

Natural Resource Conservation and Policy

**Conservation, viewed in its entirety, is the slow and laborious unfolding of a new relationship between people and land.*

—Aldo Leopold,

Wisconsin Wildlife Chronology (1940)

**The Stone Age came to an end, but not because we ran out of stones.*

— Sheikh Yamani, former OPEC oil minister

If we draw on the resources in our minds, we won't have to rely on resources that we mine.

—Stan Oshinsky, Inventor

**Tell me the landscape from which you come, and I will tell you who you are.*

— Jose Ortega y Gasset

**The king who cannot take good care of the mountain, forest, lake and meadow, will not be able to rule the nation.*

—Guan Zhong (645 BC)

**A nation deprived of its liberty may win it, a nation divided may unite, but a nation whose natural resources are destroyed must inevitably pay the penalty of poverty, degradation, and decay.*

—Gifford Pinchot, founder, U.S. Forest Service

**Despite our artistic pretensions, sophistication and accomplishments—we still owe our existence*

to a six-inch layer of topsoil and the fact that it rains.

—Chinese Proverb

Instructor: Dr. Susan Todd

Associate Professor of Conservation Planning

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Office Hours: Fridays 1-3 and by appointment

Teaching Assistant: Josie Sam

Email: josie.sam@alaska.edu

Josie is studying for her masters in natural resource management. She will grade all the quizzes, the footprint exercise, and lead a Leopold discussion group.

Course Description:

The course examines the conservation of natural resources, including its history and ecological, economic and social foundations. First we discuss the basic principles of resource management including sustained yield, ecology, conflict resolution, and the effects of world population growth. With this foundation, we take a more detailed look at the management of specific resources, including agriculture, forestry, wildlife, fisheries, and recreation management, then fossil fuels and renewable energy.

The Goal of Resource Conservation:

"To learn to live on a piece of land without spoiling it."

—Aldo Leopold

Resource conservation is about survival—survival of both our planet and us. Over the long-term, human welfare and environmental quality are inseparable. Resource conservation is about working *with* nature to provide what we need while trying to minimize our impact on the environment. We cannot "lock up" *all* of Earth's natural resources. People are consumers—when we stop using the Earth's bounty, we die. We must try to limit our population and to stop consuming far more than we need. But even if we succeed in doing so, the remaining humans will still need food, water and shelter. We will still need to obtain everything we require from the Earth. And as Leopold said, we must learn to do so without spoiling the very source of our livelihood.

2 Required Texts and an iClicker required:

For those of you on a tight budget, copies of both texts will be on reserve in the Bioscience Library and the main library and an eBook is available online for the first text.

1) The following text provides vital background and supplementary information that we don't have time to cover in

lecture: **Daniel D. Chiras; John P. Reganold, *Natural Resource Conservation: Management for a Sustainable Future*, 9th or 10th Edition. You can order a hardcopy for \$125 at <http://www.UAFText2U.com>**

You can also buy an "eBook subscription" of this book for \$66.33. It gives you online access for 180 days. Go to <http://www.coursesmart.com/givecoursesmartatry?xmlid=9780321682598&instructor=2207693>

2) ***A Sand County Almanac* by Aldo Leopold.** We will read and discuss this book in detail in discussion groups. Please get the Oxford 1987 Edition ordered for this class. Other editions have different essays! Copies of this book can be obtained online and also at Gullivers Books on College Road and some will be available at the campus bookstore. This book is not available as an eBook.

Additional short readings will be available on Blackboard, the online resource for this class at <http://classes.uaf.edu/>. See the course schedule on the last page of the syllabus for due dates.

3) **iClickers.** We will be using iClickers in this class and the use of these will count for 50 pts of the participation grade and they will also count for attendance. More details on these will be available soon.

Course Objectives:

Upon completion of this course, the student should:

- Recognize our total dependence on natural resources and our own *personal* impacts on them. All of us "live off the land," though for most of us, this link is so remote that we are no longer aware of it. All of us are consumptive users of the environment.

- Recognize the complexity of our resource problems; that there are often no simple answers and there is no free lunch—all decisions have consequences.
- Recognize the importance of our philosophy in determining both the types of environmental problems we are likely to confront and the types of solutions we are willing to consider.
- Recognize that *everything is connected*. Resources are not separate entities, but communities of living, interacting organisms and their abiotic environments.
- Be able to challenge both optimistic and pessimistic perceptions about the state of our environment.
- Be able to explain what sustained yield is and why it is important in resource management.
- Consider both human needs and the needs of ecosystems.
- Know where much of our food, shelter and clothing comes from and understand the ancient history of these products.
- Be able to tolerate, and even appreciate, diverse viewpoints.
- Recognize that few disciplines are more controversial than resource management—and few are more important.

