

WaterTalk

Alaska

Idaho

Oregon

Washington

U.S. Environmental Protection Agency, Region 10 Bulletin - EPA 910/9-92-043

May 2004



The Mighty Columbia: A Regional Priority

It should surprise no one that the health of the Columbia River and its tributaries is of great importance to EPA Region 10. The Columbia River is the fourth largest river in North America. Much of the states of Idaho, Oregon, and Washington falls within the 219,000 square mile Columbia Basin. The water in the basin sustains great productivity of biological and social significance.

The resources of the basin, however, also have been subject to major changes caused by human activities. Of 200 historical salmon stocks in the basin, 69 have become extinct and another 75 are at risk. Twelve distinct groups of salmon are listed as threatened or endangered under the Endangered Species Act. Water quality has been degraded with respect to temperature, dissolved gases, and toxic substances.

In 2002, Region 10 designated the Columbia Basin as one of six priority areas for extra emphasis. EPA is now carrying out a plan to improve the effectiveness of our work in the basin. Activities relate to:

- toxic contaminants
- conventional pollutants and habitat
- biological resources

Two examples of recent agency efforts relating to toxics are described below.

The Columbia Basin Fish Contaminant Survey found elevated PCBs (among other contaminants) in fish that could be of concern to Native American and other consumers of fish. As a follow up, the Region surveyed electrical transformers near hydroelectric dams in the Columbia Basin. Such transformers used to be produced

Columbia Basin Goal

Protect public health and aid the recovery of Pacific salmon by:

- Reducing sources of contamination and
- Improving water and habitat quality in or near waters of the Columbia River Basin

with PCB-laden fluids and are a potential source of PCBs to the environment. EPA inspected facilities associated with 47 of 60 major dams in the basin. As a result, Region 10 created an accurate inventory of decommissioned PCB-laden transformers in the basin. This effort helped improve the understanding of facilities managers with regard to PCB

In This Issue...



EPA News to update you on agency activities, pages 1–4.



Tools to clue you in on resources, publications, opportunities, and services, pages 4 & 5.



WaterWords to share stories from communities around the Greater Northwest, pages 6 & 7.



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Ecosystem to provide news that goes beyond water topics, pages 9–11.

and TRI requirements for utilities using hydroelectric energy. Region 10 urges the continued voluntary decommissioning of these transformers to reduce the potential for PCB contamination.

Many studies by EPA and others have found elevated levels of metals in the sediments of the Upper Columbia River in northeastern Washington State. The major source of contamination is the Teck Cominco-Trail smelter in Trail, BC, about 7 miles upstream from the US-Canadian border. Before 1995, the smelter discharged about 160,000 tons of slag per year directly into the Columbia. The slag moved downstream to settle in slow flow areas. Slag, a by-product of the smelting furnaces, contains glassy, sandy, needle-like particulate and heavy metals such as arsenic, cadmium, copper, lead and zinc. EPA investigated 61 mines and mills in the surrounding area and is taking action to

address contamination at several of these sites.

EPA Region 10 recently decided to conduct a remedial investigation and feasibility study (RI/FS) at the Upper Columbia River site. The RI/FS process will evaluate the effects of contamination on human health and the environment, and determine if any cleanup action is necessary.

Much other work is being done (and remains to be done!) to protect and restore the valuable aquatic resources of the Columbia Basin. The "Mighty Columbia" deserves the best efforts of everyone responsible for its resources.

Contacts:

John Gabrielson, 206-553-4183, priority plan
Dan Duncan, 206-553-6693, PCB inspections
Cami Grandinetti, 206-553-8696, RI/FS

EPA Approves Oregon Water Quality Standards

On March 2, 2004, EPA approved water quality standards for the state of Oregon. These new and revised water quality standards address temperature, inter-gravel dissolved oxygen, and antidegradation. The standards were developed to reflect life-stage needs for the fish that live in rivers throughout Oregon.

