Basic Paleontology Introduction To Paleobiology And The Fossil Record

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Paleobiology And The Fossil Record what you later than to read!

The History of Life: A Very Short Introduction - Michael J. Benton 2008-11-27

There are few stories more remarkable than the evolution of life on earth. This Very Short Introduction presents a succinct guide to the key episodes in that story - from the very origins of life four million years ago to the extraordinary diversity of species around the globe today. Beginning with an explanation of the controversies surrounding the birth of life itself, each following chapter tells of a major breakthrough that made new forms of life possible: including sex and multicellularity, hard skeletons, and the move to land. Along the way, we witness the greatest mass extinction, the first forests, the rise of modern ecosystems, and, most recently, conscious humans. Introducing ideas from a range of scientific disciplines, from evolutionary biology and earth history, to geochemistry, palaeontology, and systematics, Michael Benton explains how modern science pieces the evidence in this vast evolutionary puzzle together, to build up an accessible and up-to-date picture of the key developments in the history of life on earth. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized

books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

Cowen's History of Life - Michael J. Benton 2019-08-08

A newly revised and fully updated edition of the market-leading introduction to paleontology Designed for students and anyone else with an interest in the history of life on our planet, the new edition of this classic text describes the biological evolution of Earth’s organisms, and reconstructs their adaptations and the ecology and environments in which they functioned. Cowen's History of Life, 6th Edition includes major updates, including substantial rewrites to chapters on the origins of eukaryotes, the Cambrian explosion, the terrestrialization of plants and animals, the Triassic recovery of life, the origin of birds, the end-Cretaceous mass extinction, and human evolution. It also features new chapters on plants, soils and transformation of the land; the Mesozoic marine revolution; and the evolution of oceans and climates. Beginning with the origin of the Earth and the earliest life on earth, the book goes on to offer insightful contributions covering: the evolution of Metazoans; the early vertebrates; life of vertebrates on land; and early amniotes and thermoregulation. The book also looks at: dinosaur diversity, as well as their demise; early mammals; the rise of modern mammals; the Neogene Savannas; primates; life in the ice ages; and

more. Covers the breadth of the subject in a concise yet specific way for undergrads with no academic background in the topic Reorganizes all chapters to reflect the geological series of events, enabling a new focus on big events Updated with three brand new chapters and numerous revised ones Put together by a new editorial team internationally recognized as the global leaders in paleontology Filled with illustrations and photographs throughout Includes diagrams to show internal structures of organisms, cladograms, time scales and events, and paleogeographic maps Supplemented with a dedicated website that explores additional enriching information and discussion, and which features images for use in visual presentations Cowen's History of Life, 6th Edition is an ideal book for undergraduate students taking courses in introductory paleontology, as well those on global change and earth systems.

Paleontology - Derek Turner 2011-04-28

In the wake of the paleobiological revolution of the 1970s and 1980s, paleontologists continue to investigate far-reaching questions about how evolution works. Many of those questions have a philosophical dimension. How is macroevolution related to evolutionary changes within populations? Is evolutionary history contingent? How much can we know about the causes of evolutionary trends? How do paleontologists read the patterns in the fossil record to learn about the underlying evolutionary processes? Derek Turner

explores these and other questions, introducing the reader to exciting recent work in the philosophy of paleontology and to theoretical issues including punctuated equilibria and species selection. He also critically examines some of the major accomplishments and arguments of paleontologists of the last 40 years.

Invertebrate Palaeontology and Evolution - E. N. K. Clarkson 2013-07-23

Invertebrate Palaeontology and Evolution is well establishedas the foremost palaeontology text at the undergraduate level. Thisfully revised fourth edition includes a complete update of thesections on evolution and the fossil record, and the evolution ofthe early metazoans. New work on the classification of the major phyla (inparticular brachiopods and molluscs) has been incorporated. The section on trace fossils is extensively rewritten. The author has taken care to involve specialists in the majorgroups, to ensure the taxonomy is as up-to-date and accurate aspossible.

