

Study Guides for Faith & Science Integration

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Summer 2017

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

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### Recommended Citation

Eppinga, R., Huizinga, A., & Marcus, L. (2017). How Can Christians Understand and Respond to the Concept of Mass Extinctions? (Leader's Guide). Retrieved from [https://digitalcollections.dordt.edu/faith\\_science/13](https://digitalcollections.dordt.edu/faith_science/13)

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Leader'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 six modules. Each module contains three sections. The first section presents a set of Reading and Reflection questions that 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 section consists of two (or more) Discussion questions, which will be written by the participants and the leader as they read. Both sets of questions are meant to foster discussion, but your group should by no means limit itself to the questions contained in these sections. The third section includes external references and additional questions for Digging Deeper into the topics addressed in the first 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?

## Planning and Preparing for a Session

The material assumes that each session will have about 30–45 minutes in which to meet. It also assumes that each participant will have read the assigned sections of *The Sixth Extinction* ahead of time, as well as studying the Reading and Reflection questions associated with that week. In order to prepare effectively for each meeting, all participants (including the leader or co-leaders) must answer the Reading and Reflection questions before the session.

More material has been included in each week than is likely to be covered in a single session. Discussion questions might often take priority over Reading and Reflection questions in-session, but the material covered in the 1<sup>st</sup> section will always be relevant to the concepts and ideas explored in small group. It must also be noted that these questions are intended as a guide for your discussion, but a spirited discussion may head off in any direction – plan accordingly for the flexibility of your small group.

## Equipped for Service

This “Leader’s Guide” is meant to **equip leaders** of these small group discussions, and thus the following pages are far more detailed and expansive than the average participant may judge necessary for complex discussion. We offer information directly from *other references, topics* for each session (as implied by session titles), and *suggested answers* to the questions posed in the text. This has been done in the hope that you, as the leader, may more easily facilitate and moderate discussion in and amongst your peers in the small group. Your small group may be made up of the generation that initiates change in how the common Christian comes to understand these questions and answers – in the service of your peers, do not underestimate your own significance as a leader or co-leader.

## 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?

Suggested Answer: Kolbert introduces the chapter with the “shadowy” evolution of humans, or *Homo sapiens*, after which she introduces the concept of the Big Five (five ancient events which were catastrophic enough to change life on the planet as we know it) and this modern Sixth Extinction. The Big Five to which she refers can be found in the back of the book on page 271, but we offer them here for your perusal. They are, in order of earliest to the most recent, 1) the **End-Ordovician Extinction**, which may have been initiated by an ice age that caused mass climate change. 2) the **Late-Devonian Extinction**, which is thought to have been caused by changes in sea level, a series of asteroids (giant hunks of rock and metal hurtling through space), and more climate change. 3) the **End-Permian Extinction**, brought about by another asteroid, volcanoes, a catastrophic release of methane into the atmosphere, and a drop in oxygen levels. 4) the **Late Triassic Extinction**, which is thought to have been brought about by climate change, flood basalt eruptions (large-scale volcanic activity), and another asteroid. 5) the **End-Cretaceous Extinction**, which may have been due in part to a series of volcanic eruptions and an asteroid striking the surface of the Earth. See page 6 for Kolbert’s summary of the major biological effects of the extinctions.

##### 2. What do you think of her approach? What are your initial thoughts on Kolbert and her book?

Suggested Answer: Kolbert offers a very different perspective on the appearance of humans and human innovation than most Christian young people would be used to. Her point-of-view appears naturalistic, with humans effectively presented as *just another species*. This is, no doubt, challenging to read for those who have never been presented with a purely secular perspective.



3. What background knowledge do you have about extinctions (from classes or previous experience)?

Suggested Answer: As with any other subject, the more you understand, the more you see. Group members who study/have studied the natural sciences, for example, may have more factual information on extinction from which to draw than those members who study/have studied within the humanities. In formulating your discussion questions, consider how your previous experience may shape the way that you interpret the book and the information presented. What about from the perspective of another participant or co-leader?

### “The Sixth Extinction”

1. What characterizes a mass extinction?

Suggested Answer: Mass extinctions are different from normal “background extinctions” (15-16) in that they are widespread and relatively rapid. As Kolbert writes, “there’s a crash, and disappearance rates spike.”

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?

