

Chapter 1 : Evolutionary Biology - Wikibooks, open books for an open world

Books shelved as evolutionary-biology: The Selfish Gene by Richard Dawkins, The Greatest Show on Earth: The Evidence for Evolution by Richard Dawkins, Th.

Definition[edit] E. Wilson defined sociobiology as "the extension of population biology and evolutionary theory to social organization". It begins with the idea that behaviors have evolved over time, similar to the way that physical traits are thought to have evolved. It predicts that animals will act in ways that have proven to be evolutionarily successful over time. This can, among other things, result in the formation of complex social processes conducive to evolutionary fitness. The discipline seeks to explain behavior as a product of natural selection. Inherent in sociobiological reasoning is the idea that certain genes or gene combinations that influence particular behavioral traits can be inherited from generation to generation [2] For example, newly dominant male lions often kill cubs in the pride that they did not sire. This behavior is adaptive because killing the cubs eliminates competition for their own offspring and causes the nursing females to come into heat faster, thus allowing more of his genes to enter into the population. Sociobiologists would view this instinctual cub-killing behavior as being inherited through the genes of successfully reproducing male lions, whereas non-killing behavior may have died out as those lions were less successful in reproducing. Wilson , a central figure in the history of sociobiology, from the publication in of his book *Sociobiology: The New Synthesis* The philosopher of biology Daniel Dennett suggested that the political philosopher Thomas Hobbes was the first sociobiologist, arguing that in his book *Leviathan* Hobbes had explained the origins of morals in human society from an amoral sociobiological perspective. Wilson came in contact this emerging sociobiology through his PhD student Stuart A. Altmann, who had been in close relation with the participants to the conference. Altmann developed his own brand of sociobiology to study the social behavior of rhesus macaques, using statistics, and was hired as a "sociobiologist" at the Yerkes Regional Primate Research Center in The three sociobiologies by Scott, Altmann and Wilson have in common to place naturalist studies at the core of the research on animal social behavior and by drawing alliances with emerging research methodologies, at a time when "biology in the field" was threatened to be made old-fashioned by "modern" practices of science laboratory studies, mathematical biology, molecular biology. The New Synthesis, which sparked an intense controversy. However, the influence of evolution on behavior has been of interest to biologists and philosophers since soon after the discovery of evolution itself. *A Factor of Evolution* , written in the early s, is a popular example. The final chapter of the book is devoted to sociobiological explanations of human behavior, and Wilson later wrote a Pulitzer Prize winning book, *On Human Nature* , that addressed human behavior specifically. Hagen writes in *The Handbook of Evolutionary Psychology* that sociobiology is, despite the public controversy regarding the applications to humans, "one of the scientific triumphs of the twentieth century. The more general term behavioral ecology is commonly substituted for the term sociobiology in order to avoid the public controversy. They contend that in order to fully understand behavior, it must be analyzed in terms of evolutionary considerations. Natural selection is fundamental to evolutionary theory. That inherited adaptive behaviors are present in nonhuman animal species has been multiply demonstrated by biologists, and it has become a foundation of evolutionary biology. However, there is continued resistance by some researchers over the application of evolutionary models to humans, particularly from within the social sciences, where culture has long been assumed to be the predominant driver of behavior. Nikolaas Tinbergen , whose work influenced sociobiology Sociobiology is based upon two fundamental premises: Certain behavioral traits are inherited, Inherited behavioral traits have been honed by natural selection. Therefore, these traits were probably "adaptive" in the environment in which the species evolved. Two categories are at the species level; two, at the individual level. The species-level categories often called "ultimate explanations" are the function i. The individual-level categories often called "proximate explanations" are the development of the individual i. Sociobiologists are interested in how behavior can be explained logically as a result of selective pressures in the history of a species. Thus, they are often interested in instinctive , or intuitive behavior, and in explaining the similarities, rather than the differences, between