Paleontology in Ecology and Conservation - Julien Louys 2012-04-25

The fossil record contains unique long-term insights into how ecosystems form and function which cannot be determined simply by examining modern systems. It also provides a record of endangered species through time, which allow us to make conservation decisions based on thousands to millions of years of information. The aim of this book is to demonstrate how palaeontological

data has been or could be incorporated into ecological or conservation scientific studies. This book will be written by palaeontologists for modern ecologists and conservation scientists. Manuscripts will fall into one (or a combination) of four broad categories: case studies, review articles, practical considerations and future directions. This book will serve as both a ‘how to guide’ and provide the current state of knowledge for this type of research. It will highlight the unique and critical insights that can be gained by the inclusion of palaeontological data into modern ecological or conservation studies.

Species and Speciation in the Fossil Record - Warren D. Allmon 2016-10-05

The literature of paleobiology is brimming with qualifiers and cautions about using species in the fossil record, or equating such species with those recognized among living organisms. Species and Speciation in the Fossil Record digs through this literature and surveys the recent research on species in paleobiology. In these pages, experts in the field examine what they think species are - in their particular taxon of specialty or more generally in the fossil record. They also reflect on what the answers mean for thinking about species in macroevolution. The first step in this approach is an overview of the Modern Synthesis, and paleobiology’s development of quantitative ways of documenting and analyzing variation with fossil assemblages. Following that, this volume’s central chapters explore the

challenges of recognizing and defining species from fossil specimens, and show how with careful interpretation and a clear species concept, fossil species may be sufficiently robust for meaningful paleobiological analyses. Tempo and mode of speciation over time are also explored, exhibiting how the concept of species, if more refined, can reveal enormous amounts about the interplay between species origins and extinction and local and global climate change.

Cowen's History of Life - Michael J. Benton 2019-10-07

A newly revised and fully updated edition of the market-leading introduction to paleontology Designed for students and anyone else with an interest in the history of life on our planet, the new edition of this classic text describes the biological evolution of Earth’s organisms, and reconstructs their adaptations and the ecology and environments in which they functioned. Cowen's History of Life, 6th Edition includes major updates, including substantial rewrites to chapters on the origins of eukaryotes, the Cambrian explosion, the terrestrialization of plants and animals, the Triassic recovery of life, the origin of birds, the end-Cretaceous mass extinction, and human evolution. It also features new chapters on plants, soils and transformation of the land; the Mesozoic marine revolution; and the evolution of oceans and climates. Beginning with the origin of the Earth and the earliest life on earth, the book goes on to offer insightful contributions covering: the evolution

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The Sauropods - Kristina Curry Rogers 2005-12-16

"This is the most comprehensive overview and analysis of sauropod dinosaurs ever written."—Jason Head, Department of Paleobiology, Smithsonian Institution

Wonderful Life: The Burgess Shale and the Nature of History - Stephen Jay

Gould 1990-09-17
"[An] extraordinary book. . . . Mr. Gould is an exceptional combination of scientist and science writer. . . . He is thus exceptionally well placed to tell these stories, and he tells them with fervor and intelligence."—James Gleick, New York Times Book Review High in the Canadian Rockies is a small limestone quarry formed 530 million years ago called the Burgess Shale. It hold the remains of an ancient sea where dozens of strange creatures lived—a forgotten corner of evolution preserved in awesome detail. In this book Stephen Jay Gould explores what the Burgess Shale tells us about evolution and the nature of history.
Applied Palaeontology - Robert Wynn Jones 2006-05-04
This book was first published in 2006. Palaeontology has developed from a descriptive science to an analytical science used to interpret relationships between earth and life history. Applied Palaeontology adopts a holistic, integrated approach to palaeontology, highlighting its key role in the study of the evolving earth, life history and environmental processes. After an introduction to fossils and their classification, each of the principal fossil groups are studied in detail, covering their biology, morphology, classification, palaeobiology and biostratigraphy. The latter sections focus on the applications of fossils in the interpretation of earth and life processes and environments. It concludes with case histories of how our knowledge of fossils is applied, in industry and elsewhere. This is a

valuable reference for anyone involved in the applications of palaeontology, including earth, life and environmental scientists, and petroleum, minerals, mining and engineering professionals.

