Feb 14, 2005

Name: _____ Pledge: _____

Env Studies 201 Test #1

Point Total: 100 pts possible

6 pts 1. What is a "citizen suit" provision in environmental law?

A 'citizen suit' provision in an environmental statute grants citizens the right to sue a government agency if they fail to properly follow the statue. Although such a right is granted generally in the the Administrative Procedures Act, a 'citizen's suit' provision, if present, lowers the requirements needed for obtaining the standing to sue.

6 pts 2. What was Disney's position on the Mineral King controversy?

Obviously they made the proposal to develop the ski resort in Mineral King valley, but once the Sierra Club sued the Dept of Interior over the action, Disney stayed out of it. Disney, not wishing to be tainted by controversy, let it be known that they were willing to abide by the court's decisions, even to the extent of publicly supporting the Sierra Club's standing to sue the DOI over the issue.

6 pts 3. What is the role of the 'God Committee' in administering the Endangered Species Act?

The 'God Committee' (ie, the Endangered Species Committee) may exempt a project from the the ESA if it determines that the benefits of the project very clearly outweighs the benefits of protecting the listed species.

6 pts 4. A famous statistic is that 99% of all species that ever lived are now extinct. Species go extinct all the time, and they always have. So why do environmentalists believe we should worry about present-day species extinction?

Although species may go extinct for natural reasons, the rate of extinction has been greatly accelerated by human activities that have resulted in loss of habitat, increased numbers of invasive species, chemical pollution, and overharvesting (eg hunting and fishing). There are a number of reasons this increased rate of extinction has alarmed many ecologists:

- It takes a VERY long time to regain the biodiversity lost during mass extinctions, typically millions of years.
- Loss of biodiversity may lead to loss of ecosystem functioning and stability. This may lead to reduced levels of ecosystem goods and services, such as wood, pollination, or pollution cleanup, and may lead to greater ecosystem fragility. There is a sense that we are undermining the ecosystems upon which we depend for our continued existence.
- Loss of pharmaceuticals and other natural products.
- Loss of genetic material to improve agricultural output (ie in crops and livestock breeding).
- Loss of food (wild game and plants).
- The feeling of some environmentalists that there should be ethical restraints on the ways in which our actions effect other organisms.

5 pts 5. **EXTRA CREDIT**: What is the *environmentalist's dilemma* as posed by Bryan Norton?

The dilemma arises when environmentalists oppose some activity, such as development or pollution, that is felt to damage the environment in some way. The dilemma is how to frame an argument against the proposed activity. Stating their opposition in purely economic terms doesn't capture the entirety of their respect for natural systems, while a purely moralistic argument based on biocentric ethics is a little too demanding for many mainstream environmentalists or those they are trying to persuade.

10 pts 6. Ecologists often assert that biodiversity loss negatively impacts ecosystem *functioning* and *stability*. What is meant by this assertion? In your answer, be sure to distinguish between the two effects.

Ecosystem functioning typically refers to the rate of flow of energy between tropic levels, and the recycling of nutrients from dead to living organisms. Most ecologists feel that, for most ecosystems, a loss in biodiversity may decrease the rate of energy flow and the efficiency of nutrient recycling. Both changes can result in decreased populations in the ecosystem community.

As an ecosystem ages, biodiversity tends to increase. New species may be estalished in the ecosystem if they fill a previously-unoccupied niche, or if they displace an existing species by out-competing it. In either case, the efficiency of ecosystem functioning will tend to increase with time.

Ecosystem stability refers to two related qualities, the constancy and resilience of ecosystem functioning. Both are time-dependent characteristics: the first term refers to the behavior of ecosystem functioning with time, and the second to the ability of the ecosystem to recover from perturbations such as drought. Higher biodiversity tends to stabilize ecosystem functioning because of greater competition: the effect of a population dip in one species will be counteracted by increased functioning from species that have similar ecosystem roles. Recovery from perturbations may be more rapid simply because there is a higher probability that the ecosystem contains species that can adapt to the changes more readily (such species have a competitive advantage immediately following the perturbation).

6 pts 7. (a) What is *Pareto optimality*?

Assume a certain distribution of goods among a group of people. The distribution is said to be at a Pareto optimum if no exchanges of goods can be made that will lead someone to be worse off. In other words, there are no possible trades that would leave someone a loser.

8 pts (b) How can this concept be applied to environmental policy?

It can be shown that an ideal marketplace economy, with true competition and fully rational and informed consumers, will lead to a Pareto optimal distribution of goods. Adam Smith refers to this as the 'invisible hand': fully rational (ie selfish) behavior will lead to fair market prices for goods, resulting in a better situation for the group as a whole.

Most public policy decisions, including environmental ones, will lead to winners (eg, those who drink water with lowered pollution levels) and losers (those who must pay for the decrease in pollutant discharge). If the winners compensate the losers for their loss — for example, if companies are allowed to pass their cost of pollution compliance on to the consumers who will benefit from them — then application of traditional cost-benefit analysis will lead to a Pareto optimum: the pollution level for which consumers are willing to pay.

A critical component of this approach is that qualities of the environment, such as clean air or the existence of conservation areas, are assigned a market value that accurately reflects their worth to the public. In other words, dollar values must be assigned to environmental *externalities* and included in the cost-benefit analysis. Such valuation is challenging to achieve in practice, particularly since it may ignore or undervalue non-commodity aspects of the environment. In addition, the complexity of environmental systems is such that their true value may not be known; in other words, consumers are not fully informed, either through ignorance or scientific uncertainty.

