

Food Case Study

ENVIRONMENT 201 Autumn 2005

Ecology and Conservation: Humans in the Environment

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Schedule and Assignment Summary*

Week/ Date	Discussion topic	Assignments/In- Section Activities	Turn in during section
I Sept 28-29	Introduction to food case study; Assign food and presentation date	Search for and summarize information about your assigned food	
III Oct 12-13	Summaries of information on assigned foods (Group 1)	In section: 1-minute presentations with key information about your food	2-page maximum report on your food item
IV Oct 19-20	Same as Oct 12–13 (Group 2)	Same as Oct 12–13	Same as Oct 12–13
V Oct 26-27	Discussion of foods and consequences of consumption	Introduction to Nov 2-3 assignment	
VI Nov. 2-3	Lessons derived from essay topics		Submit maximum 5-page (1-½ spaced) essay as described below.

* See pages 4–7 for full explanation of assignments

Introduction – Foods, Food Webs, and People

Some people imagine that humans have somehow transcended the natural world, that science and technology have released us from any dependence upon nature. Nowhere is this fallacy more easily exposed than when we consider our place in and utter dependence upon the food web. Our food—whether plant or animal, fungal or bacterial—is, simply put, other organisms. The organisms we eat and the organisms that digest our waste products (indeed our very bodies after our deaths, at least before modern embalming) link us to other species. Our every action depends on an adequate supply of the sun's energy made available to us by other organisms. Our decisions about food affect our own health as well as the health of Earth's living systems. Indeed, "Our most intimate contact with the natural environment occurs when we eat it" (F. Fernandez-Armesto, 2002).

The act of nourishing ourselves has consequences throughout the food web. Through the ingestion of nutrients and the elimination of wastes, every human influences the natural world. As we will learn this quarter, humans currently consume the equivalent of about 40% of the annual production of Earth's terrestrial ecosystems and about 35% of the

oceans' continental shelf production. From the most conscientious consumer to the most unrepentant glutton, each of us is a link in the larger flow of nutrients and energy that propels the natural world, as well as a generator of waste products that are themselves sent through other webs of nutrition (and toxicity). One goal this quarter is to explore diverse biological connections in the human experience as well as the biological consequences of human actions and choices. Another goal is for you to explore these connections in light of your personal experience.

Food Milestones

Some of the turning points in human history relate to how we nourish ourselves as a species—as individuals and communities. The control of fire, for example, transformed and expanded the options of what we could ingest and what we could preserve for a later day. Fire-cooked food transformed solitary eaters into communal ones; food has played and continues to play a crucial role in society beyond just nourishment.

Fire was also a tool for altering the biota, including the food available to us. Adding edge to a forest or changing a forest into a savannah or grassland made environments selectively more suitable to one type of organism than another, such as grazing animals instead of forest dwellers. Grasslands provided the "nursery" from which we selected our most important grains, including wheat, barley, teff, and maize.

Many of the basic tools of society had their origins in the procurement and preparation of food. Fire is one example already mentioned. The rock, club, spear, bow and arrow, fish hook, and various forms of nets were invented or discovered primarily as a means to hunt, which is to say, nourish ourselves. Pottery and baskets were first of all means to store and transport foodstuffs. Fermentation—whether for bread, yogurt, cheese, wine, or beer—was and is a means of food preservation, and it is often a way to make certain substances more palatable.

Hunting of animals led not only to changed nutrition, but perhaps also to the birth of art in human society; think of the cave paintings of Lascaux or Altamira. Hunting (including fishing) of animals led to other changes as well. As humans turned to domestication, it fostered increased growth in human populations and the decimation of certain animal species. Scholars are only beginning to unravel the links between hunting and the gendering of human behavior, the creation and delineation of sex roles.

Domestication of animals changed nutrition as well as human social arrangements, including commerce. Think of domestication (cows, pigs, chickens) and semi-domestication (as in reindeer) as food preservation techniques. The domestication of plants led to further population growth and perhaps to one the most profound social changes of all: sedentary communities along with rotten teeth, hierarchical social orders, and urbanization.

One other profoundly important side of food also deserves mention. The ritualization of eating brought magic and meaning into people's relationships with what they eat as well as with each other. Food rituals served and continue to tie members of communities together. Food also provides an indicator of rank, a way to show the inequalities among members of human communities.

For tens of thousands of years, humans foraged like most other species. Hunter-gatherers successfully tracked the annual shifts in availability of various foods across their territories. In short, they found what they could in their environment, subsisting on the organisms in environments of varying diversity from place to place. The advent of domestication changed those human-environment interactions in many ways, including nutritional stress not experienced by early humans. In Greece and Turkey, for example, heights of men and women declined by 5 to 7 inches from late ice age norms following the advent of agriculture. In the Illinois and Ohio River valleys in North America, the shift from hunter gatherer ways of obtaining food to cultivation of corn were associated with increased numbers of cavities, higher rates of tooth loss, enamel defects in children's milk teeth due to undernourishment nutrition in pregnant and nursing mothers, increased occurrence of anemia (4X), epidemic tuberculosis, increases (67%) in osteoarthritis and similar degenerative diseases, and lower survival rates after age 50.

