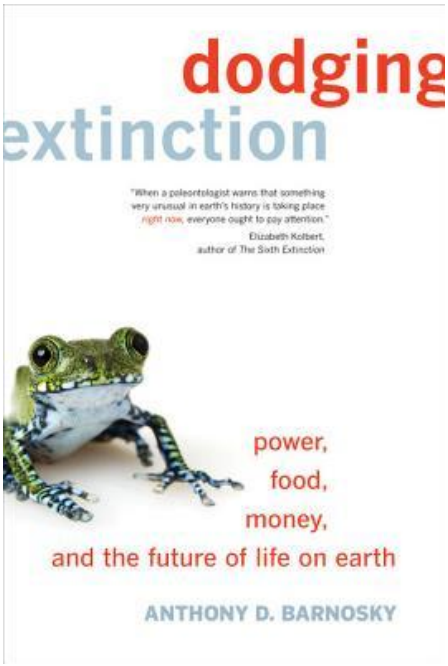

Dodging Extinction: Power, Food, Money, and the Future of Life on Earth

Anthony D. Barnosky

Dodging Extinction: Power, Food, Money, and the Future of Life on Earth

Anthony D. Barnosky

Dodging Extinction: Power, Food, Money, and the Future of Life on Earth Anthony D. Barnosky Paleobiologist Anthony D. Barnosky weaves together evidence from the deep past and the present to alert us to the looming Sixth Mass Extinction and to offer a practical, hopeful plan for avoiding it. Writing from the front lines of extinction research, Barnosky tells the overarching story of geologic and evolutionary history and how it informs the way humans inhabit, exploit, and impact Earth today. He presents compelling evidence that unless we rethink how we generate the power we use to run our global ecosystem, where we get our food, and how we make our money, we will trigger what would be the sixth great extinction on Earth, with dire consequences.

Optimistic that we can change this ominous forecast if we act now, Barnosky provides clear-cut strategies to guide the planet away from global catastrophe. In many instances the necessary technology and know-how already exist and are being applied to crucial issues around human-caused climate change, feeding the world's growing population, and exploiting natural resources. Deeply informed yet accessibly written, *Dodging Extinction* is nothing short of a guidebook for saving the planet.

Dodging Extinction: Power, Food, Money, and the Future of Life on Earth Details

Date	:	Published October 1st 2014 by University of California Press (first published January 1st 2014)
ISBN	:	9780520959095
Author	:	Anthony D. Barnosky
Format	:	ebook 256 pages
Genre	:	Science, Nonfiction, Environment, Sustainability, Economics, Nature

From Reader Review Dodging Extinction: Power, Food, Money, and the Future of Life on Earth for online ebook

Kate Lawrence says

Barnosky discusses extinction from several aspects, in a thoroughly researched style. Each book of this kind that I read deepens my knowledge of these critically important topics. I may not, however, always agree fully with an author. With Barnosky, who indicates he understands the serious impact of livestock agriculture, I cannot understand why he stops with suggesting "eat a little less meat" when what would really have a huge positive impact is to eat a LOT less meat, or ideally none. That would also be the way to reverse the decline of the world's fish species, a subject he treats at length.

We chose this as a monthly selection in our Readin' Vegans book club, and the group found it to be rich with discussable topics.

Rayfes Mondal says

Sad to read about the plight of elephants, tigers, and rhinos being killed for dubious reasons along with other things happening to our Mother Earth.

Susan says

A very positive, energizing book. It starts out by documenting the dire straits we are in, that the sixth mass extinction is well on its way, caused by humans. I found especially enlightening the scientific discoveries about previous mass extinctions, very clearly explained. But unlike previous books I've read on the topic, Barnosky describes specific steps we can take right now to slow the process of mass extinction, perhaps to save many species and make the world more liveable during climate change. Scary, but also encouraging!

Rena Sherwood says

Granted, Baronsky's preaching to the choir here, but this is still a mighty impressive book about climate change and the small chance any non-human species has of continuing to exist beyond 2050. Baronsky not only presents complex topics in easy-to-digest formats, but has many fine suggestions that could be implemented today if only we all got up off of our collective arses to do so. A very hope-filled book, despite the heavy topic matter.

