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Helminth Parasites of the Endangered Houston Toad, *Bufo houstonensis* Sanders, 1953 (Amphibia, Bufonidae)

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The Houston toad, *Bufo houstonensis* Sanders, has an extremely restricted range in southeastern Texas, being known historically from 6 counties with viable populations remaining in only 2. Due to its relative rarity and federally protected status as an endangered species, its parasites have received attention only once. Harwood (1932, Proc. U.S. Natl Mus. **81**: 1–71) identified 2 Harris

County specimens of this toad as *B. terrestris* and reported *Cosmocercoides dukae* (Oxyuridae) in both and *Oswaldocruzia pipiens* (Diaphanocephalidae) in 1. In the course of ecological studies on the Houston toad, additional information on its parasitic helminths has been acquired.

Seventeen preserved specimens of *B. houstonensis* from the following institutions were used in the study: Strecker Museum, Bryce C. Brown (BCB) Collection, Baylor University, Waco, Texas, and the Texas Natural History Collection (TNHC), University of Texas, Austin. The sample represented 2 localities: Bastrop County (TNHC 35536–37) and Harris County (TNHC 25628, 25630, 34741; BCB 5441, 5457–59, 5461–62, 5678–79, 5683, 5690–91, 5693). Additionally, parasites were examined from a series of toads collected as eggs and tadpoles in Bastrop County and raised in the Houston Zoological Gardens. The digestive tract, lungs, heart, gall bladder, liver, and coelomic cavity of each specimen were examined. Most of the parasites were mounted temporarily for identification, then returned to vials of 70% isopropyl alcohol and remain with the host voucher specimen. *Brachycoelium storeriae* from 2 specimens (BCB 5441 and 5457) were stained with Semichons acetocarmine and remain mounted in Canada balsam. Type material of the following species was used to verify identifications: *Physaloptera ranae* (USNM Helm. Coll. 50789), *Cosmocercoides dukae* (USNM Helm. Coll. 8001), and *Brachycoelium storeriae* (USNM Helm. Coll. 30873).

Only 2 specimens (TNHC 25628 and 25630) were devoid of helminths. Those found in the remaining 15 toads provide new host records for 3 species: 2 nematodes, *Physaloptera ranae* (Spiruridae) in the stomach of 1 host from Harris County, and *Rhabdias ranae* (Rhabdiasidae) from the lungs of 3 hosts from that county; and the trematode, *Brachycoelium storeriae* (Brachycoe-

liidae) in the small intestines of 1 specimen from Bastrop County and 2 from Harris County. Other helminths found included: *O. pipiens* in the stomach and small intestine of 13 Harris County toads; *C. dukae* from the intestine and rectum of 9 hosts representing both counties, and unidentified tetrathyridea in the gall bladder and common mesenteries of a specimen from Harris County and in the same tissues plus heart and liver of a Bastrop County toad. Neither *O. pipiens* nor *P. ranae* was found in the captive reared toads from Bastrop County but *R. ranae* was abundant in them.

None of the parasites found are unique to the Houston toad or the family Bufonidae. *Bufo americanus*, the presumed nearest relative of *B. houstonensis*, shares most of these parasites (Rosen and Manis, 1976, J. Parasit. 62: 833–834; Baker, 1977, Can. J. Zool. 55: 104–105; Baker, 1978, Can. J. Zool. 56: 1026–1031; Baker, 1978, J. Parasit. 64: 765–766; Ashton and Rabalais, 1978, Proc. Helminth. Soc. Wash. 45: 141–142). Instead of *Rhabdias ranae*, *B. americanus* is infected with *R. americanus* (= *R. bufonis* of Ashton and Rabalais, loc. cit.; fide Baker, 1978, Can. J. Zool. 56: 2127–2141). Other parasites reported from *B. americanus* are *Megalodiscus temperatus*, *Megalodiscus rankini*, *Ostiolium medioplexus*, *Haematoloechus similiplexus*, an unidentified echinostome, and unidentified metacercariae (Rosen and Manis, loc. cit.; Ulmer, 1970, Am. Midl. Nat. 83: 38–64).

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