Material supporting these standards is available on a series of computer maps and tables with detailed migration, spawning and rearing information for salmon, steelhead, bull trout, Lahontan Cutthroat Trout, and Redband Trout. EPA has lauded these standards and the maps as a national model for the restoration and protection of fish. The maps can be easily accessed at www.deq.state.or.us/wq/standards/WQStdsFinalFishUseMaps.htm.

Oregon's temperature criteria for salmonid uses is based on the *EPA Region 10 Temperature Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards*. This guidance is intended to help states and authorized tribes adopt temperature water quality standards. The Temperature Guidance recommends an approach for adopting temperature water quality standards to protect cold-water salmonids. It addresses these cold-water species in the Pacific Northwest: chinook, coho, sockeye, chum, and pink salmon; steelhead and coastal cutthroat trout; and bull trout.

The Temperature Guidance provides recommendations on how to establish temperature criteria for waterbodies, to help meet the Clean Water Act's

goal of fishable, swimmable waters. In addition, temperature standards are viewed by many as an important tool for the protection and recovery of threatened and endangered salmonid species in the Pacific Northwest. Meeting the criteria and protecting cold water temperatures will help maintain and improve salmonid habitat and aid in their recovery.

Under the new standards, all water quality permits in Oregon will need to meet more protective targets for temperature when they are renewed. Oregon Department of Environmental Quality (DEQ) also will use the new temperature standards in its future listing of impaired water bodies in the state and when issuing pollution load limits (known as Total Maximum Daily Loads/TMDLs) for Oregon rivers and streams. The new standards will affect "point of discharge" pollution (point source) and nonpoint pollution sources in the state, including agriculture and forestry.

The new standards include methods that carry out Oregon's "anti-degradation" policy. Under this policy, proposed new or increased pollution discharges must go through a water degradation review by DEQ before they're allowed to occur. The review balances the need for the discharge against the water quality impacts that might result from the discharge.

The standards lower the acceptable temperature in many rivers and streams, and raise the temperature limit for other streams, based on the latest scientific data. Previously, DEQ used a temperature standard

EPA Approves Oregon Water Quality Standards (cont.)

of 64 degrees F on most of the state's streams and rivers.

These standards are the result of extensive public review and consultation with the U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration National Marine Fisheries Service, Pacific Northwest tribal governments, Oregon Department of Fish and Wildlife, and DEQ.

EPA's approval of the DEQ standards, which were adopted by the Oregon Environmental Quality Commission last December, means that EPA does not need to issue final water quality standards for the state. In response to a March 2003 court decision, EPA was directed to either approve revised state standards or issue federal standards by March 2, 2004.

One new feature is that DEQ will now be able to work with comprehensive watershed maps that show temperature requirements for each water body in the state. This will help water quality officials get a better handle on when and where the new temperature rules are in effect for specific sections of rivers and streams. In the past, this link between specific water bodies and temperature requirements was vague.

For more information, contact Mary Lou Soscia, EPA, at 503-326-3250. Or visit one of these websites:

DEQ: www.deq.state.or.us/wq/standards/wqstdshome.htm

EPA: www.epa.gov/r10earth/oregonwqs.htm



Mercury Fish Advisory Issued

Fish and shellfish are an important part of a healthy diet. Fish and shellfish contain high-quality protein and other essential nutrients, are low in saturated fat, and contain omega-3 fatty acids. A well-balanced diet that includes a variety of fish and shellfish can contribute to heart health and children's proper growth and development. So, women and young children in particular should include fish or shellfish in their diets due to the many nutritional benefits.

However, nearly all fish and shellfish contain traces of mercury. For most people, the risk from mercury by eating fish and shellfish is not a health concern. Yet, some fish and shellfish contain higher levels of mercury that may harm an unborn baby or young child's developing nervous system. The risks from mercury in fish and shellfish depend on the amount of fish and shellfish eaten and the levels of mercury in the fish and shellfish. The Food and Drug Administration (FDA) and EPA are advising women who may become pregnant, pregnant women, nursing mothers, and young children to avoid some types of fish and eat fish and shellfish that are lower in mercury.

