**Chapter 10: Land Use**

**Reading Guide**

**Vocabulary**

Learn the definition of each term. The *italicized* words are not necessarily in the textbook. The **bold** words require you to know more than just the definition. For example: Ecosystem service - you should what they are, be able to name several types and describe how we benefit from those services.

**Tragedy of the commons**

Externality

Maximum sustainable yield

**National parks**

Managed resources protected areas

Habitat/species management areas

Strict nature reserves and wilderness areas

Protected landscapes and seascapes

National monuments

Resource Conservation Ethic

Multiple-use lands

**Bureau of land management**

**US forest service**

**National parks service**

**Fish and wildlife service**

Rangelands

**Overgrazing**

Taylor Grazing Act

**Clear-cutting**

**Selective cutting**

Sustainable forestry

Tree plantation

Reforestation

Prescribed burn

Wildlife refuge

Wilderness areas

**NEPA**

**Environmental impact study**

Suburban lands

Exurban lands

**Urban sprawl**

Urban blight

Induced demand

Zoning

Infill

Urban growth boundaries

Eminent domain

*Buffer zone*

*Crown fires*

*Ground fires*

*Habitat corridors*

*Healthy Forest Initiative*

***Light pollution***

*Microclimate*

*Mixed-use development*

*Noise pollution*

***Smart growth***

*Surface fires*

*Tree plantation*

***Urban heat island***

**Reading Outline**

**Who Owns a Tree? Julia Butterfly Hill versus Maxxam**

1. What are the benefits of selective cutting?
2. What were the negative effects of switching to clear-cutting?

**10.1 Human land use affects the environment in many ways**

1. What is the Tragedy of Commons? Who came up with the theory?
2. Explain how the Tragedy of the Commons could apply to the ocean.
3. What is an externality? Who pays for the costs of externalities? Describe one positive externality and one negative externality of living near the ocean.
4. What are two ways to prevent the Tragedy of the Commons? Be specific.
5. Dr Elinor Ostrom won a Nobel Prize for her work on effectively managing common resources. Check it out: <http://www.yesmagazine.org/new-economy/the-victory-of-the-commons> What is her ground-breaking solution to the Tragedy of the Commons? (You will have to think – it is not explicitly stated in an easy to copy sound-byte)
6. What is the Maximum Sustainable Yield? What happens if you harvest below the MSY? At the MSY? Above the MSY?
7. Why is it difficult to calculate the MSY in reality?

**10.2 Public lands are classified according to their use**

1. What percent of Earth’s total land area is protected?
2. In the United States, what percentage of land is publicly held? Where (geographically speaking) is most of the protected land?
3. How should land be used based on the Resource Conservation Ethic? How realistic is this?
4. Fill in the correct acronym and full name for each Federal Agency that manages federal lands in the United States:

|  |  |  |
| --- | --- | --- |
| **Full Name** | **Acronym** | **Public Land Uses** |
|  |  | Recreation and conservation |
|  |  | Timber harvesting, grazing and recreation |
|  |  | Wildlife conservation, hunting and recreation |
|  |  | Grazing, mining, timber harvesting and recreation |

**10.3 Land management practices vary according to land use**

1. Fill in the following chart for public land uses in the US. Remember to SUMMARIZE: each box should contain very few words. Try not to expand the boxes.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type of Land** | **Description** | **Managed by** | **Primary Uses** | **Major Environmental Impacts** |
| Rangelands |  |  |  |  |
| Forests |  |  |  |  |
| National Parks |  |  |  |  |
| Wildlife Refuges and Wilderness Areas |  | NPS, USFS, FWS, BLM |  |  |

1. Rangelands
2. What is the Taylor Grazing Act of 1934? How does it work? Is it an economically sound solution?
3. Why is the BLM not always successful in its quest to manage rangeland?
4. Forests
5. What is the difference between clear cutting and selective cutting? List some pros and cons of each.
6. What kind of environmental impacts are the same regardless of what type of logging you choose?
7. Why is it hard for the USFS to manage forests?
8. *Fire management will be covered in class*
9. National Parks
10. Why are land uses outside of National Parks impacting the inside of the park? Give a few specific examples.
11. National Wildlife Refuges
12. *Although they are often categorized with wilderness areas, wildlife refuges are not nearly as protected as wilderness areas. Hunting, fishing and other resource extraction activities are often allowed in wildlife refuges as long as they do not threaten a protected species.*
13. National Wilderness Areas
14. When/why are banned activities such as mining allowed in National Wilderness Areas?

