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How the Earth Turned Green - Joseph E. Armstrong 2015-07-08

On this blue planet, long before pterodactyls took to the skies and tyrannosaurs prowled the continents, tiny green organisms populated the ancient oceans. Fossil and phylogenetic evidence suggests that chlorophyll, the green pigment responsible for coloring these organisms, has been in existence for some 85% of Earth's long history—that is, for roughly 3.5 billion years. In *How the Earth Turned Green*, Joseph E. Armstrong traces the history of these verdant organisms, which many would call plants, from their ancient beginnings to the diversity of green life that inhabits the Earth today. Using an evolutionary framework, *How the Earth Turned Green* addresses questions such as: Should all green organisms be considered plants? Why do these organisms look the way they do? How are they related to one another and to other chlorophyll-free organisms? How do they reproduce? How have they changed and diversified over time? And how has the presence of green organisms changed the Earth's ecosystems? More engaging than a traditional textbook and displaying an astonishing breadth, *How the Earth Turned Green* will both delight and enlighten embryonic botanists and any student interested in the evolutionary history of plants.

The Future of Phylogenetic Systematics - David Williams 2016-07-21

This book documents Willi Hennig's founding of phylogenetic systematics and the relevancy of his work for the future of cladistics.

Systematic Botany of Flowering Plants - R E. Spichiger 2019-03-29

The principle objective of this book is to describe a range of families of flowering plants in a sequence corresponding to current phylogenetic classification based on the most recent results of molecular systematics. The selection of families is large and comprises families of temperate European flora as well as tropical flora. They are integrated in their respective orders and keys are given to help the reader recognize them. Each family is richly illustrated, the identifying characters being shown as clearly as possible. A glossary complements the overall didactic qualities of this reference.

Phylogenetics - E. O. Wiley 2011-10-11

The long-awaited revision of the industry standard on phylogenetics Since the publication of the first edition of this landmark volume more than twenty-five years ago, phylogenetic systematics has taken its place as the dominant paradigm of systematic biology. It has profoundly influenced the way scientists study evolution, and has seen many theoretical and technical advances as the field has continued to grow. It goes almost without saying that the next twenty-five years of phylogenetic research will prove as fascinating as the first, with many exciting developments yet to come. This new edition of *Phylogenetics* captures the very essence of this rapidly evolving discipline. Written for the practicing systematist and phylogeneticist, it addresses both the philosophical and technical issues of the field, as well as surveys general practices in taxonomy. Major sections of the book deal with the nature of species and higher taxa, homology and characters, trees and tree graphs, and biogeography—the purpose being to develop biologically relevant species, character, tree, and biogeographic concepts that can be applied fruitfully to phylogenetics. The book then turns its focus to phylogenetic trees, including an in-depth guide to tree-building algorithms. Additional coverage includes: Parsimony and parsimony analysis Parametric phylogenetics including maximum likelihood and Bayesian approaches Phylogenetic classification Critiques of evolutionary

taxonomy, phenetics, and transformed cladistics Specimen selection, field collecting, and curating Systematic publication and the rules of nomenclature Providing a thorough synthesis of the field, this important update to *Phylogenetics* is essential for students and researchers in the areas of evolutionary biology, molecular evolution, genetics and evolutionary genetics, paleontology, physical anthropology, and zoology.

Plant Biosystematics - William F. Grant 2013-09-25

Plant Biosystematics is a compendium of papers from a symposium titled "Plant Biosystematics: Forty Years Later" held in Montreal in July 1983. This collection reviews the current field of biosystematics, particularly the evolution of natural biota, and how plant biosystematics can contribute to the welfare of humans. One paper reviews biosystematics, compares new approaches, and discusses the latest trend in comparative, molecular evolution of genes. One author discusses the cytology and biosystematics concerning the discontinuities and genetic independence occurring in the evolutionary process. Another author discusses chromosome pairing in species and hybrids that includes models of chromosome pairing in diploids. The text also describes chromosome banding and biosystematics, as well as the problems of chromosome banding that should be addressed to in future research. With estimates of the number of species being threatened with extinction numbering around 20,000 one paper address the issue of conservation and biosystematics. The author suggests that more biological information should be published to avoid duplication of effort, and possibly drive scientists to have their views more widely felt. Agriculturists, botanists, conservationists, environmentalists, and researchers in the field of botany, conservation, and plant genealogy will find this book valuable.

