

Catalogue of American Amphibians and Reptiles.

Villa, Jaime D. 1990. *Hydromorphus*, *H. concolor*, *H. dunni*.

***Hydromorphus* Peters**
Central American Watersnakes

Hydromorphus Peters, 1859:142. Type species, *Hydromorphus concolor* Peters, by monotypy.

• **Content.** Two species, *concolor* and *dunni*, are recognized.

• **Definition.** Members of the genus *Hydromorphus* are medium-sized colubrid snakes (males to 690, females to 797 mm TL) with broadly rounded heads barely distinct from the neck, and moderately short tails (13-19% of TL). Eyes are small, with a round pupil. Nostrils are directed dorsally. Cephalic scales are typically colubrid except for having 1 or 3 internasals and 1 or 3 prefrontals. Nasals are usually entire but may be partially or entirely divided below the nostrils. A loreal is present and usually borders the orbit. A single, upper preocular is usually present (the lower preocular is usually fused to the loreal) but two or more may be found. There are two pairs of chin shields with a mental groove variably developed or absent. Dorsal scales are smooth (except for supra-anal keels in one species), in 15-17 rows at midbody, 13-15 near the vent. Anal plate and subcaudals are divided. Ventrals number 157-186, caudals 33-54.

Dorsal color is dark gray to dark brown, somewhat paler on rows 1-2. The venter is yellowish or cream-colored with variable dark smudging along the edges and the center of the ventrals, more abundant on the posterior portion of the body.

Hemipenes are short (to subcaudal 11), slightly bi-lobed, and uncapitate, with four large basal hooks and large spines over the central part. The sulcus spermaticus is centrolineal and bifurcate. The capitulum is spinous proximally and calyculate distally.

• **Descriptions.** The most comprehensive descriptions of the genus are by Nelson (1966) and Savage and Donnelly (1988).

• **Illustrations.** See species accounts.

• **Distribution.** The range extends from Guatemala to central Panamá on the Caribbean versant and from central Costa Rica to central Panamá on the Pacific.

• **Fossil Record.** None.

• **Pertinent Literature.** Villa et al. (1988) summarized the literature to 1987. The genus was reviewed by Savage and Donnelly (1988). Villa (1971) and Crother (1989) provided information on the hemipenes. Solórzano et al. (1989) described the karyotype.

• **Etymology.** The name *Hydromorphus* is derived from the Greek *hydor*(water) and *morphe* (shape or form), in reference to the snake's aquatic habits. The gender is neuter.

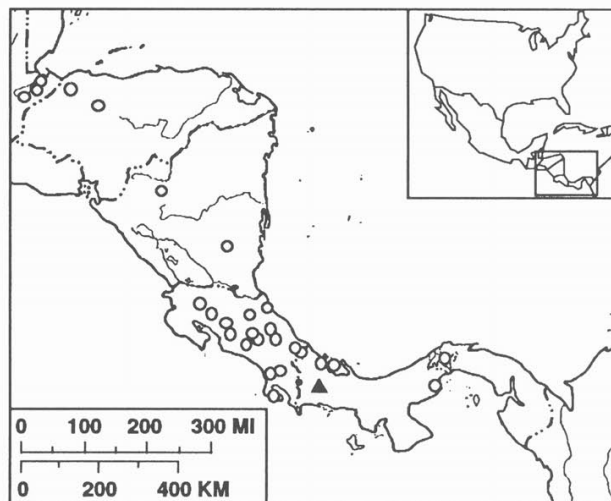
• **Key to Species.**

Prefrontal single; internasal single; dorsal scales in 21-17-15 to 17-15-15 (usually 19-17-15) rows; no supra-anal keels; posterior chin shields slightly longer than the anterior pair*concolor*

Three prefrontals; two internasals; dorsal scales in 15-15-13 rows; supra-anal keels present; anterior chin shields slightly longer than the posterior pair*dunni*

***Hydromorphus concolor* Peters**
Central American Watersnake

Hydromorphus concolor Peters, 1859:277. Type locality: "Costa Rica." Holotype, Königliche Zoologische Museum [no number



Map. Distribution of *Hydromorphus concolor* (circles; type-locality too imprecise to plot) and *H. dunni* (triangle) (modified from Savage and Donnelly, 1988).

cited], an adult female, no date of collection (not examined by author).