Know the Three Principles of Sustainable Resource Mgmt:

1. Reduce dependence on non-renewable, non-recyclable materials, as these will run out.
2. Harvest renewable resources no faster than they can be renewed, or they will also run out.
3. Produce wastes no faster than nature can absorb or break them down, or we will poison our environment—and ultimately, ourselves.

Learning Disabilities:

If you have a learning disability that may interfere with your ability to perform the work in this course, I am happy to make any necessary accommodations. However, it is the student's responsibility to obtain an Accommodation Letter from the Disabilities Office of the Health Center (ext.6158). This letter **MUST** be presented to Dr. Todd **within the first two weeks** of class. No accommodations will be made until this letter is given to the professor. Accommodations will NOT be made retroactively (i.e. if you have a spelling disability, you must present the letter **before** any points are deducted for spelling).

ATTENDANCE

Ten unexcused absences and you fail the course. We'll give you 2 unexcused absences without counting them. After that, each one will deduct 75 points from your final grade. You may be a brilliant student, but if you are not reliable, employers want to know that. They feel this should be reflected in grades, and I agreed. It also has a negative impact on the entire class when lots of students are missing. If you can't manage to come to class, you'd best not take the course. If you are seriously ill, if there's a death in the family, or if some other serious issue arises, send me an email. Otherwise, you are expected to be in class.

Conduct in Class

Guest Speakers are Volunteers—please be considerate! Most speakers are nervous about speaking to a group this large. They spend considerable time putting together a talk they hope you will like. Please show them—and your fellow students—the respect they deserve. Good audience behavior enhances the reputation of the University and our ability to attract speakers who are at the cutting edge of their fields.

-Do NOT put books away or zip backpacks until class is over (i.e. NOT ONE MINUTE BEFORE 11:30).

-Please use the bathroom before or after class, not during it. Leaving and returning disrupts the class and disturbs other students.

-Anyone talking during a presentation will be asked to leave.

-Anyone sleeping during a presentation will be asked to leave.

-Any student who is asked to leave three times will be withdrawn from the course. This is not high school. Here, an instructor can drop a student from class at any time.

-If you arrive LATE, please sit in the back.

-If you MUST leave early, please sit in the back and depart quietly.

-Feet belong on the floor, not up in a speaker's face.

-If other students are disturbing or distracting you, please let me know.

Email

If you send an email to me or to the TA, please put **"NRM 101" and your name at the start of the subject line**. Most faculty get 100-200 messages/day, many of which are spam. If you want us to read your email, **ALWAYS include a subject and your name**. Otherwise, it could be considered spam and be deleted.

Only those with active UAF accounts are allowed to use our "online classroom" called Blackboard. Your UAF email account will be created automatically. If you have any questions about email or Blackboard, contact the Computing Help Desk at helpdesk@alaska.edu.

Blackboard

We use the online course center called "Blackboard" (abbreviated BB) for many things in this class. It allows us to post copyrighted material (since only those with a password can access it), most of the gradebook is kept online, and you can access lecture notes, announcements, handouts, etc.

Go to <http://classes.uaf.edu/> and log in using your UA username (eg. sktodd). Don't know it? Go to: https://uaonline.alaska.edu/banprod/owa/bwgbk2gid.P_DisplayID_Request.

First time users of BB should use their student ID number without any dashes as their password. Once logged in, you can change your password by going to "TOOLS" and then to "PERSONAL INFORMATION" where you can click on "CHANGE PASSWORD."

Grading Policy

Zeros play havoc with the total number of points received in the semester. Each year, 15% of the students in this course receive an F, and inevitably they have several zeros on the grade sheet. This is NOT a difficult course—unless you fail to do the work. It is always better to turn in something rather than taking a zero. Remember that if this is a required course in your major, you must have receive a C or better for it to count. Grades will be based on the percentage of points earned out of the total possible points in the course, as shown below.

Item	# Points	% of Final Grade
Short Paper on Your "Ecological Footprint."	100	5%
15 Online Chapter Multiple Choice Quizzes (10 pts each)	150	8%
Attend 3 Leopold Discussions at 50 pts each	150	8%
Attend 2 Commons Game Sessions at 50 pts each	100	5%
Write 3 papers on Leopold's A Sand County Almanac at 100 pts each	300	15%
Two tests for 300 each	600	30%
Final Exam	450	23%
Participation: a) iClicker responses, b) lecture response cards, & c) answers in class	150	8%
Total Points	2000	100%
Unexcused Absences—subtract 75 points for each unexcused absence. (8 absences=an F)	-75 pts each	
Extra Credit: Provide proof that you had a summer NRM job interview scheduled through the NRM Career Day Event on November 4.	+75 pts	

Anyone who has less than 51% of the points possible by October 31st will be withdrawn from the course. You will be sent an email if this is the case.

