

Study Guides for Faith & Science Integration

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## How Can Christians Understand and Respond to the Concept of Mass Extinctions? (Participant's Guide)

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Participant's Guide to

# How Can Christians Understand and Respond to the Concept of Mass Extinctions?

*A Study of *The Sixth Extinction**

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Summer 2017

## How to Use This Material?

This study of the relationship between the Christian faith and the science of extinction (as presented in Elizabeth Kolbert's *The Sixth Extinction: An Unnatural History*) is composed of approximately six "weeks." Each week contains two sections. The 1<sup>st</sup> section deals with two sets of questions. The first set, *Reading and Reflection* questions, are to be completed before each meeting and are meant to help the participant wrestle with the concepts introduced in that week's chapters. The second set, *Discussion* questions, are to be written by the participants (and the leader) as they read. Both sets of questions are meant to foster discussion, but your groups should by no means limit itself to the questions contained in these sections. The 2<sup>nd</sup> section includes external references and additional questions for "Digging Deeper" into the topics addressed in the 1<sup>st</sup> section.

This study is intended for **informal, small group** discussion, such as that of a Bible study, catechism, or family reunion. Each theme may be unpacked on its own, but it is the hope of the authors that the entire study may be useful to the interested reader (leader and participant alike). The study is also aimed toward **high school students, college students, and post-college adults** with an interest in how science and the Christian faith interact.

As you read, it is our hope that you will come across (and come up with) questions which challenge you, both in understanding your personal faith and in understanding science. In these questions, you will have the opportunity to grow through asking and answering these questions in a healthy setting. Consider the context and history of these questions: Why has the church historically believed in *this* answer or *that* answer? What might you say if you were a Christian scientist? How might you be challenged to defend your answer?

## Who is the author of *The Sixth Extinction*?

Elizabeth Kolbert is an American journalist and author. She earned her undergraduate degree in literature at Yale University and studied in a German University as a Fulbright Scholarship recipient. At the time of the publication of this work, she is a staff writer for *The New Yorker* and comments frequently on environmentalism for the magazine. She is also a visiting fellow at Williams College, a private liberal arts college in Williamstown, Massachusetts, which is considered to be a leading institution of higher education in the United States. In addition, she serves on the Science and Security Board of the academic journal *Bulletin of the Atomic Scientist* (which covers and confronts discussions on global security and public policy issues related to, among other things, climate change. Kolbert's well-known book *The Sixth Extinction: An Unnatural History* is winner of the 2015 Pulitzer Prize for general nonfiction.

It is important to note that Kolbert is not a Christian, and does not write explicitly for a Christian audience. That said, her book is still useful for Christians seeking to better understand the idea of extinctions and human-caused extinctions.

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## Week 0: Before You Begin

### Overview Questions

*Over the next six weeks, you and your small group will discuss Elizabeth Kolbert's The Sixth Extinction and topics such as extinction and evolution. These pre-questions are designed to help you begin thinking about these topics and to provide you with a record of how your thoughts have developed throughout the session. These questions might not be discussed, but please answer them thoughtfully and honestly nonetheless.*

How might your social situation impact the way you view the natural world?

How does the worldview you were born into impact the way you respond to the natural world?

If the way you view the natural world shifts, how might your social situation be affected?

Given that we are called to steward the earth in Genesis 1, to what level should extinction concern us?

In the face of extinction, what obligations do we have to the created world?

## Week 1: Introduction to Extinctions

Chapters covered: "Prologue," "The Sixth Extinction," "The Mastodon's Molars"

### Reading and Reflection

#### "Prologue"

1. How does Kolbert introduce the chapter?
2. What do you think of her approach? What are your initial thoughts on Kolbert and her book?
3. What background knowledge do you have about extinctions (from classes or previous experience)?

#### "The Sixth Extinction"

1. What characterizes a mass extinction?

2. How should information about amphibian extinction be presented to a non-scientific community? Should the extinction be given an optimistic spin, like the children's magazine did? Should the research be presented more matter-of-factly? What response did the children's magazine hope to inspire within its audience?

3. On page 18, Kolbert says that you "can probably find signs of the current extinction event in your own backyard," if you know where to look. What do you think of that statement? What species, zoological or botanical, might be endangered in your area? Are there any non-native species which have interfered with native species? How have locals (scientists, government officials, residents) responded to the situation?

