bodies of water in Europe. Whether this is a distinct species of a larva of the previous one I am not yet fully clear.

**** *Those whose tail is terete, imbricate, longer than the body.*

Basiliscus 27. Lizard with a terete, long tail; radial dorsal fin; crested occiput.
Seb. mus. 1. *t.* 100. *f.* 1.
Lives in South America.

Iguana[30] 28. Lizard with a terete, long tail; a dorsal, dentate suture; a denticular gular crest.
Amoen. acad. 1. *p.* 123. 287. Lizard with a terete tail; five-toed feet; longitudinal dorsal crest; a hanging, anteriorly dentate appendage on the throat.
Mus. Ad. Fr. 1. *p.* 43. The same.
Gron. mus. 2. *p.* 82. *n.* 60. Iguana.
Maregr. bras. 236. *f.* 236.

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Jonst. quadr. t. 77. *f.* 5.
Jacob. mus. t. 4.
Olear mus. t. 6. *f.* 1. Yvana.[31]
Bont. jav. 56. *t.* 56. Leguan lizard
Maregr. bras. 236. Senembi or Iguana
Nieremb. nat. 271. *t.* 271.
Ovied. amer. I. 13. *c.* 3.
Rhed. exper. 100. *t.* 101. Iguane.
Worm. mus. 313.
Sloan. jam. 2. *p.* 333.
Raj. quadr. 265. Senembi lizard and Iguana.
Seb. mus. 1. *t.* 95. *f.* 1. 2.
96. *f.*
97. *f.* 3.
98. *f.* 1.
Clus. exot. 116. Yvana.
Catesb. car. 2. *p.* 64. *t.* 64?
Lives in the Indies.
It is captured by means of a noose. Its flesh is tastiest of all, but is harmful to those with syphilis.

Calotes 29. Lizard with a terete, long tail. Anterior back and posterior head dentate.
Amoen. acad. 1. *p.* 289.
Mus. Ad. Fr. 1. *p.* 44.
Seb. mus. 1. *t.* 95. *f.* 3. 4.
t. 93. *f.* 2.
Lives in Asia: Ceylon.
The body is blue with pointed scales; keeled below. Dorsal spines lamellate.

Agama 30. Lizard with a terete, long tail. The dorsal neck and posterior head are prickly.
Amoen. acad. 1. *p.* 288.
Mus. Ad. Fr. 1. *p.* 44.
Seb. mus. 1. *t.* 107. *f.* 1. 2. 3.
Lives in America.
Body color pallid. Abdomen lightly striated. [32]

Umbra 31. Lizard with a terete, long tail; nape slightly crested; occiput callous; back keeled[33].
Lives in southern regions.
A deep fold beneath the throat. Body color clouded.

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Plica 32. Lizard with a terete, long tail; a callous occiput; eyelids lacking skin above; neck laterally warty and plicate below.
Lives in the Indies.
The body is scarcely longer than a finger, not counting the tail. In my specimen it is covered everywhere with conical scales (like shagreen). The occiput is callous and the eyebrows are subcrenate, lacking skin above, with a membranous scar, divided transversely into three parts by a distinct furrow.[34] Behind the ears, towards the sides of the head and neck, are two spiny warts. The neck has a double fold below. The dorsal suture has largish scales, almost crenate anteriorly. A wrinkle, raised up from the neck over the arms, runs in each direction and bends in the middle of the trunk. The tail is smooth, covered with tiny spots, and is just noticeably verticillate, and longer than twice the body. The toes are long, scabby below, with fairly pointed scales. The claws are compressed.

marmorata 33. Lizard with a long, terete tail; throat somewhat crested, anteriorly dentate; back smooth.
Amoen. acad. 1. *p.* 129. 288.
Mus. Ad. Fr. 1. *p.* 43.
Seb. mus. 2. *t.* 76. *f.* 4.
Lives in Spain.
Body compressed; tail striped.

bullaris 34. Lizard with a terete, long tail, with a pouch on the throat.
Catesb. car. 2. *t.* 66. Green Jamaican lizard.
Lives in Jamaica.
Small, with a green body; beneath the throat is a red globe which is vesicular and retractable.

strumosa 35. Lizard with a terete, long tail, a gibbous, forward -thrust chest.
Seb. mus. 2. *t.* 20. *f.* 4. Mexican strumose salamander.
Lives in South America.
The chest, or sternum, projects forward into a blunt dagger shape.

Teguixin 36. Lizard with a terete, long tail; a lateral folded suture.
Amoen. acad. 1. *p.* 128. Lizard with a terete, long tail; five-toed feet; no crest; plicate abdomen.
Mus. Ad. Fr. 1. *p.* 45.
Seb. mus. 1. *t.* 96. *f.* 1.
Lives in the Indies.
The neck has a triple fold below.

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aurata 37. Lizard with a terete, long tail; glabrous rounded scales; darkish sides.
Amoen. acad. 1. *p.* 294. Lizard with a smooth tail; five-toed feet; rounded, very smooth, grayish scales; darkish sides.
Mus. Ad. Fr. 1. *p.* 46. Barbarian lizard.
Gron. mus. 2. *p.* 75. *n.* 48.Scincus?
Seb. mus. 1. *t.* 89. *f.* 3.
Aldr. quadr. 660. Cypriot scincoid lizard.
It lives in the English Isle of Jersey and on Cyprus.
In life, it shines most beautifully with a gold color.
The body is smooth, almost fat. The ears are concave.

punctata 38. Lizard with a terete, long tail; with two yellow lines on the back, with interspersed black dots.
Mus. Ad. Fr. p. 46.The same lizard.
Seb. mus. 2. *t.* 9. *f.* 9.
Lives in Asia.
Two yellowish lines enclose the back and distinguish it from the sides.

lemni-scata 39. Lizard with a terete, long tail; with eight striped[35] lines on the back
Mus. Ad. Fr. 1. *p.* 47.The same lizard.
Seb. mus. 1 *t.* 92. *f.* 4.
Lives in Guinea. [36]
Very similar to *Lacerta agilis.*

fasciata 40. Lizard with a terete, longish tail; back brown, with five yellowish lines.
Catesb. car. 2. *t.* 67. Blue-tailed lizard.
Lives in Carolina.

lineata 41. Lizard with a terete, long tail. four-toed front feet; body with four yellow lines.
Mus. Ad. Fr. 1. *p.* 46. Lizard with a terete, long tail; feet split and minimally clawed.
Front feet are four-toed, hind feet five-toed.
Seb. mus. 2. *t.* 41. *f.* 6. Lesser lemniscate Ceylonese lizard.
Lives in Ceylon.

Chalci-des 42. Lizard with a terete, long tail; three-toed feet.
Syst. nat. 36. *n.* 7. The same lizard.

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Column. Ecphr. 1. *p.* 35.t. XXXVI. Seps, chalcid lizard or chalcides[37].
Aldr. quadr. 638. Chalcidic lizard.
Lives in southern Europe and Africa.
Midway between the lizards and the snakes, but equipped with ears.

angvina[38] 43. Lizard with a tail somewhat stiff at its end; striped body[39]; pinniform feet.
Seb. mus. 2. *t.* 68. *f.* 6. 7. A serpentiform worm out of Africa.
Lives on the Cape of Good Hope. It has not been seen by me.

106. *RANA.* Body tetrapod, naked, tailless.

Pipa 1. Frog with stubby, four-toothed front feet, clawed rear feet.
Mus. Ad. Fr. 1. *p.* 49. The same frog.
Gron. mus. 2. *p.* 84. *n.* 64.
Seb. mus. 1. *p.* 121. *t.* 77. *f.* 1-4.Toad or American pipa.[40]
Vincent. pip. 1726. *t.* 62. Surinam aquatic toad.
Bradl. nat. t. 22. *f.* l. Surinam frog.
Vallisn. nat. 1. *t.* 41. *f.* 6.
Lives in Surinam.
It hatches its young by laying them on its back.

Bufo 2. Frog with a dark and pale, warty, swollen body.
Fn. svec. 253. Frog with split, four-toed front feet; rear feet palmate, six-toed[41]; fairly short thumb.
It. oel. 142.
Gesn. pisc. 807. Rubeta or phrynum.[42]
Jonst. quadr.
Bradl. nat. t. 21. *f.* 2.
Raj. quadr. 252. Toad or rubeta.
It lives in shady, wooded, stony areas of Europe, especially in Ukrainia.
It is eaten by the buteo falcon. *Gesn. pisc.* 807.
The warts exude a milky substance and are poisonous if drunk, touched, or inhaled. It delights in *Cotula, Actaea, Stachys foetida* .[43] It is viviparous, with, so they say, the male acting as midwife. It lures insects into its mouth through bewitchment. It is nocturnal and a digger.

The front feet in most species of *Ranae* are split and four-toed. The rear feet are five-toed and palmate, less frequently indistinctly six-toed[41].

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Rubeta 3. Frog with a warty body; obtuse anus; dotted with black below.
Syst. Nat. 37. *n.* 5. Frog with split, four-toed front feet; subpalmate rear feet; anus dotted below.
It. Wgot. 261.
Lives in Europe.

gibbosa 4. Frog with an ovate-convex body; a longitudinal ash-gray dentate stripe; split feet.
Amoen. acad. 1. *p.* 286.Frog with four-toed split front feet; six-toed [41] split rear

feet; thumb a bit wide and very short.
Mus. Ad. Fr. 1. *p.* 48. The same frog.
Lives in remote areas.

variegata 5. Frog with a warty body; a white abdomen spotted with black; a gular fold.
Lives in remote areas.
It is similar to toads but is small, black, and is everywhere rough above with dots. Below, it is variegated with white and black. The feet are stubby, the front feet split and four-toed, the rear feet five-toed and palmate. A transverse wrinkle under the neck.

ventricosa 6. Frog with a semi-ovate mouth, fairly projecting throat.
Mus. Ad. Fr. 1. *p.* 48. The same frog.
Lives in the Indies.

marina 7. Frog with gibbose shoulder blades; bumpy rear end.
Seb. mus. 1. *t.* 76. *f.* 1. Largest marine frog.
Lives in America.
Front feet split, four-toed. Rear feet somewhat split and five-toed.

typhonia 8. Frog with ovate ear lobes.
Lives in America, calling by night with the foul sound of the crow as it grows light. *Rolander.*
The back has four longitudinal wrinkles, raised dots, and black spots. The feet are stubby, front feet four-toed and split, rear feet five-toed and palmate. The toes are narrow, the second being the longest, but lacking rounded claws.

ocellata 9. Frog with ocellate ears and stubby feet.
Brown. jam. 466. *t.* 41. *f.* 4.The largest, compressed, mottled frog.

Are the penises of frogs the warts on the thumb of the front foot? [44] For in the turtles the penis is at the loins by the thighs, in serpents it is at the anus. Frogs' eggs are naked.

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Lives in America.
At the ears there is an occellate spot on each side. Front feet four-toed and split; rear feet five-toed, subpalmate.

cornuta 10. Frog with conical eyelids.
Mus. Ad. Fr. 1. *p.* 48. The same frog.
Seb. mus. 1. *t.* 72. *f.* 1, 2. Horned toad or spiny Virginia [toad].
Lives in Virginia and is hideous in appearance.

marginata 11. Frog with marginate sides, a smooth body, and split rear feet.
Mus. Ad. Fr. p. 47. Frog with marginate sides.
Lives in the Indies.

paradoxa 12. Frog with femur obliquely striated posteriorly. *Mus. Ad. Fr.* 2.*p*....
Syst. nat. 36. *n.* 2. Lizard with a double tail; front feet four-toed and split; rear feet

five-toed and palmate. Abdomen swollen.
Mus. Ad. Fr. 1. *p.* 49. Fish frog.
Seb. mus. 1. *t.* 78. *f.* all.
Merian. surin. 71. *t.* 71.
Lives in Surinam.

temporaria 13. Frog with a flatish, sub-angular back.
Faun. svec. 250.Frog, front feet four-toed and split, rear feet five-toed and palmate. The thumb is rather long.
It.. oel. 154. Occasional frog.
Gesn. ovip. 46. Harmless aquatic frog.
Aldr. ovip. 89. Frog.
Jonst. quadr. t. 75 *f.* 5, 6, 7, 8.
Raj. quadr. 247. Aquatic frog.
Bradl. natur. t. 21. *f.* 1.
It lives in Europe.
It is aquatic in the spring but terrestrial in the summer. It lives on gnats and is eaten by ducks and herons. Even when its heart has been removed, it leaps.

esculenta 14. Frog with an angular body; back transversely gibbous; abdomen marginate.
Roes. ran. 51. *t.* 13. Green aquatic frog.
It lives in springs in Europe.
Green, with three yellow lines, the middle one running from the mouth to the anus. The back is divided transversely with a hump. Rear feet palmate.The male has rounded, inflated ears. Very often it predicts rain with its evening song.

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Hyla 15. Frog with a transversely gibbous angular back; abdomen crossed with a curved band on the groin.
Gesn. pisc. 809. Gibbous frog. 4,5,
Lives in Europe.
From a distance its croaking imitates the sound of bells.

arborea 16. Frog with a smooth body. Beneath it is tuberculate with contiguous dots. Feet split, with roundish wide claws.
Amoen. acad. 1. *p.* 135. Frog with split feet, roundish claws, and smooth, posteriorly angulate body.
Mus. Ad. Fr. 1. *p.* 47. The same frog.
Gron.. mus. 2. *p.* 84. *n.* 63. Frog.
Seb. mus. 1. *t.* 73. *f.* 3.Slender Brasilian frog.
Seb. mus. 2. *t.* 78. *f.* 5. Red American frog.
Gesn.. pisc. 808. Green, small frog.
ß *Amoen. acad.* 1. *p.* 285. Frog with split feet; front feet four-toed, rear feet five-toed. Knees are tuberose below.
Lives beneath the leaves of trees in Europe and America, calling flies into its jaws.

boans 17. Frog with a smooth body; contiguous dots below. Feet palmate, rear feet five-toed, front feet four-toed with roundish, wide claws.

Amoen. acad. 1. *p.* 285. Frog with four-toed front feet, rear feet five-toed and palmate. Tips of the claws roundish.
Mus. Ad. Fr. 1. *p.* 47.The same frog.
Seb. mus. 1. *t.* 71. *f.* 3, 4. Surinam frog.
Lives in America.
It is very similar to the tree frog but all the feet are palmate and the body is large and white, even possessing milky white spots. And these things are enough to distinguish it as a species.

Oviparous aquatic frogs undergo metamorphosis.

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II. SERPENTES[45]

Mouth breathing. No feet or fins.[46]

107. *CROTALUS.* Abdominal scutes. Subabdominal scutes and scales. Rattle at the end of its tail.
Scutes and small scutes.

192. *horridus.* ♂ 167-23: 2. *Mus. Ad. Fr.* 1. *p.* 39
Bradl. natur. t. 9. *f.* 1
Seb. mus. 2. *t.* 95 f. 1.
Lives in America
Very venomous; its antidote is *Senega* ; it is eaten by pigs; it calls down birds and squirrels from the trees into its jaws.

195. *Dryinus* ♂ 165-30. *Amoen. acad.* 1. *p.* 297.
Lives in America.
A few off-white, yellowish spots.