By following these 3 recommendations for selecting and eating fish or shellfish, women and young children will receive the benefits of eating fish and shellfish and be confident that they have reduced their exposure to the harmful effects of mercury.

-Do not eat Shark, Swordfish, King Mackerel, or Tilefish because they contain high levels of mercury.

-Eat up to 12 ounces (2 average meals) a week of a variety of fish and shellfish that are lower in mercury.

-Five of the most commonly eaten fish that are low in mercury are shrimp, canned light tuna, salmon, pollock, and catfish.

Another commonly eaten fish, albacore ("white") tuna has more mercury than canned light tuna. So, when choosing your two meals of fish and shellfish, you may eat up to 6 ounces (one average meal) of albacore tuna per week.

Check local advisories about the safety of fish caught by family and friends in your local lakes, rivers, and coastal areas. If no advice is available, eat up to 6 ounces (one average meal) per week of fish you catch from local waters, but don't consume any other fish during that week.

Follow these same recommendations when feeding fish and shellfish to your young child, but serve smaller portions. For more details about this advisory, visit the Internet at <http://www.epa.gov/ost/fishadvice/advice.html>.

Comment on National Coastal Condition Report

EPA invites you to comment on the draft **National Coastal Condition Report II**. This report is the second in a series and describes the ecological and environmental conditions in U.S. coastal waters. It also highlights several exemplary federal, state, tribal, and local programs that assess coastal ecological and water quality conditions. Like the first report released in 2001, this report rates the overall condition of U.S. coastal waters as fair to poor, varying from region to region. It represents a coordinated effort among EPA, the National Oceanic and Atmospheric Administration, the U.S. Geological Survey, the U.S. Fish and Wildlife Service, and coastal states. EPA expects to release the final report in this fall. The report can be found on EPA's web site at www.epa.gov/owow/oceans/nccr2/index.html. Provide your comments to burgan.barry@epa.gov or summers.kevin@epa.gov by June 7, 2004.

View EPA's Strategic Plan

EPA's national five-year **Strategic Plan** is now available. The plan presents five strategic goals—Clean Air and Global Climate Change, Clean and Safe Water, Land Preservation and Restoration, Healthy Communities and Ecosystems, and Compliance and Environmental Stewardship. The plan also outlines supporting objectives, as well as the cross-goal strategies EPA will employ to achieve these goals.

Visit EPA's Internet site at www.epa.gov/ocfopage/. For information about EPA's national water program strategic plan and plans from each EPA region including Region 10, visit www.epa.gov/water/waterplan.



New Watershed Outreach Guides Available

EPA announces a set of resources to help local governments, watershed groups, watershed management agencies, and others plan and conduct effective watershed outreach campaigns:

- 1) Getting in Step: A Guide for Conducting Watershed Outreach Campaigns (Pub. # EPA 841-B-03-002), and
- 2) Getting in Step: A Video Guide for Conducting Watershed Outreach Campaigns (Pub. # EPA 841-V-03-001)

These two companion guides offer advice on how to raise citizen awareness of nonpoint source pollution and to motivate individual behavior change to develop more water-friendly practices that will lead to cleaner waters.

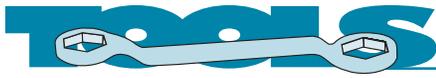
The 100-page book, plus appendices, expands upon a 1998 publication by the Council of State Governments. It includes new information from the growing field of community-based social

marketing. The book pulls together principles, techniques, and information for effective watershed outreach into a single, user-friendly source. The 35-minute video reinforces the six-step process outlined in the book, and showcases outreach programs from around the U.S.

For a free copy of this guide and video, contact the National Service Center for Environmental Publications via phone at 1-800-490-9198. Or visit the web at www.epa.gov/ncepihom. The book is also available as a PDF download at www.epa.gov/nps/outreach.html.

