

Biology of Subterranean Fishes



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 Science
Publishers

 CRC Press
Taylor & Francis Group

Biology Of Subterranean Fishes

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Biology Of Subterranean Fishes:

Biology of Subterranean Fishes Eleonora Trajano, Maria Elina Bichuette, B.G. Kapoor, 2010-05-20 In most habitats adaptations are the single most obvious aspects of an organism's phenotype. However, the most obvious feature of many subterranean animals are losses, not adaptations. Even Darwin saw subterranean animals as degenerate examples of eyelessness and loss of structure in general. For him, the explanation was a straightforward Lamarck. The biology of hypogean fishes Aldemaro Romero, 2013-06-29 Hypogean cave artesian fishes have fascinated researchers even before they were described in the scientific literature in 1842. Since then, a number of scientists have used them to justify their own evolutionary ideas, from neo-Lamarckism to neo-Darwinism, from neutral evolution to selectionist approaches. Research in recent years has shown that these fishes are much more complex in their adaptations to the subterranean environment than previously believed. There are those with features expected from living in total darkness: complete blindness and depigmentation, and poor in nutrients, extremely low metabolic rates; others differ very little, if any, from their epigean surface ancestors in their morphology and physiology, but not so in their behavior. Some of them even live in nutrient-rich environments. Actually, one of the most overlooked facets of these animals is that there are more species of hypogean fishes without troglomorphisms (blindness, depigmentation) than with troglomorphic ones. The study of these apparently unadapted fishes is providing new insights into our understanding of the evolution of phenotypic characters, founding effect, behavioral and physiological adaptations. The 86 species of troglomorphic fishes described so far belong to 18 different families, many of which would hardly fit the notion that they were preadapted to conquer the underground environment. Further, many troglomorphic species show very little genotypic differentiation when compared with their putative ancestors, indicating that massive phenotype changes can be achieved via little genetic reorganization, a reorganization that mostly affects regulatory genes. These and many other topics are discussed in this volume, containing 29 papers written by 41 authors from 9 countries. Hopefully, this volume will convince many other researchers that hypogean fishes represent a unique opportunity to study a concept in evolutionary biology that is only superficially understood: convergent evolution. *Subterranean Fishes of the World* Graham S. Proudlove, 2006 The Biology of Caves and Other Subterranean Habitats David C. Culver, Tanja Pipan, 2009 This book offers a concise but comprehensive introduction to cave ecology. The emphasis is on the organisms that dominate this unique environment, although conservation and management aspects are also considered. The book is intended for both graduate students and professionals and assumes no previous knowledge of cave biology. Caves and other subterranean habitats, with their often strange even bizarre inhabitants, have long been objects of fascination, curiosity, and debate. The question of how such organisms have evolved and the relative roles of natural selection and genetic drift has engaged subterranean biologists for decades. Indeed, these studies continue to inform the more general question of adaptation and evolution. However, interest in subterranean biology is not limited to questions of evolutionary biology. Both

the distribution and the apparent ancient age of many subterranean species continue to be of significant interest to biogeographers Subterranean ecosystems generally exhibit little or no primary productivity and as extreme ecosystems provide general insights into ecosystem function Furthermore the simplicity of subterranean communities relative to most surface dwelling communities makes them useful model systems for the study of species interactions such as competition and predation as well as more general principles of ecosystem function The rarity of many cave species makes them of special interest in conservation biology The Biology of Caves and other Subterranean Habitats offers a concise but comprehensive introduction to cave ecology Whilst there is an emphasis on the organisms that dominate this unique environment conservation and management aspects are also considered The book includes a global range of examples and case studies from both caves and non cave subterranean habitats it also provides a clear explanation of specialized terms used by speleologists This accessible text will appeal to researchers new to the field and to the many professional ecologists and conservation practitioners requiring a concise but authoritative overview Its engaging style will also make it suitable for senior undergraduate and graduate students taking courses in cave and subterranean biology