196. *Durissus.* ♂ 172-21: 3. *Amoen. acad.* 1. *p.* 500.
Kalm. *act. Stockh.* 1752. *p.* 310 & 1753: *p.* 52, 185.
Gron. mus. 2. *p.* 70. *n.* 45. Crotalophorus 174-22:3.
Lives in America.
Varied with white and yellow, black rhomboidal spots with white ones in a disc pattern.[47]

108. *BOA.* Abdominal scutes. Subcaudal scutes (lacking a rattle).

276. *scytale.* 250-26. *Gron. mus.* 2. *p.* 55. *n.* 10.
Scheuch. sacr. t. 737. *f.* 1.
Lives in America.
Color undulate in white and black. The scales of the head are larger.

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280. *canina.* 203-77. *Mus. Ad. Fr.* 1. *p.* 39. *t.* 3.
Seb. mus. 2. *t.* 96. *f.* 2.
t. 81. *f.* 1.
Lives in the trees of America.
Green with intermittent white stripes.

Worshipped by the Americans. Rolander.

299. *Hipnale.* 179-120. *Seb. mus.* 2. *t.* 34. *f.* 2.
Lives in Asia.
Varied with a gray-yellowish color.

300. *Constrictor.* 240-60. *Amoen. acad.* 1. *p.* 497. *t.* 17. *f.* 3.
Mus. Ad. Fr. 1. *p.* 38.
Gron. mus. 2. *p.* 69. *n.* 43. Cenchris 248-60
Seb. mus. 2. *t.* 98. *f.* 1
t. 99. *f.* 1,2.
t. 100. *f.* 1.
t. 101. *f.* 1.
t. 104. *f.* 1.
1. *t.* 53. *f.* 1.
t. 36. *f.* 5.
t. 62. *f.* 2, 1.
Lives in the Indies.

319. *murina.* 254-65. *Gron. mus.* 2. *p.* 70. *n.* 44. Coluber 254-69.
Seb. mus. 2. *t.* 29. *f.* 1.
Lives in America.
Reddish with rounded spots above.

322. *cenchria.* 265-57.
Lives in Surinam.
Yellowish, with white spots, gray in the iris.

345. *Orophias.* 281-64. *Mus. De Geer.*
Lives...
Face of the constrictor, but dark.

375. *Enydris.* 270-105. *Mus. De Geer.*
Lives in America.
Variegated with a gray color. The lower teeth are long.

418. *Hortulana* 290-128. *Mus. Ad. Fr.* 1. *p.* 37.
Seb. mus. 2. *t.* 84. *f.* 1.
t. 74. *f.* 1

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Lives in America.
Pale, with livid, wedge-shaped spots. Head [48]with golden-yellow splotches resembling a garden.[49]

109. *COLUBER.* Abdominal scutes.
Subcaudal scales.

140. *Vipera.* ♂ 118-22. *Hasselqv. Act. Ups.* 1750. *p.* 24. [50]
[*Hasselqv.*] *itin.* 314. *n.* 60.

Lives in Egypt.
Very short, gibbous head, minute scales.
The sort of this viper for sale is Egyptian, not *Berus.* [51]

153. *Atropos* [52] 131-22. *Mus. Ad. Fr.* 1 *p.* 22. *t.* 13. *f.* 1
♂ Lives in America.
Hoary, dark eyes with a white iris.

160. *Leberis.* 110-50.
♂ Lives in Canada. Kalm.
Bands [with] black lines.[53]

161. *Lutrix.* 134-27.
Lives in the Indes.
Back and abdomen yellow; sides tending to blue.

162. *Calamarius.* 140-22. *Mus. Ad. Fr.* 1. *p.* 23. *t.* 6 *f.* 3.
Lives in America.
Livid with dark bands and linear punctations; below, dark-tessellated.

170. *Constrictor* 130-40.
Lives in Canada. *Kalm.*
The lowest apex of its jaw is three-cornered.
It approaches men, twisting itself around their feet, but it is harmless.

174. *Ammodytes.* 142-32. *Amoen. acad.* 1. *p.* 506. *n.* 25.
♂ *Bellon. itin.* 203. Druinus.
Aldr. serp. 169. Ammodytes.

The horned viper, *Hasselqv. Act. Ups.*, 1750, *p.* 27. is a coluber fabricated by the craft of the Arabs, who pierced its head with the claws of a small bird and then inserted them there.

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Lives in the Orient.
Nose terminated in a raised wart.

175. *Cerastes.* 150-25. *Hasselqv. Act. Ups.*, 1750. *p.* 27. [see footnote on p. 216] [50]
[Hasselqv.] iter. 315. *n.* 61. Horned Coluber.
Bellon. itin. 203.
Lives in the Orient.
All the scales of its head are small and rounded.
A soft tooth emerges from its upper eyelid.

177. *plicatilis.* 131-46. *Amoen. acad.* 1. *p.* 301. *n.* 26.
Mus. Ad. Fr. 1. *p.* 23.
Seb. mus. 1. *t.* 57. *f.* 5.
Lives in Ternate.[54]
Livid, with dark sides; beneath , a triple row of dark dots.

178. *Domicella.* 118-60. *Amoen. acad.* 1. *p.* 117. *n.* 5.
Seb. mus. 1.
White with darkish bands coming together below.

179. *Alidras.* 121-58. *Mus. De Geer.*
Lives in the Indies.
Totally white.

180. *buccatus.* 107-72. *Mus. Ad. Fr.* p. 29. *t.* 19. *f.* 3
Lives in the Indies.
Dark with white bands. White head: two dark spots on top of its head and a triangle over its nostrils.

181. *angulatus.* 120-60. *Mus. Ad. Fr.* 1. *p.* 23. *t.* 15. *f.* 1.
Amoen. acad. 1. *p.* 119. *n.* 7.
Seb. mus. 2. *t.* 12. *f.* 3.
Lives in Asia.
Gray-brown with dark bands.

183. *Berus.* ♂ 146-39. *Faun. svec.* 260.
Amoen. acad. 1. *p.* 113. *n.* 1
Aldr. serp. 115, 116.
Lives in Europe.

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184. *Chersea.* ♂ 150-34. *Faun. svec.* 261.
L. Act. Stockh. 1749. *p.* 246. *t.* 6.
Aldr. serp. 197. Rusty colored asp.
Lives in the lowlands of Sweden; very venomous and its bite is frequently fatal in Sweden. Is it sufficiently different from the asp, even though it is smaller in our lands?

189. *caeruleus.* 165-24. *Amoen. acad.* 1. *p.* 303. *n.* 31.
Seb. mus. 2. *t.* 13. *f.* 3.
Lives in America.
Bluish-white scales on either side; below, white.

190. *albus.* 170-20. *Mus. Ad. Fr.* 1. *p.* 24. *t.* 14. *f.* 2.
Lives in the Indies.
White, without spots.

192. *aspis.* ♂ 146-46. French "aspice"
Lives in France.
Reddish, with dark alternate spots flowing together into a band.
Like *Chersea*, but larger.

193. *Typhlus.* 140-53. *Mus. De Geer.*
Lives in the Indies.
Bluish.

201. *Lebetinus* ♂ 155-46. *Hasselqvist.*
Lives in the Orient.
Somewhat cloudy; dark dots below.

202. *melanocephalus.* 140-62. *Mus. Ad. Fr.* 1. *p.* 24. *t.* 15. *f.* 2.
Lives in America.
Dark, very smooth, black head.

204. *Cobella.* 150-54. *Amoen. acad.* 1. *p.* 117. *n.* 14.
p. 302. n. 28.
p. 496. n. 14.
Gron. mus. 2. *p.* 65. *n.* 32.
Seb. mus. 2. *t.* 2. *f.* 6.
Lives in America, very common.

The subcaudal scutes of the colubers are counted longitudinally, or as pairs even though they are alternate, although two may present the appearance of a scute beneath the abdomen.[55]

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Ash gray, with scattered oblique white lines; oblique, lead-colored spots behind each eye.

207. *Reginae.* 137-70. *Mus. Ad. Fr. p.* 24. *t.* 13. *f.* 3.
Lives in America.
Dark abdomen variegated with white and black.

212. *severus.* ♂ 170-42. *Mus. Ad. Fr.* 1,. *p.* 25. *t.* 8. *f.* 1.
Seb. mus. 2. *t.* 54. *f.* 4.
Lives in Asia.
Ash-gray with white bands. Ash-gray band between the eyes and behind the nostrils.

216. *Aurora.* 179-37. *Mus. Ad. Fr. p.* 25. *t.* 19. *f.* 1.
Seb. mus. 2. *t.* 78. *f.* 3.
Lives in America.
Livid, yellow back.

217. *Sipedon.* 144-73. *Kalm.*
Lives in North America.
Dark.

218. *maurus.* 152-66.
Lives in Algeria. *E. Brander.*
Body dark above with two dorsal lines. Dark-black below. From the dorsal lines to the abdomen, on each side, many black bands.

219. *stolatus.* ♂ 143-76. *Mus. Ad. Fr.* 1. *p.* 26. *t.* 22. *f.* 1.
Seb. mus. 2, *t.* 9. *f.* 1.
Lives in America.
Gray, with two white stripes.

Scutes on both sides with a black dot.

220. *vittatus.* 142-78. *Amoen. acad.* 1. *p.* 30. *n.* 27.
Mus. Ad. Fr. p. 26. *t.* 18. *f.* 2.
Gron. mus. 2. *p.* 65. *n.* 31. Coluber 155-62.
Seb. mus. 2. *t.* 45. *f.* 5.
t. 60. *f.* 2, 3.
Lives in America.
Scutes with a dark margin.
White stripe, dentate, beneath the tail.

Serpents of our country hibernate and in the early spring shed their skin, that is to say, their "old age."

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221. *miliaris* 162-59. *Mus. Ad. Fr. p.* 27.
Lives in the Indies.
Dark; white spot on the scales. White below.

227. *rhombeatus* 157-70. *Mus. Ad. Fr. p.* 27. *t.* 24. *f.* 2.
Lives in the Indies.
Bluish with black spots, blue rhomboids in the middle.

229. *cyaneus.* 119-110. *Amoen. acad.* 1. *p.* 493. *n.* 10.
Seb. mus. 2. *t.* 43. *f.* 2.
Lives in America
Intensely blue, with the appearance of *Ah* [*a*]*etulla.* Green below.

230. *Natrix.* 170-60. *Faun. svec.* 259.
It. gotl. 146.
Amoen. acad. 1. *p.* 116. *n.* 3.
Gron. mus. 2. *p.* 63. *n.* 27.
Lives in Europe; bears young in dung heaps.
Black with a white spot on each side toward the neck.

233. *Aesculapii.* 190-43. *Amoen. Acad.* 1. *p.* 497. *n.* 15.
Mus. Ad. Fr. 1. *p.* 29. *t.* 11. *f.* 2.
Gron. mus. 2. *p.* 59. *n.* 18.
Seb. mus. 2. *t.* 18. *f.* 4.
Lives in the Indies.
White and black bands divided by a line or a white ring.

234. *agilis.* 184-50. *Amoen. acad.* 1. *p.* 304. *n.* 33.
Mus. Ad. Fr. 1. *p.* 27. *t.* 21. *f.* 2.
Lives in the Indies.
Dark and white bands.

235. *lacteus.* ♂ 203-32. *Mus. Ad. Fr.* 1. *p.* 28. *t.* 18. *f.* 1.
Lives in the Indies.

White with double dark-black spots.Top of the head dark-black with a white, longitudinal line.

244. *aulicus.* 184-60. *Mus. Ad. Fr.* 1. *p.* 29. *t.* 12. *f.* 2.
Seb. mus. 1. *t.* 91. *f.* 5.
Lives in America.

Serpents often swallow down prey twice as thick as their neck, on account of their expandable, unarticulated jaws.

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Gray, with bifurcated white bands on the side. Top of head white.

246. *monilis.* 164-82. *Mus. De Geer.*
Lives in America.
Annulate body, a necklace [monile] of 3 white dots on the neck.

252. *pallidus.* 156-96. *Amoen. Acad.*1. *p.* 494. *n.* 11.
Mus. Ad. Fr. 1. *p.* 31. *t.* 7. *f.* 2.
Lives in the Indies.
Pale , with scattered gray spots and dark dots. Double, interrupted, blackish lateral small [56] lines.

252. *lineatus.* 169-84. *Mus. Ad. Fr.* 1. p. 30. *t.* 12. *f.* 1.
t. 20. *f.* 1.
Seb. mus. 2. *t.* 12. *f.* 3.
Lives in Asia.
Bluish, with 4 dark linear stripes.

253. *Naja.* ♂ 193-60. *Mus. Ad. Fr.* p. 30. *t.* 21. *f.* 1.
Seb. mus. 2. *t.* 90. *f.* 1, 2.
t. 85. *f.* 1.
t. 89. *f.* 1, 2, 3, 4.
t. 97. *f.* 1, 2, 3, 4.
t. 94. *f.* 1.
1. *t.* 44. *f.* 1.
Kaemph. amoen. 565. *t.* 567.
Amoen. acad. 1. *p.* 305.
Lives in eastern India.
Sides of the neck widen into a membrane with white spectacle-shaped spots above.
Most venomous of all. Antidote is *Ophiorhiza* ; killed by the mongoose.

254. *padera.* 198-56. *Mus. Ad. Fr.* 2. *p...*
Lives in the Indies.
Many pairs of black spots down its back in a connected small line. The same number, unconnected, on its sides.

258. *canus.* 188-70. *Mus. Ad. Fr.* 1. *p.* 31. *t.* 11. *f.* 1.
Lives in the Indies.

Note those armed with a retractable, venomous weapon, marked by the symbol ♂.

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Hoary, with darkish bands, two snowy dots on the sides.

260. *sibilans.* 160-100. *Amoen. acad.* 1. *p.* 302. *n.* 30.
Seb. mus. 2. *t.* 52. *f.* 4.
t. 56. *f.* 4.
t. 107. *f.* 4.
Lives in Asia.
Bluish, with black stripes, white below.

261. *laticaudatus.* 220-42. *Mus. Ad. Fr.* 1. *p.* 31. *t.* 16. *f.* 1.
Lives in the Indies.
Ash-gray with dark bands.
Blunt tail, doubly compressed.

262. *Sirtalis.*[57] 150-114. *Kalm.*
Lives in Canada.
Three green-bluish stripes on a dark, slender, ribbonlike body.

263. *atrox.* ♂ 196-69. *Amoen. acad.* 1. *p.* 305. *n.* 35.
Mus. Ad. Fr. 1. *p.* 33. *t.* 22. *f.* 2.
Seb. mus. 1. *t.* 43. *f.* 5.
Lives in Asia.
Hoary, with carinate scales.
Head depressed, with compressed, angular small scales.

264. *Sibon.* 180-85. *Amoen. acad.* 1. *p.* 304. *n.* 32.
Seb. mus. 1. *t.* 14. *f.* 4.
Lives in Africa.
Rusty-dark, sprinkled with white; below white with dark spots.

265. *nebulatus* 185-81. *Mus. Ad. Fr. p.* 32. *t.* 24. *f.* 1.
Catesb. car. 2. *p.* 42. *t.* 42?
Lives in America.
Clouded with dark and ash-gray; below, varied with white and dark; it climbs legs and constricts.