Cetacean Paleobiology - Felix G. Marx 2016-05-31

Cetaceans (whales, dolphins, and porpoises) have fascinated and bewildered humans throughout history. Their mammalian affinities have been long recognized, but exactly which group of terrestrial mammals they descend from has, until recently, remained in the dark. Recent decades have produced a flurry of new fossil cetaceans, extending their fossil history to over 50 million years ago. Along with new insights from genetics and developmental studies, these discoveries have helped to clarify the place of cetaceans among mammals, and enriched our understanding of their unique adaptations for feeding, locomotion and sensory systems. Their continuously improving fossil record and successive transformation into highly specialized marine mammals have made cetaceans a textbook case of evolution - as iconic in its own way as the origin of birds from dinosaurs. This book aims to summarize our current understanding of cetacean evolution for the serious student and interested amateur using photographs, drawings, charts and illustrations.

Triassic Life on Land - Hans-Dieter Sues 2010-04-28

The Triassic period is generally viewed as the beginning of the Age of Dinosaurs. For paleontologists, however, it also marks the rise of

the world's first modern land ecosystems. Over the past three decades, extensive, worldwide fieldwork has led to the discovery of many new species of Triassic animals and plants, suggesting that faunal and floral changes already began in the Middle Triassic and were more protracted than previously thought. The Late Triassic is a pivotal time in the evolution of life on land, with many of the major groups of present-day vertebrates and insects first appearing in the fossil record. This book provides the first detailed overview of life on land during the Triassic period for advanced students and researchers. Noted vertebrate paleontologists Hans-Dieter Sues and Nicholas C. Fraser also review the biotic changes of this period and their possible causes.

Basic Questions in Paleontology - Otto H. Schindewolf 1993

Now available in English for the first time, Basic Questions in Paleontology is a landmark work in twentieth-century evolution and paleontology. Originally published in German in 1950, Schindewolf's book was highly controversial for its thoroughgoing anti-Darwinism, but today his ideas are remarkably relevant to current research in evolutionary biology. "[This book] would rank number one on my list of items awaiting translation from the history of twentieth-century evolutionary theory."—Stephen Jay Gould

Avian Evolution - Gerald Mayr 2016-09-08

Knowledge of the evolutionary history of birds has much improved in recent

decades. Fossils from critical time periods are being described at unprecedented rates and modern phylogenetic analyses have provided a framework for the interrelationships of the extant groups. This book gives an overview of the avian fossil record and its paleobiological significance, and it is the only up-to-date textbook that covers both Mesozoic and more modern-type Cenozoic birds in some detail. The reader is introduced to key features of basal avians and the morphological transformations that have occurred in the evolution towards modern birds. An account of the Cenozoic fossil record sheds light on the biogeographic history of the extant avian groups and discusses fossils in the context of current phylogenetic hypotheses. This review of the evolutionary history of birds not only addresses students and established researchers, but it may also be a useful source of information for anyone else with an interest in the evolution of birds and a moderate background in biology and geology.

Rereading the Fossil Record - David Sepkoski 2012-04-16

The title provides a historical account of the origin, rise, and importance of paleobiology. Drawing on a wealth of archival material, Sepkoski shows how the movement was promoted by an influential group of paleontologists and examines the intellectual, disciplinary, and political dynamics involved in the ascendancy of paleobiology.

Introduction to Paleobiology and the Fossil Record - Michael J. Benton

2013-04-25

This book presents a comprehensive overview of the science of the history of life. Paleobiologists bring many analytical tools to bear in interpreting the fossil record and the book introduces the latest techniques, from multivariate investigations of biogeography and biostratigraphy to engineering analysis of dinosaur skulls, and from homeobox genes to cladistics. All the well-known fossil groups are included, including microfossils and invertebrates, but an important feature is the thorough coverage of plants, vertebrates and trace fossils together with discussion of the origins of both life and the metazoans. All key related subjects are introduced, such as systematics, ecology, evolution and development, stratigraphy and their roles in understanding where life came from and how it evolved and diversified. Unique features of the book are the numerous case studies from current research that lead students to the primary literature, analytical and mathematical explanations and tools, together with associated problem sets and practical schedules for instructors and students. “..any serious student of geology who does not pick this book off the shelf will be putting themselves at a huge disadvantage. The material may be complex, but the text is extremely accessible and well organized, and the book ought to be essential reading for palaeontologists at undergraduate, postgraduate and more advanced levels—both in Britain as well as in North America.” Falcon-