Ecology and Evolution of Poeciliid Fishes Jonathan P. Evans, Andrea Pilastro, Ingo Schlupp, 2011-09-26 The history of biology is populated by

numerous model species or organisms But few vertebrate groups have aided evolutionary and ecological research more than the live bearing fishes of the family Poeciliidae Found throughout tropical and subtropical waters poeciliids exhibit a fascinating variety of reproductive specializations including viviparity matrotrophy unisexual reproduction and alternative mating strategies making them ideal models for research on patterns and processes in ecology behavior and evolution Ecology and Evolution of Poeciliid Fishes is a much needed overview of the scientific potential and understanding of these live bearing fishes Chapters by leading researchers take up a wide range of topics including the evolution of unisexual reproduction life in extreme environments life history evolution and genetics Designed to provide a single and highly approachable reference Ecology and Evolution of Poeciliid Fishes will appeal to students and specialists interested in all aspects of evolutionary ecology

Extremophile Fishes Rüdiger Riesch, Michael Tobler, Martin Plath, 2015-01-24 This book summarizes the key adaptations enabling extremophile fishes to survive under harsh environmental conditions It reviews the most recent research on acidic Antarctic cave desert hypersaline hypoxic temporary and fast flowing habitats as well as naturally and anthropogenically toxic waters while pointing out generalities that are evident across different study systems Knowledge of the different adaptations that allow fish to cope with stressful environmental conditions furthers our understanding of basic physiological ecological and evolutionary principles In several cases evidence is provided for how the adaptation to extreme environments promotes the emergence of new species Furthermore a link is made to conservation biology and how human activities have exacerbated existing extreme environments and created new ones The book concludes with a discussion of major open questions in our understanding of the ecology and evolution of life in extreme

environments *Fish Hearing and Bioacoustics* Joseph A. Sisneros, 2015-10-29 *Fish Hearing and Bioacoustics* is an anthology of review papers that were presented at a special symposium to honor Arthur Popper and Richard Fay on May 25th 2013 at the Mote Marine Laboratory in Sarasota FL The research presentations at this conference spanned the range of disciplines covered by Fay and Popper during their long and productive careers The book includes the following thematic areas for the papers in this special volume morphology and anatomy of the inner ear and lateral line systems physiology of inner ear lateral line and central auditory systems acoustically mediated behavior including communication and sound localization and environmental influences on fish hearing and bioacoustics including anthropogenic effects of noise on fishes Each chapter reviews and summarizes the past studies of particular area that will lead the reader up to the current work presented at the symposium In addition each chapters includes a perspective of how Arthur Popper and Richard Fay have influenced their particular area of fish bio acoustic research Each manuscript also includes a hypotheses for future studies These hypotheses will provide a springboard for future work in each field **Encyclopedia of Caves and Karst Science** John Gunn, 2004 The *Encyclopedia of Caves and Karst Science* examines cave and karst geoscience cave archaeology and human use of caves art in caves hydrology and groundwater cave and karst history and conservation and management

Encyclopedia of Caves William B. White, David C. Culver, Tanja Pipan, 2019-05-10 *Encyclopedia of Caves* Third Edition provides detailed background information to anyone with a serious interest in caves This includes students both undergraduate and graduate in the earth biological and environmental sciences and consultants environmental scientists land managers and government agency staff whose work requires them to know something about caves and the biota that inhabit them Caves touch on many scientific interests in geology climate science biology hydrology archaeology and paleontology as well as more popular interests in sport caving and cave exploration Case studies and descriptions of specific caves selected for their special features and public interest are also included This book will appeal to these audiences by providing in depth essays written by expert authors chosen for their expertise in their assigned subject Features 14 new chapters and 13 completely rewritten chapters Contains beautifully illustrated content with more than 500 color images of cave life and features Provides extensive bibliographies that allow readers to access their subject of interest in greater depth

Catfishes, a Highly Diversified Group Gloria Arratia, Roberto E. Reis, 2025-10-16 The order of Catfishes Siluriformes is one of the largest in number of families genera and species The group is found in most freshwaters and shallow saltwater bodies around the world Its extraordinary evolutionary and biogeographic pathways leave many open questions on its origin and large diversification that make its study a complex subject yet a fascinating field for research Catfishes a Highly Diversified Group is divided in two volumes Volume 1 Their Outstanding Biology 14 chapters aims to rectify the incomplete information on the enormous morphological diversity of the group special habits and adaptations to specific environments and morpho functional characteristics of the catfishes Volume 2 Evolution and Phylogeny 18 chapters deals with evolutionary

mechanisms and major evolutionary trends within Siluriformes investigating new avenues concerning fossil and extant catfishes and relationships within and among families using morphological and molecular evidence

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