266. *fuscus.* 149-117. *Mus. Ad. Fr.* 1. *p.* 32. *t.* 17. *f.* 1.
Seb. mus. 2. *t.* 54. *f.* 2.
t. 71. *f.* 1.
t. 72. *f.* 1.
t. 87. *f.* 1.
t. [58]91. *f.* 1.

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Lives in Asia.
Ashy-dark, resembling the Ahaetulla. Behind the eyes an oblong, dark

spot.

267. *Saturni-nus.* 147-120. *Mus. Ad. Fr.* 1. *p.* 32. *t.* 9. *f.* 1.
Lives in the Indies.
Livid, ashy-cloudy. Large eyes.

270. *candidus* 220-50. *Mus. Ad. Fr.* 1. *p.* 33. *t.* 7. *f.* 1.
Lives in the Indies.
Whitish with dark bands.

271. *niveus.* ♂ 209-62. *Mus. De Geer.*
Seb. mus. 2. *t.* 15. *f.* 1.
Lives in Africa.
White, without spots.

272. *scaber.* 228-44. *Mus. Ad. Fr. p.* 36. *t.* 10. *f.* 1.
Lives in the Indies.
Clouded with dark and black, carinate scales. Top of head with a black spot, bifid to the rear.[59]

273. *carinatus* 157-115. *Mus. Ad. Fr. p.* 31.
Lives in the Indies.
Lead-colored with scales pale at the margin. White below. Carinate back.

275. *coralli-nus* ♂ 193-82. *Mus. Ad. Fr.* 1. *p.* 33.
Seb. mus. 2. *t.* 17. *f.* 1.
Lives in Asia.
Glaucous with three dark bands; scales distant[60] pale below with hoary dots.

276. *ovivorus.* 203-73. *Kalm.*
Pis. bras. 279. Guinpuaguara.
Lives in America.

279. *exoletus* 147-132. *Mus. Ad. Fr.* 1. *p.* 34. *t.* 10. *f.* 2.
Lives in the Indies.
Bluish-ashy, resembles the Ahaetullae.

281. *Situla.* 236-45.
Lives in Egypt. *Hasselqv.*
Gray with two black stripes.

The color in serpents varies widely, thus one should never trust in their coloration.

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282. *triscalis* 195-86.
Lives in the Indies.
Glacous body. Three dark longitudinal dorsal lines joined at the backbone, the middle of which ends above the anus; on each side, a dark line running with the previous two to the tip of the tail; tail 1/5.[61]

285. *lemniscatus.* 250-37. *Amoen. acad.* 1. *p.* 118. *n.* 6.
p. 413. *n.* 9.
Mus. Ad. Fr. 1. *p.* 34. *t.* 14. *f.* 1.
Seb. mus. 1. *t.* 10. *f.* last.
2. *t.* 76. *f.* 3.
Lives in Asia.
White and black bands, often interrupted by two white rings. Body very glabrous.

286. *annulatus* 190-96. *Amoen. acad.* 1. *p.* 120. *n.* 9.
p. 305. *n.* 34.
Mus. Ad. Fr. p. 34. *t.* 8. *f.* 2.
Seb. mus. 2. *t.* 38. *f.* 2.
Lives in America.
White with altemate dark round spots, everywhere flowing together.

287. *Dipsas.* ♂ 152-135. *Amoen. acad.* 1. *p.* 302. *n.* 29.
Gron. mus. 2. *p.* 64. *n.* 30.
Seb. mus. 2. *t.* 24. *f.*3.
Lives in America.
Bluish with scales whitish at the margin. Tail with a bluish suture below.

290. *Pelias.* 187-103. *Mus. De Geer.*
Lives in the Indies.
Dark behind the eyes and top of the head, the rest doubled with black. Abdomen green with a yellow line on each side.

293. *Tyria.* 210-83.
Lives in Egypt. *Hasselqvist.*
Whitish with a triple longitudinal row of rhomboidal, dark spots.

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297. *jugularis.* 195-102.
Lives in Egypt. *Hasselqv.*
Black with a blood-red throat.

299. *Petola.* 209-90. *Amoen. acad.* 1. *p.* 306. *n.* 36.
p. 119. *n.* 8.
p. 495. *n.* 13.
Gron. mus. 2. *p.* 57. *n.* 13.
Seb. mus. 1. *t.* 54. *f.* 4.
Lives in Africa.
Lead-colored with testaceous bands.

307. *Molurus.* 248-59. *Mus. De Geer.*
Lives in India.
Very similar to the boa, but the scutes and scales of the head are larger as in colubers.

313. *Ahaetulla.* 163-150. *Amoen. acad. p.* 115. *n.* 2.

p. 495. *n.* 12.
Mus. Ad. Fr. 1. *p.* 35. *t.* 22. *f.* 3.
Gron. mus. 2. *p.* 61. *n.* 24.
Seb. mus. 2. *t.* 82. *f.* 1.
2. *t.* 12. *f.* 3.
Bradl. natur. t. 9. *f.* 2.
Lives in Asia, America.
Green-gold with black scales at its peak; black bands across its eyes.

314. *petolarius.* 212-102. *Mus. Ad. Fr.* 1. *p.* 35. *t.* 9. *f.* 2.
Lives in the Indies.
Dark with white bands; pale below.

316. *Haje.* 207-109. *Hasselqv. iter.* 317. *n.* 62. A Coluber with 206 abdominal scutes, 60 caudal scales.
Lives in lower Egypt.
Very large, dark-black with oblique bands and half-white scales.

323. *filiformis.* 165-158. *Mus. Ad. Fr. p.* 36. *t.* 17. *f.* 2.
Lives in the Indies.
Black, very narrow, white below. Head thicker than the body.

325. *pullatus.* 217-108. *Amoen. acad.* 1. *p.* 300. *n.* 25.
Mus. Ad. Fr. 1. *p.* 35. *t.* 20. *f.* 3.

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Gron. mus. 2. *p.* 56. *n.* 12. Coluber 215-104.
Seb. mus. 2. *t.* 20. *f.* 1.
Lives in Asia.
Dark black bands with white dots. Snowy white temples with dark black spots.

326. *hippocrepis.* 232-94. *Mus. Ad. Fr.* 1. *p.* 36. *t.* 16. *f.* 2.
Lives in America.
Livid with dark spots. Dark bands between the eyes and a curved band on the occiput.

328. *minervae* 238-90. *Mus. Ad. Fr.* 1. *p.* 36.
Lives in the Indies.
Glaucous with a dark dorsal stripe. Three dark stripes on the head.

337. *cinereus* 200-137. *Mus. Ad. Fr.* 1. *p.* 37.
Lives in the Indies.
Ash-gray with a white, angled abdomen. Scales of the tail rust colored at the margin.

339. *viridissimus.* 217-122. *Mus. Ad. Fr.* 2, *p...*
Lives in Surinam.
Very green with abdominal scutes medially widened.

340. *mucosus* 200-140. *Mus. Ad. Fr.* 1. *p.* 37. *t.* 23. *f.* 1.
Lives in the Indies.
Bluish head.

344. *cenchoa.* 220-124. *Amoen. acad.* 1. *p.* 306. *n.* 37.
Seb. mus. 2. *t.* 16. *f.* 2,3.
Lives in America.
Dark with pale spots and snowy-white bands. Head subglobular.

359. *mycteri-* 192-167. *Mus. Ad. Fr.* 1. *p.* 28. *t.* 5. *f.* 1.
♂ *zans.* *t.* 19. *f.* 2.
Gron. mus. 2. *p.* 59. *n.* 19.
Seb. mus. 2. *t.* 23. *f.* 2.
Catesb. carol. 2. *p.* 47. *t.* 47.
Lives in America.
Snout extended, tetragonal; sides with a pale linear stripe.

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385. *caerule-* 215-170. *Mus. Ad. Fr.* 1. *p.* 37. *t.* 20. *f.* 2.
scens. Lives in the Indies.
Bluish

Arges. *Seb. mus.* 2. *t.* 103. *f.* 1.
Lives in Africa.
Occiput bilobed-gibbous. Body with transverse ocelli distributed in rings[62]. Not seen by me, nor have the scutes been noted.

110. *ANGUIS.* Abdominal scales and subcaudal scales.

160. *bipes.* 100-60. *Mus. Ad. Fr.* 1. *p.* 21. *t.* 28. *f.* 3.
Seb. mus. 1. *t.* 53. *f.* 8.
t. 86. *f.* 3.
Lives in the Indies.
Two very short feet, two-fingered, toward the anus. Pale with a dark dot on each scale.

197. *Melea-* 165-32.
gris. *Seb. mus.* 2. *t.* 21. *f.* 4.
Lives in the Indies.
Sirnilar to *A. bipes*, glaucous with black dots in a multiple, longitudinal row.

Colubers not seen by me, described by Cl . Gronovius in *Gron. Mus.*
165 abdominal. 141 caudal 24. *Gron.* 41. Seb. 2 t. 98. f. 1.

175	--	136	--	39. *Gron.* 38. variegated with rusty-blue and white.
177	--	135	--	42. *Gron.* 39. white with black and white spots.
201		159	--	42. *Gron.* 29. Seb. 1. t. 33. f. 6. white-rufous.
202	--	142	--	60. *Gron.* 36. Seb. 2. t. 35. f. 4. bluish.
203	--	153	--	50. *Gron.* 34. white, with black lines and spots.
212	--	149	--	63. *Gron.* 33. white, girdled with black lines.
213	--	138	--	74. *Gron.* 37. Seb. 2. t. 20. f. 2. blue with black spots.

220 – 160 -- 60. *Gron.* 28. girdled with white and black lines.
230 – 165 -- 74. *Gron.* 25. Seb. 2. t. 21. f. 3. white with obscure lines.
234 – 174 -- 60. *Gron.* 22. Seb. 2. t. 33. f. 1. ashy -blue.
240 – 163 -- 77. *Gron.* 26. Seb. 2. t. 1. f. 9. & t. 9. f. 2. with a black stripe.
260 – 180 -- 80. *Gron.* 20. variegated with white and brown.
266 – 191 -- 75. *Gron.* 15. brown with white dots.
298 – 202 -- 96. *Gron.* 14. with brown spots.
311 – 189 -- 122. *Gron.* 17. purplish with dark -black spots.
314 – 172 -- 142. *Gron.* 23. blue with a dark-black lateral line.
315 – 190 -- 125. *Gron.* 28. girdled with white and black lines.
342 – 272 -- 70. *Gron.* 11. Seb. 2. t. 199. f. 2. clouded.

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198. *colubrina* 180-18. *Hasselqv. iter.* 320. n. 65.
Lives in Egypt.
Beautifully variegated with pale and dark.

209. *Jaculus.* 186-23. *Hasselqv. iter.* 319. n. 64.
Lives in Egypt.
Abdominal scales a bit wider.

212. *maculata* 200-12. *Mus. Ad. Fr.* 1. *p.* 21. *t.* 21. *f.* 3.
Gron. mus. 2. *p.* 53. *n.* 5.
Seb. mus. 2. *t.* 100. *f.* 2.
1. *t.* 53. *f.* 7.
Lives in America.
Yellow above, with a dorsal stripe and dark linear bands.

214. *reticulata* 177-37. *Gron. mus.* 2. *p.* 54. *n.* 7.
Scheuch. sacr. t. 747. *f.* 4.
Lives in America.†
Color of the scales is dark with a white disc.

215. *Cerastes* 200-15. Hasselqv. Act. Ups. 1750. p. 28 [50]
[*Hasselqv.*] *it* [*er*]. 320. *n.* 66.
Lives in Egypt. †

237. *lumbricalis.* 230-7. *Gron. mus.* 2. *p.* 52. *n.* 3.
Brown. jam. 460. *t.* 44. *f.* 1.
Seb. mus. 1. *p.* 137. *t.* 86. *f.* 2.
Lives in America. †
Color from yellow from whitish.

250. *laticauda* 200-50. *Mus. Ad. Fr.* 2. *p.* ..
Lives in Surinam.
Compressed tail, pointed, pale with dark bands.

253. *Scytale* 240-13. *Amoen. acad.* 1. *p.* 296.
Mus. Ad. Fr. 1. *p.* 21. *t.* 6. *f.* 2.
Gron. mus. 2. *n.* 14. Anguis 227-14.

Seb. mus. 2. *t.* 2. *f.* 1,2,3,4.
t. 7. *f.* 4.
t. 20. *f.* 3.
Lives in the Indies.
Whitish, with the margins of the scales everywhere rust colored. Dark bands.

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262. *Eryx.* *Gron. mus.* 2. *p.* 35. *n.* 9. (126-136.)
Lives in America (I have not seen it).
Ash-gray with three black lines; bluish below.

270. *fragilis.* 135-135. *Faun. svec.* 258.
Aldr. serp. 245. *Caecilia vulgaris.*
Lives in Europe.
Its extreme fragility is cleverly explicated by Lemery [63] in his dictionary.

111. *AMPHISBAENA.* Rings on the body and tail.

230. *fulginosa* 200-30. *Amoen. acad.* 1. *p.* 295.
Mus. Ad. Fr. 1. *p.* 20.
Gron. mus. 2. *p.* 1. Amphisbaena 209-25.
Raj. quadr. 288.
Seb. mus. 2. *t.* 1. *f.* 7.
t. 18. *f.* 2.
t. 22. *f.* 3.
t. 73. *f.* 4.
t. 100. *f.* 3.
1. *t.* 88. *f.* 3.
Lives in America.
Variegated with white and black.

239. *alba.* 223-16. *Mus. Ad. Fr.* 1. *p.* 26. *t.* 4. *f.* 2.
Seb. mus. 2. *t.* 24. *f.* 1.
t. 6. *f.* 4.
Lives in America.
Totally white.

112. *CAECILIA.* Wrinkles on the trunk and tail.
Upper lip with two tentacles.

135. *tentaculata* 135-0. *Amoen. acad.* 1. *p.* 489. *t.* 17. *f.* 2.
Mus. Ad. Fr. 1. *p.* 19. *t.* 5. f.2.
Gron. mus. 2.n. 1. *p.* 52.
Lives in America.

350. *glutinosa.* 340-10. *Mus. Ad. Fr.* 1. *p.* 19. *t.* 4. *f.* 1.
Lives in the Indies.
Dark, with a whitish lateral line.

END NOTES

1. The nature of the Latin is such that Linnaeus may refer either to himself as the author or to God as the "Author", i.e., creator of these animals. The capitalization of "Author" is Linnaeus's.

2. *Draco*, a genus of SE Asian lizards.

3. *Bufo, Salamandra, Gecko* are species by Linnaeus' s reckoning, but the forms in general are as we interpret them.

4. Catonians--the lower world. An obscure term, perhaps related to the Greek "kata", "down", and hence these lowly creatures

5. Apparently a referral to cusps or solid teeth.

6. Redi, an Italian scientist, performed experiments on the nature of poisonous creatures. A recent translation and annotation is *Francesco Redi on Vipers*, by Peter K. Knoefel. 1988. E.J. Brill, Leiden. xvii+86 pp., 2 figs.

7. Linnaeus tells us first that only 10% of all snakes are made venomous. In so doing the creator not only protected humans from excessive poisoning, but also protected the serpents' feelings and existence. Here he adds the fact that humans have been given various natural protections against the poisonous serpents, listing an animal enemy and a plant antidote for three main locales.