Tempo and Mode in Evolution - for the National Academy of Sciences 1995-02-09

Since George Gaylord Simpson published *Tempo and Mode in Evolution* in 1944, discoveries in paleontology and genetics have abounded. This volume brings together the findings and insights of today's leading experts in the study of evolution, including Ayala, W. Ford Doolittle, and Stephen Jay Gould. The volume examines early cellular evolution, explores changes in the tempo of evolution between the Precambrian and Phanerozoic periods, and reconstructs the Cambrian evolutionary burst. Long-neglected despite Darwin's interest in it, species extinction is discussed in detail. Although the absence of data kept Simpson from exploring human evolution in his book, the current volume covers morphological and genetic changes in human populations, contradicting the popular claim that all modern humans descend from a single woman. This book discusses the role of molecular clocks, the results of evolution in 12 populations of *Escherichia coli* propagated for 10,000 generations, a physical map of *Drosophila* chromosomes, and evidence for "hitchhiking" by mutations.

The Gymnosperms - Chhaya Biswas 2013-11-09

The Gymnosperms is a well-illustrated comprehensive account of living and fossil plants of this group. Chapters 1 and 2 give a general account, and describe similarities and dissimilarities with pteridophytes and angiosperms. Chapter 3 deals with classification. The next 18 chapters (4-21) deal sequentially with fossil and living taxa. Phylogenetic relationships are considered for each order. Chapter 22 discusses the in vitro experimental studies on the growth, development and differentiation of vegetative and reproductive

organs and tissues. Chapter 23 summarizes the economic importance of gymnosperms. Chapter 24 gives the concluding remarks. Thus, there is a complete coverage of significant findings concerning morphology, anatomy, reproduction, development of embryo and seed, cytology, and -evolutionary trends and phylogeny. Ultrastructural and histochemical details are given wherever considered necessary. There is a comprehensive list of literature citations, and a plant index. This book is essentially meant for the postgraduate students in India and abroad. Undergraduate students can also use it profitably. The entire course should be taught in 25-30 lectures/hours and about 75 hours of field and laboratory work.

The Chlamydomonas Sourcebook: Organellar and Metabolic Processes - Arthur Grossman
2022-05-01

The Chlamydomonas Sourcebook, Third Edition, Volume Two: Organellar and Metabolic Processes has been fully revised and updated to include a wealth of new resources for the Chlamydomonas community. Long known for its comprehensive insights into this highly multidisciplinary topic, this edition includes new views on Chlamydomonas branched electron transfer pathways in photosynthesis, the organization of pyrenoids and CO₂ concentration mechanisms, and the fermentative-aspects of dark metabolism. Further, the book covers Chlamydomonas and its use in microalgae biotechnology. In addition to updates to previous editions, this book presents the latest in research and best practices, thus making it a must-have resource for those working with the Chlamydomonas organism. Describes molecular techniques, analysis of the recently sequenced genome, and reviews of the current status of the diverse fields in which Chlamydomonas is used as a model organism Provides methods for Chlamydomonas research and best practices for applications in research, including methods for culture, preservation of cultures, preparation of media, lists of inhibitors, and other additives to culture media Assists researchers with common laboratory problems such as contamination

Plant Systematics - Walter S. Judd 2002

Incorporating phylogenetic principles and methods throughout, this text moves from the careful explanation of phylogenetic methods and principles to the taxonomic survey of vascular plant families. A much expanded CD-ROM is included, containing over 2,200 colour photos illustrating the diagnostic characters of plant families covered in the text. Appropriate for any course devoted to the systematics of plants, this text assumes no prerequisites other than introductory botany or biology.