Clean Water Act Nominations Due

EPA has released nomination guidelines for the **2004 Clean Water Act Recognition Awards**. This award program seeks to recognize outstanding and innovative technological achievements at wastewater treatment facilities. It recognizes excellence in biosolids management, pretreatment, stormwater, and combined sewer overflow programs. Nominations are due by June 18. For details, visit www.epa.gov/owm/mtb/intnet.htm.



Communities & Salmon Newsletter Online

The National Fish and Wildlife Foundation's Community Salmon Fund Program recently announced its first issue of **Communities & Salmon**, a newsletter about this expanding program in western Washington, including updates from program managers, project profiles, and funding levels. The Community Salmon Fund stimulates small-scale, voluntary action by landowners and community groups to support salmon recovery through local partnerships with the Foundation. **Communities & Salmon** is available online at www.nfwf.org/programs/CSFnews.pdf.

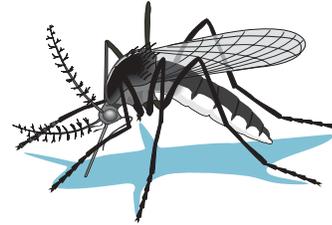
Easy Guide to Regulations

EPA recently developed a plain-language guide to its regulatory development process. The guide is called **Regulations: A Vital Tool for Protecting Public Health and the Environment**. The guide addresses topics like the origin and chronology of major environmental laws, considerations that guide decision-making, when regulations are not needed, improving the process, helpful websites, and more. The pamphlet is on the web at www.epa.gov/opei/regulatory/booklet.



West Nile Virus Information

For the most up-to-date information on West Nile Virus, please visit the Center for Disease Control's website at <http://www.cdc.gov/ncidod/dvbid/westnile/>.



Looking for Federal Funding?

Seeking federal funds? Check out the **Catalog of Federal Funding Sources for Watershed Protection** website. The site is a searchable database for financial assistance sources (grants, loans, cost-sharing) available to fund watershed protection projects. Search based on subject matter or funding program title. Criteria searches include the type of organization (e.g. non-profit groups, private landowners, states, businesses), type of assistance sought (grants or loans), and keywords (e.g. agriculture, wildlife habitat). Visit <http://cfpub.epa.gov/fedfund>.

Water Security Product Guide Online

EPA now offers an online **Security Product Guide** especially for drinking water and wastewater utilities. The guide can help treatment plant operators and utility managers reduce risks and provide protection against possible natural disasters and intentional attacks. Products evaluated in this guide relate to distribution systems, wastewater collection systems, pumping stations, treatment processes, personnel entry, delivery and storage, and computer systems. The guide will be updated regularly to ensure the most recent information on security technologies is available. To access the guide, visit the Internet at www.epa.gov/safewater/security/guide/index.html.

Clean Water Loan Helps Control Weeds with Goats, Not Chemicals



An innovative weed-control method is now at work in Oregon, thanks in part to a loan from the **Clean Water State Revolving Fund**. The Oregon Department of Environmental Quality (DEQ) recently signed an agreement with the Deschutes Soil & Water Conservation District. The agreement provides a \$250,000 loan to provide additional funding for a project that uses goats to eliminate weeds rather than relying on chemical weed killers.

The loan helps finance the “Caprine Restoration Services” project, aimed at improving streamside areas. The project uses an intensive traditional



Goats can help reduce the use of pesticides.

grazing system to manage vegetation, reduce erosion and improve the diversity of streamside vegetation in Central Oregon. Officials would like to expand the program throughout Oregon.

By using goats to feed on noxious weeds, the program greatly reduces both the need for pesticides in stream areas and the potential pollution of waterways due to pesticide runoff.

The loan is the second ever in Oregon’s Clean Water State Revolving Fund program concentrating on “nonpoint” water pollution sources – pollution sources that don’t come from “point source” or end-of-pipe industrial or municipal sewage and wastewater systems. Non-point pollution includes pollutant runoff from residential lawns and gardens, driveways and parking lots, as well as agricultural and grazing areas.

Other funding sources for the project include livestock sales and project contract fees. The district will repay the loan over a five-year period, at 1.23% interest.