Vince says

Definitely going to be conscious of where my food comes from, and what I’m putting in my body, so I can be a well-informed consumer.

Bevan says

A concise look at the very real possibility of a Sixth Mass Extinction, and what humans might do about it. The author weaves together a startling amount of information in a short book. Although he claims to be an optimist, we need to pay attention to what might happen in the very near future, otherwise his optimism will be for naught. I enjoyed this book tremendously because it covers many fields with which I am deeply concerned,

---

John Kaufmann says

Solid; but nothing new. I didn't find any new ideas here; I've seen virtually all of it in other books and web sites. If this is your first book about extinction/collapse, this book would give you what you need to know. If you're already reasonably familiar with it, I think you would be a little disappointed. I was expecting a lot more, after his previous book Heatstroke: Nature in an Age of Global Warming, which was excellent.

Bob Stocker says

For laymen like myself, Anthony Barnosky's book *Dodging Extinction: Power, Food, Money, and the Future of Life on Earth* provides an accessible, science-based overview of the disastrous path our planet is on. In short, human activities are destroying the ecosystem that we live in. Many species now teeter on the brink of extinction. Prompt, decisive action may prevent catastrophe for these species and possibly our own. Barnosky is optimistic. I'm not so sure.

!Tæmbu?u says

KOBOBOOKS

Reviewed by Open Letters Monthly

Jane says

Well written book that is all science. Depressing premise of mass extinction caused by ourselves. Informative and thought provoking.

Keith Akers says

The book is about megafauna extinctions, what has brought them about, and what we can do to avoid further extinctions. Barnosky is an expert on this and we get some interesting discussions about what a species is and what we could do to conserve them. Obviously the human impact has been huge and the impact of our agricultural system is key. There is a chapter on how to "resuscitate" extinct species such as the passenger pigeon or even mammoths and mastodons, using DNA from ancient animals plus some editing of any missing DNA, but this probably wouldn't be entirely satisfactory — with much effort, we might get a mammoth-like creature, but probably not an exact replica.

His technical discussions of species and the history and causes of megafauna extinctions is quite good. His analysis of our current human-related issues is well organized, but not quite as strong, as it takes him out of paleontology and into such things as technology, politics, and economics. If you're looking for information on mass extinctions, Dodging Extinction: Power, Food, Money, and the Future of Life on Earth is a substantially better book than Elizabeth Kolbert's book The Sixth Extinction: An Unnatural History. Kolbert's book is great and readable journalism as far as it goes but essentially is only trying to document that the sixth extinction is real. If you already know that, Barnosky understands the underlying causes and is "in the ballpark" so far as the remedies go, so his book is a huge advance in attempts to explain the basic problem of extinction to a wider educated audience. By the way, Elizabeth Kolbert has given the book a hearty endorsement.

That's my review. Here are some (lengthy) additional details about the ideas discussed in the book.

The author of this excellent little book is known to me through a paper of his I found online. The paper is titled "Megafauna biomass tradeoff as a driver of Quaternary and future extinctions," and forms the basis of part of a good part of the book, although the book explains all this in a much more popular style than his earlier paper. "Megafauna" just means "big animals" whose average size is 100 pounds or more, like humans, elephants, apes, giraffes, deer, sheep, that sort of thing.

Barnosky postulates that because of the basic nature of photosynthesis and the plant biology of the planet, the earth can naturally support about 200 million tons of megafauna biomass, it's just a question of which species are going to predominate, whether it's dinosaurs or dogs. Barnosky's paper referred to above, which is discussed at greater and more leisurely length in his book, states that humans initiated a mass extinction event some 50,000 years ago. There were "pulses" of extinction as humans expanded from continent to continent, basically through overhunting. These prehistoric extinctions affected the big animals, the "megafauna." During this time, humans displaced wild animals. As humans increased, other animals decreased and some became extinct, but the total megafauna biomass remained roughly the same, about 200 million tons.