Hydromorphus clarki Dunn, 1942:2. Type locality: "Agua Clara Village near Chagres River, Panamá." Holotype, Academy of Natural Sciences of Philadelphia 23910, a juvenile, sex unknown, consisting of a head and anterior body (examined by author).

• **Content.** No subspecies have been described.

• **Definition.** A species of *Hydromorphus* with a single prefrontal, no supra-anal keels, the anterior chin-shields longer than the posterior pair, and dorsal scale rows in 17-15-15 to 21-17-15 rows.

• **Descriptions.** The most complete descriptions of this species are in Taylor (1951, 1954, Costa Rican specimens) and Wilson and Meyer (1982, 1985, Honduran specimens). Nelson (1966) and Savage and Donnelly (1988) described the species from throughout its range. Villa (1971) and Crother (1989) described the hemipenes. Solórzano et al. (1989) described eggs, a juvenile, and the karyotype.

• **Illustrations.** Peters (1859) provided a line drawing of the dorsal surface of the head of the holotype. Line drawings and photographs of preserved specimens are in Nelson (1966). Savage and Donnelly (1988) provided schematic line drawings of the cephalic scales. Villa (1971) illustrated the dorsal pattern of a Nicaraguan specimen. Villa (1971) and Crother (1989) illustrated the hemipenes. Solórzano et al. (1989) illustrated the karyotype.

• **Distribution.** The species is found at low to moderate elevations from Guatemala through central Panamá. It is typically active at night in and around small streams in lowland and premontane forests.

• **Pertinent Literature.** The species is included in faunal works or checklists for Honduras (Wilson and Meyer, 1982, 1985), Nicaragua (Villa, 1970, 1983), Costa Rica (Savage and Villa, 1986), Panamá (Smith, 1958), Middle America (Villa et al., 1988) and the Neotropics (Peters and Orejas-Miranda, 1970). Notes on biology are in Savage and Donnelly (1988) and Solórzano et al. (1989). Obst et al. (1988) stated that the species' "principal diet is fish and frogs." The only item this snake is known to eat in its natural habitat is small freshwater crabs.

• **Etymology.** The name *concolor* is Latin for "uniformly colored," probably referring to the generally patternless dorsum.

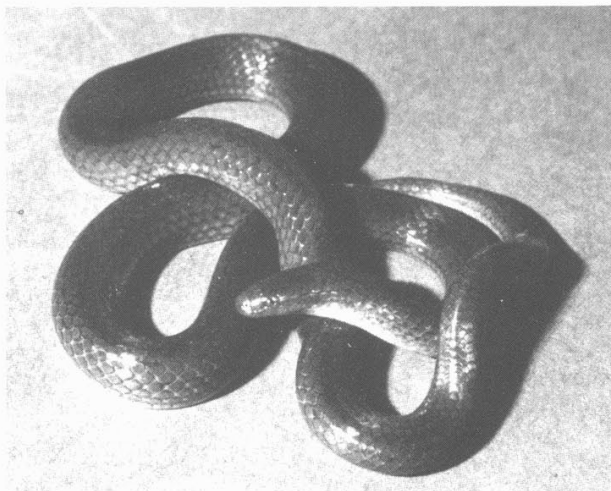


Figure. *Hydromorphus concolor*, adult from San Ignacio de Acosta, Costa Rica. Photographs courtesy of Norman J. Scott, Jr.

Hydromorphus dunni Slevin Dunn's Watersnake

Hydromorphus dunni Slevin, 1942:474. Type locality, "Vicinity North of Boquete, Chiriqui Province, Panama." Holotype, California Academy of Sciences (CAS) 78939, an adult male collected by Joseph R. Slevin July 30, 1939 (not examined by author).