The Clean Water State Revolving Fund program loans money to public entities, helping communities pursue a variety of water quality improvement projects. Loans range from \$7,000 up to \$34 million. DEQ administers the program, which is supported by annual grants from EPA. For details, contact Larry McAllister at mcallister.larry@deq.state.or.us or 503-229-6412.

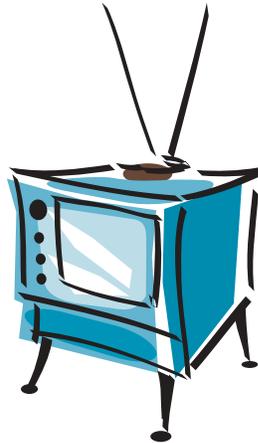
For information about the Revolving Fund program throughout Region 10 and in your state, visit the Internet at www.epa.gov/r10earth. Click on Index, click on C for Clean Water Act, State Revolving Fund in Region 10. Or call Michelle Tucker, EPA, at 206-553-4141 or 1-800-424-4372.

WATERWORDS

Weather Channel Airs Watersheds, June 26

A half hour special about watersheds, co-produced by EPA and The Weather Channel, will air on The Weather Channel on Saturday, June 26th at 8:30 and 11:30 pm EST. **After the Storm** shows the connection between weather and watersheds and the importance of watershed protection. When it rains or when snow melts, pollutants from city streets, lawns, and farms run off into our waterways. Scientists, water experts, and citizens involved in watershed protection efforts provide insight into the problems as well as solutions to water quality crisis.

After the Storm explains simple things people can do to protect their local watershed, such as picking up after one's dog and recycling household hazardous wastes. It also shows how some communities and private companies are getting involved through low-impact development -- utilizing rain gardens and green roofs to minimize storm-water runoff. Visit the EPA website at www.epa.gov/weatherchannel for scheduling and other information.



To view WaterTalk on the Internet, go to www.epa.gov/r10earth/watertalk.htm.

SPOTLIGHT

Invading Species Harming our Ecosystems

by Joan Cabreza

Just as we begin to see some light at the end of the point-source pollution tunnel, we are faced with the remarkable rise of another environmental danger: **invasive species**. Invasive species are widely considered to be second only to habitat destruction as the major cause of biodiversity loss. In fact, they have become one of the main environmental threats of the 21st century.

An invasive species is a species not native to the ecosystem in which it occurs, and which causes environmental or economic harm. Under this definition, an East Coast organism such as the bullfrog is considered invasive in the Northwest because it is such a voracious carnivore. On the other hand, cows or wheat, although non-native to the US, are not considered invasive species, because they are normally considered beneficial.

Some impacts of these species are direct and obvious. An invading species such as carp may compete with native organisms for food or habitat. Other invaders, such as lamprey, prey on native

species. They may also introduce new parasites or diseases into the ecosystem, or breed with native species, simplifying the local gene pool.

Some species may produce a single impact that sets a cascade of other impacts in motion. For example, the grass *Spartina alterniflora*, an asset in East Coast estuaries, becomes a disaster on the West Coast. When *Spartina* starts growing on tidal mudflats, it converts them to beds of vegetation. These beds trap sediment, raising the sediment level by as much as 2 inches a year. Structure and function of the entire coastal ecosystem can shift, as mudflats and native vegetation decline. Valuable shorebird habitat disappears, to be replaced by a single-species stand of grass.

Some invaders have multiple direct impacts. The salt cedar tree has already changed the character of most stream systems in the arid West. Salt cedar germinates in wet areas along streams and uses 10-20 times as much water as the native plants. This lowers the water table below the roots of

Invading Species (cont.)

native plants, often drying up whole stream systems. Salt cedar's incredibly long taproots allow it to access deeper water layers, helping it thrive. It also concentrates salt, and its salty leaf litter increases the soil salinity, making it hard for native species to grow.

Sometimes the sheer numbers of an invader create broad, profound changes in ecosystems. In one California stream, over 500,000 New Zealand mud snails were found per square meter. Their numbers altered the stream's entire food web structure, nitrogen flux and storage.

