

Mudskippers undermine ID claims on macroevolution

SIR — In his Science in Culture article “Dying for a drink” (*Nature* **438**, 564; 2005) Martin Kemp outlines the ancestral line of vertebrates, from modern humans back through evolutionary history to mudskippers.

Mudskippers are amphibious gobioids (a suborder of perch-related bony fishes) with arm-like pectoral fins. They live in the mangrove swamps of Africa, Asia and Australia, where they feed both in water and on land. The most terrestrial species catch insects and sometimes climb trees. They are living model organisms for the study of a key event in the history of life: the evolutionary transition of fishes to amphibians (tetrapods) that occurred about 364 million years ago.

Modern young-earth creationists and adherents of the intelligent design (ID) movement have no problem with microevolution (speciation). But most of these Bible-based anti-darwinists refuse to accept macroevolution (phylogenetic development above the species level) on the grounds both that it is unscriptural and that it has never been observed (S.B. Carroll *Nature* **409**, 669; 2001). Mudskipping gobies and other amphibious fishes are examples of macroevolution in progress that can be analyzed by observation and experiment.



Periophthalmus barberus

They are living intermediate forms that display a number of anatomical and physiological macromodifications of their fishlike body plan that enable them to live and forage on land.

These facts are relevant to the current ID debate, as they illustrate Darwin's classical concept of descent with modification that evolved over past decades into the modern (synthetic) theory of biological evolution — the unifying principle of all life sciences.

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