If your final % of total points is between:	And:	Your LETTER grade will be:
92.5	100	A
90.0	92.4	A-
87.5	89.9	B+
82.5	87.4	B
80.0	82.4	B-
77.5	79.9	C+
72.5	77.4	C
70.0	72.4	C-
67.5	69.9	D+
62.5	67.4	D
60.0	62.4	D-
0.0	<59.9	F

A – Exceptional – The work is of “*professional*” quality, demonstrating originality, independence, and a thorough mastery of the subject matter. This not only means fulfilling the requirements, but doing it in a way that *goes beyond* the basic expectations of the assignment.

B – Very Good – Work does not have all the *refinements* that could give it real polish, but also didn’t have any significant problems. Work is accomplished on time and presented neatly and thoroughly but does not have the depth and originality for an “A.”

C – Acceptable – The work fulfills the *minimum* requirements with only a few notable errors. The student grasps the essential information; but work is not consistently thorough and does not demonstrate mastery. BTW, if this course is required for your major, you must get a C or better (even a C- is not adequate).

D – Unacceptable – The work demonstrates a lack of understanding of the fundamental nature of the assignment or material.

F – Complete lack of understanding of the fundamentals of the course.

Academic Honesty:

The UAF Student Code of Conduct requires that collaboration among students will not be allowed on essays, tests, exams and online quizzes. Copying or paraphrasing another student's writing is a violation of the Student Code. Evidence of academic dishonesty (either copying anyone else's work or allowing someone to copy yours) will be presented to the Director of Judicial Services and may result in an F for the course and possible expulsion from the University.

The Difference Between Research Universities & High School or Community Colleges

At high schools and community colleges, faculty are not expected to do research and virtually none of their institution's income is derived from research. Teaching is their focus.

But at a university, the *majority* of the capital and operating costs come from research grants. The primary purpose of research universities is to conduct research. Teaching is a side benefit. This arrangement has worked for centuries to push the envelope of knowledge while at the same time training the next generation of researchers. These are also considered to be higher caliber institutions for learning; a degree from a research university is generally more prestigious than one from a non-research oriented college.

As a result of this research focus, most faculty in the sciences have 80-90% research appointments and just 10-20% teaching appointments. Even if the professor wants to spend more time teaching, s/he is not being paid to do so and must still complete the research that is required. If you sometimes feel that professors do not spend enough time with students, please be aware that many of us would like to spend more time teaching, but teaching alone cannot begin to support the costs of a university like this.

Research pays the lion's share of the bills, constructs almost all of the facilities on campus, adds to the value of your

diploma and certainly adds to the ability of a university to attract professors who are at the cutting edge of their fields. Although it has its downside in pulling faculty away from the classroom, it has great benefits also. If it did not, you and I would probably be at a community college right now.

Editing and Spelling MATTERS...

One point will be deducted for each spelling error on each written assignment except tests. If you have trouble spelling, ask the Writing Center or a friend to proofread your papers. The Writing Center on 8th Floor Gruening has trained staff who will proofread your paper for FREE. Save points by taking your paper there before turning it in. If your first paper loses many points for grammar and spelling, your section instructor will require that you take your last two papers to the Writing Center.

The following are taken from papers submitted in this class. It simply takes longer to comprehend such sentences. When the entire paper is like this, it can take **10 times as long** for me to discern what the writer was trying to say, let alone grade the paper. Take pity on your readers! Spell check and READ your papers (AND your email messages) before turning them in.

Jobs in natural resources, wildlife and fisheries are highly competitive. The first contact most applicants make with potential employers is through their cover letters and resumes. **Would an employer spend 30 minutes reading a poorly written letter, when she could read a well-written one in just three minutes?** An ability to write so that others can easily understand it is essential to finding a job in this field.

FOUR WRITTEN ASSIGNMENTS

NOTE: ALWAYS keep a copy of graded & ungraded written assignments (in all classes) in case one gets lost or your grade was recorded incorrectly.

1. Entry Knowledge Quiz

We are required to give a "survey of knowledge" at the start of this course. It will be given on the 2nd day of class. You are NOT expected to know all the answers, but you will be rewarded with up to 100 pts extra credit for doing your best on it.

2. Multiple Choice Quizzes (10 pts) on each chapter

For quizzes, go to <http://www.prenhall.com/chiras/> and choose Edition 9 or 10, then click on the Chapter. Next, do ONLY the multiple choice questions for the assigned chapter.

Email your quiz results to the TA, Josie Sam at josie.sam@alaska.edu (do so while still logged into website). Do NOT send them to Professor Todd. Email a copy to yourself also! KEEP your copy of the email until you see your grade in BB (which takes about a week).

Quizzes are due by 9 am on the date listed on the schedule (on back page of this syllabus). You can do the Quizzes at any time; feel free to work ahead.

3. Your Ecological Footprint and the PAT Impact Equation.

Directions for this assignment are included in this syllabus. See the schedule on the last page for the due date.