Sometimes an invader may not only cause multiple impacts but also make it easier for other species to invade. With densities up to 700,000 per square meter, zebra mussels are so efficient at filtering water that they deprive other plankton feeders of food, and disrupt the nutrient cycle. The water becomes so clear that it allows growth of new types of plants. The abundant mussel feces create a soft, rich bottom layer which encourages bottom dwellers, including the exotic faucet snail, to increase in number.

Where several invading species are present, they may have synergistic effects. In the Great Lakes, system upsets caused by invading species have stimulated growth of the local *Clastridium* bacteria. These bacteria produce the deadly botulism



Chinese Mitten Crabs like this burrow into dikes, thus potentially threatening lowlands in Washington

toxin. Zebra mussels and quagga mussels (both invaders) then concentrate the toxic bacteria, and round gobies (another invader) eat the mussels, passing the toxin up the food chain. When gobies are eaten by larger fish and birds, fish and bird kills result.

Freshwater weeds such as Eurasian milfoil, parrot feather, and water hyacinth produce their own cascade of impacts. They create a dense mat of surface vegetation. This mat decreases water mixing, raises temperature, and prevents light from getting to the lower water layers. Fish and vegetation can die, and oxygen is reduced in the water and sediments. This, in turn, alters the pH, releasing phosphorous from the sediments and producing noxious algal blooms. The end result is loss of wildlife habitat and recreational fishing, creation of a swimming hazard, and a boating nightmare. The human response to these weeds is to apply herbicides, which have their own water quality impacts.

The bottom line: invasive species can have tremendous environmental and economic impacts that change entire ecosystems. EPA is hard at work on the issue of invasive species. In Region 10, Joan Cabreza now heads up efforts to identify what tools are available to fight this emerging problem and to chart the course ahead. For more information, contact Joan Cabreza at 206-553-7369, 1-800-424-4372 or cabreza.joan@epa.gov.

Environmental Cleanups Reviving Communities

EPA places a high priority on cleaning up contaminated sites and returning them to productive use. Cleaning up properties for reuse invigorates communities, preserves green space, and prevents sprawl. Revitalizing properties creates jobs and gives local economies a boost. Whether a property is a Superfund site, a waste disposal facility, a former gas station, or an abandoned industrial site, environmental cleanup must be achieved with a consideration for the needs of the nearby community.

To that end, EPA Region 10 works with federal, state, tribal, public, and private partners to help local decision-makers restore land for a variety of uses. Each reuse plan brings a unique set of benefits to the local community. Redevelopment options vary widely, from creating parks, to constructing hospitals, to restoring wetlands, to establishing new businesses.

EPA recently published a 7-page document providing snapshots of some important revitalization efforts. The booklet is called **Community Revitalization Through Environmental Cleanup: EPA Activities in Alaska, Idaho, Oregon, and Washington**. For a copy, call EPA's Public Environmental Resource Center at 206-553-1200 or 1-800-424-4372.

Watch Out for Counterfeit Flea and Tick Products



Flea and tick season is upon us. But before you buy products for your pets, be sure you know what you're getting. Foreign-labeled flea and tick products are being unlawfully imported into the U.S. and packaged in retail cartons that look like

legitimate EPA-registered pesticides under the trade names "Advantage" and "Frontline."

EPA is concerned because consumers cannot be sure the counterfeit products contain the appropriate size applicator for the pet indicated on the carton. In addition, they may not have required child-resistant packaging, and may be missing directions for proper use.

If you have concerns about products you have purchased, or for information on identifying counterfeit products, visit EPA on the internet at <http://yosemite.epa.gov/R10/ECOCOMM.NSF/webpage/Counterfeit+Pet+Pesticides>. You may also contact Lyn Frandsen at 206-553-4768, toll free 1-800-424-4372, or by e-mail at frandsen.lyn@epa.gov.