Lang, H., Proc. Geol. Assoc. 2010 “...this is an excellent introduction to palaeontology in general. It is well structured, accessibly written and pleasantly informative .....I would recommend this as a standard reference text to all my students without hesitation.” David Norman Geol Mag 2010 Companion website This book includes a companion website at: www.blackwellpublishing.com/paleobiology The website includes: · An ongoing database of additional Practical’s prepared by the authors · Figures from the text for downloading · Useful links for each chapter · Updates from the authors

Introduction to Paleobiology and the Fossil Record - Michael J. Benton 2009-02-02

This book presents a comprehensive overview of the science of the history of life. Paleobiologists bring many analytical tools to bear in interpreting the fossil record and the book introduces the latest techniques, from multivariate investigations of biogeography and biostratigraphy to engineering analysis of dinosaur skulls, and from homeobox genes to cladistics. All the well-known fossil groups are included, including microfossils and invertebrates, but an important feature is the thorough coverage of plants, vertebrates and trace fossils together with discussion of the origins of both life and the metazoans. All key related subjects are introduced, such as systematics, ecology, evolution and development, stratigraphy and their roles in understanding where life came from and how it evolved and diversified.

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Introduction to Palaeobiology - Bernhard Ziegler 1984-03-01

Bringing Fossils To Life: An Introduction To Paleobiology - Donald R. Prothero 2004

This is the first text to combine both paleontology and paleobiology.

Traditional textbooks treat these separately, despite the recent trend to combine them in teaching. It bridges the gap between purely theoretical paleobiology and purely descriptive invertebrate paleontology books. The text is targeted at undergraduate geology and biology majors, with the emphasis on organisms, rather than dead objects to be described and catalogued. Current ideas from modern biology, ecology, population genetics, and many other concepts will be applied to the study of the fossil record.

Stratigraphic Paleobiology - Mark E. Patzkowsky 2012-04-16

This work weaves important strands of the paleontological literature into a coherent worldview that emphasizes the importance of understanding the geological record.

Tyrannosaurid Paleobiology - J. Michael Parrish 2013-07-05

Drawn from a 2005 international symposium, these essays explore current tyrannosaurid current research and discoveries regarding Tyrannosaurus rex. The opening of an exhibit focused on “Jane,” a beautifully preserved tyrannosaur collected by the Burpee Museum of Natural History, was the occasion for an international symposium on tyrannosaur paleobiology. This volume, drawn from the symposium, includes studies of the tyrannosaurids Chingkankousaurus fragilis and “Sir William” and the generic status of Nanotyrannus; theropod teeth, pedal proportions, brain size, and craniocervical function; soft tissue reconstruction, including that of “Jane”;

paleopathology and tyrannosaurid claws; dating the “Jane” site; and tyrannosaur feeding and hunting strategies. Tyrannosaurid Paleobiology highlights the far ranging and vital state of current tyrannosaurid dinosaur research and discovery. “Despite being discovered over 100 years ago, Tyrannosaurus rex and its kin still inspire researchers to ask fundamental questions about what the best known dinosaur was like as a living, breathing animal. Tyrannosaurid Paleobiology present a series of wide-ranging and innovative studies that cover diverse topics such as how tyrannosaurs attacked and dismembered prey, the shapes and sizes of feet and brains, and what sorts of injuries individuals sustained and lived with. There are also examinations of the diversity of tyrannosaurs, determinations of exactly when different kinds lived and died, and what goes into making a museum exhibit featuring tyrannosaurs. This volume clearly shows that there is much more to the study of dinosaurs than just digging up and cataloguing old bones.” —Donald M. Henderson, Royal Tyrrell Museum of Palaeontology