4. "A Sand County Almanac" (SCA) discussions and papers

Directions for this assignment are included in this syllabus. See the schedule on the last page for the due dates.

PLEASE CONSERVE PAPER: UAF uses a stack of paper 60 feet tall every day.

All papers in this class can be turned in on recycled paper or on double-sided paper.

As more people learn to read worldwide, paper is consuming immense quantities of wood! China alone has quadrupled its consumption of paper in the past decade.

LATE PAPERS:

Each written assignment is turned in **AT THE END OF CLASS on the DATE DUE**. It is far easier to keep track of papers if they are all collected in class at the same time. To encourage everyone to turn them in on time and to reward those who do, the following points will be deducted from late papers.

Points Deducted for Late Papers:

Papers submitted outside my office (349 O'Neill) after 1 p.m. but before 5 pm on the day it is due.	—20 points
Papers submitted after 5 pm on FRIDAY, but before class the following Monday.	—30 points
Papers after this without a note from a doctor or other responsible party.	—ALL points

Tests & Final Exam

There will be two tests and one comprehensive final exam. Each of these will include about 30 true/false questions, several multiple choice and a few short answer questions. Dates for tests and the exam are given on the attached course schedule.

Questions on Test Scores

An opportunity for students to discuss questions regarding a test score will be provided, subject to the following guidelines. Please do **not** discuss the score after class. I can be surrounded by a dozen students pleading for points and this isn't fair to any of us. Instead, do the following:

Write the number of the question on the back of the test and explain why you feel you deserve more points for it, then turn it in.

I will look these over and correct any problems. When you get your corrected test back, if you still have concerns, please make an appointment to discuss it with me. However, an appointment to discuss a particular test must be made within one week after I have checked it. Do NOT wait until the end of the semester to bring such problems to my attention.

No Early Final Exams

Early final exams are not allowed (an airline ticket is not an excuse for missing the final exam). However, if you have 3-4 exams in one day, provide proof and if possible, we will allow you to take the final exam at a different time.

Don't Miss a Test!

Missed Test Policy

If you are delayed for any reason, remember that arriving late to a test is preferable to missing it altogether.

This policy is an effort to be fair to those who did take the test on time and who have complained in the past that they, too, would have liked extra time to study (or sleep, etc...).

Sports Teams. If you are on a team that requires you to miss a test, you must have an excuse signed by your coach and make arrangements with me to take the test as soon as you return.

Other reasons. Legitimate problems do happen, but sleeping through the test, getting caught in a blizzard that mysteriously occurred only at your house, being detained by aliens, etc. do NOT constitute reasons to take the test another day!

Illness. Anyone absent due to *severe* illness must write me an email as soon as possible (preferably before the quiz) and make it up as soon as possible.

Other. Any other excuse must be signed by the Dean of Students—preferably *before* the test, but at the latest during or before the next class period following the test.

NO OTHER EXCUSE WILL BE ACCEPTED

Is Zero Waste Attainable? Several businesses say "Yes!"

"If it can't be

Reduced, Reused, Repaired, Rebuilt, Refurbished, Refinished, Resold, Recycled or Composted,

Then it should be

Restricted, Redesigned OR Removed from production."

—Ecology Center, Berkeley

Question: Walmart has committed itself to attaining zero waste by 2020. What will they need to do to attain this goal?

ASSIGNMENT Instructions: Your Ecological Footprint & the PAT Equation



See schedule (on the last page of this syllabus) for the date due
See the Grading Policy in this syllabus for the number of points it is worth.

A. Your Ecological Footprint

The Ecological Footprint Quiz estimates the area of land and ocean required to support your consumption of food, goods, services, housing, and energy and assimilate your wastes. Your ecological footprint is expressed in "global hectares" (gha) or "global acres" (ga), which are standardized units that take into account the differences in biological productivity of various ecosystems impacted by your consumption activities. This particular footprint is broken down into four consumption categories: carbon (home energy use and transportation), food, housing, and goods and services. Your footprint is also broken down into four ecosystem types or biomes: cropland, pastureland, forestland, and marine fisheries.

First, calculate your ecological footprint at http://www.myfootprint.org/en/visitor_information/. There are lots of footprint sites out there, but I prefer that we all use the same one.

You will need to click on North America, then the U.S., then choose your preferred language, and answer a few questions. **PRINT the last page of the exercise, entitled "Quiz Results."** It shows how many Earths it would take to support the current human population at your standard of living, gives a bar chart of your acres by consumption category and a pie chart of footprints by biome (6 pts). *You will NOT be graded on how low or high you are; simply report what you come up with.*

On a separate page, number and briefly answer the following questions in 1-2 sentences each. REPEAT THE QUESTION BEFORE WRITING YOUR ANSWER.