Suggested Answer: Extinction is a deathly serious concept, and seeking to gloss over the stark reality of extinction can be dangerous. Clearly, the audience of the publication is an important factor when deciding how to present extinction. If a publication gives the topic an “optimistic spin,” is the author presenting a kind of false hope? Is it appropriate to present an optimistic picture of evolution in a children’s magazine? Does the publication still communicate a *sense of urgency* regarding modern extinctions?

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?

Suggested Answer: Asian carp are, of course, a huge problem in the Great Lakes and the Mississippi River. However, non-native species are not necessarily a bad thing for an ecosystem. For example, consider the fact that pheasants are a “non-native” species to North America from China, introduced in the 1880s. Yet, this species currently fills the niche of prairie chickens, whose population is currently dwindling.<sup>2</sup> Could the introduction of this species be considered “restoration ecology”?

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

Suggested Answer: Answers to this question may vary greatly. Some people view zoos as a means of preserving species, some people view zoos as a cruel system that subjects creatures to poor living conditions, some view zoos as a source of entertainment. Others believe that zoos are also useful for opening the eyes of the public to the reality of extinction, even helping to promote empathy.

### “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?

Suggested Answer: Jefferson wrote, “Such is the economy of nature that no instance can be produced of her having permitted any one race of her animals to become extinct; of her having formed any link in her great work so weak as to be broken” (27-28). In Jefferson’s time, we recognize that nature was seen as inexhaustible. Now, with centuries of archeology and paleontology behind us, and no doubt due in part to Cuvier’s bold claims which swept the scientific world of his time, we have evidence of species that once

existed which have never been seen. Thus, we have altered the mindset of the world from “impossible” to “absolutely certain.”

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?

Suggested Answer: Cuvier put his faith in anatomy and “the correlation of parts” (41), arguing that “Were any one of these parts to be altered, the functional integrity of the whole would be destroyed” (42). Upon the discovery of an embalmed cat shipped back to Paris from the Napoleonic invasion of Egypt, Cuvier found no evidence of transformation in the animal. Compared to the Parisian alley cat, Kolbert notes, they were “anatomically speaking, indistinguishable” (43). He ignored the argument that the few thousand years of the cat’s preservation was an incomparably small period of time when measured against the vastness of the years of Earth’s existence.

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

Suggested Answer: This question is a thought question, designed to probe the minds of your small group members (and your own mind). What do you and your peers believe? How firmly do you believe these things? If a theistic evolutionist, could you explain why? If a young earth creationist, are you open to the concept of a theistic evolutionary process (a mechanism designed and guided by God, the Master of the Universe)? Why or why not?

## 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.<sup>3</sup>

## 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”?

Suggested Answer: Lyell was a “uniformitarian” (*uniformitarianism* is the theory that changes in the earth's crust during geological history have resulted from the action of continuous and *uniform* processes). Lyell saw no evidence of the cataclysm claimed by Cuvier, for Lyell believed that every feature of the landscape was the result of very gradual processes operating over countless millennia. (In summary, “The present is the key to the past,” he said (48).) Cuvier, however, proposed a catastrophic and rapid “revolution” which destroyed the mammoth and other species (46). The claim that change in the world had ever occurred for different reasons or at different rates than in the present day was, Lyell thought, “unphilosophical” (unscientific). The fossil evidence was, by Lyell’s understanding, rendered unreliable, and extinction a process that occurred so slowly as to go practically unnoticed.

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?

Suggested Answer: This question is meant to put the participants in the shoes of Cuvier and Lyell’s contemporaries. Some students may say they’d side with Cuvier because cataclysmic events seem to align with the history presented in Scripture (e.g. the Flood). Others may say they’d side with Lyell because we tend to assume that the natural world is predictable.

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?

Suggested Answer: Kolbert, who is not a Christian, would not have much to say on the subject of “maintaining species” in respect to the duties of stewardship and the “good” of creation. She might, however, have some insights on maintaining species for the good of mankind. Consider these, as well as taking some time to discuss what you and your peers think about extinction, the maintenance of species, and the responsibility of humanity in the loss of biological diversity.

## “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?

Suggested Answer: Positing an idea that might cause a shift in a scientific paradigm is no easy matter. Scientific paradigms are widely used by large portions of the scientific community, and asking these scientists to change the framework through which they’ve been viewing the world is quite a task. Paradigms become paradigms because they seem to align with what is being observed in the natural world. Paradigms seem to be true, and suggesting that they are not will obviously raise some eyebrows. It is probably good that paradigm shifts can take a long time to occur. If scientists were willing to change the way they viewed the natural world every time one scientist suggested an alternative framework, science would be less reliable.

