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## A revision of the spirit loaches, genus *Lepidocephalus* (Cypriniformes, Cobitidae)

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### Abstract

*Lepidocephalus* has been assumed to include only two species and confined to peninsular Malaysia and Indonesia. However, based on records and collections reported herein, the genus contains five species and is most common in the Chao Phraya basin of Thailand. Large rivers seem to be the preferred habitat, and difficulty in collecting these rivers may account for the paucity of specimens in collections. The known range of these five species includes western and southern Borneo, Java, Sumatra, peninsular Malaysia, and central Thailand.

**Key words:** Teleostei, Southeast Asia, *Lepidocephalichthys*, *Lepidocephalus nanensis*

### Introduction

Recent publications (Roberts, 1989; Šlechtová *et al.* 2008; Havird and Page, 2010; Havird *et al.* 2010; Kottelat, 2012), have recognized only two species of *Lepidocephalus*: *L. macrochir* (Bleeker 1854), described from the confluence of Lamatang and Enim rivers at Palembang in eastern Sumatra and the Pepeh River at Surakarta in central Java; and *L. spectrum* Roberts 1989, described from Sungai Melawi near its confluence with Kapuas River, near Sintang, western Kalimantan. *Lepidocephalichthys pallens* Vaillant 1902, described from the Kapuas River, western Kalimantan, and *Acanthopthalmus pahangensis* de Beaufort 1933, from the Pahang River, at Mentakab, peninsular Malaysia, have been considered synonyms of *L. macrochir*. However, based on examination of holotypes, both are valid species easily distinguished from *L. macrochir* and *L. spectrum*. Recent collections in the Chao Phraya basin in Thailand have resulted in the discovery of a fifth species, described herein. The objectives of the study were to diagnose valid species of *Lepidocephalus* and describe their geographic distributions based on available specimens.

### Material and methods

All specimens known to us and available for study were examined. Measurements and counts follow Armbruster (2012), except prepelvic and preanal lengths were measured as the greatest straight-line distance between the tip of the snout and the origin of the first pelvic- or anal-fin ray. The posterior two rays of the dorsal and anal fins are branches of the same ray that unite internally and are counted as one. Lengths were measured to the nearest 0.1 mm using digital calipers and were taken from the left side of the specimen when possible. Paired fin-ray counts were recorded as the total number of unbranched and branched rays. Barbel lengths were measured with barbels extended posteriorly from the base in a straight line.

Scales on *Lepidocephalus* are extremely small, embedded in the dermis to varying degrees, and difficult to count. For some specimens and species, counts are given for scales along the lateral line; for others, counts are given for lateral-line pores, which often are easier to count than scales.

All specimens examined were over 35 mm standard length (SL) and assumed to be sexually mature. The sex of

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