4. What is the role of zoos? Do zoos fulfill the creational mandate of stewardship?

### "The Mastodon's Molars"

1. Why might Thomas Jefferson, among others, have believed that nature wouldn't allow any race to become extinct? What has changed between then and now to alter our mindset?

2. Cuvier did not believe in the idea of evolution. What were some of his reasons for disbelieving *transformisme*? How did Cuvier respond to the discovery of a mummified cat?

3. What evidence would you require to come to the conclusion that species are changing or evolving?

## Discussion

In addition to thinking about the above reading questions, please write two questions of your own regarding the chapters you read for today.

1.

2.

## Digging Deeper

Can hunting be a decent way of managing populations? Are animals considered part of the Fall (can animals “sin”)?

Even though we don’t make the mistake of denying the extinction of any species (as Jefferson did), we do, of course, continue to err in other realms: unfortunately, though we now understand nature to an unprecedented degree, we’ve also gotten so good at using nature that we have begun to overuse (destroy) it. How does this statement make you feel?

Now that you and your discussion group have directly come up against the concept of evolution (perhaps for the first time), you might be wondering if a Christian could believe in theistic evolution and still hold the label of Christian. At this point, we recommend reading the book

*Evolution: Scripture and Nature Say Yes!* by Denis O. Lamoureux (2016). In the work, Lamoureux offers the story of his personal battle with the concept of “science vs. faith” over a period of nearly twenty years, from his first brush with evolution in a college biology class (and his subsequent struggle with atheism and agnosticism) to his eventual – though initially tentative – acceptance of the theory.

## Week 2: History of the Theory of Evolution and the Fossil Record

Chapters covered: “The Original Penguin,” “The Luck of the Ammonites”

### Reading and Reflection

#### “The Original Penguin”

1. Why did Lyell think Cuvier’s “vision of earth history” was “unphilosophical”?
2. If you didn’t have any background knowledge on the topics of earth history and extinctions, would you be inclined to side with Cuvier or Lyell? Why?
3. What do you think about the idea that humanity has never seen the production of a new species, but it has seen the extinction of many species? If all creation is good, what is our role in maintaining species, especially if extinction rates have been increased by human activity?

#### “The Luck of the Ammonites”

1. What do the paleontologists’ responses in the New York Times tell you about the nature of this sort of scientific research? How are new theories or discoveries received? Why? Why might this be a good way to respond? What drawbacks might it have?

2. Why were the ammonites wiped out? What might that tell us about the nature of extinctions? About the nature of life?

3. How does an understanding of extinctions fit with a Christian understanding of the created world?

## Discussion

In addition to thinking about the above reading questions, please write two questions of your own regarding the chapters you read for today.

1.

2.

## Digging Deeper

As a species, we're able to hunt other species to extinction; we're very efficient hunters. Is that good? Is that bad? Nonsense? What do you think about the idea that we have even tried to exterminate other people groups?

Can a sense of entitlement be a good thing?

At what point is something a new species (we've seen new dog breeds)? If we're destroying species, should/are we obligated to create new species (such as splicing genes of the chytrid fungi and the Panamanian golden frog)? Is it okay to "make" a new species and release it into the wild? In that vein, what are appropriate uses of gene splicing technology compared to exploitation?

## Week 3: Humankind's Impact on Aquatic Systems

Chapters covered: "Welcome to the Anthropocene," "The Sea Around Us," "Dropping Acid"

### Reading and Reflection

#### "Welcome to the Anthropocene"

1. What seems to be the pattern for occurrences of mass extinctions? How regularly do they seem to occur?

2. Where did the name "Anthropocene" come from? Why is this name fitting?

#### "The Sea Around Us"

1. What impact may increasing CO<sub>2</sub> levels have on the environment? What dangers does ocean acidification pose?

#### "Dropping Acid"

1. What is Biosphere 2? What does it have to do with the study of ocean acidification?

## 2. What is Darwin's Paradox?

### Discussion

In addition to thinking about the above reading questions, please write two questions of your own regarding the chapters you read for today.

1.

2.

### Digging Deeper

Does a post-human world fit with the Biblical understanding of God's plan for creation? What is our role collectively and individually in responding to mass extinctions?