- 1) Explain why you may have scored higher or lower than the average American. (7 pts)
- 2) What, if anything, would you be willing to do to reduce your footprint in each of the 4 categories (i.e. how would you reduce your carbon footprint, your food footprint, etc)? (7 pts)
- 3) Do you think your result is accurate? Why or why not? (7 pts)

B. The PAT Equation: An Exercise in "Reading" an Equation.

Paul Ehrlich (who wrote the influential book *The Population Bomb*) came up with the "PAT Equation": $I=(PA)/T$ where human impact (I) on the environment is directly proportional to the human population (P) and its level of affluence (A) (i.e. its consumption of resources per person) and inversely proportional to the technology available to reduce the impact (such as technology that increases the number of miles per gallon or that allows us to harvest the sun or wind or that cleans exhaust fumes more effectively). Answer the following questions and REPEAT THE QUESTION BEFORE WRITING YOUR ANSWER.

- 1 a) Holding the other variables constant, what happens to I when P increases? (3 pts)
b) What happens to I when A increases? (3 pts)
c) What happens to I when T increases? (3 pts)
- 2) Some people contend that rich countries have the most impact, while others claim it is poor countries. Using only the PAT equation, can you resolve this debate? Does the equation tell us which country has more impact on the environment: poor countries or rich countries? Why or why not? (7 pts)
- 3) Based solely on this equation, if a country wants to reduce its environmental impact, what are its choices? (7 pts)

Staple your results from the Footprint website to your answers to the above questions. **Your answers can be single spaced, but they must be typed, spell-checked (1 point off for each misspelled word) and stapled.**

**** NO STAPLE, NO CREDIT ! ****

Eco-Footprint Background Info (questions from this will be on the first test)

What's your 'Ecological Footprint?'

Karen Youso, Star Tribune April 22, 2003

Everybody loves the Earth. And why not? It supplies us with food, a place to live, places to go and ways to get there.

All this human activity puts a demand on the planet. That's not a problem as long as the demand doesn't exceed nature's ability to supply.

The question on this 33rd anniversary of the first Earth Day is: Are we taking more from nature than nature can give? Or, more specifically, are we drawing more than our fair share of the Earth's resources?

One way to address the question is by calculating an "ecological footprint." The bigger your footprint, the more of Earth's resources are needed to support you as you live, eat and move about. Add your footprint to everybody else's and you get the total human demand on nature.

Nature, in this case, is figured as the acres of Earth's land and water that produce food, absorb so-called "greenhouse" gases from fossil fuels and provide space for roads and homes. In other words, the part of Earth that supplies us.

Take the number of productive acres and divide it by the number of people on Earth, and you get nature's available capital, according to Mathis Wackernagel of Redefining Progress, a think tank in Oakland, Calif.

Every person on the planet would get 4.5 acres before overdrawing on nature's bank, Wackernagel says. But some say that people should have access to the amount that exists in their country, which doesn't always fit the average. For example, productive land in the United States allows about 14 acres per resident. Yet the average American footprint approaches 24 acres per person.

We aren't alone in taking more than Earth can replenish. The average German uses 12 acres, Australians 19 acres per person. As the human footprint increases, resources for future generations and wildlife diminish.

"You may not need elephants to live, but some people don't want to live in a world without elephants," Wackernagel said. It's a choice, he said. What kind of world do we want to live in?

The challenge is to find quality of life within nature's means.

According to Redefining Progress, the Ecological Footprint for the average American is 23.5 acres. Here's an example of how it's divided and ways to reduce it:

FOOD: 5.5 acres

The average American eating meat at least once a week requires 5.5 acres to allow for food production and energy used to transport, process, package and store it. About three-quarters of the typical American's diet is prepackaged, processed food that comes from farther than 200 miles away.

To reduce: Eat less meat, or eat range-fed or wild meats. Plants generally require less land, energy and other resources.

Otherwise, buy more locally produced meats, preferably from small-scale, organic or so-called sustainable farmers.

Much of the energy in the food system is spent on transportation, processing, packaging and storage. Grow food yourself, shop at farmers markets or buy directly from farmers.

SHELTER: 5.1 acres

This measures the energy and resources for constructing, heating, cooling and maintaining a dwelling. This number is for a 1,000 to 1,500-square-foot, free-standing house with energy conservation and two occupants.

To reduce: A smaller-sized home with more occupants means the resources used go farther. Adding to the family, however, isn't an effective strategy to minimize your impact. Don't oversize your home. Also, living in a condo, townhouse or apartment tends to decrease your footprint.

MOBILITY: 4.3 acres

This is how walking, biking, trains, planes and automobiles affect the planet. It reflects the space and resources used for building byways, and manufacturing and operating vehicles.

The average American drives about 14,000 miles a year, or 270 miles a week, in a vehicle that delivers 15 to 25 miles per gallon and occasionally has passengers.

Americans spend an average of 4.7 hours per person on commercial airlines every year. This is roughly equivalent to a round-trip flight between Washington, D.C., and Chicago.

