

DISTRIBUTION AND TAXONOMIC STATUS OF *PHRYNOPS HOGELI*,
A RARE CHELID TURTLE FROM SOUTHEASTERN BRAZIL

ANDERS G. J. RHODIN, RUSSELL A. MITTERMEIER
AND ROBERTO DA ROCHA E SILVA

Made in United States of America

Reprinted from COPEIA

1982, No. 1

© Copyright, 1982, by the American Society of Ichthyologists and Herpetologists

Copeia, 1982(1), pp. 179-181
 © 1982 by the American Society of
 Ichthyologists and Herpetologists

DISTRIBUTION AND TAXONOMIC STATUS OF *PHRYNOPS HOGEI*, A RARE CHELID TURTLE FROM SOUTHEASTERN BRAZIL.—The sidenecked turtle family Chelidae (Testudines: Pleurodira) is widely distributed in the Australia-New Guinea region and in South America from northern Colombia to the temperate regions of Argentina. Of the four South American genera (*Chelus*, *Hydromedusa*, *Phrynops*, *Platemys*) *Phrynops* is the most diverse and also the most complex taxonomically, with 11 currently recognized taxa (*dahli*, *geoffroanus*, *gibbus*, *hilarii*, *hoge*, *nasutus*, *rufipes*, *tuberculatus*, *tuberosus*, *vanderhaegei* and *wermuthi*) and several other taxa that remain to be described or resurrected. Much of the confusion surrounding this genus results from the scarcity of museum material and the rarity of most species in the wild. Comparative material is frequently unavailable or widely dispersed, and descriptions of new species have on several occasions been based on single specimens. Two of the 11 recognized taxa are still known only from the type specimen (*hoge* and *vanderhaegei*) and five others are represented by relatively small series (*dahli*, *rufipes*, *nasutus*, *tuberculatus* and *wermuthi*). Larger series are available for the three closely related taxa *P. geoffroanus*, *P. tuberosus* and *P. hilarii*, but intraspecific variation and interspecific relationships within this group are complex and unclear. Precise distribution patterns remain to be worked out for almost all taxa and little or nothing is known of behavior and ecology in the wild. Patterns of relationships based on skull morphology have been analyzed by Gaffney (1977), but without examining more than half of the recognized taxa. Only *P. gibbus* has received somewhat detailed examination, with work by Medem (1973) on reproduction, Gaffney (1977) on cranial morphology, and Mittermeier et al. (1978) on distribution, habitat and reproduction.

The purpose of this paper is to provide new information on the distribution and taxonomic status of one of the least known species, *Phrynops hoge*. *P. hoge* was described by Mertens (1967) on the basis of a single specimen and no other material has been mentioned in the literature since that time. The holotype (SMF 62530) is an adult male of 327 mm carapace length that was discovered by Mertens in a serpentarium at the Instituto Butantan in São Pau-

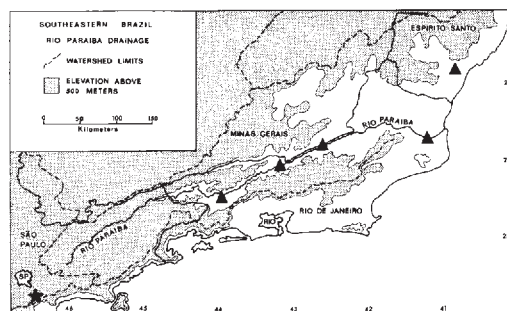


Fig. 1. Distribution of *Phrynops hoge*. Triangles represent confirmed localities, the star indicates the questionable type locality.

lo, Brazil. It was allegedly collected in the "Rio Pequena, southwest of São Paulo," but no such locality exists. P. Vanzolini (pers. comm.) states that the locality should read "Rio Pequeno, southeast of São Paulo," this being a small tributary of Represa Billings in the Rio Tiete drainage, ca. 30 km from São Paulo.

During the course of an extensive review of the South American Chelidae, we have discovered ten additional museum specimens of *P. hoge* and have examined four live individuals in private Brazilian collections. All 14 of these animals come from low-lying areas in the Rio Paraíba drainage of the state of Rio de Janeiro and southern Minas Gerais and from the nearby Rio Itapemirim in southern Espírito Santo (Fig. 1).