8 pts 8. Briefly, what were Aldo Leopold's biggest criticisms of the land management practices of the Forest Service in his time?

In Leopold's time, the Forest Service policies were aimed at producing the highest possible sustained yield of a particular product (usually timber) out of the national forests. Ultimately, his main criticism is that the policies did not work over a long time frame: yields might initially be high but would eventually falter. One of the reasons for this, according to Leopold, is that the Forest Service practiced single species management without considering the context of the system in which that species exists. Leopold was heavily influenced by the relatively new field of ecology, which emphasized the inter-dependencies of species. By 'raising trees like cabbages,' the Forest Service tended to oversimplify ecosystems and thus destroyed the support structures of the very species they were interested in harvesting.

Leopold advocated a context-based management system that considered the entire community in which a species exists. Interactions between species must specifically be taken into account, as well as the physical environment; a given set of management practices might successful in one biome but not another. Leopold also advocated taking a longer-term view of consequences, learning to 'think like a mountain.'

Leopold strongly cautioned against practices driven wholly by economics, since many elements of the biotic community that are considered valueless — because they cannot be directly transformed to some useful commodity — may be essential for community functioning and stability. Leopold: 'it [economics] tends to ignore, and thus eventually to eliminate, many elements in the land community that lack commercial value but that are essential to its healthy functioning.'

9. There have been some notable criticisms of a purely economic approach to environmental policy.

8 pts (a) Summarize the criticisms that Mark Sagoff has for 'economic efficiency.'
Sagoff feels that there is a distinct difference between consumer *preferences*, which are reflected by market value, and citizen *values*, which are not. Sagoff does not believe that the value lost when, for example, a forest is cut down is not completely reflected by economic valuation concepts such as 'willingness-to-pay.' In addition, he believes that there are certain inalienable rights, such as the freedom to enjoy clean water and air, that should not be sacrificed to the 'majority rules' principle of utilitarianism upon which marketplace economics is based. Stated another way, Sagoff feels that an individual's rights and morals should not be treated as marketplace commodities.

8 pts (b) Gatto and De Leo criticize efforts of ecological economics, such as John Costanza, to value ecosystem services. What is the nature of their criticism?
Gatto and De Leo are skeptical that the main valuation methods used by economists are adequate to capture the true value of natural systems. More generally, they do not think it necessary to collapse all measures of value onto the single scale of market value. They feel that the method of multicriteria analysis, already employed in Environmental Impact Assessments worldwide, is a better basis of decision-making than cost-benefit analysis. The multicriteria method, which is based on the input of various experts, allows the decision maker to weigh and rank various incompatible criteria to come up with policy that better accounts for nonmarket value.

8 pts 10. The Endangered Species Act (ESA) is sometimes called the 'pit bull' of environmental activists. It has created a lot of controversy. What two main criticisms of the ESA are usually used by its detractors?

The two most common forms of criticisms of the ESA are the following.

- It violates private property rights. The ESA applies to both public and private lands, and in the latter case (critics say) essentially amounts to a regulatory 'taking' by the government without due compensation to the landowner, violating the fifth amendment of the U.S. Constitution. Stated another way, the landowner is providing a public service for free.
- Even when applied to public lands, critics claim that the ESA unduly slows economic growth when it (for example) hampers the ability of timber companies to harvest wood. It takes money away from people who lose their jobs in order to save a species that may not even be that ecologically important. Essentially, these critics claim that public lands can be put to a better use than as a habitat for endangered species.

8 pts 11. Roderick Nash states that American pioneers had a 'bias' against wilderness. What was the nature of this bias?

Nash claims that the pioneer has an essentially adversarial relationship with nature. Wilderness was something to be mastered, to be 'tamed', so that the land could be cultivated and made safe for settlers. The pioneers were also conditioned by Puritans to believe that wilderness was a source of moral depravity, as evidenced by the 'wild savages' whose 'base' nature was not restrained by contact with civilization. The pioneers also considered wilderness vast and inexhaustible; there was no concern at all with limits to resources such as land or wood. The pioneers felt pride in their role in the westward expansion of the nation, pushing back the boundaries of evil wilderness.

12 pts 12. In some detail, compare and contrast the attitudes of the following people towards wilderness: Gifford Pinchot, John Muir, and Aldo Leopold.

Pinchot, the first chief of the Forest Service, was the leading advocate of the Progressive Conservative movement that gained favor under Teddy Roosevelt. His was a utilitarian philosophy that also considered the needs of future generations: wilderness should provide 'the greatest good for the greatest number for the longest period of time.' Pinchot believed that public lands should not be sold to private citizens, but should be managed by trained scientists so that they can use resources most efficiently for the public. His view of wilderness was strongly anthropocentric and discounted non-commodity uses of wilderness, such as public recreation.

Muir, co-founder of the Sierra Club and a leading naturalist, tended to a much more spiritual view of nature. He was a strong advocate of preservation and expansion of the National Park system, so that the public could enjoy the aesthetic and spiritual aspects of nature. Muir's view of wilderness was similar to that of the Transcendentalists, who felt that wilderness should be widely experienced to combat the corruptive influence of city life. Although he usually used utilitarian arguments to persuade his audience towards preservation, Muir was himself more inclined towards a biocentric view of wilderness.

Leopold's attitudes toward nature was a curious mixture of Muir and Pinchot. In his capacity as a professional forester, he had no problem with managing wilderness in order to maximize the sustainable production of goods. However, he had a much more organic view of nature than Pinchot. In particular, Leopold felt that management should not damage the biotic community as a whole, feeling a respect, almost a reverence, for ecosystem functioning and the interdependence of its components.