Guide to Flowering Plant Families - Wendy B. Zomlefer 1994

Guide to Flowering Plant Families

Plant Taxonomy - Tod F. Stuessy 2009-01-01

The field of plant taxonomy has transformed rapidly over the past fifteen years, especially with regard to improvements in cladistic analysis and the use of new molecular data. The second edition of this popular resource reflects these far-reaching and dramatic developments with more than 3,000 new references and many new figures. Synthesizing current research and trends, Plant Taxonomy now provides the most up-to-date overview in relation to monographic, biodiversity, and evolutionary studies, and continues to be an essential resource for students and scholars. This text is divided into two parts: Part 1 explains the principles of taxonomy, including the importance of systematics, characters, concepts of categories, and different approaches to biological classification. Part 2 outlines the different types of data used in plant taxonomic studies with suggestions on their efficacy and modes of presentation and evaluation. This section also lists the equipment and financial resources required for gathering each type of data. References throughout the book illuminate the historical development of taxonomic terminology and philosophy while citations offer further study. Plant Taxonomy is also a personal story of what it means to be a practicing taxonomist and to view these activities within a meaningful conceptual framework. Tod F. Stuessy recalls the progression of his own work and shares his belief that the most creative taxonomy is done by those who have a strong conceptual grasp of their own research.

Status of Pollinators in North America - National Research Council 2007-05-13

Pollinators-insects, birds, bats, and other animals that carry pollen from the male to the female parts of flowers for plant reproduction-are an essential part of natural and agricultural ecosystems throughout North America. For example, most fruit, vegetable, and seed crops and some crops that provide fiber, drugs, and fuel depend on animals for pollination. This report provides evidence for the decline of some

pollinator species in North America, including America's most important managed pollinator, the honey bee, as well as some butterflies, bats, and hummingbirds. For most managed and wild pollinator species, however, population trends have not been assessed because populations have not been monitored over time. In addition, for wild species with demonstrated declines, it is often difficult to determine the causes or consequences of their decline. This report outlines priorities for research and monitoring that are needed to improve information on the status of pollinators and establishes a framework for conservation and restoration of pollinator species and communities.

Here Be Dragons - Dennis McCarthy 2011-06-09

Why do we find polar bears only in the Arctic and penguins only in the Antarctic? Why do oceanic islands often have many types of birds but no large native mammals? As Charles Darwin and Alfred Russel Wallace travelled across distant lands studying the wildlife they both noticed that the distribution of plants and animals formed striking patterns - patterns that held strong clues to the past of the planet. The study of the spatial distribution of living things is known as biogeography. It is a field that could be said to have begun with Darwin and Wallace. In this lively book, Denis McCarthy tells the story of biogeography, from the 19th century to its growth into a major field of interdisciplinary research in the present day. It is a story that encompasses two great, insightful theories that were to provide the explanations to the strange patterns of life across the world - evolution, and plate tectonics. We find animals and plants where we do because, over time, the continents have moved, separating and coalescing in a long, slow dance; because sea levels have risen, cutting off one bit of land from another, and fallen, creating land bridges; because new and barren volcanic islands have risen up from the sea; and because animals and plants vary greatly in their ability to travel, and separation has caused the formation of new species. The story of biogeography is the story of how life has responded and has in turn altered the ever changing Earth. It is a narrative that includes many fascinating tales - of pygmy mammoths and elephant birds; of changing landscapes; of radical ideas by bold young scientists first dismissed and later, with vastly growing evidence, widely accepted. The story is not yet done: there are still questions to be answered and biogeography is a lively area of research and debate. But our view of the planet has been changed profoundly by biogeography and its related fields: the emerging understanding is of a deeply interconnected system in which life and physical forces interact dynamically in space and time.

Esau's Plant Anatomy - Ray F. Evert 2006-09-18

This revision of the now classic Plant Anatomy offers a completely updated review of the structure, function, and development of meristems, cells, and tissues of the plant body. The text follows a logical structure-based organization. Beginning with a general overview, chapters then cover the protoplast, cell wall, and meristems, through to phloem, periderm, and secretory structures. "There are few more iconic texts in botany than Esau's Plant Anatomy... this 3rd edition is a very worthy successor to previous editions..." ANNALS OF BOTANY, June 2007

Contemporary Plant Systematics - Dennis W. Woodland 2000

"It has been written to teach basic botanical facts as applied to vascular plants; relates these facts to systematic principles; shows how systematic principles are important to contemporary botanical and environmental issues from a global perspective; and allows the student access to computer botanical images." -- Andrews University Press.