- **Content.** No subspecies have been described.
- **Definition.** A species of *Hydromorphus* with three prefrontals, knob-like supra-anal keels, the posterior chin shields longer than the anterior pair, and dorsal scales in 15-15-13 rows.
- **Descriptions.** The most complete description of this species is the original (Slevin, 1942). Savage and Donnelly (1988) differentiated it from *H. concolor*.
- **Illustrations.** Slevin (1942) provided a black and white photograph of the dorsal portion of the head and neck, as well as the lateral portion of the vent area of the holotype; he also illustrated habitat. Savage and Donnelly (1988) provided a very schematic line drawing of the dorsal surface of the head of the holotype illustrating the arrangement of the anterior cephalic scales.
- **Distribution.** The species is known only from the type-locality in "upland southwestern Panama in the premontane zone (ca 1250 m)" (Savage and Donnelly, 1988).
- **Pertinent Literature.** As for descriptions.
- **Etymology.** The name *dunni* honors Emmett Reid Dunn, who was "so intimately connected with Central American herpetology." (Slevin, 1942).

Literature Cited

- Crother, Brian O. 1989. A redescription of the hemipenis of *Hydromorphus concolor* (Colubridae) with comments on its tribal allocation. *Copeia* 1989(1):227-229.
- Dunn, Emmett Reid. 1942. New or noteworthy snakes from Panama. *Notulae Naturae* 108:1-7
- Nelson, Craig E. 1966. Systematics and distribution of snakes of the Central American genus *Hydromorphus* (Colubridae). *Texas J. Sci.* 18:365-371.
- Obst, Fritz Jürgen, Klaus Richter, and Udo Jacobs. 1988. The completely illustrated atlas of reptiles and amphibians for the terrarium. TFF Publications, Neptune, New Jersey. 831 p.
- Peters, W. 1859. Über die von Hrn. Dr. Hoffmann in Costa Rica ge-

sammelten und an das Königl. Zoologische Museum gesandten Schlangen. *Monatsberichte der Königlich. Preussischen Akad. Wiss. zu Berlin* 1959:275-278.

- Peters, James A., and Braulio R. Orejas-Miranda 1970. Catalogue of the Neotropical Squamata. Part 1, Snakes. U. S. Nat. Mus. Bull. (297):1- 347.
- Savage, J. M., and Maureen A. Donnelly. 1988. Variation and systematics in the colubrid snakes of the genus *Hydromorphus*. *Amphibia-Reptilia* 9:289-300.
- , and Jaime Villa R. 1986. Introduction to the herpetofauna of Costa Rica. *Soc. Stud. Amph. Rept., Contrib. Herpetol.* (3):viii + 206 pp.
- Slevin, Joseph R. 1942. Notes on a collection of reptiles from Boquete, Panama, with the description of a new species of *Hydromorphus*. *Proc. Cal. Acad. Sci.* 23(32):473-480, pls. 39-42.
- Smith, Hobart M. 1958. Handlist of the snakes of Panama. *Herpetologica* 14(4):222-224.
- Solórzano, Alejandro, José M. Gutiérrez, and Luis Cerdas. 1989. Notes on the natural history and karyotype of the colubrid snake, *Hydromorphus concolor* Peters, from Costa Rica. *J. Herpetol.* 23(3):314-315.
- Taylor, Edward Harrison. 1951. A brief review of the snakes of Costa Rica. *Univ. Kansas Sci. Bull.* 34(1):1-188.
- . 1954. Further studies on the snakes of Costa Rica. *Univ. Kansas Sci. Bull.* 36(2):673-801.
- Villa, Jaime. 1970. Lista tentativa de vertebrados inferiores de Nicaragua. *Universidad Nacional Autónoma de Nicaragua, Managua.* 36 p.
- . 1971. The snake *Hydromorphus* in Nicaragua, with a description of its hemipenis. *Carib. J. Sci.* 10:119-121 [dated 1970].
- . 1983. Nicaraguan fishes, amphibians and reptiles: A checklist and bibliography. *Universidad Centroamericana, Managua.* 53 p.
- , Larry D. Wilson and Jerry D. Johnson. 1988. Middle American herpetology. A bibliographic checklist. *Univ. Missouri Press, Columbia.* xxxvi+132 p.
- Wilson, Larry D. and John R. Meyer. 1982. The Snakes of Honduras. *Milwaukee Public Mus. Publ. Biol. Geol.* (6):1-159.
- , and ———. 1985. The Snakes of Honduras, 2nd. Ed. *Milwaukee Public Mus.,* x+ 150 pp.

Jaime D. Villa, Directorate for Science and Engineering Education, National Science Foundation, Washington D.C. 20550.

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