The enmity of the mongoose to the cobra and the pig to the rattlesnake (cf. *Crotalus horridus* below) are well known. The mongoose, which Linnaeus described as *Viverra ichneumon* on p. 43 of the 10th ed. of the *Systema Naturae*, is today known as *Herpestes ichneumon*, a species ranging from the Iberian Peninsula through North Africa to Asia Minor. India is home to several species of *Herpestes*, but not *H. ichneumon*. Ophiorhiza means, literally, "snake root," and Linnaeus lists it below as an antidote for the bite of the *Naja* (cobra) (the mongoose is also again mentioned here). Gerth van Wijk, H.L. (1922. *A Dictionary of Plant Names* . 2 v. M. Nijhoff, The Hague. 1:918) gives its popular names as "mongoose plant" and Indian snake-root." R. N. Chopra et al. (1956. *Glossary of Indian Medicinal Plants* . Council of Sci. and Indust. Res., New Delhi. p. 181) as an antidote to snake bite. *Polygala senega* is an American milkwort and C.F. Millspaugh (1974. *American Medicinal Plants*. Dover Publ., New York . p. 174-176) lists it as a popular antidote to rattlesnake bite and Linnaeus lists it below as such (*Crotalus horridus*). The well known antipathy of storks and serpents was frequently commented upon in antiquity. See D. W. Thompson (1966. *A Glossary of Greek Birds*. Olms, Hildesheim, Germany. p. 223) for possible sources for Linnaeus's comment.

8. Linnaeus uses three different terms for sorts of scales and plates. In order best to reproduce the effect of the original, the following renditions are used consistently throughout without regard to their actual correspondence with the animal's appearance: squama= scale, scutum= scute, scutellum = a small scute. All, of course, are synonyms for the epidermal scales.

9 Reading the non-Latin "e caudatum" as a single word.

10. Figure 4 in in plate 3 of Grew looks more like *Eretmochelys* if judged by pattern and apparent overlapping scutes.

11. Cf. Pliny, *Naturalis Historiae* 9.12.35. In an 1832 issue of a Key West, Florida newspaper mention was made of a dealer seeking to buy 500 lbs. of loggerhead turtle shell, which for lack of any other known use for the shell, we speculate was to be used for arches.

12. This reference cited by Catesby is Rochefort, César de (Charles de) 1658. *Histoire naturelle et morale des Iles Antilles de l'Amérique.* Roterdam. Arnould Leers. In the copy we saw, the accent in *l'Amérique* is over the "q", an obvious error.

13. Reading "anterioribus" for the obvious typographical error "a terioribus".

14. Linnaeus frequently changes from "lacertus" to "lacerta" when speaking of the lizard. The terms here are treated as interchangeable.

15. A confusion of Pliny, Historiae Naturalis. 8.36.88f, which first speaks of the ichneumon/mongoose and then of the crocodile.

16. This is reference to the book of Job in the Bible. Leviathan is a term which today is usually thought of as referring to a whale, but also something monstrous, actually a sea monster in biblical and other older writings. The verses in Job,although perhaps often referable to whales, also comment about teeth, scales, etc., things that would be applicable to a crocodilian. Most likely that would be the Nile crocodile, a known man eater well-known to early European travelers in Africa. Today we recognize *Lacerta crocodilus* as *Caiman crocodilus* of Middle and South America.

17. This tale stems from Pliny, *Historiae Naturalis* 8.38.93, who ascribes this behavior to a diminutive race of men called the Tentyritae.

18. Linnaeus' s term "amboinensis" might be interpreted as referral to the Amboin Islands in Indonesia. In the present case, however, the reference is to the amboin tree of India and adjacent areas, hence in these trees (this lizard is now known as the agamid *Lyriocephalus scutatus*, endemic to Sri Lanka).

19. This ambiguous statement about scales perhaps is due to the peculiar scale arrangement on this lizard. The body has large tubercular scales and small scales on the back, with the tubercular ones tending to form six rows.

20. Today we know this to be the salamander, *Triturus vulgaris.*

21. Delos is a Greek island. Of herpetological interest is that Apollo was born there and a famous statue of him depicts him killing a lizard. Kitchell has visited the island and says that it literally swarms with lizards.

22. Emending the printed, non-word, "inaebuale" to read "inaequale".

23. Reading "quadratis" for the non-Latin "quadiatis."

24. Subpentatdactyl means fewer than five toes, but meaning is not clear. He could be saying that some feet have fewer than five toes, or perhaps that some toes are decidedly shorter than others.

25. The parenthetical expression is Linnaeus's.

26. Typographical error. The name should be *scincus*, which was what Gronovius used in 1754. Linnaeus repeated this error in the 12th ed. of the *Systema.*, but Gmelin's version in the 13th ed. shows *scincus*.

27. Not "Rocky Arabia" as in the translation of the 13th ed. of Syst. Nat. by Wm. Turton, but rather the area of Arabia surrounding Petra. The term is an ancient one.

28. The fact is from Pliny, Historiae Naturalis. 8.38.91f who specified it as a male aphrodisiac.

29. Linnaeus abandons his more usual "palma" for forefeet here in favor of "manus", "hand."

30. "U" and "V " are often used interchangeably in Latin. In this case Linnaeus clearly wanted to use "V". See further discussion under *Lacerta igvana* in the list of current names appended.

31. This and following names reflect variations on "Igvana."

32. "Striatum" could mean keeled or striped, but the abdominal scales of this species are not actually keeled, nor is the pattern striped. Perhaps some wrinkling due to preservation gave the appearance of striations, hence this choice of interpretation.

33. Here we interpret that "striatus" means keeled, but we must wonder if Linnaeus perhaps meant "striped" in reference to the crossbands of the dorsum.

34. Grammatically, either the eyebrows or the scar (a raised superciliary area) can be what is divided. But the term "transversely" in the description appears to be inaccurate and certainly a single furrow could not divide something into three parts. Dr. George Zug has examined *Plica plica* and *Plica umbra* for us and states,"The upper eyelid and brow ridge are large and in preservation folded, likely because of size. Brow consists of 2-3 rows of large superciliary scales forming a distinct ledge. The eyelid is covered with numerous small scales and usually bears longitudinal folds (probably due to tissue contraction and sinking of eyeball during preservation hardening). The first furrow (longitudinal [anter-posterior axis] inpocketing) lies immediately beneath the brow ridge internal/ventral juncture with the eyelid; the second furrow extends along the middle of the eyelid. The two furrows form thus three folds".

35. Here "striatus" clearly means striped because that is the color pattern of this lizard.

36. He probably meant Guiana. The species herein described is *Cnemidophorus lemniscatus*, a South American lizard.

37. In ancient Greek writings Seps was a venomous serpent, but also the term came to be applied to the serpentiform lizards that we know as *Chalcides*. The term chalcidian could be interpreted as the term applied to chalcid wasps, but in this case Linnaeus probably refers to Chalcis, a city on the Greek island of Euboia.

38. The use of "v" instead of "u" in this name raises a question of Linnaeus's intent. Compare to *Igvana* as discussed in endnotes 28, 29. In this case we interpret that the "v" is intended as a "u" because "angvina" has no meaning, whereas "anguina" is derived from the Latin "anguis" for snake, and most certainly this species is snakelike in appearance.

39. "Striato" here can mean both striped and keeled, for both appearances apply to this species.

40. Pipa is a Dutch term for a Carib indian group that lives in the Guianas.

41. Linnaeus apparently mistakes the metatarsal spade for a digit.

42. Rubeta is a Latin term for a kind of toad, and phryne is a Greek word for toad.

43. Various plants.

44. In many male anurans the base of the thumb of males is much larger than in females, and is used in gripping the female during amplexus. Anurans have no intromittent structure resembling a penis (except for a very few that have a taillike appendage), thus Linnaeus may have thought the sperms were conveyed via the thumbs which are the only parts of the male anatomy directly contacting the female.

45. The numbering format that Linnaeus used for the snakes differs from that of the turtles, lizards, frogs, and toads. The number given before the species name represents the total of the ventral and subcaudal scutes added together, and the next set of numbers represents the ventral and subcaudal counts separately. But the reader may notice that sometimes the v + sc count does not equal the total first given: that is because when total counts are the same (e.g., on p. 217 for *buccatus* and *angulatus*, Linnaeus added one to the second species listed. Linnaeus's counts often were erroneus, thus readers are advised to seek more information from other sources, a very important one of which is Andersson (1899. Bihang till K. Svenska Vet.-Akad. Handlingar. Band 24 Afd. IV. No. 6: 1-35).

46. A footnote on page 221 calls attention to the male symbol, which in this case is used to denote presence "of a retractable, venomous weapon." In light of modern knowledge Linnaeus erred in ascribing venomous properties to some snakes, but also failed to note that some, e.g., *Couber haje=Naja haje* , are venomous. But, of course, the herpetological world is discovering that some snake species that have been presumed to be harmless are in fact capable of delivering a poisonous bite.

47 The Latin could be better; even in the translation of the 13th edition the rendition could be improved. What Linnaeus is trying to say is that the dark rhomboidal spots are fringed with small white scales

48. Emending the senseless "put" to "caput."

49. The text is sound; the sense is apparently that the splotches resemble an enclosed garden. The translation of the 13th edition reads, "resembling a flower-pot", but the translation is dubious and the sense obscure.

50. The actual date of publication is 1751.

51. A referral to the snakes that are sold being the Egyptian species, not the European species *Coluber berus*.

52. Greek mythology lists three fates: Clotho wove the thread of life into a tapestry that represented all of existence; Lachesis measured each individual thread, and Atropos was the fate

who cut the life thread. Clotho and Lachesis, the remaining fates, appear as serpents in the 13th edition.

53. This species has never been effectively determined to date. Klauber (1948. Copeia 1948: 11-12) gave a liberal translation of "bands consisting of black lines" and discussed both pattern and scutellation as a basis for his suggestion that the animal might be *Storeria* sp.

54. An island in the Moluccas of the East Indies.

55. Subcaudal scutes usually occur in slightly staggered pairs and are counted as pairs, but occasionally the subcaudals may not be divided and are thus similar to the ventral scutes.

56. Linnaeus uses the diminuitive form of line. Did he mean short or did he mean narrow?

57. This species has considerable interest for North American herpetologists because it represents one of the most studied and common of North American species. Klauber (1948. Copeia 1948, p. 8-10) discussed the error that had been made in applying the name to the common garter snake, whereas it really described the Eastern Ribbon Snake that we know as *Thamnophis sauritus*. The problem has been rectified by official suppression via the ICZN.

58. Correcting the "*s*" to "*f*".

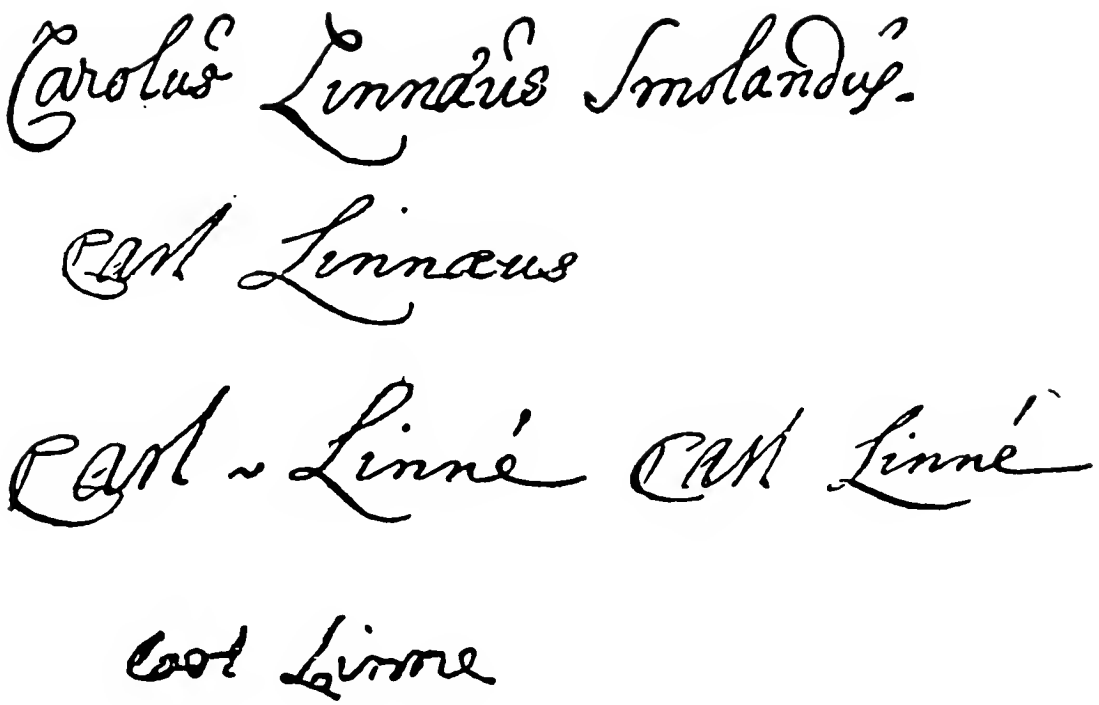
59. The grammar is such that either the spot or the top of the head may be bifid, but of course we know from actual specimens the spot is what is divided.

60. Probably meaning that the scales were well-separated from each other. This phenomenon could perhaps be attributed to the animal containing an undigested food item in the digestive tract.

61. Tail 1/5 probably means tail is 1/5 the total length.

62. Argus (the name of the 13th edition) is a figure of Greek mythology notable for his one hundred eyes.

63. Lémery, Nicolas 1716. *Dictionaire, ou Traité universel des Drogues simples. Pharmacopée universelle*. Several editions subsequently published.



The Aging of a Signature,
from 1728 to 1765 (third line) and later.

CURRENT NAMES FOR LINNAEUS'S HERPETOLOGICAL SPECIES IN SYSTEMA NATURAE X

by

Harold A. Dundee

The following list gives Linnaeus's original assignment and the name and source for its first use as utilized currently in systematic herpetology. Identification of Linnaeus's species has not been easy for herpetologists because his descriptions often were sparse, inaccurate, or specimens have not been located or had tags jumbled. Major sources of information on the type specimens are those of L.G. Andersson, 1899. *Catalogue of Linnaean Type-specimens of Snakes in the Royal Museum in Stockholm.* Bihang till Kungliga Svenska Vetenskapakademien Handlingar. 24, pt. 4 (6)1-35 ; Lönnberg, E. 1896. *Linnean type specimens of birds, reptiles, batrachians and fishes in the zoological museum of the R. University in Upsala.* Bih. till Svensk. Vet. Akad. Handl. 22(4)1:1-45. The Royal Museum is where most of Linnaeus' types were stored. Andersson noted flaws in Linnaeus's descriptions, problems in labeling of specimens, etc. The following listing is given sequentially by page as the names appear in the10th edition of *Systema Naturae.* Also, because Linnaean localities often were wrong, the area(s) of major distribution is/are given [the ranges listed are for the whole species, but note that the specimen[s] used by Linnaeus may represent but one of the subspecies and thus might have a more restricted distribution]. The geographic designation "Indiis" seems to apply almost exclusively to South America, not to the West Indies as one might interpret. I have disputed several names in use and cite the Code and ICZN in reference to interpretation. These refer to International Commission of Zoological Nomenclature. 1985. *International Code of Zoological Nomenclature*, 3rd ed. International Trust for Zoological Nomenclature, London.