A Botanist's Vocabulary - Susan K. Pell 2016-05-25

For anyone looking for a deeper appreciation of the wonderful world of plants! Gardeners are inherently curious. They make note of a plant label in a botanical garden and then go home to learn more. They pick up fallen blossoms to examine them closer. They spend hours reading plant catalogs. But they are often unable to accurately name or describe their discoveries. A Botanist's Vocabulary gives gardeners and naturalists a better understanding of what they see and a way to categorize and organize the natural world in which they are so intimately involved. Through concise definitions and detailed black and white illustrations, it defines 1300 words commonly used by botanists, naturalists, and gardeners to describe plants.

An Introduction to Plant Structure and Development - Charles B. Beck 2010-04-22

A plant anatomy textbook unlike any other on the market today. Carol A. Peterson described the first

edition as 'the best book on the subject of plant anatomy since the texts of Esau'. Traditional plant anatomy texts include primarily descriptive aspects of structure, this book not only provides a comprehensive coverage of plant structure, but also introduces aspects of the mechanisms of development, especially the genetic and hormonal controls, and the roles of plasmodesmata and the cytoskeleton. The evolution of plant structure and the relationship between structure and function are also discussed throughout. Includes extensive bibliographies at the end of each chapter. It provides students with an introduction to many of the exciting, contemporary areas at the forefront of research in the development of plant structure and prepares them for future roles in teaching and research in plant anatomy.

Plant Systematics - Gurcharan Singh 2004

"The book strikes a balance between classical fundamental information and the recent developments in plant systematics. Special attention has been devoted to the information on botanical nomenclature, identification and phylogeny of angiosperms with numerous relevant examples and detailed explanation of the important nomenclatural problems. An attempt has been made to present a continuity between orthodox and contemporary identification methods by working on a common example. The methods of identification using computers have been further explored to help better online identification. The chapter on cladistic methods has been totally revised, and molecular systematics discussed in considerable detail."-- Jacket.

Lunar Sourcebook - Grant Heiken 1991-04-26

The only work to date to collect data gathered during the American and Soviet missions in an accessible and complete reference of current scientific and technical information about the Moon.

Systematics, Evolution, and Biogeography of Compositae - Vicki A. Funk 2009

"This spectacular book does full justice to the Compositae (Asteraceae), the largest and most successful flowering plant family with some 1700 genera and 24,000 species. It is an indispensable reference, providing the most up-to-date hypotheses of phylogenetic relationships in the family based on molecular and morphological characters, along with the corresponding subfamilial and tribal classification. The 2009 work not only integrates the extensive molecular phylogenetic analyses conducted in the last 25 years, but also uses these to produce a metatree for about 900 taxa of Compositae. The book contains 44 chapters, contributed by 80 authors, covering the history, economic importance, character variation, and systematic and phylogenetic diversity of the family. The emphasis of this work is phylogenetic; its chapters provide a detailed, current, and thoroughly documented presentation of the major (and not so major) clades in the family, citing some 2632 references. Like the Compositae, the book is massive, diverse, and fascinating. It is beautifully illustrated, with 170 figures, and an additional 108 cladograms (all consistently color-coded, based on the geographic range of the included taxa); within these figures are displayed 443 color photographs, clearly demonstrating the amazing array of floral and vegetative form expressed by members of the clade." --NHBS Environment Bookstore.

Introduction to Plant Physiology - William G. Hopkins 2009

Textbook, concepts, experimental data.