Urumaco and Venezuelan Paleontology - Marcelo R. SÃ¡nchez-Villagra 2010-07-16

Urumaco and Venezuelan Paleontology offers a synthesis of the paleontological record of Venezuela, including new discoveries on stratigraphy, paleobotany, fossil invertebrates, and vertebrates. Besides providing a critical summary of the record of decapods, fishes, crocodiles, turtles, rodents,

armadillos, and ungulates, several chapters introduce new information on the distribution and paleobiology of groups not previously studied in this part of the world. Given its position in the northern neotropics, close to the Panamanian land bridge, Venezuela is a key location for understanding faunal exchanges between the Americas in the recent geological past. The book reviews the recent paleobotanical and vertebrate fossil record of the region, provides an understanding of Pleistocene climatic change and biogeography for the last few thousand years, and integrates new information with summaries of Spanish language works on Venezuelan geology and paleontology.

Atlas of Taphonomic Identifications - Yolanda Fernandez-Jalvo 2016-07-28

The aim of the atlas is to provide images of taphonomic modifications, making it as comprehensive as possible with evidence presently available. This volume is intended both as a field guide for identifying taphonomic modifications in the field, and for use in the laboratory when collections of fossils are being analyzed. Images in the book are a combination of scanning electron micrographs, regular photographs, cross-sections of bones and line drawings and graphs. By providing good quality illustrations of taphonomic modifications, with links between similar types of modification, the atlas provides a reference source for identifying the agents responsible for the modifications, the processes by which they were formed, and the potential bias introduced by the processes. The

authors also aim to emphasize on the directions they consider taphonomic studies should be headed. Firstly, we should seek to quantify the degree of bias introduced into a fossil fauna and to take account of this bias before interpreting the palaeoecology of the fossil site. Secondly, we should recognize that taphonomic modifications increase the information encoded in fossils by identifying perimortem and postmortem contexts. This provides a more dynamic and realistic view of the past.

Nautilus - W. Bruce Saunders 2009-12-17

1. 1 Nautilus and Allonautilus: Two Decades of Progress W. Bruce Saunders Department of Geology Bryn Mawr College Bryn Mawr PA 19010 wsaunder@brynmawr. edu Neil H. Landman Division of Paleontology American Museum of Natural History New York, New York 10024 landman@amnh. org When Nautilus: Biology and Paleobiology of a Living Fossil was published in 1987, it marked a milestone in cross-disciplinary collaboration. More than half of the contributing authors (36/65) were paleontologists, many of whom were collaborating with neontological counterparts. Their interest in studying this reclusive, poorly known animal was being driven by a search for clues to the mode of life and natural history of the once dominant shelled cephalopods, through study of the sole surviving genus. At the same time, Nautilus offered an opportunity for neontologists to look at a fundamentally different, phylogenetically basal member of the

extant Cephalopoda. It was a w- win situation, combining paleontological deep-time perspectives, old fashioned expeditionary zeal, traditional biological approaches and new techniques. The results were cross-fertilized investigations in such disparate fields as ecology, functional morphology, taphonomy, genetics, phylogeny, locomotive dynamics, etc. As one reviewer of the xxxvi Introduction xxxvii book noted, Nautilus had gone from being one of the least known to one of the best understood of living cephalopods.

Dinosaur Paleobiology - Stephen L. Brusatte 2012-04-30

The study of dinosaurs has been experiencing a remarkable renaissance over the past few decades. Scientific understanding of dinosaur anatomy, biology, and evolution has advanced to such a degree that paleontologists often know more about 100-million-year-old dinosaurs than many species of living organisms. This book provides a contemporary review of dinosaur science intended for students, researchers, and dinosaur enthusiasts. It reviews the latest knowledge on dinosaur anatomy and phylogeny, how dinosaurs functioned as living animals, and the grand narrative of dinosaur evolution across the Mesozoic. A particular focus is on the fossil evidence and explicit methods that allow paleontologists to study dinosaurs in rigorous detail. Scientific knowledge of dinosaur biology and evolution is shifting fast, and this book aims to summarize current understanding of dinosaur science in a technical, but accessible, style, supplemented with