Sources for names and distributions include: *Catalogue of American Amphibians and Reptiles* (a continually issued publication by the Society for the Study of Amphibians and Reptiles); Peters and Orejas-Miranda 1970 *The Neotropical Squamata I. Snakes* (plus addenda by P.E. Vanzolini) ; Peters and Donoso-Barros 1970 *The Neotropical Squamata. II. Lizards and Amphisbaenians* (plus addenda by P.E. Vanzolini); Welch 1982 *Herpetology of Africa;* Welch 1983 *Herpetology of Europe and Southwest Asia* Welch 1988 *Snakes of the Orient*; Frost 1985 *Amphibian Species of the World*; Mertens and Wermuth1960 *Die Amphibien und Reptilien Europas*; Villa, Wilson, and Johnson 1988 *Middle American Herpetology*; and various recent publications in journals.

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Testudo mydas. *Chelonia mydas* Schweigger 1812. Königsberg. Arch. Naturgesch. Math.: 291. Most warmer oceanic regions.

Testudo caretta. *Caretta caretta* Stejneger 1902. Ann. Rpt. U.S.N.M. for 1902:715. Most warmer oceanic regions.

198

Testudo orbicularis. *Emys orbicularis* Blanford 1876. Zool. 2:308. (See under *T. lutaria.*).

Testudo scabra. *Melanochelys trijuga* Gray 1869. Proc. Zool. Soc. London:187. India and Ceylon to Burma. Lönnberg (1896. Bih. Sven. Vet.-Akad. Handl. 22[4]:34) said that "the specimen is quite young, dried and in a very bad condition" and cannot be identified with certainty Boulenger (1899. Cat. Chel. Brit. Mus.:118) said it may be *Nicoria trijuga.*

Testudo lutaria. *Emys orbicularis* Blanford 1876. Zool. & Geol. *in* Acct. Jour. Persian Boundary Comm. 2:308. Europe, N. Africa, western Asia.

Testudo graeca. *Testudo graeca* Linnaeus. Northern Africa to southwestern Europe and western Asia.

Testudo carolina. *Terrapene c. carolina* Bell 1825. Zool. J. 2:309. Eastern U.S.A. and México.

Testudo carinata. *Terrapene carolina.* See under *T. carolina* above.

199

Testudo geometrica *Psammnobates geometricus* Fitzinger 1843. Syst. rept.:29. South Africa.

Testudo pusilla. *Testudo g. graeca* Mertens 1946. Senckenbergiana 27:112. Southern Europe, northern Africa.

Testudo serpentina. *Chelydra s. serpentina* Schweigger 1812. Königsberg. Arch. Naturgesch. Math. 1:292. Eastern North America to northwestern South America.

Draco volans *Draco volans.* Linnaeus. Malay Peninsula to the Philippine Ids.

200

Lacerta crocodilus *Caiman crocodilus.* Andersson 1900. Bih. Kung. Svenska Vet.-Akad. Handl. 26(1):5. Southern México to northern Argentina.

Lacerta caudiverbera. ? Boulenger 1887. Cat. Liz. British Mus. 1:236 thought this to be a mythical species of gecko.

Lacerta superciliosa. *Uranoscodon superciliosa* Kaup 1825. Isis von Oken 16:590. Northeastern South America.

201

Lacerta scutata. *Lyriocephalus scutatus* Kelaart 1852. Prod. Faun. Zeyl.:166. Sri Lanka.

Lacerta monitor. An invalid and rejected name. 1959. Opinion 540. Opin. and dec. rend. by ICZN. 20:79.

Lacerta principalis. *? Anolis carolinensis.* Boulenger 1885. Cat. Liz. British Mus. 2:43. U.S.A. The application of *Anolis carolinensis* is credited to Baird 1859. Rept. boundary. U.S. Mex. bound. surv. under Comm. Lt. Col. W.H. Emory :12, but the name was originally proposed as *Anolius carolinensis* Voigt 1832. Cuvier's Thierreich 2:71. Lönnberg (1896. Linnean type-specimens of birds, reptiles, batrachians and fishes in the Zoological Museum of the R. University of Upsala. K. Svenska Vet.-Akad. Handl. 22[4]:1:1-45) said that the specimen was in bad condition and although it resembles members of the *Anolis carolinensis* group, it is not *A. carolinensis.* Also, he believed that the name *L. principalis* was probably based on a composite of several species of *Anolis.* Savage and Guyer (1991. J. Herpetol. 25:365) believe that the status of the name would require reexamination of the type and that it is a potential threat to a currently recognized species as a senior synonym.

Lacerta bicarinatus. *Neusticurus bicarinatus.* Duméril and Bibron 1839. Erp. Gén. 5:64. Northern South America.

Lacerta palustris. *Triturus vulgaris* Dunn 1918. Bull. M.C.Z. 62:452. Europe and western Asia.

202

Lacerta cordylus. *Cordylus cordylus* Fitzsimons 1943. Liz. So. Africa:455. Kenya, Zimbabwe, and Angola to Namibia and Republic of South Africa.

Lacerta stellio. *Agama stellio.* Boulenger 1885. Cat. Liz. British Mus. 1:368. Africa, Orient.

Lacerta mauritanica. *Tarentola mauritanica.* Gray 1845. Cat. Spec. Liz. British Mus.: 164. Canary Islands, western Mediterranean to Greece and northern Africa.

Lacerta azurea. *Uracentron azureum*. Kaup 1826. Isis von Oken 19:88. Guianas and northern Brasil.

Lacerta turcica. *Hemidactylus turcicus*. Boettger 1876. Ber. Offenbach Ver. Naturk. 15/16:57. Mediterranean to Red Sea areas, eastward to northwestern India, south to Kenya. Widespread as introduction to southeastern U.S.A., México, and Cuba.

Lacerta ameiva. *Ameiva ameiva*. Cockerell 1893 J. Inst. Jamaica 1:310. Panamá, tropical South America, Trinidad, and Tobago.

203

Lacerta agilis. *Lacerta agilis*. Linnaeus. Europe to central Asia.

Lacerta algira. *Psammodromus algirus*. Boulenger 1887. Cat. Liz. British Mus. 3:50. SW Europe and northwestern Africa.

204

Lacerta seps. *Tetradactylus seps*. Boulenger 1887. Cat. Liz. British Mus. 3:124. South Africa.

Lacerta angulata. *Alopoglossus angulata*. Hoogmoed 1973. Biogeographica 4: 216. Guianas and amazonian regions of South America.

Lacerta chamaeleon. *Chamaeleo chamaeleon*. Stejneger 1936. Copeia 1936:136. Portugal to North Africa, east to western Asia.

Lacerta salamandra. *Salmandra salamandra*. Lönnberg 1896. Bih. Kung. Svensk. Vet.-Akad. Handl. 22(4):10. Europe, northwestern Africa, and western Asia.

205

Lacerta gecko. *Gecko gecko*. Smith 1935. Fauna British India. Rept. & Amph. II: Sauria: 111. Northeastern India to southern China, southward to Malay Peninsula and East Indies.

Lacerta stincus. *Scincus scincus*. Loveridge 1936. Field Mus. Nat. Hist. Zool. Ser. 22(1):72. N. Africa.

Lacerta hispida. *Agama hispida*. Gray 1845. Cat. Spec. Liz. in Coll. British Mus. :257. Tanzania to Zimbabwe and Namibia southward.

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Lacerta orbicularis. *Phrynosoma orbiculare*. Wiegmann 1828. Isis von Oken :367. México

Lacerta vulgaris. *Triturus vulgaris*. Dunn 1918. Bull. M.C.Z. 62:452. Europe and western Asia.

Lacerta aquatica. *Triturus vulgaris*. Dunn 1918. Bull. M.C.Z. 62:452. Europe and western Asia.

Lacerta basiliscus. *Basiliscus basiliscus*. Wagler 1830. Nat. Syst. Amph.:148. Northwest South America to southern Central America.

Lacerta igvana. *Iguana iguana*. Van Denburgh 1898. Proc. Acad. Nat. Sci. Phila. 1898(1897) 49:461. México to southern Brasil and Paraguay. Frost and Collins (1988. Herpetol. Rev. 19:74) noted that Linnaeus used *Lacerta igvana* and that his usage elsewhere on the page of *vulgaris, aquatica*, and pre-Linnaean names such as Yvana, Igvana, Leguan indicated that use of a "v" rather than a "u" in *igvana* was not as romanized "u". They therefore interpreted that the correct specific epithet is *igvana*. Lönnberg (1896. Bih. Kung. Svensk. Vet.-Akad. Handl. 22[4]1:9) also had suggested that "we have no right to abolish the old Linnean name." However, in light of the lack of usage of *igvana* they indicated that they would petition the International Commission on Zoological Nomenclature for conservation of the spelling *iguana*. I have not seen evidence of that petition in print as yet.

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Lacerta calotes. *Calotes calotes*. Lönnberg 1896. Bih. Kung. Svensk. Vet.-Akad. Handl. 22(4):15. India, Sri Lanka.

Lacerta agama. *Agama agama.* Andersson 1900. Bih. Kung. Svensk Vet.-Akad. Handl. 22(4):15. Africa.

Lacerta umbra. *Plica umbra.* O'Shaughnessy 1881. Proc. Zool. Soc. Lond. 1881:245. Northern South America.

208

Lacerta plica. *Plica plica.* Gray 1831. Synop. Species Class Rept. *In* Griffith. Cuvier's animal kingdom 9:41. Northern South America.

Lacerta marmorata. *Polychrus marmorata.* Merrem 1820. Tent. Syst. Amphib. :48. Amazon Basin; Venezuela.

Lacerta bullaris. Savage and Guyer (1991. J. Herpetol. 25:365) indicated that Stimson and Underwood(1983. Bull. Zool. Nomencl. 40:17-19) said that the name was based on the colored figure (pl. 66) and description of *Lacerta viridis jamaicensis* in Catesby 's (1743. The Natural History of Carolina, Florida, and the Bahama Islands. v. 2.) pre-Linnean work and thus considered this name to be a senior synonym of *Anolis garmani* Stejneger 1899(Amer. Natur. 33:601). Savage and Guyer noted that no one had adopted that proposal and because *A. bullaris* had not been used as a valid name for any species in this century the Jamaican species should be properly called *Norops garmani* (Stejneger) (= *Anolis garmani*).

Lacerta strumosa. *Anolis lineatus* Daudin 1802. Hist. Nat. Rept. 4:66., pl. 58, fig. 1. Curaçao. Savage and Guyer (1991. J. Herpetol. 25:365) reviewed the nomenclatural history and indicated that Linnaeus's name, *L. strumosa*, had priority but that because it had not been used for 175 years and because of current Code rules the name would be suppressed

Lacerta teguixin. *Tupinambis teguixin.* Boulenger 1885. Cat. Liz. British Mus. 2:335. Guianas to Uruguay and northern Argentina.

209

Lacerta punctata. *Lygosoma punctatum.* Boulenger 1887. Cat. Liz. British Mus. 3:310. Asia.

Lacerta lemniscata. *Cnemidophorus lemniscatus.* Duméril and Bibron 1839. Erp. Gén. 5:123. Central America to northern South America.

Lacerta fasciata. *Eumeces fasciatus.* Cope 1875. Bull. U.S.N.M. (1):45. Eastern U.S.A.

Lacerta lineata. *Gymnophthalmus lineatus.* Andersson 1900. Bih. Kung. Svensk. Vet.-Akad. Handl. 26(1):16. Dutch Leeward Islands and Surinam.

Lacerta chalcides. *Chalcides chalcides.* Mertens and L. Müller 1940. Abh. senckenburg. Naturf. Ges. 451:58. Western Mediterranean region except for northwestern Africa.

210

Lacerta angvina. [*Chamaesaura*]*anguina.* Schneider 1801. Hist. Amph. 2:210. South Africa. Schneider actually used the trivial name *anguinea* and subsequent authors used *anguina.*, sometimes crediting Schneider with that usage. The 12th ed. of *Systema Naturae* also used *L. angvina*, but the 13th Gmelin edition used *L. anguina.* In this situation I believe that the "v" represents a "u" because angvina has no meaning whereas *anguina* is derived from *anguis* (from the Latin meaning a snake and indeed this species is snakelike in appearance).C.D.Sherborn (1899. An index to the generic and trivial names of animals described by Linnaeus in the 10th and 12th editions of his Systema Naturae. Manchester Museum Handbooks, pub. 25. Dulau & Co., London and J.E. Cornish, Manchester) listed under *Lacerta, angvina*, but under trivial names showed *anguineus.* Compare this name usage to the comments on *Lacerta igvana* (p. 206). The Principle of Priority in the Code would require use of *Chamaesaura angvina*, but because *angvina* has not been used for over 50 years it should be suppressed under articles 23b and 79c of the Code.

Rana pipa. *Pipa pipa.* Barbour 1923. Proc. New Eng. Zöol. Club 9:3. Far northern South America.

Rana bufo. *[Bufo bufo.]* Cuvier 1817. Règ. Anim. Ed. 1. 2:94. Northwest Africa, Europe to Lake Baikal, the Caucasus, and Iran.

211

Rana rubeta. *Bufo bufo.* see *Rana bufo* above.

Rana gibbosa. *Breviceps gibbosus.* Merrem 1820. Tent. Syst. Amphib. :178. South Africa.

Rana variegata. *Bombina variegata.* Mertens and L. Müller 1928. Abh. senckenberg. Naturf. Ges. 41:16. Central and southern Europe to central Asia

Rana ventricosa. *Bufo bufo.* See *Rana bufo* on p. 210.

Rana marina. *Bufo marinus.* Schneider 1799. Hist. Amph. 1:219. Southern Texas to northern South America. Widely introduced in Australia, some Pacific islands, Florida, Caribbean islands, etc.

Rana typhonia. *Bufo typhonius.* Schneider 1799. Hist. Amph. 1:207. South America.

Rana ocellata. *Leptodactylus ocellatus.* Girard 1853. Proc. Acad. Nat. Sci. Phila.:420. South America east of the Andes.

212

Rana cornuta. *Ceratophrys cornuta.* Schlegel 1837. Abteil. neuer oder unvollst. bek.-Amphib. pl. 10. Northern South America east of the Andes.

Rana marginata. ? Lönnberg (Bih. Kung. Svensk. Vet.-Akad. Handl. 22[4]1:35) said, "can impossibly be identified. (sic)."

Rana paradoxa. *Pseudis paradoxus.* Wagler 1830. Nat. Syst. Amph.:203. Northern South America east of the Andes to northern Argentina.

Rana temporaria. *Rana temporaria* (part) Linnaeus, *Rana arvalis.* Nilsson 1842. Skandin. Faun., 3 Amfib.:92. Most of Europe.

Rana esculenta. *Rana esculenta* Linnaeus. England and Sweden to Italy, Sicily, and the Ukraine.

213

Rana hyla. *Hyla arborea.* Cuvier 1817. Règ. Anim. Ed. 1. 2:94. Northwestern Africa, central Europe to the Caucasus and Turkey.

Rana arborea. *See Rana hyla* above.

Rana boans. *Hyla boans.* Daudin 1803. Hist. Nat. Rept. 8:64. Panamá and northern South America.