Plant Systematics - Michael G. Simpson 2010-07-19

Plant Systematics, Second Edition, provides the basis for teaching an introduction to the morphology, evolution, and classification of land plants. It presents a foundation of the approach, methods, research goals, evidence, and terminology of plant systematics, along with the most recent knowledge of evolutionary relationships of plants and practical information vital to the field. This updated edition has been expanded to include 15 fern families, 9 gymnosperm families, and increased angiosperm family treatments from 100 to 129. Each family description includes a plate of full color photographs, illustrating exemplars of the group along with dissected and labeled material to show diagnostic features. The book includes a new chapter on species concepts and the role and impact of plant systematics in conservation biology, and a new appendix on statistical and morphometric techniques in plant systematics. It also contains more detailed explanations of maximum likelihood and Bayesian phylogeny inference methods, an expanded coverage and glossary of morphological terms, and an updated chapter on botanical nomenclature. This book is recommended for graduate and undergraduate students in botany, plant taxonomy, plant systematics, plant pathology, plant anatomy, and ecology as well as scientists and

researchers in any of the plant sciences. The second edition of *Plant Systematics* has been expanded to include: Fifteen fern families, 9 gymnosperm families, and an increase of angiosperm family treatments from 100 to 129. Each family description includes a plate of full color photographs, illustrating exemplars of the group along with dissected and labeled material to show diagnostic features A new chapter on species concepts and the role and impact of plant systematics in conservation biology A new appendix on statistical and morphometric techniques in plant systematics In addition, the second edition contains more detailed explanations of maximum likelihood and Bayesian phylogeny inference methods, an expanded coverage and glossary of morphological terms, and an updated chapter on botanical nomenclature

Contemporary Plant Systematics - Dennis W. Woodland 1997

CD-ROM disk contains color 3,000 botanical images representing over 150 families and 850 genera of vascular plants.

Diversity and Classification of Flowering Plants - Armen Leonovich Takhtadzhian 1997

The culmination of more than fifty years of research by the foremost living expert on plant classification, *Diversity and Classification of Flowering Plants* is an important contribution to the field of plant taxonomy. In the last decade, the system of classifying plants has been thoroughly revised. Instead of describing every individual family, Takhtajan includes descriptions in keys to families, which he calls "descriptive keys." The advantage of descriptive keys is that they give both the characteristic features of the families and their differences. The delimitation of families and orders drastically differs from the one accepted by the Englerian school and from the one accepted in Arthur Cronquist's system. Takhtajan favors the smaller, more natural families and orders, which are more coherent and better-defined, where characters are easily grasped, and which are more suitable for information retrieval and phylogenetic studies, including cladistic analysis (because it reduces polymorphic codings).

Plant Systematics - Michael G. Simpson 2011-08-09

Plant Systematics is a comprehensive and beautifully illustrated text, covering the most up-to-date and essential paradigms, concepts, and terms required for a basic understanding of plant systematics. This book contains numerous cladograms that illustrate the evolutionary relationships of major plant groups, with an emphasis on the adaptive significance of major evolutionary novelties. It provides descriptions and classifications of major groups of angiosperms, including over 90 flowering plant families; a comprehensive glossary of plant morphological terms, as well as appendices on botanical illustration and plant descriptions. Pedagogy includes review questions, exercises, and references that complement each chapter. This text is ideal for graduate and undergraduate students in botany, plant taxonomy, plant systematics, plant pathology, ecology as well as faculty and researchers in any of the plant sciences. * The Henry Allan Gleason Award of The New York Botanical Garden, awarded for "Outstanding recent publication in the field of plant taxonomy, plant ecology, or plant geography" (2006) * Contains numerous cladograms that illustrate the evolutionary relationships of major plant groups, with an emphasis on the adaptive significance of major evolutionary novelties * Provides descriptions and classifications of major groups of angiosperms, including over 90 flowering plant families * Includes a comprehensive glossary of plant morphological terms as well as appendices on botanical illustration and plant description

Biodiversity Conservation and Phylogenetic Systematics - Roseli Pellens 2016-02-24

This book is about phylogenetic diversity as an approach to reduce biodiversity losses in this period of mass extinction. Chapters in the first section deal with questions such as the way we value phylogenetic diversity among other criteria for biodiversity conservation; the choice of measures; the loss of phylogenetic diversity with extinction; the importance of organisms that are deeply branched in the tree of life, and the role of relict species. The second section is composed by contributions exploring methodological aspects, such as how to deal with abundance, sampling effort, or conflicting trees in analysis of phylogenetic diversity. The last section is devoted to applications, showing how phylogenetic diversity can be integrated in systematic conservation planning, in EDGE and HEDGE evaluations. This wide coverage makes the book a reference for academics, policy makers and stakeholders dealing with biodiversity conservation.

