

Synapomorphies and scenarios – more characters of *Youngolepis* betraying its affinity to the Dipnoi

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Abstract

The close relationship between the Porolepiformes and Dipnoi, based on the unusual combination of characters in *Youngolepis* and *Diabolepis*, was suggested nearly 20 years ago, and has since been well corroborated by many workers. The remaining question, however, is whether *Youngolepis* is closer to the Dipnoi or to the Porolepiformes. Although new morphological features in the related forms tend to further support the relationship, the problem is yet to be completely settled. There are strongly competing alternative views. Some hold that dipnoans (with or without *Diabolepis*), *Youngolepis* and *Powichthys* occupy either the basal rhipidistian or basal sarcopterygian position. Others, though accepting the dipnoan affinity of the Porolepiformes (including *Powichthys*, *Youngolepis* and *Diabolepis*) with some reservations, reject any particular close relationship between *Youngolepis*, *Diabolepis* and the dipnoans.

During the reexamination of the grinding series and the specimens of *Youngolepis praecursor*, several additional morphological features were identified. Most of them were described in 1982. Yet these have somehow eluded most workers on the subject. These features have not only confirmed but also strengthened the point of view that *Youngolepis* and the Porolepiformes are stem dipnoans.

Introduction

In the last two decades, an unusual combination of characters in *Youngolepis* and *Diabolepis* has been noted (CHANG & YU 1981, 1984, CHANG 1982), which has led MAISEY (1986) and JANVIER (1986) to suggest a close relationship between the Porolepiformes and Dipnoi. This point of view has been well supported by many workers (AHLBERG 1991, CHANG 1991a,b, CLOUTIER & AHLBERG 1996, CHANG & YU 1997, ZHU et al. 2001 etc.). However, the difference remains on whether or not *Youngolepis* is closer to the Porolepiformes than to Dipnoi (CHANG & SMITH 1992). In the meantime, new morphological features in the related forms have been added to further support the relationship (CHANG 1995). The problem, however, remains equivocal, as there exist strongly competing alternative views. SCHULTZE (1987, 1991, 1994) and ZHU & SCHULTZE (1997, 2001) hold that dipnoans (with or without *Diabolepis*), *Youngolepis* and *Powichthys* occupy the basal rhipidistian or basal sarcopterygian position. CAMPBELL & BARWICK (1995, 2001), though at one time accepting the affinity of the Porolepiformes (including *Powichthys*, *Youngolepis* and *Diabolepis*) and the Dipnoi (see CAMPBELL & BARWICK 1995: fig. 5) with reservation, now categorically reject the close relationship between *Youngolepis*, *Diabolepis* and the dipnoans. In their review of phylogenetic studies on the sarcopterygian interrelationships, CLOUTIER & AHLBERG (1996) pointed out a few major relationship problems. Among them is the question about the position and composition of the Dipnoiformes, in which both CLOUTIER (1991) and CLOUTIER & AHLBERG (1996) also included *Powichthys*, *Youngolepis*, *Diabolepis* and the Dipnoi in the traditional sense. Against the backdrop of these diverse opinions, this paper is to revise *Youngolepis* and discuss its phylogenetic implications in the light of the new information.

The whole contribution can be purchased as PDF file.

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