214

Crotalus horridus. *Crotalus horridus* Linnaeus. Eastern U.S. in forested regions.

Crotalus dryinas. *Crotalus durissus.* Hoge 1966 (1965). Mem. Inst. Butantan 32:142. Northeastern México to northern Argentina, but in South America, east of Andes in savanna regions and apparently absent from the Amazon basin.

Crotalus durissus. *Crotalus durissus* Linnaeus. See *C. dryinas* above.

Boa scytale. *Anilius scytale.* Oken 1816. Leh. Naturgesch. 3:283. Guianas, northern Brasil, and Amazon drainage of Colombia, Ecuador, and Peru.

215

Boa canina. *Corallus caninus.* Boulenger 1893. Cat. Sn. in British Mus. 1:102. Amazon Basin and the Guianas of South America.

Boa hypnale. *Corallus caninus..* see above.

Boa constrictor. *Boa constrictor* Linnaeus. México to Argentina, and Dominica and St. Lucia in the Antilles.

Boa murina. *Eunectes murinus.* Gray 1831. Syn. Species of Class Rept. 9:96. *In:* E. Griffith, The Animal Kingdom....by Baron Cuvier.

Boa cenchria. *Epicrates cenchria.* Wagler 1830. Nat. Syst. Amph. :38. Costa Rica to Argentina, and Trinidad and Tobago.

Boa orophias. *Boa constrictor orophias* Linnaeus. Peters and Orejas-Miranda 1970. Bull. U.S.N.M. (297):37. St. Lucia in the Antilles.

Boa enydris. *Corallus enydris.* Forcart 1951. Herpetologica 7:197. Nicaragua to Peru; Windward Islands.

Boa hortulana. *Corallus enhydris.* See *B. enhydris* above.

216

Coluber vipera. *Cerastes vipera.* Boulenger 1891. Trans. Zool. Soc. London 13:155. Sahara Desert .

Coluber atropos. *Bitis atropos.* Günther 1858. Cat. Colubrine Sn. in Coll. British Mus.:268. Zimbabwe to South Africa.

Coluber leberis. ?? *Storeria* sp. See Klauber 1948. Copeia 1948:11-12.

Coluber lutrix. *Duberria lutrix.* Loveridge 1929. Bull. U.S.N.M. (151):28. Ethiopia and Zaire to Republic of South Africa.

Coluber calamarius. *Oligodon calalmarius.* Andersson 1899. Bih. Kung. Svensk. Vet.-Akad. Handl. 24(6):8-9. Sri Lanka.

Coluber constrictor. *Coluber constrictor.* Linnaeus. U.S.A. and northern México.

Coluber ammodytes. *Vipera ammodytes.* Sonnini and Latreille 1801. Hist. Nat. Rept. 3:306. Southwestern Europe and western Asia.

217

Coluber cerastes. *Cerastes cerastes.* Andersson 1899. Bih. Kung. Svensk. Vet.-Akad. Handl. 24(6):29. Sahara Desert to Arabian Peninsula and the Middle East.

Coluber plicatilis. *Pseudoeryx plicatilis.* Fitzinger 1826. Neue Class. Rept.:55. Colombia and the Guianas to northern Argentina.

Coluber domicella. *Liophis poecilogyrus.* Dixon 1980. Cont. Biol. and Geol. Milwaukee Pub. Mus. (31):7. Amazonian Ecuador and Brasil to Argentina.

Coluber alidras ?? Andersson 1899. Bih. Kung. Svensk. Vet.-Akad. Handl. 24(6):34 could not identify the Linnaean type, but said that the specimen matches a completely discolored *Helicops angulatus,* from which it differed by having 21 scale rows rather than 19. Andersson concluded that *C. alidras* is a synonym of *Coluber angulatus* Linnaeus.

Coluber buccatus. *Homalopsis buccata.* Merrem 1790. Betr. z. Naturgesch. fasc. 2:36. India to Indochina and Indonesia..

Coluber angulatus. *Helicops angulatus.* Wagler 1830. Nat. Syst. Amph. :171. Northern South America and Trinidad.

Coluber berus. *Vipera berus.* Daudin 1803. Hist. Nat. Rept. 6:89. Europe to north and middle Asia.

218

Coluber chersea. *Vipera berus.* Daudin 1803. Hist. Nat.Rept. 6:89. See *Coluber berus* page 217.

Coluber coeruleus. ?????

Coluber albus. *Brachyorrhus* [*albus*]. Agassiz 1848. Nomencl. Zool. Universalis. Soloduri, Jent and Gassman . The original spelling of the generic name was given by Kuhl (1826 in Schlegel, Bull.Sci. Nat. Géol. (Paris): 236 as *Brachyorrhos* but was emended by Agassiz 1847. Nomencl. Zool. Index Univ.:51 and 1848 2nd ed.:147. Indonesia.

Coluber aspis. *Vipera aspis.* Merrem 1820. Tent. Syst. Amph. :151. Southern Europe.
Coluber typhlus. *Liophis typhlus.* Dixon 1980. Cont. Biol. Geol. Milwaukee Pub. Mus. (31):16. Northern South America east of Andes to northern Argentina
Coluber lebetinus. *Vipera lebetina.* Daudin 1803. Hist. Nat. Rept. 6:137. Northwestern Africa, Greek islands, western and middle Asia.
Coluber melanocephalus. [*Tantilla*] *melanocephala.* Cope 1861. Proc. Acad. Nat. Sci. Phila. 13:74. Honduras to northern Argentina.
Coluber cobella. *Liophis cobella.* Jan 1866. Icon. Gén. Ophid. livr. 16:pl. 5. Northern South America east of the Andes.

219

Coluber reginae. *Leimadophis reginae.* Amaral 1935. Mem. Inst. Butantan 9:238. Northern South America east of the Andes.
Coluber severus. *Xenodon severus.* Fitzinger 1826. Neue Class. Rept. :57. Amazonian South America.
Coluber aurora. *Lamprophis aurora.* Smith 1849. Illus. Zool. So. Africa Rpt. App.:19. South Africa.
Coluber sipedon. *Nerodia sipedon.* Baird and Girard 1853. Cat. N.A. Rept. I. Serp.:38. Eastern U.S.A. and extreme southern Canada.
Coluber maurus. *Natrix maura.* Lindholm 1929. Zool. Anz. 81:81. Southwestern Europe and northwestern Africa.
Coluber stolatus. *Amphiesma stolata.* Duméril, Bibron, and Duméril 1854. Erp. Gén. 7:727. Pakistan to southeastern China and Indochina.
Coluber vittatus. *Xenochrophis vittata.* Malnate and Minton 1965. Proc. Acad. Nat. Sci. Phila. 117:22. Indonesia.

220

Coluber miliaris. *Liophis miliaris.* Müller 1927. Abh. senckenberg. Naturf. Ges. 40:259-304. Brasil from Amazonas state to Argentina.
Coluber rhombeatus. *Psamnophylax rhombeatus.* Günther 1858. Cat. Colubrine Sn. in Coll. British Mus.:31. Southern Africa.
Coluber cyaneus. ??
Coluber natrix. *Natrix natrix.* Stejneger 1907. Bull. U.S.N.M. (58):263. Europe to Turkey and Iran and western China; northwestern Africa.
Coluber aesculapii. *Erythrolamprus aesculapii.* Duméril, Bibron, and Duméril. 1854. Erp. Gén. 7:845.
Coluber agilis. *Erythrolamprus aesculapii.* See *Coluber aesculapii* above.
Coluber lacteus. [*Homoroselaps lacteus*]. Smith and Smith 1983. Bull. Zool. Nomencl. 33:73. South Africa.
Coluber aulicus. *Lycodon aulicus.* Boie 1827. Isis von Oken 20:551. Pakistan to Nepal, India, and Sri Lanka

221

Coluber monilis. ?? Andersson 1899. Bih. Kung. Swensk. Vet.-Akad. Handl. 24(6):34 indicated that of four snakes at the Royal Museum in Stockholm called *C. monilis,* one agrees completely with Linnaeus' s description and it probably was Linnaeus's type. He said the animal is a *Homalopsis buccata.*
Coluber pallidus. *Thamnodynastes pallidus.* Andersson 1899. Bih. Kung. Svensk. Vet.-Akad. Handl. 24(6):17. Northern South America.

Coluber lineatus. *Liophis lineatus.* Dixon 1980. Cont. Biol. Geol. Milwaukee Pub. Mus. (31):29. Panamá.

Coluber naja. *Naja naja.* Sworder 1922. Singapore Nat. (2):71. Iran and southern Russia to southern China, the Philippines, and Indonesia.

Coluber padera ?? Andersson 1899 Bih. Kung. Swensk. Vet.-Akad. Handl. 24(6):29 stated that the type could not be identified, but that another specimen from the Museum Drottingholmense and now at the Royal Museum in Stockholm was labeled *Coluber padera* and is identical with Linnaeus's *Coluber canus* (=*Pseudaspis canus*).

Coluber canus. *Pseudaspis cana.* Cope 1864. Proc. Acad. Nat. Sci. Phila. 16:168. Kenya and Angola southward in Africa.

222

Coluber sibilans. *Psamnophis sibilans.* Boie 1827. Isis von Oken 20:547. Africa.

Coluber laticaudatus. *Laticauda laticauda.* Stejneger 1907. Bull. U.S.N.M. (58):402. Warm seas from Bay of Bengal and Sri Lanka to Australia, Melanesia and Polynesia to Japan.

Coluber sirtalis. *Thamnophis sirtalis.* Garman 1892. Bull. Essex Inst. 24:104. Klauber (1948 Copeia 1948:9) pointed out that the description really was for *T. sauritus.* That application has been officially suppressed. Much of North America and northern México.

Coluber atrox. *Bothrops atrox.* Lichtenstein 1856. Nomencl. Rept. et Amph. Mus. Zool. Ber. :35.Northern Bolivia and northern Brasil to Colombia and Venezuela east of the Andes.

Coluber sibon. *Sibon nebulata.* Fitzinger 1826. Neue Class. Rept. :31. Southern México into northern South America.

Coluber nebulatus. *Sibon nebulata.* See *Coluber sibon* above.

Coluber fuscus. *Chironius fuscus.* Amaral 1929. Mem. Inst. Butanatan 4:161. Panamá to Peru, the Guianas and central Brasil.

223

Coluber saturninus. *Chironius fuscus.* See *Coluber fuscus* above.

Coluber candidus. *Bungarus candidus.* Cantor 1847. Cat. Rept. Malay Pen.:113. Thailand to Java.

Coluber niveus. *Naja haje.* Merrem 1820. Tent. Syst. Amph. :148. Much of Africa.

Coluber scaber. *Dasypeltis scabra.* Günther 1858. Cat. Colubrine Sn. Coll. British Mus.:142. Egypt to Gambia and the Cape of South Africa. Many authors over the years have used *D. scabra,* but equally many have used *D. scaber.* In 1952 Gans and Loveridge submitted an application to ICZN to validate the use of *Dasypeltis* and also requested placement of the trivial name scaber on the Official List of Specific Trivial Names in Zoology (Bull. Zool. Nomencl. 6:347-348). In 1956 that application was approved by the ICZN--Opinion 387 (Bull. Zool. Nomencl. 12:241). Unfortunately Gans, in his doctoral dissertation on *Dasypeltis* (Ann. Mus. Royal du Congo Belge, ser. 8 Scien. Zool. 74:1-237.), used the name *Dasypeltis scabra.* His synonymy listed 58 uses of *scaber* and 60 of *scabra.* Apparently since that time everyone has used *scabra.* Gans (personal comm.) does not recall why he did not follow the opinion rendered in his favor. The name should be *Dasypeltis scaber.* I base this interpretation on Article 31(b)(i) of the Code which says that where the author of a species-group name did not indicate where he regarded it as a noun or as an adjective and where it may be regarded as either and evidence of usage is not decisive, it is to be treated as a noun in apposition to the name of its genus; its spelling is not changed if it is combined with a generic name of a different gender. What rulings will be made in the forthcoming 4th ed. of the Code regarding agreement in gender of genus and species was not clearly established at the 1990 ICZN meeting.

Coluber carinatus. *Chironius carinatus.* Fitzinger 1826. Neue Class. Rept.:31 Central America and tropical South America; Guadalupe, St. Vincent Isl.,Trinidad.
Coluber corallinus. *Liophis triscalis.* Boulenger 1894. Cat. Sn. British Mus. 2:129. Caribbean South America and Curaçao.
Coluber ovivorus. ??*Elaphe vulpina.* See Klauber 1948. Copeia 1948:12. North central North America. ***Coluber exolitus.*** *Chironius exoletus.* Hoge, Romano, and Cordeiro 1976/77. Mem. Inst. Butantan 40/41:41. Western Amazon Basin in Peru and Brasil.
Coluber situla. *Elaphe situla.* Mertens 1923. Senckenbergiana 5:208. Southern Italy and major Mediterranean islands into southwestern Asia.
224
Coluber triscalis. *Liophis triscalis.* See *Coluber corallinus* on p. 223.
Coluber lemniscatus. *Micrurus lemniscatus.* Beebe 1919. Zoologica (NY) 2:216. Trinidad, Venezuela to the Guianas and the Amazon Basin.
Coluber annulatus. *Leptodeira annulata.* Fitzinger 1843. Syst. Rept. :27. México to Argentina.
Coluber dipsas. *??*
Coluber pellas. *Chrysopelea pelias.* Andersson 1899. Bih. Kung. Svensk. Vet.-Akad. Handl. 24(6):35. Malaysia to Borneo and Java.
Coluber tyria ?? Andersson 1899. Bih. Kung. Svensk. Vet.-Akad. Handl. 24(6):30 stated that the type apparently no longer exists. Boulenger 1893. Cat. Sn. British Mus. 1:407 put ? *C. tyria* as a synonym of *Zamenis nummifer,* but such could only have been a guess from the limited description given by Linnaeus.
225
Coluber jugularis. *Coluber jugularis.* Linnaeus. Southeastern Europe and western Asia.
Coluber petola. [*Oxyrhopus*] *petola.* Lönnberg Bih. Kung. Svensk. Vet.-Akad. Handl. 22(4):7. México to Ecuador, eastward in northern South America.
Coluber molurus. *Python molurus.* Gray 1842. Zool. Misc.:4. Pakistan to Java.
Coluber ahaetulla. *Leptophis ahaetulla.* Bell 1825. Zool. J. 2:328. Clarified by Stejneger 1933. Copeia 1933:202. Southern México to Ecuador and central Argentina east of the Andes.
Coluber petolarius. [*Oxyrhopus*] *petola.* See *Coluber petola* above.
Coluber haje. *Naja haje.* See *Coluber niveus* on p. 223.
Coluber filiformis. Unidentifiable. See Oliver 1948. Bull. A. M. N. H. 92:169.
Coluber pullatus. *Spilotes pullatus.* Wagler 1830. Nat. Syst. Amph.:179. Southern México to Argentina.
226
Coluber hippocrepis. *Coluber hippocrepis.* Linnaeus. Southwestern Europe to northwestern Africa.
Coluber minervae. *Liophis lineatus.* Dixon 1980. Cont. Biol. Geol. Milwaukee Publ. Mus. (31):10. Panamá; South America west of Andes to northern Argentina.
Coluber cinereus. *Liophis cobella* ?? Dixon 1980. Cont. Biol. Geol. Milwaukee Pub. Mus. (31):6. See *Coluber cobella* on p. 218.
Coluber viridissimus., *Philodryas viridissimus.* Boulenger 1896. Cat. Sn. British Mus. 3:129. Southern Venezuela and the Guianas to Argentina.
Coluber mucosus. *Ptyas mucosus.* Cope 1860. Proc. Acad. Nat. Sci. Phila. 12:563. Pakistan to Taiwan and Java.
Coluber cenchoa. *Imantodes cenchoa.* Duméril 1853. Mém. Acad. Sci. Paris 23:507. Southern México to Bolivia and Paraguay.

