Marine Mammals Evolutionary Biology

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berta and sumich have succeeded yet again in creating superior marine reading this book is a succinct yet

comprehensive text devoted to the systematics evolution morphology ecology physiology and behavior of marine mammals the first edition considered the leading text in the field is required reading for all marine biologists concerned with marine mammals revisions include updates of citations expansion of nearly every chapter and full color photographs this title continues the tradition by fully expanding and updating nearly all chapters comprehensive up to date coverage of the biology of all marine mammals provides a phylogenetic framework that integrates phylogeny with behavior and ecology features chapter summaries further readings an appendix glossary and an extensive bibliography exciting new color photographs and additional distribution maps

setting the stage rocks fossils and evolution the oldest marine mammals whales and sea cows later diverging whales neoceti aquatic carnivores pinnipeds and a bear like carnivoran crown sirenians and their desmostylian relatives aquatic sloths and recent occupants of the sea sea otters and polar bears diversity changes through time the influence of climate change and humans

mammals are the dominant large animals of today occurring in virtually every environment this book is an account of the remarkable 320 million year long fossil record that documents their origin their long spell as no more than small nocturnal creatures and their explosive radiation since the extinction of the dinosaurs 65 million years ago tom kemp also unveils the exciting molecular evidence which coupled with important new fossils is presently challenging current thinking on the interrelationships and historical biogeography of mammals the origin and evolution of mammals will be of interest to advanced undergraduate and graduate students as well as researchers in vertebrate palaeontology biogeography mammalian systematics and molecular taxonomy it will also be welcomed by vertebrate fossil enthusiasts and evolutionary biologists of all levels with an interest in macroevolutionary problems

evolution of island mammals evolution on islands differs in a number of important ways from evolution on mainland areas over millions of years of isolation exceptional and sometimes bizarre mammals evolved on islands such as pig sized elephants and hippos giant rats and gorilla sized lemurs that would have been formidable to their mainland ancestors evolution of island mammals second edition provides an updated and expanded overview of the current knowledge on fossil island mammals worldwide ranging from the oligocene to the onset of the holocene the book addresses evolutionary processes and key aspects of insular mammal biology exemplified by a variety of fossil species

readers familiar with the first edition will find here a host of updated and enhanced material including an entirely new chapter on the island rule updated and expanded theoretical chapters updated and improved taxonomic information extensive coverage of new discoveries body masses or body size indices for most extinct island mammals new figures visualizing the richness of the fossil record this accessible and richly illustrated textbook is written for graduate level students and professional researchers in evolutionary biology palaeontology biogeography zoology and ecology

the synapsida are the mammal like reptiles and mammals a group that diverged from a common ancestor shared with reptiles and birds about 340 million years the fossil record of the synapsids is extraordinarily good and documents the three phases of the history of the group each one of which points to important evolutionary generalisations as well as relating an intrinsically fascinating story the first stage leads from the origin of the group to the earliest mammals the non mammalian synapsids constituted the first radiation of fully terrestrial vertebrates dominating the land long before the dinosaurs displaced them and took over that role the fossil record illustrates the relationship between this radiation and the environmental conditions of the permo triassic when it occurred it also illustrates to a far greater degree than any other fossil record the origin of a major new taxon the sequence of acquisition of mammalian structures and functions inferred from the fossils leads to an interpretation about the processes involved in the evolution of mammalian biological organisation the second stage is the mesozoic history of mammals throughout the jurassic and cretaceous periods mammals remained small insectivorous or omnivorous animals living a nocturnal existence they were abundant and diverse but failed completely to evolve into any of the middle sized and large sized forms familiar amongst today s mammals this is usually though not completely satisfactorily explained by competitive exclusion by dinosaurs the third stage is the great cenozoic radiation of mammals from the moment the dinosaurs disappeared 65 million years ago new kinds of mammals proceeded to evolve medium and large bodied herbivore and carnivore groups appeared early and from then onwards a kaleidoscope of origins flourishings and extinctions of lineages of mammals took place this great story interweaves changing climates shifting continents ecological opportunities and the fulfilment of the adaptive potential of mammalia the latest molecular evidence that is having a huge impact on ideas about the timing and origins of the modern mammalian taxa is discussed along with the fossil evidence the book reviews these three stages in turn bringing up to date the palaeontological evidence and incorporating the molecular taxonomic data that has been rapidly accumulating over the last few years and which is responsible for a series of exciting radicalnew ideas about relationships amongst mammals and their inferred palaeo biogeographic history

this book provides a general introduction to the biology of marine mammals and an overview of the adaptations that have permitted mammals to succeed in the marine environment each chapter written by experts in their field will provide an up to date review and present the major discoveries and innovations in the field important technical advances such as satellite telemetry and time depth recorders will be described in boxes

