

May

Taking Action

Throughout the past year, the focus has been on describing how aquatic ecosystems on our planet work and what kinds of physical, chemical, biological and human influences affect them. This last chapter focuses on humans and their direct connections to water and fish.

When someone takes care of something that has been entrusted to them, they are practicing **stewardship**. Environmental stewardship means taking responsibility and being careful with natural resources and the natural systems we are part of. Some people do so through their careers. They are professional stewards. Other people take care of natural resources in the ways that they live. They are also environmental stewards. We'll call them practical stewards. Environmental stewardship is very important because no matter how distant we might feel from natural systems, we are all part of ecosystems and depend on functioning, healthy ones for our survival and that of future generations.

We know matter cannot be created nor destroyed. It can, however be altered and dispersed. At any one time, we have a finite supply of natural resources (such as fisheries, forests, water, minerals, and fossil fuels) on our planet. If we contaminate them or use them up faster than they are replaced, we will automatically defeat our ability to achieve **sustainability**.

Sustainability is a complex term to define and understand. The World Conservation Union, Caring for the Earth describes it as a way of doing things that "improves the quality of human life while living within the carrying capacity of supporting

ecosystems". It means making decisions and conducting our lives based on how natural systems and cycles work.

For many, sustainability refers not only to the quantity of natural resources but to their quality as well. Quality, in this case, refers to purity of abiotic resources and genetic diversity of living things. Because natural systems are constantly changing, it is difficult to determine when an ecosystem is changing in a way that harms it beyond repair. At that point it is obviously too late. Most naturally occurring changes in ecosystems happen very slowly. Sometimes human activities cause those same changes to happen too rapidly. (See April for a discussion of cultural versus natural eutrophication).

Sustainability also includes improving the quality of life for all humans and their descendents. Therefore, it has social, economic, and political implications. Conserving natural resources and sharing the benefits of natural resources more equitably throughout the planet are part of the sustainability discussion. Decisions about using natural resources are often difficult because the ecological, economic, and social factors must all be weighed.

Stewardship can refer to using human practices that promote sustainability. Let's look at the example of green plants. Green plants on land and in the oceans supply us with oxygen, help moderate temperatures on the planet, form the base of food chains, and serve as storage reservoirs in the hydrologic and nutrient cycles. Green plants also provide us with medicines, foods and products. Using up green plants faster than

they can be replaced eventually leads to an imbalance in the system and creates problems for humans and other living organisms on the planet. When we recognize the roles natural resources play within our ecosystems and all human's dependence on them, we cannot help but recognize a call to stewardship.

PROFESSIONAL STEWARDS

Professional stewards work in many career fields. They work with federal, state and local agencies, academic institutions, private organizations, and in business and industry. Examples of careers that provide

people an opportunity to practice stewardship every day are fisheries biologist, teacher, conservation organization representative, outdoor guide, outdoor writer, conservation officer, coastal planner, water quality technician, and marine extension specialists. Listed below are some of the many places you can contact for information, speakers, educational programs, publications, audio visual aids and stewardship opportunities.

<u>Federal Agencies</u>	<u>State Agencies</u>	
US Environmental Protection Agency (EPA) Pacific Southwest Region 75 Hawthorne St San Francisco, CA 94105 (866)-EPA-WEST or (415) 947-8000	California Environmental Protection Agency 1001 I Street P.O. Box 2815 Sacramento, CA 95812-2815 (916) 323-2514	California Natural Resources Agency 1416 Ninth Street, Suite 1311 Sacramento, CA 95814 (916) 653-5656
US Fish and Wildlife Service Region 8 2800 Cottage Way, Suite W2606 Sacramento, California 95825 (916)414-6464	California Department of Fish and Game 1416 9th Street Sacramento, CA 95814 (916) 445-0411	<u>Private Organizations</u> Sacramento Audubon Society PO Box 160694 Sacramento, CA 95816-0694 (916) 709-2308
US Forest Service Pacific Southwest Region 1323 Club Drive Vallejo, CA 94592 (707) 562-8737	State of California Fish and Game Commission 1416 Ninth Street PO Box 944209 Sacramento, CA 94244 (916) 653-4899	Audubon California 6404 Wilshire Blvd #1250 Los Angeles, CA 90048 (323) 951-9620 x 104
<u>University Based</u>		
University of California, Davis One Shields Avenue Davis, CA 95616 (530) 752-1011	California Wildlife Conservation Board 1807 13th Street, Suite 103 Sacramento, CA 95811 (916) 445-8448	Nature Conservancy California Field Office 201 Mission Street, 4th Floor San Francisco, CA 94105 (415) 777-0487
UC Cooperative Extension		