ECOSYSTEM

Beneficial Landscaping **Dragonflies, Living Flashes of Light**

by Ralph Thomas Rogers, EPA's resident dragonfly expert

One of the many fruits of beneficial landscaping is the provision of habitat for native creatures and the opportunity for watching them. Ralph Rogers provides a 2-part series on dragon and damselflies — this issue's Part 1 is a fascinating look into their world; Part 2 is about dragonfly habitat and how to create it.

For more information about Beneficial Landscaping, contact Elaine Somers at **206-553-2966** or somers.elaine@epa.gov, or visit the website at www.epa.gov/r10earth/bl.htm.

Summer is the premier season to observe the multitude of flying insects which inhabit marshes and other wet places. For size, flying ability and beauty few, if any, insects can rival the dragonfly or its cousin, the dainty damselfly. For thousands of years humans have marveled at dragonflies. They have been depicted in ancient and modern oriental art in paintings, tapestries and woodcuttings. The Nootka Indians of the Pacific Northwest conferred the name clacking stick on dragonflies and included them in their totems and on personal decorative objects. Tennyson referred to them as "Living Flashes of Light."

Insect Cousins

Dragonflies were contemporaries of the first reptiles more than 300 million years ago and were around long before the mammals and flowering plants. Dragonflies and damselflies (referred to as Odonates of the insect Order Odonata) share characteristics which, in combination, distinguish them from other insects: two equal or nearly equal pairs of wings; large compound eyes; short, thread-like antennae; a long, slender body; and young that are aquatic and develop from eggs to adult through a nymphal stage.

Damselflies are delicate and weak fliers. When at rest, they hold their wings folded or slightly spread over their abdomen, butterfly fashion. Damselfly compound eyes are widely separated on either side of the head. Dragonflies, on the other hand, are strong fliers with robust bodies, and when perched, they hold their slightly unequal pairs of wings straight out to the sides like oars. There are 88 species of Odonates in Oregon and 80 species in Washington, and 97 species for both states combined. About 450 species occur in North America.

Dragonflies, An Introduction (cont.)

Courting - A Tandem Affair

One of the most observed dragonfly behaviors relates to courtship and mating, a behavior which is unique among insects, culminates in male and female tandem flights so commonly seen in summer and early fall. This flight is initiated by the male when he pursues a female that has entered his territory. The male clasps the tip of his abdomen to the back of her head, and they fly in a tandem coupling, male in front, while the female curls her abdomen to form the mating "wheel" prior to egg laying. Damselflies mate in the same manner except that the male clamps on to the female's thorax rather than behind the head.

Nymph to Adult, Voracious Predators of Two Worlds

Dragonfly young, which rival any scifi aquatic creature in appearance and method of procuring food, spend their youth underwater catching other insects, tadpoles and even small fish with their hinged, lightning-fast, extendible mouthparts. The amount of time spent preparing for an aerial adulthood may be as long as five years in some cold water species to as short as a few weeks in warm water species that live in small, vernal pools which dry up by summer's end. Dragonfly young can be grouped as Climbers, Sprawlers and Burrowers. The former are active foragers with streamlined bodies and keen eyesight for stalking prey. They derive their name from their active crawling over submerged vegetation. The sprawlers and burrowers are more sedate, preferring to either lie on top of the bottom ooze and debris or, in the case of burrowers, actually within the silt and muck, awaiting unsuspecting prey, which they snare with their hooked, prehensile mouthparts.



Halloween Pennant Dragonfly (male)

After the voracious young dragonfly has stored enough energy to make the transformation to adult, it crawls from the water on a stem of vegetation where its skin is shed. This generally occurs under the cover of darkness or in early morning, since this is a vulnerable time in its life. The result is a winged hunter, as ravenous a predator as its younger self, but this time exploiting a new habitat. It is interesting to note that a mosquito missed in its aquatic larval form may now be snatched by the same dragonfly in a different arena. The adult will also feed on a variety of insects, which they capture and eat while in flight by forming a "basket" with their six barbed legs. Sometimes the larger species will also feed on smaller dragonflies and damselflies and are themselves food for many species of birds. In their juvenile stage they are eaten by fish, aquatic birds, amphibians and other invertebrates.