cultures. For example, mothers within many species of mammals – including humans – are very protective of their offspring. Sociobiologists reason that this protective behavior likely evolved over time because it helped the offspring of the individuals which had the characteristic to survive. This parental protection would increase in frequency in the population. The social behavior is believed to have evolved in a fashion similar to other types of nonbehavioral adaptations, such as a coat of fur, or the sense of smell. Individual genetic advantage fails to explain certain social behaviors as a result of gene-centred selection. Wilson argued that evolution may also act upon groups. Altruism is defined as "a concern for the welfare of others". If altruism is genetically determined, then altruistic individuals must reproduce their own altruistic genetic traits for altruism to survive, but when altruists lavish their resources on non-altruists at the expense of their own kind, the altruists tend to die out and the others tend to increase. An extreme example is a soldier losing his life trying to help a fellow soldier. This example raises the question of how altruistic genes can be passed on if this soldier dies without having any children. Stability of a strategy can be difficult to prove, but usually, it will predict gene frequencies. The hypothesis can be supported by establishing a correlation between the gene frequencies predicted by the strategy, and those expressed in a population. Altruism between social insects and littermates has been explained in such a way. Altruistic behavior, behavior that increases the reproductive fitness of others at the apparent expense of the altruist, [12] in some animals has been correlated to the degree of genome shared between altruistic individuals. A quantitative description of infanticide by male harem-mating animals when the alpha male is displaced as well as rodent female infanticide and fetal resorption are active areas of study. In general, females with more bearing opportunities may value offspring less, and may also arrange bearing opportunities to maximize the food and protection from mates. An important concept in sociobiology is that temperament traits exist in an ecological balance. Just as an expansion of a sheep population might encourage the expansion of a wolf population, an expansion of altruistic traits within a gene pool may also encourage increasing numbers of individuals with dependent traits. Studies of human behavior genetics have generally found behavioral traits such as creativity, extroversion, aggressiveness, and IQ have high heritability. The researchers who carry out those studies are careful to point out that heritability does not constrain the influence that environmental or cultural factors may have on those traits. There are arguments that in some environments criminal behavior might be adaptive. For example, the transcription factor FEV aka Pet1, through its role in maintaining the serotonergic system in the brain, is required for normal aggressive and anxiety-like behavior. In addition, FEV has been shown to be required for correct maternal behaviour in mice, such that offspring of mothers without the FEV factor do not survive unless cross-fostered to other wild-type female mice. Gould grouped sociobiology with eugenics, criticizing both in his book *The Mismeasure of Man. A Factor of Evolution*, which focused more on altruism than aggression, suggesting that anarchist societies were feasible because of an innate human tendency to cooperate. However, some critics have argued that the language of sociobiology readily slips from "is" to "ought", [23] an instance of the naturalistic fallacy. Pinker has argued that opposition to stances considered anti-social, such as ethnic nepotism, is based on moral assumptions, meaning that such opposition is not falsifiable by scientific advances.

Chapter 2 : Popular Evolutionary Biology Books

Charles Robert Darwin was an English naturalist and geologist best known for his contributions to the science of evolution. Darwin's book introduced the scientific theory that populations evolve over the course of generations through a process of natural selection.

This volume provides an entry into understanding the development of our own species. *Brain and Behavior* by G. Ayala eds - National Academies Press , The central goal of the series is to promote the evolutionary sciences through state-of-the-art colloquia. This volume focuses on the field of evolutionary neuroscience that now includes a vast array of different approaches, data types, and species. Yet today, the topic is often relegated to a few class sessions in introductory biology courses, if covered at all. In recent years, a movement is aimed at radically changing this situation *An Introduction* by John S. Wilkins - The TalkOrigins Archive , Critics of evolutionary theory very often misunderstand the issues of the philosophy of science. This essay summarises some of the more important recent developments to show that evolution is no worse off philosophically than any other science. This essay aims to show that Darwin had influences, but that he was honest in his theoretical development. This book is a brief introduction to evolutionary biology. The author attempts to explain basics of the theory of evolution and correct many of the misconceptions. This volume explores different facets of the complex holistic process of human origins. *Shraiman* - arXiv , This review provides a simplified exposition of the concept and mathematics of Quasi-Linkage Equilibrium QLE which is central to the statistical description of genotypes in sexual populations. We discuss under what circumstances QLE is applicable. *Fisher* - At The Clarendon Press , Providing a synthesis of Darwinian selection and Mendelian genetics and marking a turning point in the development of evolutionary thought, this work is one of the most frequently cited references in modern evolutionary biology. *An account of extinct flying reptiles* by H. Its coming into existence is among the great mysteries of Nature. *Goldsmith* - Azinet LLC , This book provides a historical review of biological aging theories including underlying evolution and genetics issues and describes exciting recent discoveries and new theories that are causing renewed interest in aging-by-design. *The Basics of Evolution* by Edith Dempster - Human Sciences Research , This workbook focuses specifically on assisting educators build their own understanding of genes, the mechanisms of inheritance and selection - the basics of evolution. The book uses diagrams, illustrations, text information and activity sheets. Darwin argued that the noblest features of humans were the result of the natural processes. It offers coherent views of natural selection, adaptation, the struggle for existence, and other concepts that form the foundation of evolutionary theory. The book is a lively and accessible introduction to the mind of this influential thinker.