PRACTICAL STEWARDS

Practical stewards are people who have careers that do not directly involve them in environmental stewardship, but they show responsibility for taking care of the environment through their daily lives at work, school and at home. There are many ways to do this. Each person must decide what and how much he or she can do. Sometimes stewardship practices that require quite a bit of effort at first become easier when they develop into a habit. Keeping cloth bags handy for grocery shopping can become a stewardship habit at home. At work, loading the computer printer with scrap paper that has one clean side is a stewardship habit. Both of these practices, reduce the rate of paper and plastic consumption which save trees, land, energy and money!

Here are some more ideas you can use at home, school or work.

- Recycle aluminum, glass, newspaper, cardboard, and paper.
- Buy products made of recycled goods or in recyclable containers.
- Think before you buy. Do you need this? Mend and repair rather than discard and replace. Buy used.
- Use rags instead of paper towels.
- Carry your water bottle or mug with you to avoid using disposable cups.
- Compost food wastes and yard debris at home and at school.
- Use public transportation, carpool, bike, in-line skate, or walk.
- Drive a fuel efficient car and keep it well tuned.
- Plant trees in your community.
- Wear a sweater rather than turn up the thermostat.
- Use fluorescent in place of incandescent light bulbs.
- Turn off lights and appliances when not in use.

- Plant trees to shade your house in the summer.
- Hang your clothes in the sun to dry.
- Install a space saver in your toilet.
- Turn off the water between rinses when brushing teeth.
- Water plants and lawn in the morning to minimize evaporation.
- Plant drought-tolerant plants.
- Buy foods grown or produced locally.
- Have your septic tank checked regularly and pumped when it needs it.
- Use alternatives to toxic household products. (See March.)
- Never pour anything (except clean water) down a storm drain.
- Remember the earth's surface and surface waters are connected to ground water!
- Visit a landfill, wastewater treatment plant, resource recovery station, or municipal compost and find out about the life cycle of different materials and products.
- Ask municipal officials for a map and tour of the storm drain system in your town.
- Call municipal offices for household hazardous waste collection events.
- Call your county Cooperative Extension Office to see demonstration sites of forestry and agricultural best management practices and to learn about bmps for lawn care.
- Contact a River Council or Office of State Planning for information about river and coastal clean up events.
- Get involved in local politics to influence local environmental policy decisions.
- Write letters to your representatives supporting environmental action.
- Take every opportunity possible to enjoy the natural environment!

SPORTFISHING and RECREATION

There is evidence that effective environmental education includes experiences in the outdoors. These experiences might be based in exploration, research, or recreation. One potential avenue to environmental stewardship is through sportfishing, particularly when it incorporates "catch and release" practices. Sportfishing is an activity that is accessible to almost everyone. It does not require a high degree of skill to get started, however, using knowledge about aquatic ecosystems helps anglers catch fish. Some anglers get involved with technical aspects of the activity, while others keep it simple. It is possible to spend much money on equipment, spend a small amount or to make your own gear.

Sportfishing can be a springboard or culmination to discussions about:

- animal feeding and reproductive behavior
- physical and chemical requirements of fish and their prey
- point and nonpoint source pollution
- common fresh and salt water fish
- geography
- habitats and microhabitats
- food webs
- carrying capacity
- non-indigenous species
- fish biology
- fisheries management
- angling ethics
- fish as sustenance
- fish and human nutrition
- law enforcement
- respecting other's property
- public access
- regional economies
- fishing gear
- fishing tackle
- angling skills
- fishing through history
- fish art
- outdoor writing
- commercial fishing

Word Power

stewardship
sustainability