**10.4 Residential land use is expanding**

1. Describe areas that suffer from urban sprawl.
2. List some environmental impacts of urban sprawl.
3. How did the automobile cause urban sprawl?
4. What are some economic reasons to move outside of an urban center?
5. Explain urban blight is often a destructive positive feedback loop.
6. Explain how the Highway Trust Fund created a destructive positive feedback loop. Include the word *induced demand* in your answer.
7. List the 10 principles of smart growth.
8. What is infill? What is an urban growth boundary?
9. What is eminent domain? Do you agree with it? Why or why not?

Additional Work:

Answer the MC questions at the end of the chapter and review the FRQs.

### Chapter 11 – Feeding the World

### Reading Guide

**Vocabulary**

Learn the definition of each term. The *italicized* words are not necessarily in the textbook (Check the lecture). The **bold** words require you to know more than just the definition. For example: Ecosystem service - you should what they are, be able to name several types and describe how we benefit from those services.

Undernutrition

Malnutrition

Food security

Famine

Anemia

Overnutrition

**Industrial agriculture**

**Energy subsidy**

**Green revolution**

Mechanization

Economies of Scale

***Compaction***

**Waterlogging**

**Soil salinization**

*Commercial inorganic fertilizer* (same as synthetic fertilizer)

*Animal manure*

*Green manure*

*Compost*

**Monocropping** (monoculture)

Pesticides

Insecticides

Broad-spectrum pesticides

*Narrow -spectrum pesticides* (same as selective pesticides)

***Biological pest control***

*Boomerang effect*

**Pesticide treadmill**

***Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)***

***Food Quality Protection Act***

**Genetically modified food (GMO)**

Bt gene

Conventional agriculture

Shifting agriculture

Slash-and-burn agriculture

**Desertification**

Nomadic grazing

Intercropping

Crop rotation

Agroforestry

Contour plowing

**No-till agriculture**

***Polyculture***

*Terracing*

**Integrated Pest management**

**Organic agriculture**

CAFO

Artificial Growth Hormones (rBGH or rBST)

Free-range meat

Fishery

Fishery collapse

Bycatch

Individual Transferable Quotas

**Aquaculture**

*Annual*

*Perennial*

**Reading Outline**

A farm where animals do most of the work

1. *Covered in a warm-up*

**11.1 Human nutritional requirements are not always satisfied**

1. How did humans survive before modern agriculture began 10,000 year ago? How well did they survive?
2. What foods make up the largest component of the human diet? How much grain, meat and fish do we produce per person? Who eats meat?
3. Briefly describe the main reasons for undernutrition and malnutrition.

**11.2 The Green Revolution and industrial farming methods have transformed agriculture**

1. How does food production lead to a positive feedback loop with population?
2. What is an energy subsidy? Why should we consider it when thinking about how to feed the world? Put the following in order from smallest energy subsidy to largest: Typical US diet 2010, Typical US diet 1950, fishing (coastal), large scale corn, small scale corn, Feedlot Beef, Grass-fed beef, Hunting and gathering.
3. What types of things are the energy subsidy used for?
4. Fill in the chart below for the Green revolution practices

|  |  |  |  |
| --- | --- | --- | --- |
| **Practice** | **Description** | **Benefits** | **Drawbacks** |
| Mechanization |  |  |  |
| Irrigation |  |  |  |
| Fertilizer |  |  |  |
| Monocropping |  |  |  |
| Pesticides |  |  |  |

1. Fill out the following fertilizer chart

|  |  |  |  |
| --- | --- | --- | --- |
| **Fertilizer Type** | **Source** | **Pros** | **Cons** |
| Organic |  |  |  |
| Synthetic |  |  |  |

1. List the pros and cons of pesticides.
2. What is the pesticide treadmill? Explain how evolution causes it.

**11.3 Genetic Engineering is revolutionizing agriculture**

1. What is golden rice? What does it prevent?
2. *Use this section to add to your GMO webquest.*

**11.4 Alternatives to industrial farming methods are gaining more attention**

1. What is no-till agriculture? What are the advantages and disadvantages of no-till agriculture?
2. Why would you till a field? What are the advantages and disadvantages?
3. What is IPM? List some practices that would be included in an IPM strategy. What are the pros and cons?
4. What is the main goal of IPM? Are pesticides completes banned in IPM?
5. What are the goals of organic agriculture? List some pros and cons of organic agriculture.

**11.5 Modern agribusiness include the farming of meat and fish**

1. What is CAFO? What are the pros and cons of the practice?
2. What is a more sustainable way to raise cows, chicken, etc? What are the pros and cons
3. Why are fish in the ocean an example of the Tragedy of the Commons?
4. Give some examples of newer fishing methods that make it too easy to catch fish in the ocean.
5. Describe some specific environmental impacts of commercial fishing operations.
6. What is a more sustainable way to fish?
7. What is the difference between ITQ and MSY?
8. What is aquaculture? What are the pros and cons?

Additional Work:

Answer the MC questions at the end of the chapter and review the FRQs.