Chapter 3 : USEFUL REFERENCE BOOKS IN EVOLUTIONARY BIOLOGY

evolutionary biology evolution textbook futuyama biologist course subject topics edition follow major reference systematics Top customer reviews There was a problem filtering reviews right now.

Wake December, This list is designed for students in an advanced class in evolution, or beginning graduate students. The list includes long-lasting classics, books of value or controversy, and recent or hot books. Some recent books will doubtless have only ephemeral value but they are included because of their utility in finding term paper topics, getting reviews of recent literature, and the like. On the Origin of Species. John Murray always seek out the first edition, facsimile version, and avoid later editions. Genetics and the Origin of Species. Press there are several later editions, and the title changed in the last. The Genetical Theory of Natural Selection. Press there is a later edition. Illinois Press an English translation of a book published earlier in German. Systematics and the Origin of Species. Press there is a later edition, with a different title. Tempo and Mode of Evolution. Press again, there is a later edition, with a different title. Accessible General Books Bonner, J. The Evolution of Complexity. History and Philosophy Hall, B. Homology, the Hierarchical Basis of Comparative Biology. Academic Press a collection of essays by many authors. Keywords in Evolutionary Biology. The Growth of Biological Thought: Diversity, Evolution and Inheritance. Fundamentals of Comparative Biology. Units of Evolution Dawkins, R. Adaptation and Natural Selection. Press destined to be classic. Domains, Levels and Challenges. Population and Quantitative Genetics Crow, J. Introduction to Quantitative Genetics, second ed. Principles of Population Genetics, second, ed. Press a collection of essays by many authors. The Basics of Selection. Molecular Evolution Gillespie, J. The Causes of Molecular Evolution. The Neutral Theory of Molecular Evolution. Fundamentals of Molecular Evolution. Evolution by Gene Duplication. Springer Verlag a minor classic, now out of date. Adaptation and Life Histories Roff, D. The Evolution of Life Histories. Academic press a collection of essays by many authors. Speciation and its Consequences. Sinauer a collection of essays by many authors. Phylogenetics and Systematics Hillis, D. Molecular Systematics, second edition. Macclade, Analysis of Phylogeny and Character Evolution, version 3. Sinauer Part 2, chapters 3 6, deal with modern phylogenetic theory. Homoplasy, the Recurrence of Similarity in Evolution. Adaptive Radiation and Major Features of Evolution. Evolutionary Innovations a collection of essays. Development and Evolution Gould, S. Belknap Press Hall, B. The Shape of Life: Genes, Development and the Evolution of Animal Form. Great Dissenters, from Brilliant Iconoclasts to Cranks. The Material Basis of Evolution. The Origins of Order, Self-organization and selection in evolution. Origin of Sex, three billion years of genetic recombination.

Chapter 4 : Evolutionary Biology (textbook) - Wikipedia

Best evolutionary biology books, from Stephen Jay Gould to Richard Dawkins Tom Chivers picks his favourite five books from a scientific field, this time evolutionary biology, including Daniel.

