



Chapter 1

1.1. Learning from the Biosphere experiments, how valuable is it for us to think of the Earth as a closed system with finite resources? What can we learn from that experiment that we can extend to our larger existence on the planet?

- Visit the [Biosphere 2 website](#) to see it for yourself!

1.2. What is an obituary? Why do you think Sala feels like he and other scientists are writing obituaries for ocean life?

- Sala is not the only one feeling this way, check out the [Obituary for the Great Barrier Reef](#)

Chapter 2

Please read chapter 2, we will consider this further during the school year.

Chapter 4

4.1. In this chapter, Sala talks about ecological succession from volcanic islands to old growth forests, and at the end of the chapter he states,

"We are abruptly interrupting and most often reversing ecological succession across the biosphere, turning complex ecosystems into simple, homogeneous systems with fast turnover rates: That is, we are accelerating and fragmenting the biosphere."

What is the difference between an ancient coral reef and one that is newly formed? Or a forest that is newly grown vs. one that has stood for 200 years? How would allowing more of the Earth's ecosystems the time and space to mature be better for biodiversity?

Here are some interesting examples for you to consider:

- [Coral Reefs of Belize- Nat Geo](#)
- [Biodiversity in the Korean DMZ](#)
- [How Chernobyl has become an unexpected haven for wildlife](#)

Chapter 5- Boundaries

5.1. Define the word *exploit, exploitation*.

5.2 Sala asserts here that the exploitation of ecosystems by humans, such as the tropical rainforest of Borneo for palm oil, prevents the habitat from ever returning to its natural ecological state, its 'glory' he says. Do you think it is possible for humans to extract from the natural world and not cause so much environmental damage? What can we do to be more sustainable in our natural harvests and preserve environmental quality, not be simply exploitive?

- Check out the [UN Sustainable Development Goals- Goal 14: Conserve and sustainably use the oceans, seas and marine resources](#)

Chapter 6- Are All Species Equal?

Please read chapter 6, we will consider this further during the school year.

Here are some interesting videos to help you see what Paine saw:

- watch [How Starfish Changed Modern Ecology](#)

Chapter 7- The Biosphere

7.1 In this chapter, Sala discusses complex relationships between microorganisms and the food web above them. From ocean food webs with whales at the top to terrestrial forest food webs with mature 'mother' trees talking to one another, to human gut biomes- there are bacteria and fungi deeply affecting the functioning of other organisms and the system as a whole.

Let's think about those soils and their carbon storage ability. In our area, we have two dominant land uses: forests and agricultural fields. Which of these land uses do you think has the more diverse, rich microbiome? *Write a set of hypotheses that we can use to study this question.* Write a sentence or two to explain why you hypothesized as you did.

- watch: [Mother Trees Connect the Forest](#)

*We will conduct some experimental tests during the school year to test your hypotheses!

Chapter 8- How Are We Different?

8.1. What is the necrosphere as Sala explains it? Why did Ramon Margalef, one of the greatest ecologists of all time, say that humans are dependent on the necrosphere? Don't we live in the biosphere? Could the term necrosphere be as much a warning to us as it is a description?

Chapter 9- Diversity is Good

9.1 In the December 2002 conference at Scripps, a reporter asked, "Why is biodiversity important?" Define biodiversity.

9.2 In your own words, why is biodiversity important?

9.3 Why does Sala say it's important?

- watch: [What is Biodiversity?](#)

Chapter 10- Protected Areas

10.1 What is the value of protected areas? Why should humans give up areas of the land and oceans to nature?

- watch: [Sala's TED talk- A bold plan to protect 30 percent of the Earth's surface and ocean floor](#)

Chapter 11- Rewilding

11.1. What is rewilding and how can it benefit us as humans? Give three specific examples, including one from the Chesapeake Bay!

- watch: [Restoring Oyster Reefs- Rewilding the Sea](#)
- watch: [Restoring Sea Grasses- Rewilding the Sea](#)