New theories or discoveries are rarely received with a 100% approval rating. Although the public may be swayed with the right information presented at the right time in the right way, the scientific community is highly skeptical, testing theories over and over again. This tendency can promote healthy scientific discussion, as long as both parties approach the claims objectively. (This can be difficult. After all, scientists who present new theories are often proving other, older science to be wrong). Drawbacks to the skepticism of so many in the sciences might include scatterings of disrespectful critiques or mudslinging feuds, and even careers being made or ruined overnight.

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

Suggested Answer: The dust of the asteroid (bolide) which created the impact crater was rich in sulfur and capable of incinerating every living thing in its path. Although “It’s unclear” what destroyed the ammonites (“the heat, the darkness, the cold, the change in water chemistry,” 90), it’s posited that perhaps the ammonite eggs (ammonitellae) were unable to survive the toxicity of the conditions on the ocean’s surface. As Kolbert notes about the nature of extinctions, “Everything (and everyone) alive today is descended from an organism that somehow survived the impact” (90). In the face of such catastrophic events as that which killed off the ammonites, the Darwinian concept of “survival of the fittest” loses all meaning. It might seem to an atheistic scientist, then, that we are “lucky” to be alive at this time, in this place, with our existence based on random chance alone. But as Christians, this observation really hammers home how magnificent it is to recognize a God who creates and sustains all things to our good and for a divine, glorifying purpose!

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

Suggested Answer: Here is another thought question for you and your group. How might extinctions fit into the plan of our Creator God? In addition, consider briefly discussing how miraculous your existence (and the existence of every other living thing with which you come into contact) truly is.

## 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?

Suggested Answer: Mass extinctions seem to occur "at regular intervals of roughly twenty-six million years" (101). Extinctions seem to occur in bursts. (This is basically a reading comprehension question.)

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

Suggested Answer: Paul Crutzen came up with the term "Anthropocene" for "the present, in many ways human-dominated, geological epoch" (108). Human activity has greatly impacted the way the world functions, so acknowledging the effect of human activity in the name of the current epoch seemed appropriate.

#### "The Sea Around Us"

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

Suggested Answer: Carbon dioxide dissolves in water to form an acid (carbonic acid). When there is more carbon dioxide in the atmosphere, there are more opportunities for carbon dioxide to react with water and produce acid, thus acidifying the water. Ocean

acidification has consequences for aquatic life; it can drive certain forms of aquatic life to extinction.

## “Dropping Acid”

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

Suggested Answer: Biosphere 2 is a large-scale terrarium that was intended to demonstrate how life on earth could be re-created on another planet, such as Mars (135). Though Biosphere 2 was not intended to demonstrate ocean acidification, the simulation went terribly wrong and the decomposition of the Biosphere’s plants increased the amount of carbon dioxide present in the dome. The spike in carbon dioxide resulted in the acidification of the Biosphere’s body of water. Chris Langdon experimented on the Biosphere’s “ocean,” and found that corals were greatly impacted by the creation of carbonic acid. In fact, they dissolve.

2. What is Darwin’s Paradox?

Suggested Answer: Tropical waters are low in nutrients like nitrogen and phosphorous. You’d expect nutrient-poor waters to be unable to sustain a wealth of biodiversity. However, tropical reefs are “the aqueous equivalent” of rainforests in terms of diversity. Corals build the framework for the ecosystem, enabling other creatures to thrive in an otherwise inhospitable environment (140).

## 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?

Suggested Answer: Global warming can drive species—tropical species included—to extinction. Gradual changes in climate usually allow species time to adapt to the new conditions, avoiding total extinction. Rapid change in climate is more disastrous. (This question, and Kolbert herself, assume the climate change does occur. Not all group members may share this belief.)

2. Should we be especially concerned about conserving tropical environments, since they are home to so many organisms?

Suggested Answer: This is a thought question that tries to get participants to think about how we assign value to organisms and environments. Should we be concerned about quantity when seeking to combat an extinction? Should we value all organisms equally?

#### “Islands on Dry Land”

1. What are “anthromes”?

Suggested Answer: Anthromes are a way of partitioning the globe into zones based on human influences (176). This term is different from biomes, which uses natural, non-human partitions.