Modern humans suddenly find themselves in an even more awkward situation: citizens of the "developed" world are dying of overnutrition—a condition for which a million years of evolution as a species has not yet prepared us. How we got here and various scenarios for where we might be going next constitute a leitmotif of this course, as well as the organizing principle for this case study.

The Study of Food

This course is about the ecology and conservation of living systems on Earth and the effects of human actions on those systems, including humans. One lens through which we can see major influences of humans on living systems is through the study of human foods. Among other questions, we can ask: What are the consequences of our food production systems (agriculture, aquaculture, harvest from the wild) for the future prospects of our food growing system or for the survival of other species? Are there analogues between humans and beavers, whose effect on their environment often results in their local disappearance because of the changes they cause?

We will ask about the potential and limits of consumer choice and about impacts of human diet on the environment. Is the widespread premise, offered in numerous books and web sites, that the individual consumer can improve the environment through simple consumer choices true? What do those consumer choices influence, including individual health, economic consequences, and ecological effects on scales from local to global? Can we identify, quantify, and analyze how (if) consumer choices influence human and ecological health? Many argue that consumer choice is the best approach to realign policies and programs that threaten human and ecological health. Do you agree with that?

How important is consumer choice, for example, relative to legal frameworks, international trade agreements, patent law in governing what foods are available where?

Our Study of Foods

To make the project manageable, we selected foods common to the typical diet of a citizen of the Puget Sound "foodshed." Note that these foods are organized loosely into two groups containing eight sets of foods (e.g., vegetables and proteins to "buzz" foods)

Group 1

Veggies:	tomato	peppers ('green' and black)	cabbage (broadly <i>Brassica oleracea</i>)	
Fruits:	apple	strawberry	banana	
Dairy:	milk	cheese	butter	yogurt
Other:	corn syrup	sugar (cane and beets)	salt	

Group 2

Proteins:	beef	salmon	soy	chicken
Starches	wheat	potato	beans	corn
Buzz:	coffee	chocolate	cola	beer
[Extras:	rice	groundnut (peanut)]		

Expanded Description of Schedule and Assignments

Sept. 28–29. Introduction of case study. Section will include a general discussion of the relationships between food and organisms of all kinds and how humans have (or should it be have not?) developed a unique relationship to food and how they control it. The importance of food will be explored from a variety of perspectives: ecological, health, economic, and cultural.

After this discussion, each student will be assigned a food item for detailed study. For your assigned food, read a diversity of relevant material and present a summary of that effort in both written (2-page maximum length; 1-½ spaced) and oral (1 minute) form for the Oct. 12–13 or Oct. 19–20 sessions.

One of the great things about mini-reports like the one you will write is that they often lead to more questions than answers. We encourage you to incorporate your best questions into your report. One way to do this is to include a research agenda in your report to highlight unanswered questions, treating them as an asset rather than an embarrassment. The following items are likely to be essential to all reports (no matter what the food).

- Common and scientific name of the food.
- Geographic distribution (a map may be helpful).
- Most common geographic source for consumers in Seattle today.
- Number of times ingredient changes hands on its way to consumers (educated guess ok).
- How it is commonly consumed?
- Domesticated or not? If domesticated, by whom and where?

The following items may be relevant to many of the food items in our list:

- What product(s) is the food used in?
- Why is it used (e.g. to cover up bad tastes, as a cheap filler, health goals)?
- Breed or cultivar diversity
- Genetic and transgenic modification (bearing in mind that domestication is in fact genetic modification)
- Packaging and generation of post consumer waste
- What preservatives are used in the food, and how do they influence shelf life, human and ecological health, profits, or other factors?
- Allergens, intolerances, and toxicity
- Healthful benefits and nutrition
- Transportation and distribution (costs, energy used)
- Environmental impacts (shade grown, use of chemicals for growing, soil erosion, irrigation issues, soil fertility, displacement of other ecosystems)
- Social and historical aspects (cultural context, historical traditions (e.g. wine-making has a rich and important history), economic impact, religious traditions (e.g. use of wine in communion, why?) and others)
- Labor issues (slavery, fair trade, migrant labor, health impacts on farmers and processors)
- Current and historical tax/subsidy policy (politics of tax/subsidy, who pays for the tax/subsidy, etc)

Oct. 12–13 or Oct. 19–20. These sessions will be devoted to short (1-minute) summaries from each person about their food and the most important of the above issues with respect to that food. Limit one transparency as a visual aid; **NO COMPUTER PRESENTATIONS.** The rest of the class period will be an open discussion of humans and their foods as defined by the set of 25. What are the lessons of this case study for considering our individual and collective ecological footprints? In addition to the oral report presented in the class, you should also provide a written report (maximum 2 pages; 1-½ SPACED) to your section leader. **Please use non-virgin paper (i.e., paper that has already been used on one side) or print on both sides.**

Oct. 26–27. Discussion during this period will focus on the ecological, health, and economic consequences of culture, harvest, and consumption of diverse foods. This

should include comparative explorations within and between our seven major types of food.

