

## ANALYSE D'OUVRAGE

**Candiru, Life and Legend of the Bloodsucking Catfishes**, by Stephen Spotte, Creative Arts Book Company (Berkeley, California), 2002, 322 pages.

Of some 48,000 species of vertebrates, fewer than 20 are known or thought to be hematophagous. Three species of vampire bats notwithstanding, the “bloodsucking” *candirú* catfishes are the most notorious of these, having long been the stuff of legends. To say that candirus are poorly known scientifically, however, would be a gross understatement. Candirus may comprise a dozen species in five or six genera in the South American trichomycterid subfamily Vandelliinae, but most were described prior to 1935 and their systematics is in a state of neglect. If folklore is to be believed, candirus may “attack” humans, penetrating the urethra, vagina, anus, or even open wounds in order to extract blood, but there is much skepticism concerning this most particular habitus. Spotte’s book is a refreshing appraisal of the subject, providing a comprehensive review of the literature in addition to new information (in contrast to the previous armchair account by Gudger, 1930).

Spotte’s book, by his own pen, is “neither wholly factual nor entirely fictitious” (p. XI); in other words, many candiru-related mysteries remain unsolved, and a healthy dose of speculation has been injected here and there. But Spotte goes a long way toward unmasking the doubts, sprouting even more questions in the process. Are candirus attracted by urine? Probably not. Is there proof that they actually penetrate human urethras? Yes. Do they subsist solely on blood? Probably. And if so, how does their physiology utilize this vapid food source? Perhaps by copious ingestion coupled with efficient ammonia excretion. The text is generously illustrated, with depictions of many species, and contains numerous footnotes and references, including recent papers from the scientific literature. One omission is Regan’s (1905) identification of a candiru that was collected and illustrated by Alfred Russel Wallace in July of 1851 from the Rio Uaupés, a tributary of the Rio Negro. Wallace’s collection was lost in the 1852 shipwreck of the *Helen*, but his illustration and account of this species survived, and has been recently published for the first time (Toledo-Piza Ragazzo, 2002, p. 392-393; a reference probably not available to Spotte).

Topics covered include a historical narrative, candiru systematics, its morphological adaptations, insights regarding its sensory world, physiological constraints of subsisting on blood, the protective adornments worn by South American natives (some of which have nothing to do with candirus), and Spotte’s own successful attempts at collecting candirus in the Brazilian Amazon basin. The systematic chapters reinforce that more material and a thorough examination of existing collections are needed in order to correctly

identify candirus. Spotte’s compilation of the literature should not be interpreted as a revision of the group; the actual number of species in the Vandelliinae may be less than reported by Spotte, but is probably even more, such is the precarious state of their taxonomy. Spotte has translated many original passages from earlier systematic works, always providing the original text (these translations, at least from the originals in Portuguese, are accurate). Mistakes are relatively few overall, but the following require notice: the oldest scientific name is *not necessarily* the correct name to be used for a species, especially according to the most recent code of nomenclature (ICZN, 1999; p. 48, para. 1); *Galeocerdo cuvier* is the correct name of the tiger shark (p. 241, fn. 8); and a lectotype *does not* become a holotype (p. 250, fn. 63).

Early in his book, Spotte entices his readers by stating that he will later discuss a recent case of a man who had a candiru removed from his urethra (in “The Smoking Gun”). Readers will not be disappointed, inasmuch as a doctor in Manaus did provide Spotte with the necessary evidence of that procedure (previously reported locally by Queiroz, 1997; the candiru measured 13 cm!). To Spotte, and his readers, this was fortuitous, as he undertook to write *Candiru* prior to that incident. Unfortunately, however, the doctor’s account of the attack itself, as told to him by the victim, does not seem credible. The rarity of these painful episodes clearly indicates that candirus do not have a predilection for human blood and that any such incident is a freak occurrence.

Spotte’s style is sometimes unappealing (e.g., in the opening paragraphs of the chapter strangely entitled “Hora do Amor,” in which Brazilian women are crassly portrayed). Nevertheless, I read the book in just a few days, and afterwards found myself in complete agreement with its author: “Candirus are very eventful creatures. They don’t need our urethras to be interesting” (p. XI).

- GUDGER, E. W. 1930. *The Candirú*. New York: Paul B. Hoeber. 120 pp.
- ICZN. 1999. *International Code of Zoological Nomenclature*. London: International Trust for Zoological Nomenclature. 4th Edition.
- QUEIROZ, E. Médico retira candirú de paciente em Manaus. *A Crítica*, November 6, p. A2. Manaus.
- REGAN, C. T. 1905. On drawings of fishes of the Rio Negro. *Proc. Zool. Soc. London*, vol. i: 189-190.
- TOLEDO-PIZA RAGAZZO, M. (Organizer). 2002. *Peixes do Rio Negro/Fishes of the Rio Negro*, by Alfred Russel Wallace. São Paulo: Editora da Universidade de São Paulo. 517 pp.

**Marcelo R. de CARVALHO**