Plant Systematics - Walter S. Judd 2015-10-01

Fourth Edition of *Plant Systematics* reflects changes in the circumscription of many orders and families to represent monophyletic groups, following the most recent classification of the Angiosperm Phylogeny

Group.

Plant Systematics - Gurcharan Singh 2019-06-07

This fourth edition of *Plant Systematics* is completely revised and updated. It incorporates the updated International Code of Nomenclature for Algae, Fungi and Plants (Shenzhen Code, 2018), the new version of PhyloCode (Beta version of PhyloCode 5, 2014), APweb version 14 (September, 2018), revised Angiosperm Phylogeny Group classification (APG IV, 2016), new Pteridophyte Phylogeny Group Classification (PPG I, 2016), besides the updates since the publication of third edition. The book is a blend of classical fundamental aspects and recent developments, especially in the field of molecular systematics, cladistics and computer identification. Special attention has been given to information on botanical nomenclature, identification, molecular systematics and phylogeny of angiosperms. The complicated concepts of phylogeny, taxometrics and cladistics have been explained with a view to providing a comparison between these diverse but interactive fields of study. An attempt has been made to build upon a common example when exploring different methods, especially in procedures of identification, taxometrics and cladistics. The major systems of classification are evaluated critically. Discussion on major families of Pteridophytes, Gymnosperms and Angiosperms, especially those of major phylogenetic interest, form a major portion of this edition. The ebook includes nearly 500 color photographs set out in 36 pages covering plants from different parts of the world. In addition, 305 black & white illustrations have been included to provide a better understanding of the plants covered in the book.

Plant Taxonomy and Biosystematics - Clive A. Stace 1991-10-03

A concise, up-to-date and fully-integrated discussion of present-day plant taxonomy.

Climate-Challenged Society - John S. Dryzek 2013-10-24

This book is an original, accessible, and thought-provoking introduction to the severe and broad-ranging challenges that climate change presents and how societies can respond. It synthesizes and deploys cutting-edge scholarship on the range of social, economic, political, and philosophical issues surrounding climate change. The treatment is introductory, but the book is written "with attitude", for nobody has yet charted in coherent, integrative, and effective fashion a way to move societies beyond their current paralysis as they face the challenges of climate change. The coverage begins with an examination of science, public opinion, and policy making, with special attention to organized climate change denial. The book then moves to economic analysis and its limits; different kinds of policies; climate justice; governance at all levels from the local to the global; and the challenge of an emerging "Anthropocene" in which the mostly unintended consequences of human action drive the earth system into a more chaotic and unstable era. The conclusion considers the prospects for fundamental transition in ideas, movements, economics, and governance.

Outlines and Highlights for Plant Systematics by Michael Simpson, Isbn - Cram101 Textbook Reviews 2010-01

Never HIGHLIGHT a Book Again! Virtually all of the testable terms, concepts, persons, places, and events from the textbook are included. Cram101 Just the FACTS101 studyguides give all of the outlines, highlights, notes, and quizzes for your textbook with optional online comprehensive practice tests. Only Cram101 is Textbook Specific. Accompanys: 9780126444605 .

Geology and Plant Life - Arthur R. Kruckeberg 2004

This title the result of more than 40 years of research into the question of why certain plants grow on certain soils and certain terrain structures, and what happens when this relationship is disrupted by human agents. It draws on case histories from around the world.

Systematics - Ward C. Wheeler 2012-06-14

Systematics: A Course of Lectures is designed for use in an advanced undergraduate or introductory graduate level course in systematics and is meant to present core systematic concepts and literature. The book covers topics such as the history of systematic thinking and fundamental concepts in the field including species concepts, homology, and hypothesis testing. Analytical methods are covered in detail with chapters devoted to sequence alignment, optimality criteria, and methods such as distance, parsimony, maximum likelihood and Bayesian approaches. Trees and tree searching, consensus and super-tree methods, support measures, and other relevant topics are each covered in their own sections. The work is not a bleeding-edge statement or in-depth review of the entirety of systematics, but covers the basics as

broadly as could be handled in a one semester course. Most chapters are redesigned to be a single 1.5 hour class, with those on parsimony, likelihood, posterior probability, and tree searching two classes (2 x 1.5 hours).