vivid photographs and illustrations. The Topics in Paleobiology Series is published in collaboration with the Palaeontological Association, and is edited by Professor Mike Benton, University of Bristol. Books in the series provide a summary of the current state of knowledge, a trusted route into the primary literature, and will act as pointers for future directions for research. As well as volumes on individual groups, the series will also deal with topics that have a cross-cutting relevance, such as the evolution of significant ecosystems, particular key times and events in the history of life, climate change, and the application of a new techniques such as molecular palaeontology. The books are written by leading international experts and will be pitched at a level suitable for advanced undergraduates, postgraduates, and researchers in both the paleontological and biological sciences. Additional resources for this book can be found at: http://www.wiley.com/go/brusatte/dinosaurpaleobiology.

Paleontological Data Analysis - Øyvind Hammer 2008-04-15

During the last 10 years numerical methods have begun to dominate paleontology. These methods now reach far beyond the fields of morphological and phylogenetic analyses to embrace biostratigraphy, paleobiogeography, and paleoecology. Paleontological Data Analysis explains the key numerical techniques in paleontology, and the methodologies employed in the software packages now available.

Following an introduction to numerical methodologies in paleontology, and to univariate and multivariate techniques (including inferential testing), there follow chapters on morphometrics, phylogenetic analysis, paleobiogeography and paleoecology, time series analysis, and quantitative biostratigraphy Each chapter describes a range of techniques in detail, with worked examples, illustrations, and appropriate case histories Describes the purpose, type of data required, functionality, and implementation of each technique, together with notes of caution where appropriate The book and the accompanying PAST software package (see www.blackwellpublishing.com/hammer) are important investigative tools in a rapidly developing field characterized by many exciting new discoveries and innovative techniques An invaluable tool for all students and researchers involved in quantitative paleontology

Fossil Horses - Bruce J. MacFadden 1994-06-24

The horse has frequently been used as a classic example of long-term evolution because it possesses an extensive fossil record. This book synthesizes the large body of data and research relevant to an understanding of fossil horses from perspectives such as biology, geology, paleontology.

Cradle of Life - J. William Schopf 2021-10-12

One of the greatest mysteries in reconstructing the history of life on Earth has been the apparent absence

of fossils dating back more than 550 million years. We have long known that fossils of sophisticated marine life-forms existed at the dawn of the Cambrian Period, but until recently scientists had found no traces of Precambrian fossils. The quest to find such traces began in earnest in the mid-1960s and culminated in one dramatic moment in 1993 when William Schopf identified fossilized microorganisms three and a half billion years old. This startling find opened up a vast period of time--some eighty-five percent of Earth's history--to new research and new ideas about life's beginnings. In this book, William Schopf, a pioneer of modern paleobiology, tells for the first time the exciting and fascinating story of the origins and earliest evolution of life and how that story has been unearthed. Gracefully blending his personal story of discovery with the basics needed to understand the astonishing science he describes, Schopf has produced an introduction to paleobiology for the interested reader as well as a primer for beginning students in the field. He considers such questions as how did primitive bacteria, pond scum, evolve into the complex life-forms found at the beginning of the Cambrian Period? How do scientists identify ancient microbes and what do these tiny creatures tell us about the environment of the early Earth? (And, in a related chapter, Schopf discusses his role in the controversy that swirls around recent claims of fossils in the famed meteorite from Mars.) Like all great teachers,

Schopf teaches the non-specialist enough about his subject along the way that we can easily follow his descriptions of the geology, biology, and chemistry behind these discoveries. Anyone interested in the intriguing questions of the origins of life on Earth and how those origins have been discovered will find this story the best place to start.