Read Your second book is the biography of Darwin by Janet Browne. But readers on Amazon. Then, somehow, when she wrote this biography she came into her own. She was able to write in an almost novelistic way, except this is fact and not fiction. In the first part of his life, he is a man of action. On the voyage he did a lot of collecting, he rode into South America. He left the ship as often as he could as he had terrible seasickness. He collected fossils, he shot animals and so on. Then he got back to England in and basically sat in his study for the rest of his life. He never left England again. He just sat there and produced this magnificent theory. It shows the power of the life of the mind. Despite not being peripatetic, he had an extremely rich life through his correspondence, his children, his family. Also a slightly tragic existence, with the death of his beloved daughter. But he continued the adventure in his head, and produced not only *The Origin* but a number of other books, many of which are quite good. I noticed in *The Origin* that people were sending him specimens from all over the world. Birds from India and Persia for example. He got material, but far more often people would send him letters. From that Darwin would deduce that the ancestral horse, that gave rise to the donkey, had stripes and this was an ancestral trait that had reappeared. It was this constant accumulation of detail. It must have been quite exciting. His mail alone must have been very interesting. Plus he was doing experiments, and getting his kids to do them – like soaking seeds in seawater to see if they could survive the long periods it would take them to get across the ocean. All while suffering very bad health. There has been a lot of speculation about what made him sick. He had all sorts of horrible symptoms – constant vomiting, headaches, depression, fits of crying. The biography also touches on a suggestion that Darwin delayed in publishing *The Origin* because his wife was deeply religious and he was worried about the effect it would have on her. He wanted to convince people that evolution had occurred, and obviously the conclusion would be that humans had also evolved. But it was only 12 years later, in , that he published *The Descent of Man*, which was much more explicit about the evolutionary origin of humans. I think the reason he had been delaying is because he wanted to be absolutely sure that he was right. Darwin was very careful to make statements that were completely accurate. One of these was the evolution of a bee colony, with all these sterile workers helping their mother. How can sterility possibly be of evolutionary advantage? She provides a view of the man, his life and the adversities that he overcame, everything that fed into this revolutionary work of human thought. What about his own religious views? Was he an atheist? When he was younger he was probably religious by default, in the way that most liberal people were religious in Britain back then. As he became older, he started shedding all these appurtenances of belief. He would still use words like Creator. For example, he says in *The Origin* that the Creator breathed life into one or more original forms of life. People take that to mean that he was religious. He says, for example, that he could not believe that a God could exist who would design a cat that would torture mice, or a wasp whose larvae eat their prey from the inside. The horrors of nature convinced him that the world was a naturalistic, materialistic phenomenon. I doubt there was any vestige of real religion left in Darwin by the time he was a middle-aged man. And he never made any expression of religious belief. Almost all of us who have read Darwin realise that. He may have called himself an agnostic – which is, by the way, a term invented by his friend Huxley – because atheist was a strong word back then. Why do creationists care whether he was religious or not? They want him to be religious in the same way that they want Christopher Hitchens to be religious. Remember that evolution is not anathema to all religious people. A lot of religious people accept evolution. People like to think there is no inherent conflict between science – in particular evolution – and religion, and to show that Darwin could have been a religious man shows that religion and science can be friends. To me, they are completely conflictual world views. People always point to the fact that Francis Collins, head of the National Institutes of Health, is an evangelical Christian. They use him as an example that religion and science are not incompatible, because here you have a religious scientist.

Chapter 5 : Free Evolutionary Biology Books Download | Ebooks Online

e-books in Evolutionary Biology category Guts and Brains: An Integrative Approach to the Hominin Record by Wil Roebroeks (ed.) - Leiden University Press, The book discusses the relationship between brain size and diet, diet and social organization, and large brains and the human sexual division of labour.