Managing Cover Crops Profitably (3rd Ed.) - Andy Clark 2008-07

Cover crops slow erosion, improve soil, smother weeds, enhance nutrient and moisture availability, help control many pests and bring a host of other benefits to your farm. At the same time, they can reduce costs, increase profits and even create new sources of income. You'll reap dividends on your cover crop investments for years, since their benefits accumulate over the long term. This book will help you find which ones are right for you. Captures farmer and other research results from the past ten years. The authors verified the info. from the 2nd ed., added new results and updated farmer profiles and research data, and added 2 chap. Includes maps and charts, detailed narratives about individual cover crop species, and chap. about aspects of cover cropping.

Principles of Plant Genetics and Breeding - George Acquaah 2020-09-28

The revised edition of the bestselling textbook, covering both classical and molecular plant breeding *Principles of Plant Genetics and Breeding* integrates theory and practice to provide an insightful examination of the fundamental principles and advanced techniques of modern plant breeding. Combining both classical and molecular tools, this comprehensive textbook describes the multidisciplinary strategies used to produce new varieties of crops and plants, particularly in response to the increasing demands of growing populations. Illustrated chapters cover a wide range of topics, including plant reproductive systems, germplasm for breeding, molecular breeding, the common objectives of plant breeders, marketing and societal issues, and more. Now in its third edition, this essential textbook contains extensively revised content that reflects recent advances and current practices. Substantial updates have been made to its molecular genetics and breeding sections, including discussions of new breeding techniques such as zinc finger nuclease, oligonucleotide directed mutagenesis, RNA-dependent DNA methylation, reverse breeding, genome editing, and others. A new table enables efficient comparison of an expanded list of molecular markers, including Allozyme, RFLPs, RAPD, SSR, ISSR, DAMD, AFLP, SNPs and ESTs. Also, new and updated "Industry Highlights" sections provide examples of the practical application of plant breeding methods to real-world problems. This new edition: Organizes topics to reflect the stages of an actual breeding project Incorporates the most recent technologies in the field, such as CRISPR genome edition and grafting on GM stock Includes numerous illustrations and end-of-chapter self-assessment questions, key references, suggested readings, and links to relevant websites Features a companion website containing additional artwork and instructor resources *Principles of Plant Genetics and Breeding* offers researchers and professionals an invaluable resource and remains the ideal textbook for advanced undergraduates and graduates in plant science, particularly those studying plant breeding, biotechnology, and genetics.

1997 IUCN Red List of Threatened Plants - World Conservation Monitoring Centre 1998

This book represents the most comprehensive compilation of data on threatened vascular plants ever published. It includes the names of some 33,000 plant species determined to be rare or threatened on a global scale. Conservation assessments were provided by the IUCN Species Survival Commission, the National Botanical Institute (South Africa), Environment Australia, and CSIRO, The Nature Conservancy, the Smithsonian Institution, and the Royal Botanic Gardens, Kew, together with hundreds of botanic gardens and botanists throughout the world. The Royal Botanic Gardens Edinburgh and the New York Botanical Garden have made major in-kind contributions. The result of 20 years work by botanists and conservationists around the world, it is intended as a conservation tool, a provider of baseline information to measure conservation progress and as a primary source of data on plant species. Most importantly, however, it provides the building blocks on which to base a worldwide effort to conserve plant species.