Coluber mycterizans. *Ahaetulla mycterizans.* Stejneger 1933. Copeia 1933:203 said that although assigned to that name earlier, confusion of the identity of five specimens invalidates early usage. Thailand to Java.

227

Coluber caerulescens. ?? Andersson 1899. Bih. Kung. Swensk. Vet.-Akad. Handl. 24(6):26 stated that only one of the original five specimens labeled *C. caerulescens* remains and it "is a *Herpetodryas fuscus*", whose scalation differed greatly from Linnaeus' s description.

Coluber arges ?? In *Syst. Nat.* XII, Linnaeus changes to ***argus*** . The description, based on a figure from Seba's Thesaurus, says, among other things, no scales noted. Boulenger 1893 Cat. Sn. British Mus. 1:82 regarded *C. argus* as a mythical creature.

Anguis bipes. *Scelotes bipes.* Gray 1845. Cat. Spec. Liz. British Mus. :123. South Africa.

Anguis meleagris. *Acontias meleagris.* Merrem 1820. Tent. Syst. Amph.:89. South Africa.

228

Anguis colubrina. *Eryx colubrinus.* Flower 1933. Proc. Zool. Soc. London 1933:804. Egypt to Kenya and Niger.

Anguis jaculus. *Eryx jaculus.* Daudin 1803. Hist. Nat. Rept. 7:251. Southwestern Europe, western Asia, and northern Africa.

Anguis maculata. *Cylindrophis maculatus.* Boulenger 1893. Cat. Sn. British Mus. 1:136. Sri Lanka.

Anguis reticulata. *Typhlops reticulatus.* Duméril and Bibron. Erp. Gén. 6:282. Tropical South America east of the Andes.

Anguis cerastes. *Eryx jaculus.* see *Anguis jaculus* above.

Anguis lumbricalis. *Typhlops lumbricalis.* Oppel 1811. Ordn., Fam. Gatt. Rept. :55. Cuba, Hispaniola, Bahamas, and introduced into Florida and Guyana.

Anguis laticauda. ?? Andersson 1899. Bih. Kung. Swensk. Vet.-Akad. Handl. 24(6):32 indicated that the type was no longer to be found.

Anguis scytale. *Anilius scytale.* Oken 1816. Lehr. Naturgesch. :283. Venezuela to Peru, the Guianas, and northern Brasil.

229

Anguis eryx. ? *Anguis fragilis* (part) according to Boulenger 1885. Cat. Liz. British Mus. 2:86. See *A. fragilis* below.

Anguis fragilis. *Anguis fragilis.* Linnaeus. Europe to the Caucasus and Iran; northwestern Africa.

Amphisbaena fuliginosa. Linnaeus. Panamá and northern South America.

Amphibaena alba. Linnaeus. Panamá; Trinidad; northern South America east of Andes, south to northern Paraguay.

Caecilia tentaculata. *Caecilia tentaculata* (part). Linnaeus. Panamá ; northern South America east of Andes to central Brasil.

Caecilia tentaculata. *Caecilia gracilis* (part). Shaw 1802. Gen. Zool. or Syst. Nat. Hist. 3, pt. 2:597-598. Guianas and Peru; probably also the Amazon Basin.

Caecilia glutinosa. *Ichthyophis glutinosus.* Cantor 1847. J. Asiatic Soc. Bengal, Calcutta. 16:1059. Sri Lanka.

INDEX TO SCIENTIFIC NAMES (GENERA AND SPECIES) USED IN SYSTEMA NATURAE ED. X AND IN CURRENT USE.

Page listings refer to page of *Systema Naturae.*

The "Methodus" of Linnaeus in the *Systema Naturae VII*
(K.P. Schmidt, 1952, J. Soc. Bibliog. Natur. Hist. 2:373)

THE LITERATURE CITED BY LINNAEUS IN THE AMPHIBIAN AND REPTILE SECTION OF SYSTEMA NATURAE X

by

Harold A. Dundee

Although Linnaeus is credited with the scientific names given in the 10th edition of the *Systema Naturae,* he was not the originator of many of those names. He used many names given by earlier writers. In the species accounts, his format is comparable to our current day "synonymy", usually giving the name used but also including in many cases some pertinent description given by the source cited. For modern systematic treatments, we can ignore those names given by pre-Linnaean authors, but the information may be useful for historical biological studies or to systematists who wish to examine a more detailed description of a Linnaean type-specimen than that given by Linnaeus in the 10th ed. of *Systema Naturae.* I have attempted to document each citation that Linnaeus used.

Identification of the literature cited by Linnaeus has not been an easy task. Although I was able to identify specifically many of the sources to which Linnaeus referred , often by virtue that only one author & title answered to that abbreviation, I frequently could only identify the publication but not the specific edition that Linnaeus may have seen. Many reprintings of older publications were made and the paginations are not necessarily the same as the original. To actually see the various possible editions I would have had to visit many libraries in diverse places, a task that could not be justified in terms of time or cost. But I have seen personally a copy of every item cited by Linnaeus. Major sources for determining titles and editions for the citations that I have identified include: 1985 *The British Library General Catalogue of Printed Books to 1975,* K.G. Saur, London; 1931 *Catalogue Général des Livres Imprimés de la Bibliothèque Nationale* [France]. Imprimerie Nationale, Paris;1979 *National Union Catalog. Pre-1956 Imprints,* Mansell Publishing, London and The American Library Association; continuances of the NU Catalog by Library of Congress. Generally speaking, I assume that Linnaeus used the editions in his own library whenever possible; that library is now housed at the Linnean Society in London. The material has all been placed on microfilm at the University of California, Berkeley library from a microfilm at the Library of Congress. A # precedes sources that were part of Linnaeus's library, but Linnaeus's edition may not be the same as the one I actually saw. All remaining items are listed in good faith. When in doubt, I list the earliest published version. I have been adamant in condemning authors who cite things that they have not seen but merely saw cited in some other article, thus often perpetuating errors. The citations as given are presented as I saw them on the title pages, thus use of "v" for "u", etc. is presented so that a reader may feel confident that he has the correct reference. Author names given in various catalogs may be anglicized, even though they appear on title pages in Latin or some other native language form. In several cases I have noted errors by Linnaeus when I could examine an original of the source. Occasionally I refer to Heller 1958; this is Heller, J.L. *Index auctorum et librorum a Linnaeo (Species Plantarum, 1753) citatorum,* pp. 3-60 of an appendix to *Species Plantorum,* a facsimile of the first edition published in 1959 by the Ray Society. Citations therein that were abbreviated the same as in *Systema Naturae X* were investigated as much as possible. At the time of his death, Heller had been working for years on

"guide to Linnaean zoological literature." A year or so before his death, Heller had asked Alwyne Wheeler, formerly of the British Museum (Natural History), to assist him in finding a publisher for that monograph. Wheeler arranged for this to be done as a joint British Museum and Oxford University Press publication, with Wheeler serving as an editor and also contributing some introductory essays and the Linnaean background. For various reasons the project has been delayed, but Mr. Wheeler graciously supplied me with verifications of several items that I had been unable to see, but I subsequently got to see them for myself. Dr. Kraig Adler also supplied some verifications . From the several pages of Heller manuscript that I have seen, I am well aware that Heller's work is infinitely more extensive than what I am supplying and likely will provide a more accurate idea of which particular editions of publications Linnaeus actually used, but Heller has not supplied publisher names as a final touch to his determinations. I recommend that readers of this report turn to Heller's guide for the "final word" when it ultimately appears. In a symposium report, Heller (1980 Bibliotheca Zoologica Linneana. pp. 240-264 *In* G. Broberg [ed.] Linnaeus: Progress and Prospects in Linnaean Research. Almquist & Wiskell International, Stockholm and Hunt Institute for Botanical Documentation, Pittsburgh) said on p. 242 of his compilation of documentation of Linnaean cites "....the present version runs to about 400 somewhat messily typed pages, and that it contains bibliographical data with commentary on Linnaeus's citations for about 450 separately titled books, monographs, or dissertations....and I think I have run down every single one of Linnaeus's not always accurate references..."

An intriguing comment concerning the printing of *Species Plantarum* perhaps applies to *Systema Naturae.* W.T. Stearn 1957, in the preface to the Ray Society's 1959 facsimile edition of *Species Plantarum,* observed that no two copies of the original issue appeared to be typographically identical , a situation that he attributed to poor workmanship by employees of Salvius, the printer, thus individual copies of the original had defects of different nature. In those days no automatic feed of paper to the press existed; as errors in typography were discovered, they were corrected, thus different errors were discovered and altered at different times. Some of the literature examined by me had variations on the title page that differ from listings in major library catalogs; this can probably be attributed to the copy by copy corrections that were made. I have listed the titles and author name spellings as actually seen by me, including the use of "v" that was often used for "u", and have noted anglicized etc. alternatives as desirable to aid the user in finding such literature in a library catalog.

My appreciation is extended to the staffs of the following libraries for assistance in seeing items in their rare book collections: Tulane University; Louisiana State University, Baton Rouge; The University of Oklahoma; Library of Congress; The Natural History Museum, London; McGill University; John Crerar Library of the University of Chicago; The University of Florida. I feel especially indebted to Ms. Gina Douglas of the Linnean Society library in London; she not only gave me access to actual items from Linnaeus' personal library, but also allowed me to view the entire Linnaeus library in its vault at the Linnean Society, certainly an exciting moment for a biologist.

#Act. Stockholm See *L. Act. Stockholm*
Ald. aquat. See *Aldr. serp.*
Ald. quad. Misspelled in some places as *Aldg.* See *Aldr. serp.*
Aldr. serp. Aldrovandus, Ulysses (Aldrovandi, Ulisse) (1599-1668). *Opera omnia.* Bononiae. Franciscum de Franciscus. 13 v. The *Ald. aquat.* refers to v. 6, 1613. *De piscibus libri v. et de cetis lib. vnus.* Ioannes Cornelius Vtervenvs...Bononiiae. Bellagamban. In the edition examined, p.

677 that should show *Lacerta crocodilus* actually shows a whale! The *Ald. quad.* refers to v. 9, 1637. *De qvadvpedib' digitatis viiviparis libri tres, et De qvadrvpedib' digitatis oviparis libri duo.* Bartholomaevs Ambrosinus. Bonon. N. Tebaldinum. *Aldr. quad.* shows a crocodile sketch. *Aldr. serp* is v. 10, 1640. *Serpentum, et draconum historiae libri duo* Bartholomaeus Ambrosinus... opus concinnauit.. Bononiae. The colophon shows 1639.

#Amœn. acad. *Amœnitates Academicae.* vols. I-VII. Stockholm and Leipzig. Dissertations edited by Linnaeus and issued from 1749 onward.

Bell. aquat. Bellonius, P. (Peter Belon, Pierre Belon) 1553. *De aquatibilibus libri duo, cum ciconibus ad veram ipsorum effigiem, quoad eius fieri potuit, expressis.* Carolum Stephanum, Parisiis.

#Bellon. itin. Bellonius, P. (Pierre Belon). 1605. *Bellonii Plurimarum.singularium et...rerum in Graecia, Asia....conspectarum observationes.* Antverpiae. Many earlier editions exist. However, Heller's manuscript notes show that Linnaeus apparently used an interpretive edition which is listed here under *Clus. exot.* But Heller indicated that it was a French translation of 1609, which edition I could not find listed in the National Union Catalog, The British Library Catalog, or the French National Library Catalog.

Bell. mus. Should be *Besl. mus.* This misprint was noted by John Heller in his manuscript and called to my attention by Alwyne Wheeler, formerly of the British Museum, who is preparing Heller's manuscript for publication.

Besl. mus. Besleri, Basilvs and Michael Rupertvs Besleri (Hortus and Michael Rupert Besler) 1716. *Rariora Mvsei Besleriani que olim. Basilivs et Michael Rupertvs Besleri. collegerunt.... Nuremberg.*

#Bont. jav. Bontii, Jacobi (Jacobus Bontius) 1658. *Historiae naturalis & medicae Indiae Orientalis. Libri Sex. V. Historia animalium. In* Gulielmi Pisonis (William Piso). *De Indiae utriusque re naturali et medica libri. XIV.* Amstelaedami, Elzevirios. *Lacertus volans* is on p. 59, not p. 57 as given by Linnaeus.

#Bradl. natur. Bradley, Richard *1721. A philosophical account of the works of nature.* W. Mears, London.

E. Brander Erik Brander (1722-1814) who collected specimens mostly from Algiers and the western Mediterranean.

#Brown. jam. Browne, Patrick 1756. *The civil and natural history of Jamaica in three parts.* London, T. Osborne and J. Shipton.

Catesby. car. Catesby, Mark 1754. *The natural history of Carolina, Florida, and the Bahama Islands.* Vol II. London, Benjamin White. Other printings include original printed at expense of the author.

#Clus. exot. Clvsii, Carolus Atrebatis (Carolus Clusius=Charles de l' Écluse) 1605. *Aulae Caesareae quondam familiaris, Exoticorvm libri decem: quibus, animalium, plantarum...: Item Petri Bellonii observationes, eodem Carolo Clusio interprete,* etc. Ex officina Plantiniana Raphelengii. Other versions of this exist. The interior of the copy I examined shows: *Petri Bellonii. Cenomani Plumiarum singularium & memorabilium... Carolvs Clvsivs..*

#Column. ecphr. Colvmna, Fabio (Savio Columna) (Fabio Colonna). 16??. *Minus cognitarum stirpium aliqvot AC etiam rariorum.....Romae.* Guilielmum Facciotum. The earliest edition was 1606; I could not read the date on the Readex microprint card seen.

#Edw. av. Edwards, George 1743-1751. *A natural history of uncommon birds and of some other rare and undescribed animals, quadrupeds, reptiles, fishes, insects, etc.* ..in 7 parts. v. 1. London. Under the same cover of the copy I saw is a French translation dated 1755 and done by M.D. de la S.R.

#Faun. Svec., *Fan. Svec.* Linnaei, Caroli 1746. *Fauna Svecica sistens animalia Sveciae regni.....* Stockholmiae, Laurenti Salvii.

#Fevlll. peruv. Feuillé, Louis 1714. *Journal des observations physiques, mathematiques et botaniques...faites...sur les côtes orientales de l'Amerique Méridionale... tome Premiere.* Paris, Pierre Giffart. The "v" in the reference to *Lacerta Caudiverbera* is definite, but Heller (1958) indicated *Few (ill)* for *Species plantarum* and indeed we confirm it; and in *Systema naturae XIII* the cite is given as "Feuill.". Thus the poor workmanship of the printer seems doubly bad. The illlustration on p. 319 is labeled "Salamandre Aquatique" and looks like a gecko with much expanded toe pads.