Questions that might be considered in this discussion include:

- Which sources of the food type have the largest and the smallest footprints? Why?
- What are the important dimensions of these footprints?
- Which footprints can be most easily reduced? Why?
- Which producers have the healthiest lives?
- Which food (within a type of food) has the most adverse soil or water effects?
- What about people and other organisms living downstream, downwind, or down the food web from the production site?
- Which food is healthiest for people eating it?

Nov. 2–3. Your assignment for this session will be to prepare an essay (maximum 5 pages; 1-½ SPACED) that provides concrete examples of things that you believe a food-savvy college student should know or demonstrate competence in before being awarded a diploma. Don't simply repeat things that have been said in class. Go beyond our discussions by coming up with your own ORIGINAL thoughts. Use those thoughts to focus your essay. Yes, we know this is hard but believe in yourself. In so doing, you honor yourself. Whatever you choose, make sure that it moves and inspires YOU, personally.

Classroom discussion for this day will focus on your essays and the emerging lessons that you collectively derive from this exercise. Your essay will be submitted to your discussion leader on this day. **Please use non-virgin paper (i.e., paper that has already been used on one side) or print on both sides.**

You might focus your essay by reflecting on such questions as:

1. What personal experience(s) have you had with food awareness that led you to select this topic for your essay?
2. In what way might your selection be considered as “sacred” or “revered?” What are ceremonies, traditions, rituals, recipes, or other factors in your family, community, or culture relate to your topic in ways that make it special?
3. Have individuals or society-at-large ignored your topic and with what consequence?
NOTE: WE DO NOT NECESSARILY WANT YOU TO ANSWER THESE THREE QUESTIONS. They are simply meant to help you reflect on the aspect of food you have chosen and its significance to you. If you allow yourself time to reflect and if you believe in your capacity to think broadly and deeply, you will find that you have many worthwhile things to say. Write for yourself; this is your journey.

Throughout the quarter, we invite you to think deeply about things that truly matter. We also invite you to communicate your thoughts in ways that are both

stimulating and respectful. This communication will happen in two ways: through participation in discussion sections and through the preparation of essays. Today's discussion is the first of those two steps. Discussion during this period will focus on the lessons learned from the presentation of information on the diverse types of human food. Think about those lessons at two levels: you as an individual and society in general. Consider both human and ecological health contexts of human food webs as they exist today.

Bibliography

The following books are excellent sources of information on food.

- Clay, J. 2004. *World Agriculture and the Environment: A Commodity-by-Commodity Guide to Impacts and Practices*. Island Press, Washington, DC.
- Davidson, A. 1999. *The Oxford Companion to Food*. Oxford University Press, NY.
- Fernandez-Armesto, F. 2002. *Near a Thousand Tables: A History of Food*. The Free Press, NY.
- Kiple, K. F., and K. C. Orbelas, Editors. 2000. *The Cambridge World History of Food*. 2 volumes. Cambridge University Press, NY.
- Millstone, E., and T. Lang. 2003. *The Penguin Atlas of Food: Who Eats What, Where, and Why*. Penguin Books, NY.
- Tannahill, R. 1988. *Food in History*. Three Rivers Press, NY.
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Documentaries on Food (Available at Odegaard Media Center)

Empty Oceans, Empty Nets, Dir: S. Cowan. PA: Bullfrog Films, 2004. This document explores the immense changes threatening marine fisheries worldwide. It also documents some of the innovative work being done to restore fisheries and protect essential fish habitat.

Farming the Seas, Dir: S. Cowan and B. Schienberg. PA: Bullfrog Films, 2004. Sequel to "Empty oceans, empty nets." As the aquaculture industry explodes across the globe, a growing number of communities and fisheries experts are engaged in an intense debate over its environmental, socio-economic, and health and food safety consequences.

People Like Us: Social Class in America. Dir: L. Alvarez and A. Kolker. NJ, 2001. This four-part documentary focuses on the ways that classes wield cultural and political power in America today. Selections in part I and II explore the ways that food decisions interrelate with class.

SUPERSIZE ME, Dir: M. Spurlock. NY: Hart Sharp Video, 2004. Under extensive medical supervision, Morgan Spurlock subjects himself to a steady diet of McDonald's cuisine for 30 days just to see what happens.