The provenance of these specimens has led us to seriously question the validity of the type locality. All 14 occur within approximately 400 km of one another, and are all from elevations below 500 m. The nearest is separated from the type locality by over 300 km of terrain above 500 m. The type locality is in the inland drainage system of the Rio Tiete and the Rio Parana, whereas all the other localities are within the coastal drainages of the Rio Paraíba and the nearby Rio Itapemirim. Other turtle species occurring in the area usually do not span this barrier. *Hydromedusa tectifera* is primarily inland, *H. maximiliani* coastal; *Platemys spixii* is inland and *P. radiolata* coastal; *Phrynops* "geoffroanus" forms are specifically distinct in the two areas. In addition, the holotype of *P. hoge* was not tagged by the Instituto Butantan and was kept in a serpentarium where other turtles are also kept. Confusion regarding the origin of the specimen could easily have arisen after Mertens

recognized its distinctness. The fact that the locality was also misspelled and geographically incorrectly located in the original description adds to its suspect nature. Consequently, although we cannot yet be certain, we believe that the type locality is erroneous and that *P. hogei* is restricted to elevations below 500 m. in the Rio Paraiba drainage of Rio de Janeiro and southern Minas Gerais and to adjacent low-lying coastal regions of the state of Espirito Santo at least as far north as the Rio Itapemirim.

P. hogei is unquestionably a distinct species that can be separated from other *Phrynops* by a combination of the following three sets of characteristics: 1) extremely narrow head without markings, uniformly dark dorsally and uniformly light ventrally, with a sharp line of color demarcation running along the dorsal border of the maxilla and through the tympanum (Fig. 2); 2) high smoothly-domed carapace without vertebral keel or furrow or posterior marginal flaring, uniformly dark or light brown; 3) plastron uniformly yellow or with irregular, indistinct grayish blotches and often oxidized. Additional important characteristics relate to color of live specimens. The soft underparts have a distinct pinkish orange tint on a light cream base. This pinkish orange color is also present on the ventral surface of the tail anterior to the anus and sometimes also on the ventral surface of the tail tip. In females, the lateral portions of the dark dorsal surface of the head have a variable area of dark wine red color, a unique feature within the genus *Phrynops*. The only other species of South American chelid with red head color is *Phrynops rufipes*, which has sharp lines of demarcation between vividly red and black areas. A medium-sized female *P. hogei* of 232 mm carapace length had a well-developed pattern of dark red pigmentation extending anteriorly along the dorsal surface of the yellow maxilla and covering the entire temporal fossa where the skin is divided into polygonal scales. This color darkened gradually to merge into dark brown over the parietal roof, interorbital and snout regions, and also over the tympanum. A large female of 340 mm carapace length had a markedly reduced pattern of dark red pigmentation, being present on only a few temporal fossa scales in the portions immediately posterior and inferior to the eye, as well as extending feebly onto the dorsal surface of the posterior maxilla. As we have not seen any live juvenile specimens we cannot be sure of age-related changes in color patterns,



Fig. 2. Lateral view of the head of a live female *Phrynops hogei* of 232 mm carapace length. The only ventral marking commonly present is a diffuse patch along the posterior mandibular sheath.

but would suppose that younger females or juveniles in general probably have well developed red patterns which gradually fade with increasing age. Adult males have no trace of the red color, the dorsal portions being entirely dark gray (based on two specimens of 213 and 343 mm carapace length). Both males and females often have a small gray blotch present on the posterior portion of the mandible, this being the only marking present on the otherwise yellow ventral portions of the head and neck. The iris is dark brown with a narrow irregular yellow border around the pupil and without trace of a horizontal black stripe. Large males (including the holotype) have a larger, thicker tail and a markedly concave plastron; females have a flat plastron. Mertens (1967) provides good photographs of the carapace and plastron of the large male holotype.

P. hogei is most similar to *P. gibbus*, with which it might be confused. *P. gibbus* is similar in having a narrow head width and lacking head markings, being dark dorsally and light ventrally. However, it is distinct in having a shallower, slightly broader carapace with a posterior vertebral keel and a relatively indistinct demarcation of the dorsal dark head color from the ventral light color. The maxilla often has small, dark vertically radiating lines and the ventral neck and tympanum often have dark reticulations and blotches of an indistinct nature. The plastron has a large dark figure which is distinctive. Also, as noted by Mittermeier et al. (1978), *P. gibbus* is exclusively Amazonian and Guianan in distribution.