2. How does small population size impact extinction rates? Why?

Suggested Answer: When population size is small, a population is more vulnerable to disasters (180). When a population is small, any change in environmental conditions can easily lead to the further decrease in population size. In addition, small populations tend to necessitate inbreeding, and that can have significant consequences for the genetics of a population.

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?

Suggested Answer: Terry Erwin counted all beetles in a single species of tree and, based on this value, estimated that the arthropod population in the tropics contained about 30 million species. Subsequent estimates tend to be smaller than Erwin's. The number of species of birds and mammals in the entire world are only in the thousands.

## 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"?

Suggested Answer: Enemy release is a term used to describe the transport of a species to a new environment in which it has few predators. By leaving "many of its rivals and predators behind," the species is free to invade and overtake the local flora or fauna (203).

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

Suggested Answer: This is a thought question. Does this statement fit with your understanding of animals' role in the post-Fall world? Are animals ever morally responsible?

3. What is the "new Pangaea"?

Suggested Answer: The "new Pangaea" is a term for the globalized world. Human activity has removed physical barriers that historically prevented species from interacting with each other.

## “The Rhino Gets an Ultrasound”

### 1. Why is Suci getting an ultrasound?

Suggested Answer: The zookeepers hope that Suci is pregnant because she is one of the last surviving Sumatran rhinos known to exist. The Sumatran rhino population is quite small, and by breeding rhinos in captivity, scientists may be able to preserve the population (at least temporarily).

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

Suggested Answer: Five were killed by trypanosomiasis (219). Other rhinos died because of injuries they had sustained, tetanus, or malnutrition. Because of our ignorance, we did more harm than good to the Sumatran rhinos. Would it be safer for everyone if we just refrained from interfering with the natural world? What happens when an environmental steward gets it wrong? Are we morally responsible for mistakes we made because of ignorance?

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

Suggested Answer: The disappearance of large mammals seems to correlate with the migration of humans to an environment (230). The megafauna extinction does not seem to be driven by climate change; rather, a decline in megafauna seems to have driven change in climate. Human hunting of slow-to-reproduce animals would have easily led to the extinction of the species. The extinction of megafauna then resulted in the extinction of various other creatures, like a domino effect.



## 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?

Suggested Answer: This is fairly subjective. Some students may say that this addition to Neanderthals is logical, given the fact that Neanderthals are thought to be closely related to the great apes, who are known to be covered in hair. Others may say that it is an example of creative license. Sir Grafton Elliot Smith may have been uncomfortable with the similarities between Neanderthals and humans, and covering a Neanderthal with hair is a way of distancing humans from these less-than-human creatures.

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

Suggested Answer: This is very much a thought question. What do you think? Is it genetics? Is it culture? Is it being made in God’s image? What does it mean to be made in God’s image? If Neanderthals were human (or were made in God’s image), how would that impact your understanding of humankind’s relationship with God?

#### “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?

Suggested Answer: Should we try to prevent as many extinctions as possible? Should we resign ourselves to the fact that humankind cannot help but wreak havoc? Should we, as young people, acknowledge some responsibility for these extinctions? Should that prompt us to action?

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

Suggested Answer: What do you think? This is the main question this book study sought to address. How has reading Kolbert's book impacted your answer to this question?

## 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?

## Bibliography

<sup>1</sup>Kolbert, Elizabeth. *The Sixth Extinction: An Unnatural History*. New York: Picador (Henry Holt and Company), 2014. Print.

ISBN 978-0-8050-9299-8 (hardcover)

ISBN 978-0-8050-9979-9 (e-book)

<sup>2</sup>These three articles are easily found by the use of a simple internet search, but here we offer the particular URL for each in case you may find them worthwhile.

[www.outdoorlife.com/articles/hunting/2016/02/embracing-9-non-native-and-invasive-species-we-love-hunt-and-fish](http://www.outdoorlife.com/articles/hunting/2016/02/embracing-9-non-native-and-invasive-species-we-love-hunt-and-fish)

[gazette.com/agencies-prairie-chicken-population-dwindling/article/145785](http://gazette.com/agencies-prairie-chicken-population-dwindling/article/145785)

[news.illinois.edu/blog/view/6367/468448](http://news.illinois.edu/blog/view/6367/468448)

<sup>3</sup>Lamoureux, Denis O. *Evolution: Scripture and Nature Say Yes!* Grand Rapids: Zondervan, 2016. Print.

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