An average American using public transportation travels 25 to 75 miles a week. For many Minnesotans, the weekly average would be zero.

To reduce: Use public transportation, shorten your daily commute, drive fuel-efficient vehicles, car-pool and, whenever possible, walk or bike.

GOODS AND SERVICES: 8.6 acres

Goods include appliances, clothing, electronic items, sports equipment, toys, computers, household furnishings and cleaning products.

Services include water, sewage, garbage, telecommunications, education, health care, entertainment, recreation and tourism, military and other government services.

To reduce: Because our lifestyles increasingly depend on goods and services, this part of the footprint can be significant. To reduce, lower your score on food, housing and mobility. Another approach: repair, don't replace. Think energy efficiency when you buy and recycle whenever possible.

Total footprint: 23.5 acres.

Humanity's Footprint

Today, humanity's Ecological Footprint is already over 30 percent larger than what the world can offer. This means we are overusing the planet and liquidating its ecological assets. Examples of our overuse include deforestation, collapsing fisheries, and the build-up of heat-trapping carbon in the atmosphere. At the same time, a significant percentage of the world's people do not have enough resources to meet basic survival needs.

Eco-Footprint Background Info (questions from this will be on the first test)

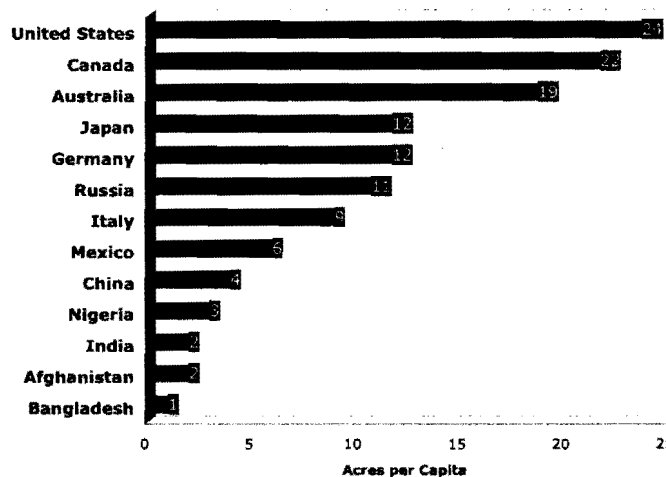
To overcome this sustainability challenge, we need to do a better job of budgeting our planet's limited resources. Nature provides an average of 2.1 hectares (5.3 acres) of biologically productive space for every person in the world. By 2050 that available space will be reduced to 1.4 hectares (3.5 acres) per person if predictions of global population are accurate. Also, some of this area must be set aside for the estimated 10 million other species on the planet.

On average, people use 2.8 hectares (6.9 acres), but there is a

wide range. In some countries, the average is as low as 0.5 hectares (1.2 acres), while others use as much as 13 hectares (32 acres) per person. Even within any given country, individuals' footprints vary widely.

By more carefully tracking human impacts on the Earth's resources, we can learn what needs to be done in order to protect our natural assets. We can all be part of the solution. Together, we can reshape the global economy in a way that will allow all people to meet their essential needs without destroying the limited capacity of our planet.

Average Footprints by Country



If the world were a village of 100 people...

These statistics give us a wider perspective on the state of the world and the pressure on natural resources worldwide. For most humans, things like parks and recreation are unthinkable luxuries. Clean water is even beyond their reach. If we could shrink the earth's population to a village of precisely 100 people, with all the existing ratios remaining the same, it would look something like the following. This is from the book, *If the World Were a Village*, by David Smith (2002).

There would be:

61 Asians
17 Europeans
14 from the Western Hemisphere, both north and south
8 Africans

52 would be female
48 would be male

70 would be non-white
30 would be white

70 would be non-Christian
30 would be Christian

89 would be heterosexual
11 would be homosexual

6 people would possess 59% of the entire world's wealth and all 6 would be from the United States.

80 would live in substandard housing
70 would be unable to read
50 would suffer from malnutrition

One would be near death; one would be near birth. One (yes, only 1) would have a college education. *One* would own a computer

If you woke up this morning with more health than illness ...you are more blessed than the million who will not survive this week.

If you have *never* experienced the danger of battle, the loneliness of imprisonment, the agony of torture, or the pangs of starvation ...you are ahead of 500 million people in the world.

If you can attend a religious or spiritual gathering without fear of harassment, arrest, torture, or death...you are more blessed than three billion people in the world.

If you can read this, you are more blessed than over two billion people in the world who cannot read at all.

Assignments on Leopold's A Sand County Almanac (SCA)

A. Discussion Sessions

On three Fridays we will have discussion sections on *A Sand County Almanac*. These sessions provide an opportunity for student participation and discussion of this influential work and they are spaced two weeks apart so that we have time to grade the papers before you write your next one. You will have the same room and the same group leader for all three sessions. In the next few weeks, we will assign each student to a group and a room.