However, extinction received an extra push during the climate change event that happened about 13,000 to 10,000 years ago, when the climate cooled and glaciers expanded. All species were affected, but humans less so than other species. The effect of these extinctions was not human displacement of wild animals, but an actual decline in total megafauna biomass, from 200 million to 100 million tons or so. During the last 10,000 years up until about 1500 or so, humans and their domestic animals slowly increased to fill this megafauna gap. Except in some isolated cases (Madagascar), generally this did not drive other species extinct.

That all changed with the beginning of the industrial revolution, when the use of fossil fuels and the development of modern machinery and agriculture resulted in a dramatic increase in TOTAL megafauna

biomass. It went from 200 million to 1500 million tons in what is a geological blink of an eye, over seven times as much (p. 58). Almost all of this increase was humans, their livestock, and their pets. Humans also additionally displaced some wild animal biomass, and so there has been an upsurge of modern (post-1700) extinctions of animals, but there was a lot more than just displacement going on in terms of the increase of humans. In fact, mostly the increase of humans and their livestock is not displacement, it is an absolute increase brought about by the industrial revolution.

Barnosky says tellingly at this point:
"That's one of the reasons the biomass graph scared me. It shouts out that the only reason we humans can exist in such high numbers — numbers that are far above Earth's normal carrying capacity for big land animals — is that we add a huge amount of energy to the global ecosystem, mostly through the extraction of fossil fuels. Without that extra energy, a lot of people would have to die . . . It's as simple as that." (p. 59–60)

So what about the proposed solutions? Barnosky is in the ballpark when he says that power, food, and money have a lot to do with species extinction. However, in each case I see some problems with what he says which, if he had taken them into account, would have somewhat altered his view of the solutions.

By "power" he does not mean just political power, but also energy. He sees climate change as a big problem, but not peak oil or other sorts of energy shortages. So he quotes the same Scientific American article that Naomi Klein cites (by Jacobson and Delucchi), and concludes that we can rapidly scale up renewables like solar and wind. Go to renewables, and problem solved.

Well, yes, we could do this, but it would be a lot harder than Jacobson and Delucchi imply. (1) He doesn't account for the fact that energy supplies are declining; we'd have to build out all these renewables in the face of absolute energy declines due to peak oil. (2) Additional infrastructure would be needed for intermittency problems — when the sun doesn't shine and wind doesn't blow — such as molten salt to store energy. (3) We'd need to seriously upgrade the electrical grid to handle the fact that all our energy needs would now be coming from (renewable) electricity. (4) We'd need to replace all internal combustion type machinery (such as cars and trucks) with electrical equivalents (electric cars, electric railways, etc.). (5) It would probably wreck the economy and would need huge political and social support across international lines. (6) We haven't even gotten to problems with other types of resource shortages (minerals, soil, water, forests.) Bottom line: it would require the total transformation of the world economy.

What about food? Again, Barnosky has correctly identified the basic problem, and he makes it clear that we have to reduce meat. "I'm a meat-eater," he admits (p. 91), and he likes fishing as well (p. 79). "Does that mean that we have to quit eating meat altogether? From my perspective, the answer is thankfully no" (p. 91), though "that means less meat" (p. 92). He thinks we can continue the Green Revolution and increase our food production still further. We can continue to graze cattle as long as we get the numbers right, but have to do away with feedlots.

There are a number of problems with this. (1) Feedlots are where most meat comes from, so if we're getting rid of feedlots, we're eliminating most meat. (2) Grazing land produces even less meat per unit area than does growing crops and feeding the crops to livestock. Grazing dramatically increases the human-dominated area of the planet, with not much return. (It does save on human labor, its one redeeming feature, and the reason grazing has been so popular.) (3) The Green Revolution has already hit the point of diminishing returns, and with the decline of energy supplies, is likely coming to an end altogether. (4) Producing just a little meat would mean that meat would continue as a food for the elites. Meat would be desired by all classes of society, though, and so there would be constant socially-generated pressure to engage in environmentally destructive and unnecessary behavior.