Introduction to Paleobiology - B. Ziegler 1983

The Paleobiology of Australopithecus - Kaye E. Reed 2013-03-15

Australopithecus species have been the topic of much debate in palaeoanthropology since Raymond Dart described the first species, Australopithecus africanus, in 1925. This volume synthesizes the geological and paleontological context of the species in East and South Africa; covers individual sites, such as Dikika, Hadar, Sterkfontein, and Malapa; debates the alpha taxonomy of some of the species; and addresses questions regarding the movements of the species across the continent. Additional chapters discuss the genus in terms of sexual dimorphism, diet reconstruction using microwear and isotopic methodologies, postural and locomotor behavior, and ontogeny.

Principles of Paleontology - David Raup 1978-03-15

Explains in a clear and concise manner the factors involved in the description and classification of fossils and the practical applications of paleontologic data

Understanding Fossils - Peter Doyle

2014-08-15
The first introductory palaeontology text which demonstrates the importance of selected fossil groups in geological and biological studies, particularly in understanding evolutionary patterns, palaeoenvironmental analysis, and stratigraphy. Part one explores several key concepts, such as the processes of fossil preservation, the determination of evolutionary patterns, and use of fossils and statigraphical tools. Part two introduces the main fossil groups of value in these applied fields. Part three concentrates on the examination of important case histories which demonstrate the use of fossils in diverse practical examples. Evolutionary studies, palaeoenvironmental analysis, and stratigraphical applications are documented using up-to-date examples supported by overviews of the principles.

The White River Badlands - Rachel C. Benton 2015-05-25
This guide to the South Dakota region that houses the world’s richest fossil beds does “an excellent job of presenting the current state of knowledge” (Choice). The forbidding Big Badlands in Western South Dakota contain the richest fossil beds in the world. Even today these rocks continue to yield new specimens brought to light by snowmelt and rain washing away soft rock deposited on a floodplain long ago. The quality and quantity of the fossils are superb: most of the species to be found there are known from hundreds of specimens. The fossils in the White River Group

(and similar deposits in the American west) preserve the entire late Eocene through the middle Oligocene, roughly 35-30 million years ago and more than thirty million years after non-avian dinosaurs became extinct. The fossils provide a detailed record of a period of abrupt global cooling and what happened to creatures who lived through it. This book is a comprehensive reference to the sediments and fossils of the Big Badlands, and also touches on National Park Service management policies that help protect such significant fossils. Includes photos and illustrations “A worthy successor to the work of O’Harra.” —Journal of Vertebrate Paleontology

Bringing Fossils to Life - Donald R. Prothero 2013-11-05

One of the leading textbooks in its field, Bringing Fossils to Life applies paleobiological principles to the fossil record while detailing the evolutionary history of major plant and animal phyla. It incorporates current research from biology, ecology, and population genetics, bridging the gap between purely theoretical paleobiological textbooks and those that describe only invertebrate paleobiology and that emphasize cataloguing live organisms instead of dead objects. For this third edition Donald R. Prothero has revised the art and research throughout, expanding the coverage of invertebrates and adding a discussion of new methodologies and a chapter on the origin and early evolution of life.

Evolution of Vertebrate Design - Leonard B. Radinsky 2015-02-26

The Evolution of Vertebrate Design is a solid introduction to vertebrate evolution, paleontology, vertebrate biology, and functional, comparative anatomy. Its lucid style also makes it ideal for general readers intrigued by fossil history. Clearly drawn diagrams illustrate biomechanical explanations of the evolution of fins, jaws, joints, and body shapes among vertebrates. A glossary of terms is included. "A luminous text is matched by lucid drawings rationally placed. . . . A great teaching monograph, the book will charm lay readers of fossil history. For virtually every college & public collection."—Scitech Book News