Dragonfly Watching

Dragonflies become sexually mature within a few weeks after emergence and begin the life cycle all over with males establishing territories near water which they patrol in search of mates and to ward off males of the same species. Conflicts between different species at the same habitat are reduced by variations in patrolling and perching habits. Although fights and some mortalities do occur, the aerial battles within and among species help reduce the competition and number of encounters. Females are seldom seen near the water at this time unless they are ready to mate or lay eggs.

Larger lakes usually have poor Odonate populations except in sheltered areas where wave action is reduced and marshy habitats have become established. The best places to watch dragonflies are in marshy small ponds, warm water streams and similar places.

Next issue, learn about naturescaping to attract dragonflies and damselflies. To learn more now, call Ralph Rogers, EPA, at 206-553-4012.

Native Plant Appreciation Week, May 24

Governor Gary Lock has designated May 24-31, 2004 as Washington State's **Native Plant Appreciation Week**. The Washington Native Plant Society and other partners (including The Nature Conservancy and the State's Natural Heritage Program) initiated the proclamation signed by Governor Lock. Native plants are critical to the maintenance of water quality and biological diversity in Washington State. The relationship between native plants and water is increasingly being acknowledged as people become more aware of which plants are native, and which plants are not; which non-native species can become invasive, and how non-native species can impact ecosystems. Native plant communities provide the habitat and water quality purification functions that are so important to healthy rivers, streams, lake shores, wetlands and coastal zones. To find out more about activities planned in May to celebrate Washington's native plants, see www.wnps.org. For information, call Linda Storm, EPA, at 206-553-6384 or 1-800-424-4372.

Visit New Sustainability Website

EPA recently launched a new website on sustainability. **Sustainability** is the ability to achieve economic prosperity while protecting the natural systems of the planet, and providing a higher quality of life for its people. Individuals, communities and institutions are developing and implementing sustainability practices with the help of dozens of EPA programs, partnerships and policy tools. This site provides links to many EPA programs and tools that contribute to sustainability. These are organized into three main areas: planning and practices, scientific tools and technology, and measuring progress. To learn more, visit <http://www.epa.gov/sustainability/>.

CALENDAR

May

American Wetlands Month, <http://www.iwla.org/sos/awm/>.

May 18

Transportation and Global Climate Change Conference, Seattle, WA. Doug Howell, 206-263-6295.

May 24-31

Washington Native Plant Appreciation Week, www.wnps.org.

June 9-12

National Environmental Health Association Conference, Anchorage, AK, 303-756-9090, www.neha.org.

June 15-18

National Community Involvement Conference, Denver, CO. EPA, www.epancic.org/2004.

June 17-18

Tribal Energy Northwest Conference, Seattle, WA. Law Seminars International, 1-800-854-8009, www.clenews.com/LSI/04/04tribwa.htm.

July 15

Deadline to contribute to the August issue of WaterTalk. Andrea Lindsay, Editor, 206-553-1896 or 1-800-424-4372 x1896, lindsay.andrea@epa.gov.

July 18-23

International Society of Wetland Scientists, "Charting the Future: A Quarter Century of Lessons Learned," Seattle, WA, www.sws.org/seattle2004.

July 23-25

SolWest Renewable Energy Fair, John Day, OR, www.solwest.org.

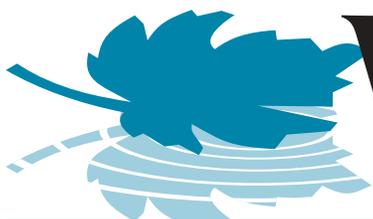


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You are invited to contribute items for publication. Submittal deadline is the 15th day of the month before publication. *WaterTalk* articles can be used in other publications. Please give credit to *WaterTalk*.

For mailing list changes, or to contact the editor, call Andrea Lindsay at (206) 553-1896 or 1-800-424-4EPA x1896, or e-mail lindsay.andrea@epa.gov.

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