What about money? Barnosky in this section does not discuss, as you might expect, the broader ramifications of our economic system, economic growth, capitalism, and that sort of thing. He has a specific question in mind, and that is whether we can create incentives to preserve animal species through their economic value. He recommends eco-tourism, which is fine but seems to be at cross-purposes with other environmental directions, since we generally want to discourage world travel to conserve burning of fossil fuels. (Perhaps he would recommend travel if it could be done renewably, although even then it's a bit problematic.) He also discusses the idea of licensing the hunting of rare species, which, as Barnosky points out, seems a bit of a strange way to conserve them.

Barnosky understands the basic problem and the needed solutions and has explained them well. I don't always agree with the details of his suggestions, but this does not detract from the importance of this book in furthering our understanding of environmental issues.

KJ says

I thought the book would offer more solutions to our current environmental situation; but rather it went into the numbers and details of how effed up us human beings are making our world. It'd be a good book for someone who has been living under a rock and completely unaware of our environmental impact. Unfortunately though it didn't have a lot of details how to actually... well... dodge extinction outside of, 'stop effing it up like you have been.'

Nola says

Dodging Extinction is a tightly written book that manages a weighty subject with an eye toward solutions instead of blame. I don't know if the author's optimism is warranted, but a book like this, engaging and to the point, is certainly helpful.
The book has a deep time perspective that puts the current situation in perspective. It starts out with two of the five previous major extinction events. The most recent, with loss of 76% of species, is believed to be caused by an asteroid hitting the Yucatan Peninsula and superheating the earth. Good evidence has been discovered that the most extreme extinction event, with loss of 90% of all species, was caused by the carbon dioxide added to the atmosphere by the erupting of vast volcanic fields in Siberia. Four things preceding this extinction, also known as the Great Dying, bear a scary resemblance to things going on now. These are CO2 increasing from 850 parts per million (PPM) to 2,500 PPM, about 11 degrees Fahrenheit of global warming, ocean acidification and dead, or anoxic, zones in the ocean.
The middle of the book is about power, food and money and how they currently contribute to climate change, but could be manipulated to reverse it.
The author calculated the normal carrying capacity for megafauna at approximately 350 species, which the earth supported for hundreds of thousands of years, until around 50,000 years ago, when this number started to decline until it is now about 183. He calculated megafauna biomass, finding about 200 million tons on earth for hundreds of thousands of years until about 10,000 years ago, when species started to go extinct. About 300 years ago, megafauna biomass starting shooting up to where now it is nearly one-and-a-half billion tons. Three hundred years ago is when the industrial revolution began and people began using fossil fuels instead of relying on energy as it came in from the sun. This all means that the only thing keeping people alive at current population levels, far above the normal carrying capacity of the earth, and a much larger percentage of all species, is the energy added by extraction of fossil fuels. Both this and the climate

changes caused by burning fossil fuels mean it is critical to reduce their use. There are technical solutions and there is precedent for implementation in the time frame required.
For food, increasing crop yield on agricultural land not now being used at full capacity, increasing the efficiency of food production, eating less meat and eating grass-fed, rather than corn-fed meat, and using algae for biofuels, leaving land currently producing biofuels available for growing food could allow enough food without exacerbating climate change.

Ryan says

A succinct account of why a mass extinction event is currently underway, caused by humans. Being a biologist, the author is best at educating the reader about the science behind extinctions, in particular his own research on the net primary productivity of the planet and the mammalian biomass it had supported throughout prehistory up till the appearance of mankind. He then turns away from his area of expertise to talk about the ultimate drivers of extinction, our energy and food demand, and our disregard for the economic value of natural capital. Though there are interesting statistics to back his material, I felt that it was more a summary of the myriad factors in each category than anything really insightful for those who are already aware of the challenges we face. Barnosky also delves briefly into the science behind potentially resurrecting extinct species and the folly in that, to which I agree. We are then introduced to the current debates on rewilding and conservation through managed landscapes rather than strictly protected reserves that exclude human activities. Lastly, the author ends by talking about the little actions each of us can take as individuals to make a difference in the aggregate. Felt that the ending was hurried and he did not have any big ideas to contribute. Nothing really concrete beyond blind faith in our ability to avert disaster at the last minute when enough people acknowledge the problem and start to change.

Lori says

Every human on earth should read this book and follow the advice given.