I will ask everyone to let me know if they prefer a room on Main Campus or West Ridge. Two discussion groups will meet on Main Campus and two on West Ridge.

Attendance is taken at each discussion session. Unless there is a problem with the assigned room (such as another class in the room, which HAS happened), you must be present in the first 10 minutes of discussion to be counted as present. If there IS a problem with your assigned room, don't panic.

You will not be penalized for someone else's mistake. If you do not know where the room is, please try to find it in advance so you do not miss the first session. If you do miss one, it will not be possible to "make-up" the points for attendance. However, you can still complete the paper,

subject to the late paper policy (i.e. no extra time is given if you miss the discussion session, UNLESS you were seriously ill).

At each discussion session, come prepared to read

- 1) a paragraph from your paper **which you will turn in at the end of the discussion** and
- 2) a passage from SCA (for this passage, you must choose a different essay than the one you chose for your paper).

In the discussion session, each student reads a paragraph from their paper and explains why they chose that essay to write about. Each student also reads a passage from the book (from a different essay than the one they wrote about) and explains why they chose that passage, then we discuss the issues it raised.

**** Bring your book to each discussion session so that you can read along. ****

See the schedule at the end of this syllabus for the dates of these discussions

B. Answer these SIX Questions on 3 different essays (one from each of the 3 parts of the book)

You will write 3 two--page papers, one for each discussion session. The first paper will be on one of Leopold's essays from Part 1 of the book, the second paper will be on one of Leopold's essays from Part 2, and the third paper on one of his essays in Part 3. Each of your papers will answer these 6 questions and each paper should be two pages long.

To make sure that you answer each of these questions, please copy the question before answering it. Note that questions 4, 5, and 6 are essay questions that require a minimum of one paragraph to answer.

1. *What is the title of the Leopold essay you are writing about?*
2. *What is the page number of the first page of the essay in the book?*
3. *Write a one to two-paragraph summary of what your chosen essay was about.*
4. *What is Leopold's thesis—his primary argument—in this essay?*

What does he want the reader to take away; why did he write this essay? Think BIG here! Think of metaphors. Leopold hoped to change the world with these essays, so why did he include this particular essay? For example, in the first essay, does he want the reader to know that animals make tracks in the snow, or is he trying to communicate something more profound and universal?

5. Describe one scientific point the essay makes.

For example, on page 4 he talks about a meadow mouse. In two short paragraphs, the reader learns a good deal about mice and you could include some of these points. And on page 73, he talks about the many diseases that afflict his trees, yet he calls the essay "A Mighty Fortress." Why call a forest with many maladies a mighty fortress? What is the scientific point he is trying to make?

6. Why did you choose this particular essay to write about?

This could be because you strongly agree with its point, because it reminds you of your own experiences, or because of things you find surprising, enlightening, irritating, unbelievable—or downright wrong.

Be sure to include quotations to support your arguments. Put quotation marks around each quotation and include the correct page number in parentheses right after each quote.

STAPLE a copy of the grading criteria on the next page to the front of your paper. You will find digital copies of the grading sheet on Blackboard.

To improve your grade, you should read the criteria and use them as a checklist when you answer the questions.

See the schedule for Due Dates.

A Sand County Almanac Paper Grading Criteria

Download this form on Blackboard. Staple a copy to the front of each of the 3 papers.

SCA PAPER GRADING CRITERIA

Which Leopold paper is attached? (check one): 1 2 3

YOUR FIRST & LAST NAME: _____

1) Points for CONTENT

Your Pts	PTS	Use the 3rd column of this section as a checklist to make sure you have included each item <i>before</i> you turn in the paper. <i>Have you included each of the following?</i>
	5	1) the title of the essay you will discuss; and 2) the page number in the book.
	10	3. Quality of the one paragraph summary of what the essay was about.
	20	4. What is Leopold's thesis—his primary argument—in this essay?
	10	5 Describe one scientific point the essay makes.
	10	6. Why did you choose this particular essay to write about?
	5	Within your answers to the above, include at least one quotation from the book, with quotation marks and the correct page number in parentheses at the end of the quotation.

2) Points for Writing Quality

	10	The points reflect thought and a careful reading of the book.
	10	Paper includes original and creative elements such as word choice, approach, unusual points or insights, etc.
	10	Paper is easy to read: effective sentence structure and word choice, not boring or verbose.
	10	Overall Quality of the paper
	100	Subtotal for both Content and Writing Quality of the Paper

3) LESS deductions for errors and omissions:

Points	Problem
-20 pts per paper	Paper is not based on an essay from the correct part of the book (Part 1, 2 or 3).
-10 pts per paper	-10 points if paper is LESS THAN ONE full page OR MORE THAN THREE pages in length.
-10 pts per paper	Paper is not STAPLED to this sheet. That means a STAPLE, not a diaper pin or a fold-and-spit. Be professional. Get a small, light \$2 stapler at the bookstore. DO NOT ASK FOR A STAPLER IN CLASS!!
-5 pts per paper	Paper does not have grading sheet stapled to the front. This is for YOUR sake, not mine. To avoid missing points, READ the grading sheet and check off each requirement before submitting your paper.
-5 pts per paper	Paper is <i>not</i> typed.
-3 pts each	Grading sheet does not have (a) YOUR NAME and (b) which room you are in at the top.
-3 pts per paper	Paper does <i>not</i> have 1.5 spacing.
-2 pts ea	For use of clearly incorrect words, such as "adversity" instead of "diversity" or "Voyage of the Bagel" instead of "Voyage of the Beagle," etc
-2 pts per paper	Paper does <i>not</i> have a 11 point font for the body of the text and no more than 1 inch margins on all sides to save paper.
-1 pt each	For each spelling error, improper use of homonyms, etc.
	For each grammatical or syntax error (subject and verb not in agreement, incomplete or run-on sentences).
	For each significant punctuation error.
	Subtotal for Errors & Omissions
+ 5 pts per paper	BONUS! SAVE PAPER! Use recycled or two-sided paper for an EXTRA 5 pts.
	TOTAL POINTS (points for content & writing quality, less errors and omissions, plus bonus.

Have we lost our connection to the Earth?

If we have, is that good, bad, or neutral?

1. Thoreau tried growing a bean patch, but he felt guilty destroying weeds and fighting woodchucks. He concluded that farming should be condemned as discrimination against innocents. Thereafter, he obtained his beans from his mother's garden.
2. A timber harvesting protest is held in lovely *log* home; dozens of flyers printed on *paper*, protesters hold *paper* placards on *wooden* stakes. Are they aware of the paradox?
3. New Alaskan: "You know, when I came to Alaska from Baltimore, I was totally opposed to cutting trees. But since I got here, I've realized something. I—well, I *like wood!*"
4. Man who condemns any manipulation of nature by resource management agencies sees porcupines in his own garden and yells: "I'm going to *firebomb* those devils!"
5. Leslie: "My mother always bought chicken drumsticks in packages of four. As a result, my sister was 12 years old before she discovered that chickens don't have four legs."
6. Park Service employee announces to tourists that he is "strictly a nonconsumptive user of the environment. I do not support consumptive uses of resources." But he just finished lunch, he is standing on a lovely redwood deck, wearing a cotton-poly uniform, breathing oxygen... Is there such a thing as a "nonconsumptive user of the environment?"
7. A Native woman describes how she was sad when she caught a mother lynx with two kittens on her 50-mile trapline. The kits would surely die. Asked how she dealt with that, she said, "Well I know that someday it will be my turn. It's like they say, 'First the salmon feed me, then I feed the salmon.'"
8. An Eskimo hunter harvests a seal and follows an ancient tradition to show thanks and reverence that the seal "gave" itself to feed the people. Contrast that with our modern approach to getting food. We rush through the grocery store, getting apples from New Zealand, oranges from Australia, salmon from Chile, a shirt from China. Do we have any relationship to these items like the Eskimo's relationship to the seal? Do we have any idea how much oil it took to get these items here? How much water it took to grow them? What habitats were using that water before it was diverted to the crops? Which animal's habitat was obliterated so that these products could be grown and sold to us?
9. They say a grizzly bear on the north slope of Alaska requires 100 square miles of habitat to survive. How much land do you and I require? (our Footprint Exercise will attempt to answer this).
10. A few years ago the question, "Who is he/she?" meant "where are they from?" Today, the same question generally means "what do they do for a living?" What does this indicate about our connection to the Earth?
11. A pilot takes biologists to the Brooks Range in Alaska. In the past, the biologists always carried a map and carefully traced the route to tell the pilot where to drop them off. They knew how their site related to the terrain around it. Today, they give him the GPS coordinates of their destination and sit back to read a magazine. Roger asks them, "Do you know the name of this river and how it got its name?" Without even looking up, they answer no and go back to reading before he answers. Apparently they don't need to know such trivia anymore.
12. Does the average person know: what phase the moon is in right now? Which watershed their water comes from? Where their trash goes? Which way is west? Where the sun would be at true noon in the northern hemisphere? Which star is the North Star? What is the dominant coniferous tree on south facing slopes in Fairbanks? What does this indicate about our connection to the Earth and our "Sense of Place."
13. Ninety percent of the world's human population will soon live in cities of over 300,000 people. How will this affect our connection to the Earth and our "Sense of Place."
14. Most Americans capitalize the names of all the planets except our own. Does this say something about our relationship with the planet that sustains us?

Perhaps the best thing we can do for the Earth is to be consciously aware of and revere our tie to it. Without such reverence, "preservation" will be hypocrisy and "harvesting" will easily turn into exploitation.