among the unresolved topics in evolutionary biology and behavioral ecology are the origins mechanisms evolution and consequences of developmental and phenotypic diversity in an attempt to address these challenges plasticity has been investigated empirically and theoretically at all levels of biological organization from biochemical to whole organism and beyond to the population community and ecosystem levels less commonly explored are constraints e g ecological costs e g increased response error perturbations e g alterations in selection intensity and stressors e g resource limitation influencing not only selective values of heritable phenotypic components but also decisions and choices not necessarily conscious ones available to individuals in populations treating extant mammals the primary purpose of the proposed work is to provide new perspectives on common themes in the literature on robustness functional diversity differential resistance to deconstraint of conserved elements and weak robustness the potential to restrict plasticity and evolvability plasticity variation expressed throughout the lifetimes of individuals in a population setting evolvability potential and evolvability non lethal phenotypic novelties induced by endogenous and or exogenous stimuli the proposed project will place particular emphasis upon the adaptive complex in relation to endogenous e g genomes neurophysiology and exogenous abiotic and biotic including social environments organismal features discussed as regulatory and environmental perturbations with the potential to induce and often constrain variability and novelty of form and function

mammals range in body size from the gigantic blue whale to the tiny etruscan shrew elephants and man may live for nearly one hundred years while most shrews die before they are three months old during the past decade mammalogists and evolutionary biologists have begun to unravel the numerous factors that shape the enormous diversity of mammal life histories in this volume the authors provide a variety of perspectives on the newest theories in this active field of study the principle uniting all studies of life history evolution is adaptation by natural selection the first chapters in the book discuss this topic offering evolutionary interpretations of geographic variation in mammal life histories explaining how natural selection operates in fluctuating environments introducing evolutionary predictions of demographic

mathematics and integrating life histories with behavioral ecology the next chapters offer functional interpretations of the importance of body size in the life history next several essays explain how developments in quantitative genetics have enabled us to distinguish between genetic and environmental components of variation within and between species with this as a basis the chapters that follow draw from principles of natural selection allometry and genetics to interpret differences among species of mammals the book concludes with speculations on various areas where research seems most urgent for the development of a comprehensive understanding of mammal life history evolution according to the authors the field is rich with questions and opportunities abound for both theoretical and empirical research

encyclopedia of evolutionary biology four volume set is the definitive go to reference in the field of evolutionary biology it provides a fully comprehensive review of the field in an easy to search structure under the collective leadership of fifteen distinguished section editors it is comprised of articles written by leading experts in the field providing a full review of the current status of each topic the articles are up to date and fully illustrated with in text references that allow readers to easily access primary literature while all entries are authoritative and valuable to those with advanced understanding of evolutionary biology they are also intended to be accessible to both advanced undergraduate and graduate students broad topics include the history of evolutionary biology population genetics quantitative genetics speciation life history evolution evolution of sex and mating systems evolutionary biogeography evolutionary developmental biology molecular and genome evolution coevolution phylogenetic methods microbial evolution diversification of plants and fungi diversification of animals and applied evolution presents fully comprehensive content allowing easy access to fundamental information and links to primary research contains concise articles by leading experts in the field that ensures current coverage of each topic provides ancillary learning tools like tables illustrations and multimedia features to assist with the comprehension process

this thorough revision of the classic encyclopedia of marine mammals brings this authoritative book right up to date articles describe every species in detail based on the very latest taxonomy and a host of biological ecological and sociological aspects relating to marine mammals the latest information on the biology ecology anatomy behavior and interactions with man is provided by a cast of expert authors all presented in such detail and clarity to support both marine mammal specialists and the serious naturalist fully referenced throughout and with a fresh selection of the best color photographs available the long awaited second edition remains at the forefront as the go to reference on marine

mammals more than 20 new material includes articles on climate change pacific white sided dolphins sociobiology habitat use feeding morphology and more over 260 articles on the individual species with topics ranging from anatomy and behavior to conservation exploitation and the impact of global climate change on marine mammals new color illustrations show every species and document topical articles from the first edition this book is so good a bargain full of riches packed with fascinating up to date information i recommend it unreservedly it to individuals students and researchers as well as libraries richard m laws marine mammals science establishes a solid and satisfying foundation for current study and future exploration ronald j shusterman science

this is a hands on guide for graduate students and young researchers wishing to perfect the practical skills needed for a successful research career by teaching junior scientists to develop effective research habits the book helps to make the experience of graduate study a more efficient and rewarding one the authors have taught a graduate course on the topics covered for many years and provide a sample curriculum for instructors in graduate schools wanting to teach a similar course topics covered include choosing a research topic department and advisor making workplans the ethics of research using scientific literature perfecting oral and written communication publishing papers writing proposals managing time effectively and planning a scientific career and applying for jobs in research and industry the wealth of advice is invaluable to students junior researchers and mentors in all fields of science engineering and the humanities