But his general point, that fluke and serendipity have profoundly influenced the history of life and that intelligence is not an inevitable outcome of evolution, is still debated. A Pilgrimage to the Dawn of Life Richard Dawkins He may have annoyed a lot of people, but no-one does clear explanations of evolutionary biology like Professor Richard Dawkins. Since there are only five books in this list, I have had to limit myself carefully; it would be easy to pick five Dawkins books that have a case for inclusion. His most recent, The Greatest Show on Earth, is one; a straightforward explanation of the evidence for evolution. But Ancestor is certainly one of his best. At its heart is a simple conceit; here we are, standing in the present. If we walk backwards through time, we will meet each of our ancestors - and, most importantly, each of our common ancestors with other animals. First we meet early humans, including the last common ancestors of all humans; Mitochondrial Eve and Y-Chromosome Adam. Next comes our common ancestor with chimpanzees, about six million years ago. Then with gorillas seven million , orangutans 14 million , old world 25m and new world monkeys 40m , before getting back to all the other mammals, then other vertebrates, then invertebrates, and eventually plants, fungi, bacteria and so on. At each meeting, one of the other descendants of that common ancestor tells a tale of their evolution; so our million-year-old common ancestor with flounders tells us how its eyes ended up on one side of its head, an imperfection that shows us how evolution never works on a clean slate. It could be a set of Just-So stories, but it is carefully evidenced - or, where evidence is patchy or non-existent, assumptions and guesses are clearly labelled. But more than almost any other book it gives a sense of the journey that life has travelled, not deliberately, not guidedly, but inexorably. The Autobiography of a Species in 23 Chapters Matt Ridley Ridley has been in the news over the last couple of years. He was a non-executive director on the board of Northern Rock, the bank which collapsed so spectacularly in , requiring a huge government buy-out and marking the beginning of the financial crisis. Lately he has made headlines as the author of a book called The Rational Optimist - decried in some parts as a Panglossian attempt to ignore the problems facing humanity, hailed in others as a refreshing counterblast to the doomsayers in the press. Without getting into it here, his largely undimmed enthusiasm for free markets and distrust of government involvement, while not unreasonable, make interesting reading in light of his history. But before that, the zoology-trained Ridley was a science writer for the Economist, and the author of this graceful, clearly written account of human evolution. Explicitly inspired by Primo Levi - the chemist and holocaust survivor wrote his memoir using the periodic table of elements, tying each chapter to an element and the memories it evoked - Ridley finds on each of our 23 chromosomes a gene that speaks to some aspect of humanity, and how it came about. Intelligence, behaviour, free will, disease, ageing, sex and conflict are all covered. As he points out, people would be just as trapped by destiny if they were solely a product of their upbringing; at least genes are part of who we are. But he enjoys showing that the interplay of gene and environment is impossibly complex. But Genome is a wonderful explanation of how the things that make us human are a product of our DNA. Dennett is a philosopher and a neuroscientist at Tufts University, in Boston, and admits that a lot of the hardest, most detailed aspects of the biology is beyond him. But as a demonstration of how the central idea of Darwinism affects every aspect of human thinking - he calls it a "universal acid", which eats away all our comforting illusions - it is impeccable. Evolutionary thinking cannot just be contained within biology, he says: Dennett, like Dawkins, is one of the leading lights of what is dismissively termed the "new atheist" movement, and the central idea of this book relates to the appearance of design in the universe, and how evolution explains it. It is hard for humans to imagine complexity arises out of simplicity, he says. We reach instead for magical solutions, which he calls "skyhooks", appearing out of nowhere to take the explanatory weight. But evolution provides a "crane", a material, non-mystical device which can lift the complex out of the simple. Evolution, he says, is an algorithm, a literal input-output idea that leads from simplicity to complexity, exactly

as inevitably as a tennis tournament leads from contestants to one winner. It is probably the hardest book to read of these five, requiring the most careful attention. Dennett is not writing solely for the lay reader, and some of the ideas are difficult, especially for those without much of a scientific or philosophical background. But if you follow it, via its explanation of why Darwinism is both so frightening and so misunderstood, through its idea of "design space", in which he describes why the distinction between "natural" objects and "designed" ones is false, it is rewarding. But both those books, while brilliant, were quite narrow in scope, arguments within evolutionary theory rather than encompassing it. Watchmaker, though, is broader in scope. Dawkins, who clearly respects Paley, says that after Darwin, it became clear that the "watchmaker" was evolution - a blind force. As mentioned, Dawkins is a controversial figure in some quarters, and it may be a shame that he now gets more coverage as a "militant atheist" than as one of the foremost life-science thinkers of our time. But if you need to be reminded of his brilliance, a good place to start would be Watchmaker.

Chapter 6 : Human Evolutionary Biology - Google Books

The Selfish Gene by Richard Dawkins is the single most eye-opening book I have ever read. It presents a logical explanation for evolution, explores how something came from nothing, and provides a foundational map for nearly all of life interaction.

Chapter 7 : Best evolutionary biology books, from Stephen Jay Gould to Richard Dawkins - Telegraph

Books in Biological Sciences: Evolutionary Biology published or distributed by the University of Chicago Press.

Chapter 8 : The Best Books on Evolution | Five Books Expert Recommendations

This textbook is by far one of the best books on evolutionary biology. It is designed for an undergraduate university course, but the author provides background and information that will allow a more general audience of interested readers to grasp the concepts.

Chapter 9 : Evolutionary Biology by Douglas J. Futuyma

The textbook Evolutionary Biology was written and published in during which Minkoff was the head of the Biology department at Bates College. The book is written in a format to which it could be used in an evolutionary biology course.