

A CLADISTIC ANALYSIS OF THE CYRTOCARA LIVINGSTONII GROUP (TELEOSTEI: CICHLIDAE)  
FROM LAKE MALAWI, AFRICA

The Cyrtocara (=Haplochromis) livingstonii species group is a monophyletic group including six described species of ambush predators endemic to Lake Malawi. Most of the species occur sympatrically in the southern part of the lake. Trewavas suggested that the group is most closely related to a nonendemic Lake Malawi cichlid, Haplochromis callipterus (=Astatotilapia calliptera). However, that hypothesis is falsified by the discovery that A. calliptera, the 10 endemic Malawian mbuna genera, Simochromis and related Lake Tanganyika forms, and the Lake Victoria-Edward-Kivu haplochromines all share a distinctive synapomorphy (true anal-fin ocellae) that is lacking in all other Malawian endemics including the C. livingstonii group. Therefore, 1) the ocellate Malawian and non-Malawian taxa are a monophyletic group, and 2) the endemic haplochromine fauna of Lake Malawi is not monophyletic and does not constitute a "species flock." Cladistic analysis yielded a dichotomous cladogram for the C. livingstonii group and its closest relatives, two Malawian endemics. Each species has autapomorphies that preclude it from ancestral status. These findings refute recent predictions that dichotomous cladograms could not be resolved for Rift Lake cichlids.

TUESDAY AFTERNOON, 21 JUNE

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SESSION 10. SYMPOSIUM: EVOLUTION OF FISH SPECIES FLOCKS

ST. JOHNS ROOM  
No. 123

CHAIRPERSON: ANTHONY ECHELLE, Oklahoma State University

INTRODUCTION:

- ✓ 1300 What is a species flock? P. HUMPHRY GREENWOOD, Department of Zoology, British Museum.

NICHE AND SPACE RELATIONSHIPS:

- ✓ 1315 The subtlety of ecological restriction and niche differentiation of the haplochromine cichlids of Lake Victoria. FRANS WITTE, University of Leiden, Netherlands.
- ✓ 1345 Macrohabitat heterogeneity and reef colonization pattern of rock-dwelling cichlids in Lake Malawi: possible extrinsic barriers to gene flow. KENNETH R. McKAYE, Duke University.

PHYLOGENY AND BIOGEOGRAPHY:

- ✓ 1415 Evolution of species flocks of north-temperate lacustrine fishes. GERALD R. SMITH, Museum of Zoology, University of Michigan, and THOMAS N. TODD, Great Lakes Fisheries Laboratory, Ann Arbor, Michigan.
- ✓ 1445 Semionotid fishes of the Mesozoic Great Lakes of North America. AMY REED McCUNE, University of California, Berkeley, KEITH STEWART THOMSON and PAUL ERIC OLSEN, Yale University.
- 1515 COFFEE BREAK
- ✓ 1530 The species flock concept as it relates to the phylogeny and biogeography of the Andean killifish Orestias. LYNNE R. PARENTI, American Museum of Natural History.
- ✓ 1600 African mastacembelid fishes (Afromastacembelinae) and the species flock concept; a review of the fauna from Lake Tanganyika and west African rapids. ROBERT A. TRAVERS, British Museum.
- ✓ 1630 A cladistic analysis of the Cyrtocara livingstonii group (Teleostei: Cichlidae) from Lake Malawi, Africa. MICHAEL K. OLIVER, Dept. of Biology, Yale University.