We can't care about things that we don't know about or understand, but we care about what we see; thus, we have to get people to experience these realities so they can care about them. At the moment, there is no sense of self-efficacy (no motivation to change because it "won't help the big picture"). How can/should we get people to take concepts of mass extinction (coral bleaching, etc.) seriously?

At what point in human history did we come to care more about our own survival than the health of the environment? Can we be held responsible for killing of species before we understood the effects of our actions (obviously, we don't want to accept responsibility, but can we)?

## Week 4: Trees and the Tropics

Chapters covered: "The Forest and the Trees," "Islands on Dry Land"

### Reading and Reflection

#### **"The Forest and the Trees"**

1. Why and how will global warming impact tropical species?
  
  
  
  
  
  
  
  
  
  
2. Should we be especially concerned about conserving tropical environments, since they are home to so many organisms?

#### **"Islands on Dry Land"**

1. What are "anthromes"?
  
  
  
  
  
  
  
  
  
  
2. How does small population size impact extinction rates? Why?

3. How did Terry Erwin estimate the number of insect species in the tropics? How do these estimates compare to the number of species in the rest of the world?

## Discussion

In addition to thinking about the above reading questions, please write two questions of your own regarding the chapters you read for today.

1.

2.

## Digging Deeper

What is the earth for? What are humans for?

Do we need biodiversity?

What motivates atheists or agnostics to care for creation? What motivates people to preserve life?

What motivates your treatment of the created world?

Is concern about personal well-being a valid motivation for creation care?

Should our stewardship be driven by a desire to respect future generations of people?

Should we love creation just because God loves it, not because of its utility?

## Week 5: Humankind's Impact on Mammals

Chapters covered: "The New Pangaea," "The Rhino Gets an Ultrasound"

### Reading and Reflection

#### "The New Pangaea"

1. What is "enemy release"?
2. "The animal is not evil, it's just amoral and in the wrong place" (204). What do you think of this statement?
3. What is the "new Pangaea"?

#### "The Rhino Gets an Ultrasound"

1. Why is Suci getting an ultrasound?

2. What killed five rhinos at a breeding facility in Peninsular Malaysia?

3. What evidence do scientists use to support the idea that man was an “overkiller” from the beginning?

## Discussion

In addition to thinking about the above reading questions, please write two questions of your own regarding the chapters you read for today.

1.

2.

## Digging Deeper

Are humans an invasive species?

What makes an invasive species bad? (Are invasive species bad?)

What is the point of captive breeding programs? Should the quality of life currently available to a species impact whether we pursue the preservation of that species? (For example, if there is no habitat available for Sumatran rhinos to return to after the population has grown because of captive breeding efforts, should we still try to breed them?)

Are we morally responsible for tragedies (such as the death of Sumatran rhinos being transported to the United States) even if our intentions were good?

Can we have a symbiotic relationship with nature? Or are we just parasites?

What does it mean for humans to thrive?

What does it mean to be in harmony with nature? If humans have always been responsible for harming the environments they live in, is it possible for humans to be in harmony with the created world?

## Week 6: Now What?

Chapters covered: “The Madness Gene,” “The Thing with Feathers”

### Reading and Reflection

#### “The Madness Gene”

1. Why might Sir Grafton Elliot Smith have invented a “shaggy covering of hair” as one of the Neanderthals’ distinctive characteristics?

2. What makes us human? (Were Neanderthals human?)

#### “The Thing with Feathers”

1. The previous extinctions were largely products of natural events. The Anthropocene extinction (or the sixth extinction) seems to be caused by humanity. What is our responsibility in this situation?

2. How do we understand extinctions in the context of our role as stewards of Creation?

## Discussion

In addition to thinking about the above reading questions, please write two questions of your own regarding the chapters you read for today.

1.

2.

## Digging Deeper

We are called to fill the earth and subdue it. What does that mean? How have we done this historically?

What role do humans have in redeeming the earth? Can we bring about any healing to Creation? Have there been any instances in which we have healed Creation?

How are we as individuals responsible for stewarding Creation? What do you do to care for the earth in your daily life? What habits can you adopt to care for the earth better?

What can you do to combat human-caused extinctions? Should Christians be concerned about combating extinctions?

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