#Gesn. ovlp. Gesneri, (Gessner), Conr. (Conrad) 1586. *Historiae animalium liber II. quiest de quadrupedibus oviparis.* Roberti Cambieri Francofvrdi. Details dealing with *Crocodilus* and *Lacerta aquatica* appear on the same pages of this edition as cited by Linnaeus. The original work was published in 1551-1558.

Gesn. quad. = *Gesn. ovip.* A mere statement of "quad" could refer to the first part of the title, but the clue is that these animals are oviparous, which eliminates referrals to the other four books of *Historia animalium.*

#Grew mus. Grew, Nehemiah 1681. *Musaeum Regalis Societatis; or A catalogue of and description of the natural and artificial rarities belonging to the Royal Society and preserved at Gresham Colledge* (sic); ..... 2 V. Rawlins, London.

#Gron. mus. Gronovii, Larentii Theodorii (Gronovius, Laurentius Theodorus) 1754. *Museum ichthyologicum sistens piscium* etc. 2 v. Lugduni Batavorum, Theodorum Haak.

#Hassel. Iter. Hasselquists, Frederic (Frederick Hasselquist) 1757. *Iter Palaestinum eller rsa til Heliga Landet förrättad ifån år 1749 til 1752...* Stockholm, Lars Salvii.

Hasselqv. Frederic Hasselquists' collection. He was a student of Linnaeus who collected in Egypt and Palestine.

 # Hasselqv. Act. Ups. This refers to Hasselquists in a journal *Acta Societatis Regiae Scientarum Upsaliensis (Kongliga Vetenskaps-Societeten). Acta.* Heller, in the 1959 appendix to the facsimile print of *Species Plantarum* , listed in the journal title "Societas" and that name also appears in the Union List of Serials, a title page before me clearly reads as I have cited.

#Hernand. Mex. Hernandez, Francisco 1651. (1648) . *Rerum medicarum Novae Hispaniae thesaurus, seu plantarum, animalium, mineralium mexicanorum historiae.....*Romae, Vitalis Mascardi. In this citation, Linnaeus on p. 206 referred to *Lacertus orbicularis,* but the statement seen in Hernandez says "lacerto orbiculare."

#It. gotl. Linnaei, Carl 1747. *Wästgöta Resa.* Lars Salvii, Stockholm. This identifies *Coluber Natrix* that is mentioned on p. 220 of the *Systema naturae X,* but 1745. *Öländska och Gothländska resa....* by Linnaeus does not contain mention of *Natrix.* Heller (1958) claimed that *It. gotl.* and *It. oel* refer to the *Öländska* (see *It. oel.*). Linnaeus was inconsistent in use of abbreviation; on. p 271 for *Pleuronectes maximus* he used *It. gottl.*

#It. oel. Linnaei, Carl 1745. *Öländska och* Gothländska *resa....* Stockholm och Upsala, Gottfried Kiesemetter. This is supposed to be the same as *It. gotl.* according to Heller 1958. But *Systema Naturae X* refers to *Bufo bufo* as *It. oel.* 142 and *Rana temporaria* as *It. oel* 154. I definitely found that the *Öländska*, not the *Wästgöta,* to contain the referral to these species.

#It.Wgot. Linnaei, Carl 1747. *Wästgöta resa.....*Stockholm, Lars Salvii. In checking for *Bufo rubeta* on p. 61, the version I saw mentions a *Rana* and speaks of it at length. For plants, Heller (1958) identified *It. W-gôth* as the source for a *Ruppia* on p. 86; I found that correct.

#Jacob. mus. Jacobaeo, Oligero (Jacobaeus, Oligerus [Holger]) 1696. *Muséum regium, seu catalogus rerum tam naturalium, quam artificialium* , etc. Hafniae, Joachim Schmetgen. Linnaeus

says that *Iguana* is t. 4, but in the edition examined the illustration in t. VIII, f. 4. Linnaeus did not mention Jacobaeus' *Chamaeleon* but note that text p. 9 says *Chamaeleon* is VIII fig. 4, but the plate and text do not correspond. Linnaeus's own copy, which I personally examined, shows the date as 1698, but someone has encircled the last two "I" 's of the Roman numeral date. I do not know the basis for the date change, but the note of submission from Jacobaeo is dated 13 May 1695. Presumably some librarian determined that it took but one year from submission of manuscript to publication and detected an error in printing the date.

#Jonst. quad. Jonstonus, Joannes (Jon Johnstone). 1657. *Historiae naturalis. de quadrupedibus libri. VI.* V. 1 *De quadrupedibus.* Amstelolami,J. Jacobi Fil, Schipper.

#Kaemph. amoen. Kaempfer, Engelbert 1712. *Amoenitatum exoticarum politico-physico-medicarum asciculi V, quibus...* Lemgoviae, H.W. Meyeri.

Kalm. Pehr Kalm, a Swede, collected in Sweden; he also wrote an account of his travels in North America and of travels in Sweden. But simple reference to *Kalm* refers only to his collection.

#Kalm. act. Stockh. This refers to a dissertation by Kalm in *Act. Stockholm.* See *L. Act. Stockh.*

Kircher Mus. Bonanni, A P Phillippo (Buonanni, F.) 1709 (1710). *Musaeum Kircherianum; sive musaeum A P. Athnnasio Kirchero in Collegio Romano...*Romae, Georgii Plachi caelaturam profitensis & characterum fuforiam propè S. Marcum.

#L. Act. Stockholm. This refers to a Linnaeus dissertation in a Swedish journal that is listed in various ways, the more typical being *Kungliga Svenska Vetenskapsacademien Handlingar, Kongliga Swenska Vetenskapsacademien,* and *Swenska Wetenskaps Academiens Handlingar,* etc. An actual cover of the journal shows *Kongl. Svenska Vetenskaps Acaademiens Handlingar.* The printer was Lars Salvius , who did *Systema Naturae X.* The Union List of Serials states that through 1756 this was Swenska Wetenskaps Academi, but the cover pages I have seen show clearly Svenska Vetenskaps Academien (two words, notVetenskapsacademien)on separate lines. In answer to my query to the Royal Swedish Academy of Science, Christer Wijkström, the librarian of the Center for Science and History confirmed that it had many minor title variations in early years but recommended that for the first 50 volumes the most common way to cite is *Kongl. Swenska Wetenskaps Academiens Handlingar.*

Leviathan Jobl. This is a referral to the Bible, book of Job.

#Marcgr. bras. Marcgravi, Georgi de Liebstad.(Marggravius, Christian). *In* Pisonis, Guilielmi *De medicina Brasiliense libri IV....*et Georgi Marcgravi 1648. *Historiae rervm natvralivm Brasiliae. Libr. octo. qvorum sextus de quadrupedibus & serpentibus.* Lugduni Batavorum.

#Matth. dlosc. Matthioli, Petri Andreae (Mattioli, Matthaeolus, Matthiolus). This refers to Matthioli's commentary on the old Greek herbal of Dioscorides. The earliest edition apparently was 1554. *Commentarii in Libros Sex Pedacii Discoridis* ...[with the Latin text of Dioscorides by J. Ruellis]. Venetiis,Vinc Valgris. Many versions of Matthioli's commentary were published, but Linnaeus was known to own a 1570 edition (*fide* J.L. Heller 1976. *Linnaeus on sumptuous books.* Taxon 25:33-52.). Dioscorides of Anazarba in Cilicia , in the first century A.D., wrote the original herbal. An English translation published by Hafner Publishing Co., Inc., New York says that the original herbal was five books. The Hafner edition has an index from Saracen's Latin Index from a 1598 edition of the herbal (Saracenus, Janus Antonio [Sarrasin, Jean Antoine] Pedacii Dioscorides Anazarbaei. Francofurti, A. Wecheli et. al.). The version that I saw indicated that the herbal was illustrated by a Bryzantine in A.D. 512, was translated into English by John Goodyer A.D. 1655, edited and first printed by R.T. Gunther. Linnaeus referred to *Lacerta salamandra* as page 274, figure on 274 in the dioscus. The Saracen index refers to book 2, 67. In the Hafner edition, item 67 of book 2 shows *Salamandra terrestris.* Item 69 is Saura, which is lizards.

Merian sur. Meriam (sic), Mario Sibyllam. (Merian, Mario Sibilla or Mario Sybilla) 1705. *Dissertatio de generatione et metamorphosibus insectorum Surinamensium: in qua.....His adjunguntur bufonis, lacerti, sepentes, aranea....*Amstelodami,Geraldum Valk. The figure for *Rana paradoxa* is on p. 71 as cited but no plate number 71 as cited by Linnaeus.

Merian surin. Same as *Merian sur.*

#Mus. Ad. Fr. Linnao, Car. (Linnaeus) 1754. *Museum S:ae R:ae M:tis Adolphi Friderici Regis....in quo animalia rariora. Tom. I.* Holmiae,Typographia Regia.

Mus. De Geer Refers to the collection of Carl de Geer, a German entomologist.

#Nieremb. Nat. Nierembergii, Joannis Evsebii (Juan Eusebio Nieremberg) 1635. *Historia naturae, maxime peregrinae, libris XVI distincta.....* Antverpiae.

#Olear. mus. Olearium , Adam (Olearius) 1674. *Gottorffische Kunst-Kammer vorinnen Allerhand ungemeine Sachen, So theils die Natur.....* Schlesswig, Gottfriedt Schulkens . National Union Catalog says G. Schultzen but Alwyne Wheeler 1980.The sources of Linnaeus' knowledge of fishes. *In* G. Broberg (ed.) Linnaeus: progress and prospects in Linnaean research. Almquist and Wiksell, Stockholm, says Schulkens. But the old style German lettering that appears to be "lz" actually is a form that represents "ss", thus I interpret the publisher as "Schussens". I found the statement "Auff Gotfriedt Schussens Kosten" to be interesting; it literally means "At the cost of Gottfriedt Schussens." The work was first published in 1666 (*Gottorffische Kunst-Kammer..... Schlesswig.* Johan Holwein), but according to Wheeler the 1674 edition contains the most accurate references, albeit some are in error. The British Library Catalog erroneously shows "Kunst-Cammer."

#Osb. Iter. Osbeck, Per 1757. *Dagbok öfwer en Ostindisk resa åren 1750- 1751, 1752...* Lor. Ludv. Grefing, Stockholm.

Ovied. amer. Oviedo y Valdes, Gonçalo Fernandez de 1547. *Coronica delas Indias. La hystoria general de Las Indias agora nueuaamente impressa corregida emendada. Primera Parte..* Usually filed under Fernandez de Oviedo y Valdes.This edition describes in Libro 13, chapter 3 a lizard, and an illustration on the third page of text of that account it pictures a lizard with a long, serrated dorsal crest, but the name "iguana" does not appear.

#Pis. bras. Piso, Willem (Guiliemi Pisonis). See *Marcg. bras.* But Piso's part actually is 1658...See *Bont. jav.* for details of the 1658 work.

#Raj. quad. Raio, Joanne (John Ray) 1693. *Synopsis methodica animalium quadrupedum et serpentini generis.* S. Smith and B. Walford, Londini. London.

#Rhed. Exp. Redi, Francisci 1675. *Experimenta circa res diversas naturales, speciatim i llas , quae ex Indiis adferentur....*Amstelodami, A. Frisii.

Roes. ran. Roesel von Rosenhof, Avgvstvs Iohannes (August Johann) 1758. *Historia natvralis ranarvm nostrativm....* Norimbergae, I.I. Fleischmanni.

Rolander Daniel Rolander, a pupil of Linnaeus's who collected in Surinam.

Scheuch. sacr. Schevchzer, Joh. Jacob (Johannes Jacob Scheuchzer) 1731-35. *Kupfer=Bibel/ In welcher Die PHYSICA SACRA, Oder Geheiligte NaturWissenschafft...*Augspurg (sic) und Ulm, C. U. Wagner. This comprises 4 volumes, bound in 6 (parts 3 and 4 each divided into two parts). The reference to *Boa scytale* appears in vol. 4 but Scheuchzer called it Serpens Surinanmensis further on in the text. Vol. 4 is 1735. But note that apparently the same work is listed in the National Union Catalog as "*Physica sacra, iconibvs aeneis illus. procurante & sumtus suppediante Johanne Andrea Pfeffel. Avgvstae Vindelicorvm, 1731-1735.* " This latter probably is the Latin version, presumably issued simultaneously.

Seb. mus. Seba, Albertus 1734-1735. *Locupletissimi rerum naturalium thesauri accurata et descriptio, iconibus artificiosissimus expressio, per universam physices historiam. Tomus I, II* Amstelaedami. Janssonio-Waesbergios, & J. Wetstenium, & Gul. Smith. .

#Sloan jam. Sloane, Sir Hans 1725. *Natural history of Jamaica. A voyage to the islands Madera, Barbada, Nieves, St. Christophers and Jamaica, with the natural history of the herbs and trees, four- footed beasts, fishes, birds, insects, reptiles....* Vol. 2. London, British Museum.

#Syst. nat. As in *Lacerta agilis* 36 n. 6 and *Lacerta Chalcides* 36 n. 7 are 6th and 7th eds., respectively, with 36 referring to page number. But in the Pisces section of the Xth Linnaeus would say, e.g., *Syst. nat.* 6. p. 47. The 6th ed. was published in 1748 by Goddef. Kiesewetter, Stockholm. The 7th, also 1748, is a repeat of the 6th but with German, instead of Swedish, names. Linnaeus' s cite for *Lacerta agilis* in the 10th ed. is not the wording that appears in the 6th. In 6th it reads, "Lacerta cauda verticillata tereti, pedibus pentadactylis unguicularis Fn1352 Lacertus."

#Tournef. Itln. Tournefort, Joseph Pitton de 1717. *Relation d'un voyage du Levant, fait par ordre du roy contenant l'histoire ancienne et moderne de plusieurs îles de Archipel de Constantinople....* Paris. I have seen a 1727 printing by A. Lyon, Bruyset, 3 v. It speaks on p. 372-373 of lizards, and in the figure facing 373 is "Lezard appelle Kosloedilos", which appears to be the reference to Tournefort that Linnaeus gives on p. 202 of the *Systema* for *Lacerta stellio* --- "Lacerta coslordilos dicta". Heller (1958) indicated that some of Linnaeus' plant references fit the Paris edition,some the Lyon edition, and others do not seem to fit any edition.

Valent. mus. Valentini, D. Michael Bernhard 1704. *Museum museorum,oder vollständige schau-bühne....* Franckfurt am Mäyn,J. D. Sunners. National Union Catalog says J.D. Zunner.

#Vallisn. nat. Vallisneri, Antonio (Vallisnieri, Antonio)1733. *Opere fisico-mediche stampate e manoscritte del kavalier Antonio Vallisnieri.....Tomo primo.* Venezia , Sebastiano Coleti

#Vincent. plp. Vincent; Levinus 1725. *Descriptio pipae, seu bufonis aquatici surinamonsis...*Harlemi Batavorum.

Worm. mus. Worm, Olao (Ole) 1655. *Museum wormianum seu historia rerum rariorum, tam naturalium, quam artificialium, tam domesticanum, quam exoticarum, quae.....*Lugduni Batavorum.