

Hunter & Gibbs Ch. 8 – Ecosystem Degradation and Loss
Study Questions and Guide
Conservation Biology
Spring 2009

This is a very important chapter!

1. What are the differences between **habitats** and ecosystems – also, how do the two concepts overlap? What are **habitat and ecosystem degradation**?
2. Know the major types of anthropogenic contamination of the natural world and some examples of each (don't be intellectually lazy – learn some examples that you don't already know). Why is water pollution/degradation an especially important species conservation issue? What are **endocrine disruptors**? What is **biomagnification** – relate this to what you know about food webs and chains from earlier in the class.
3. Be familiar with the depressing section on the effects of human structures on natural populations. Roads and dams are especially important topics and we will return to roads in particular later in the chapter when we consider fragmentation. Do much-touted **fish ladders** work? Notice that some things that everyone thinks are totally benign, such as lighting, can be problematic to some populations (nesting sea turtles).
4. Notice that soil erosion, although often a natural phenomenon is often accelerated greatly by human activities. Soil is not only a slowly replaced resource but also a pollutant in many bodies of water.
5. Fire can be an important part of ecosystems and also something that is a severe disturbance to which the system is not adapted.
6. We take water for granted and we tend to believe that irrigation and city water projects are always good. Is that the case?
7. What are **deforestation and desertification**? What are their many causes and consequences?
8. Be able to discuss the reasons and consequences of draining, dredging, and damming natural systems. Hydroelectric is a non-greenhouse means of generating electricity. Is it ecologically benign? Is any power source ecologically benign? And if not, how do we deal with these questions? What is meant by a **lotic to lentic** conversion?
9. The **fragmentation** section of the chapter is particularly important. It is not difficult to understand. We have already covered island biogeography theory and so relate its main ideas and effects on populations to the production of "islands" by fragmentation of habitat by roads and farms and other cleared areas. Also, please think about effects on demes' genetic structure and the repopulation of areas after local extinctions as a result of fragmentation. What are **area-sensitive species** (p 175)? How does the concept of r- and K- selected species enter into considering the effects on different species? Why are animals

that are higher trophic level often more severely affected (relate this to "island size)?

10. What is the effect of geometry (i.e. patch shape) on the condition of "island" patches? Note this is essentially a perimeter to area question?

11. Again, please study the depressing case example of Madagascar. The conflicts between the needs of humans who are far from rich and a unique natural

12. An overriding theme to think about from this chapter and earlier in the course is the role of disturbance. When is disturbance good for a system and when is it bad? Can disturbance be a conservation tool and if so when. Why are most anthropogenic disturbances bad for ecosystems (think about spatial and temporal scale besides severity)?

Once again, the discussion questions at the end of the chapter are excellent and deserve some review; we will probably discuss some of them in class.

Terms that you should know are given above in bold (and Q#12 is particular important, that is why it is in bold).