The Diversity of Fishes - Gene Helfman 2009-04-03

The second edition of *The Diversity of Fishes* represents a major revision of the world's most widely adopted ichthyology textbook. Expanded and updated, the second edition is illustrated throughout with striking color photographs depicting the spectacular evolutionary adaptations of the most ecologically and taxonomically diverse vertebrate group. The text incorporates the latest advances in the biology of fishes, covering taxonomy, anatomy, physiology, biogeography, ecology, and behavior. A new chapter on genetics

and molecular ecology of fishes has been added, and conservation is emphasized throughout. Hundreds of new and redrawn illustrations augment readable text, and every chapter has been revised to reflect the discoveries and greater understanding achieved during the past decade. Written by a team of internationally-recognized authorities, the first edition of *The Diversity of Fishes* was received with enthusiasm and praise, and incorporated into ichthyology and fish biology classes around the globe, at both undergraduate and postgraduate levels. The second edition is a substantial update of an already classic reference and text. Companion resources site This book is accompanied by a resources site: www.wiley.com/go/helfman The site is being constantly updated by the author team and provides: · Related videos selected by the authors · Updates to the book since publication · Instructor resources · A chance to send in feedback

[Molecular Plant Taxonomy](#) - Pascale Besse 2014-01-11

Plant taxonomy is an ancient discipline facing new challenges with the current availability of a vast array of molecular approaches which allow reliable genealogy-based classifications. Although the primary focus of plant taxonomy is on the delimitation of species, molecular approaches also provide a better understanding of evolutionary processes, a particularly important issue for some taxonomic complex groups. *Molecular Plant Taxonomy: Methods and Protocols* describes laboratory protocols based on the use of nucleic acids and chromosomes for plant taxonomy, as well as guidelines for phylogenetic analysis of molecular data. Experts in the field also contribute review and application chapters that will encourage the reader to develop an integrative taxonomy approach, combining nucleic acid and cytogenetic data together with other crucial information (taxonomy, morphology, anatomy, ecology, reproductive biology, biogeography, paleobotany), which will help not only to best circumvent species delimitation but also to resolve the evolutionary processes in play. Written in the successful *Methods in Molecular Biology* series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible protocols, and notes on troubleshooting and avoiding known pitfalls. Authoritative and easily accessible, *Molecular Plant Taxonomy: Methods and Protocols* seeks to provide conceptual as well as technical guidelines to plant taxonomists and geneticists.

[Using the Biological Literature](#) - Diane Schmidt 2014-04-14

The biological sciences cover a broad array of literature types, from younger fields like molecular biology

with its reliance on recent journal articles, genomic databases, and protocol manuals to classic fields such as taxonomy with its scattered literature found in monographs and journals from the past three centuries. *Using the Biological Literature: A Practical Guide, Fourth Edition* is an annotated guide to selected resources in the biological sciences, presenting a wide-ranging list of important sources. This completely revised edition contains numerous new resources and descriptions of all entries including textbooks. The guide emphasizes current materials in the English language and includes retrospective references for historical perspective and to provide access to the taxonomic literature. It covers both print and electronic resources including monographs, journals, databases, indexes and abstracting tools, websites, and associations—providing users with listings of authoritative informational resources of both classical and recently published works. With chapters devoted to each of the main fields in the basic biological sciences, this book offers a guide to the best and most up-to-date resources in biology. It is appropriate for anyone interested in searching the biological literature, from undergraduate students to faculty, researchers, and librarians. The guide includes a supplementary website dedicated to keeping URLs of electronic and web-based resources up to date, a popular feature continued from the third edition.

Systematics and the Origin of Species - National Academy of Sciences 2005-10-28

In December 2004, the National Academy of Sciences sponsored a colloquium on "Systematics and the Origin of Species" to celebrate Ernst Mayr's 100th anniversary and to explore current knowledge concerning the origin of species. In 1942, Ernst Mayr, one of the twentieth century's greatest scientists, published *Systematics and the Origin of Species*, a seminal book of the modern theory of evolution, where he advanced the significance of population variation in the understanding of evolutionary process and the origin of new species. Mayr formulated the transition from Linnaeus's static species concept to the dynamic species concept of the modern theory of evolution and emphasized the species as a community of populations, the role of reproductive isolation, and the ecological interactions between species. In addition to a preceding essay by Edward O. Wilson, this book includes the 16 papers presented by distinguished evolutionists at the colloquium. The papers are organized into sections covering the origins of species barriers, the processes of species divergence, the nature of species, the meaning of "species," and genomic approaches for understanding diversity and speciation.