Previous references to specimens assignable to *P. hogei* are to be found in Luederwaldt (1926) and Ruschi (1966). Luederwaldt described two specimens of this turtle from the Rio Paraiba as *Mesoclemmys* ?sp. Mertens (1967) was unsure of their status, but we have exam-

ined the specimens and can confirm that they are *P. hogei*. Ruschi listed *Mesoclemmys gibba* as occurring in the state of Espírito Santo, but since *P. gibbus* is not found in eastern Brazil, this record is probably based on specimens of the similar *P. hogei*. Pritchard (1979) also briefly discusses *P. hogei*, noting the importance of narrow head width as a distinguishing characteristic.

sity, Cambridge, Massachusetts 02138; RUSSELL A. MITTERMEIER, World Wildlife Fund—U.S., 1601 Connecticut Ave., N.W., Washington, D.C., and Department of Anatomical Sciences, Health Sciences Center, State University of New York, Stony Brook, New York 11794; and ROBERTO DA ROCHA E SILVA, Rio de Janeiro Primate Center, Department of Environmental Conservation—FEEMA, Rio de Janeiro, Brazil. Accepted 15 Dec. 1980.

Specimens examined.—MZUSP = Museu de Zoologia, Universidade de São Paulo; MHN RJ = Museu de Historia Natural, Rio de Janeiro; CM = Carnegie Museum, Pittsburgh; CAS = California Academy of Sciences, Los Angeles; P = voucher photographs in collection of AGJR; SMF = Senckenberg Museum, Frankfurt; ZSM = Zoologische Staatssammlung, München. MZUSP 47, Entre Rios (= Tres Rios), Rio Paraiba, Rio de Janeiro, Brazil; MZUSP 96, Campos, Rio Paraiba, R.J.; MHN RJ 1051, Campos, Rio Paraiba, R.J.; MZUSP 2683, Fazenda Feliz Remanso, Pinheiral, Rio Paraiba, R.J.; CM 3132, Entre Rios (= Tres Rios), Rio Paraiba, R.J.; MHN RJ 3145, Alem-Paraiba, Rio Paraiba, Minas Gerais; CAS SU-13458, Rio Paraiba, R.J.; P 18, Campos, Rio Paraiba, R.J.; P 17, 48-9, Rio Itapemirim, Espírito Santo; SMF 62530, "Rio Pequeno, southeast of São Paulo"; ZSM 163/1938(2), "Rio de Janeiro," R.J.

Acknowledgments.—We wish to thank the following people for providing assistance and specimens: E. E. Williams, P. E. Vanzolini, A. L. de Carvalho, C. J. McCoy, A. E. Leviton, K. Klemmer, U. Gruber and N. Araujo. AGJR's studies were partly funded by the American Philosophical Society.

LITERATURE CITED

- GAFFNEY, E. S. 1977. The side-necked turtle family Chelidae: a theory of relationships using shared derived characters. *Amer. Mus. Novit.* 2620.
- LUEDERWALDT, H. 1926. Os chelonios brasileiros. *Rev. Mus. Paulista* 14:403-470.
- MEDEM, F. 1973. Beitrage zur Kenntnis uber die Fortpflanzung der Buckel-Schildkröte, *Phrynops (Mesoclemmys) gibbus*. *Salamandra* 9:91-98.
- MERTENS, R. 1967. Bemerkenswerte Susswasserschildkroten aus Brasilien. *Senck. Biol.* 48:71-82.
- MITTERMEIER, R. A., A. G. J. RHODIN, F. MEDEM, P. SOINI, M. S. HOOGMOED AND N. C. DE ESPINOZA. 1978. Distribution of the South American chelid turtle *Phrynops gibbus*, with observations on habitat and reproduction. *Herpetologica* 34:94-100.
- PRITCHARD, P. C. H. 1979. *Encyclopedia of Turtles*. Hong Kong: T.F.H. Publications.
- RUSCHI, A. 1966. Lista dos repteis do Estado do Espírito Santo. *Bol. Mus. Biol. Prof. Mello-Leitao (Zool.)* 26A:1-6.
- ANDERS G. J. RHODIN, *Department of Surgery (Orthopaedics), Yale University School of Medicine, New Haven, Connecticut 06510, and Museum of Comparative Zoology, Harvard Univer-*