Basic Palaeontology - Michael J. Benton 1997

Palaeontology, a fundamental topic in geology and evolutionary biology, has undergone exciting and rapid change in recent years. Contemporary debates on mass extinctions and the origin of life have had profound implications for our understanding of how life evolved. Basic Palaeontology is a comprehensive and accessible introduction to palaeontology. With in-depth analysis of basic principles and all the main fossil groups, this fully illustrated text presents new and exciting research on the origin and history of life. The text focuses on traditional topics such as marine invertebrate palaeontology and biostratigraphy, but also provides unique and unparalleled taxonomic coverage from microfossils to plants and vertebrates. Key Features include: - Covers important recent developments in macroevolution and

mass extinctions - A strong focus on a statistical and quantitative approach, emphasising the vital importance of both applications and theory - Full coverage of the evolution of vertebrates and plants - Over 600 highly detailed illustrations - An accessible format with extensive boxed material and bullet points Basic Palaeontology is essential reading for undergraduate students of geology, environmental science and biology, taking courses in palaeontology, palaeobiology, palaeoecology or evolution, and will also be of interest to all those who have an interest in the origin of life and human evolution. Michael J Benton is a Reader in the Department of Geology, University of Bristol, UK. David A T Harper is a Lecturer in Geology at the Department of Geology, University College Galway, Ireland.

Introduction to Palaeobiology - Bernhard Ziegler 1983

Paleontological Collections of Germany, Austria and Switzerland - Lothar A. Beck 2018-11-19

This book is devoted to 250 years of collecting, organizing and preserving paleontological specimens by generations of scientists. Paleontological collections are a huge resource for modern research and should be available for national and international scientists and institutions, as well as prospective public and private customers. These collections are an important part of the scientific enterprise, supporting research, public education, and the documentation of past biodiversity. Much of what we are beginning to

understand about our world, we owe to the collection, preservation, and ongoing study of natural specimens. Properly preserved collections of fossil marine or terrestrial plants and animals are archives of Earth's history and vital to our ability to learn about our place in its future. The approach employed by the editors involves not only an introduction to the paleontological collections in general, but also information on the international and national collection networks. Particular attention is given to new exhibition concepts and approaches of sorting, preserving and researching in paleontological collections and also their neglect and/or threat. In addition, the book provides information on all big public museums, on important state museums and regional Museums, and also on university collections. This is a highly informative and carefully presented book, providing scientific insight for readers with an interest in fossil record, biodiversity, taxonomy, or evolution, as well as natural history collections at large.

Introduction to Paleobiology and the Fossil Record - Michael J. Benton 2020-06-02

This book presents a comprehensive overview of the science of the history of life. Paleobiologists bring many analytical tools to bear in interpreting the fossil record and the book introduces the latest techniques, from multivariate investigations of biogeography and biostratigraphy to engineering analysis of dinosaur skulls, and from homeobox genes to cladistics. All the well-known fossil groups are

included, including microfossils and invertebrates, but an important feature is the thorough coverage of plants, vertebrates and trace fossils together with discussion of the origins of both life and the metazoans. All key related subjects are introduced, such as systematics, ecology, evolution and development, stratigraphy and their roles in understanding where life came from and how it evolved and diversified. Unique features of the book are the numerous case studies from current research that lead students to the primary literature, analytical and mathematical explanations and tools, together with associated problem sets and practical schedules for instructors and students. New to this edition The text and figures have been updated throughout to reflect current opinion on all aspects New case studies illustrate the chapters, drawn from a broad distribution internationally Chapters on Macroevolution, Form and Function, Mass extinctions, Origin of Life, and Origin of Metazoans have been entirely rewritten to reflect substantial advances in these topics There is a new focus on careers in paleobiology

The Paleobiological Revolution - David Sepkoski 2009-10-15

The Paleobiological Revolution chronicles the incredible ascendance of the once-maligned science of paleontology to the vanguard of a field. With the establishment of the modern synthesis in the 1940s and the pioneering work of George Gaylord Simpson, Ernst Mayr, and Theodosius Dobzhansky, as well as the subsequent

efforts of Stephen Jay Gould, David Raup, and James Valentine, paleontology became embedded in biology and emerged as paleobiology, a first-rate discipline central to evolutionary studies. Pairing contributions from some of the leading actors of the transformation with overviews from historians and philosophers of science, the essays here capture the excitement of the seismic changes in the discipline. In so doing, David Sepkoski and Michael Ruse harness the energy of the past to call for further study of the conceptual development of modern paleobiology.