these original contributions on the evolution of primates and the techniques for studying the subject cover an enormous range of material and incorporate the work of specialists from many different fields showing the necessity of a multidisciplinary approach to problems of primate morphology and phylogeny collectively they demonstrate the concerns and methods of leading contemporary workers in this and related fields each contributor shows his way of attacking fundamental problems of evolutionary primatology

the fossil record on mesozoic mammals has expanded by orders of magnitude over the past quarter century new specimens some of them breathtakingly complete have been found in nearly all parts of the globe at a rapid pace coupled with the application of new scientific approaches and techniques these exciting discoveries have led to profound changes in our interpretation of early mammal history mesozoic mammals have come into their own as a rich source of information for evolutionary biology their record of episodic successive radiations speaks to the pace and

mode of evolution early mammals were small but they provide key information on the morphological transformations that led to modern mammals including our own lineage of placentalia significant and fast evolving elements of the terrestrial biota for much of the mesozoic early mammals have played an increasingly important role in studies of paleoecology faunal turnover and historical biogeography the record of early mammals occupies center stage for testing molecular evolutionary hypotheses on the timing and sequence of mammalian radiations organized according to phylogeny this book covers all aspects of the anatomy paleobiology and systematics of all early mammalian groups in addition to the extant mammalian lineages extending back into the mesozoic

vertebrate evolution is studied through comparative anatomy and functional morphology of existing vertebrates as well as fossil records since the publication of the previous edition of colbert s evolution of the vertebrates a history of the backboned animals through time there have been significant advances in the knowledge surrounding backboned animals this latest edition of the classic text is completely revised to offer the most recent discoveries in this continually evolving field of science covering the various aspects of vertebrate life from skeletal system to ecology behavior and physiology the fifth edition includes new sections on conodonts dinosaurs primates and the origin of birds and discusses analysis of morphological and molecular data early diversification of vertebrates the evolution of dinosaurs the origin of mammals early ruling reptiles basic adaptation of ungulates colbert s evolution of the vertebrates fifth edition carries on its legacy as an invaluable reference for professionals in evolutionary biology and paleontology as well as an ideal textbook for students in those fields

this book celebrates the contributions of dr frederick s szalay to the field of mammalian evolutionary morphology professor szalay is a strong advocate for biologically and evolutionarily meaningful character analysis he has published about 200 articles six monographs and six books on this subject this book features subjects such as the evolution and adaptation of mammals and provides up to date articles on the evolutionary morphology of a wide range of mammalian groups

the book aims to integrate our understanding of mammalian societies into a novel synthesis that is relevant to behavioural ecologists ecologists and anthropologists it adopts a coherent structure that deals initially with the characteristics and strategies of females before covering those of males cooperative societies and hominid societies it

reviews our current understanding both of the structure of societies and of the strategies of individuals it combines coverage of relevant areas of theory with coverage of interspecific comparisons intraspecific comparisons and experiments it explores both evolutionary causes of different traits and their ecological consequences and it integrates research on different groups of mammals with research on primates and humans and attempts to put research on human societies into a broader perspective

living amniotes including all mammals birds crocodilians snakes and turtles comprise an extraordinarily varied array of more than 21 000 species found in every major habitat on earth they possess a truly remarkable range of morphological ecological and behavioral adaptations the fossil record of amniotes extends back three hundred million years and reveals much about modern biological diversity of form and function a collaborative effort of twenty four researchers amniote paleobiology presents thirteen new and important scientific perspectives on the evolution and biology of this familiar group it includes new discoveries of dinosaurs and primitive relatives of mammals studies of mammalian chewing and locomotion and examinations of the evolutionary process in plesiosaurs mammals and dinosaurs emphasizing the rich variety of analytical techniques available to vertebrate paleontologists from traditional description to multivariate morphometrics and complex three dimensional kinematics amniote paleobiology seeks to understand how species are related to each other and what these relationships reveal about changes in anatomy and function over time a timely synthesis of modern contributions to the field of evolutionary studies amniote paleobiology furthers our understanding of this diverse group

suppose you were designing a marine mammal what would you need to think about to allow it to live in the ocean how would you keep it warm what would you design to allow it to dive for very long periods to extreme depths where would it find water to drink how would you minimize the cost of swimming and how would it find its prey in the deep an

walker s vision the text smoothly combines in depth scholarship with a popular readable style to preserve and enhance what the washington post called a landmark of zoological literature

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