



Illustration by:

Nick Lozza
Chase Middle School
Spokane, Washington

“NatureMapping to me is when someone goes out in the wilderness to record or draw notes on what they saw in the different habitats. ...It is a fun and enjoyable experience that you’ll remember for a long time.”

the *NatureMapping* Program

EDUCATION

COMMUNITY

SCIENCE

the *NatureMapping* Program

EDUCATION COMMUNITY SCIENCE

Karen Dvornich
National Director, *NatureMapping* Program
Washington Cooperative Fish & Wildlife Research Unit
Box 355020
University of Washington
Seattle, WA 98195
206-616-2031
vicon@u.washington.edu
www.fish.washington.edu/naturemapping

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THE CHALLENGE

a grass roots effort to protect biodiversity



Most wildlife viewing opportunities are by chance—you spot a bird from your kitchen window, your cat brings in a hapless bird or mouse, your lucky glimpse of wildlife when you're out hiking. Which wildlife are seen and in what habitat is rarely documented. Wildlife biologists and researchers will record such things when a species is rare or endangered. But, what about the common species? What can we do to keep common animals common?

TELL US WHAT YOU SEE AND WHERE YOU SEE IT

The *NatureMapping* Program introduces children and adults, their families, and their communities to the natural world that surrounds them by getting them outdoors and collecting biodiversity data—as volunteers and as citizen scientists involved in local research projects. “Real” data can be collected any time, any day, anywhere, by anyone.

A NATURE “HOW TO”

Biodiversity is complex, but not impossible to understand or document. It is the variety on which all life depends—from plants, which need insect pollination to humans who need grains, fruits, and vegetables for food. Plants and animals do not adhere to political boundaries, and we need to learn which habitats fish, wildlife, and insects use throughout the year, no matter where they travel. The more people help to “map” our environment and its inhabitants, the more we all can learn about biodiversity and help preserve our natural environment.

LEARNING FROM EACH OTHER AT ALL AGES

Children are curious about their natural world. We adults can learn from their uncanny ability to locate plants and animals. In return, we can use our experiences and knowledge to expand their understanding.

Retirees have their time and experience to offer. They can explore their environment on morning walks, during their travels, or even from their kitchen windows.

Using species lists developed by professionals, community members can conduct a “bioblitz,” inventorying everything they see in a 24-hour period. From these inventories, a biodiversity report card is created. *NatureMappers* can decide if they want to improve or maintain their community's report card.

AN INTERACTIVE WEB SITE AND DATABASE

The information that *NatureMapping* citizen scientists collect today can be used in the future by scientists and citizens alike to analyze their environment and make policy decisions.

OUR GOALS

citizens learn about their natural environment

The *NatureMapping* Program was developed in response to the need to document and preserve the biodiversity of our environment. The program's goals are to:

- Teach biological concepts, such as species distributions and habitat associations
- Train informal science professionals to teach citizen scientists to gather credible data for biodiversity inventories
- Allow citizens to use accumulated data to make a difference within their communities
- Develop a model that can be replicated and expanded nationwide
- Link science instruction in the informal and formal education sectors by providing teachers and students with real opportunities to contribute data to scientific investigations.
- Provide communities with a deeper understanding of their environment
- Focus more attention on the challenges of preserving biodiversity for future generations.



WHAT WE DO



NatureMapping is a hands-on environmental research and education program that teaches the public how to collect and record biodiversity using emerging technologies, works with teachers and schools to enrich their science curriculum and make it relevant to their communities, analyzes citizen-science data for accuracy and reliability, and maintains a web site for disseminating biodiversity information.

Our workshops offer outdoor practice, teamwork, trail tips, and fun facts. They contain three recurring themes: habitat, search image (knowing where and when to look), and geography. The workshops are offered at multiple levels:

- Basics for Teachers
New terminology, map basics, habitat definitions
- Intermediate Data Collection and Monitoring for Wildlife
Classifying habitats, recording precise geographic locations, learning wildlife tracking skills in the field
- Advanced Research Project Design for Communities
Using emerging technological tools such as CyberTracker, Global Positioning Systems (GPS), and Geographic Information Systems (GIS), satellite imagery, working with researchers on scientific methodology

LOCAL, REGIONAL & NATIONAL SCOPE

map, monitor, and share biodiversity data

The Washington State *NatureMapping* program, established in 1992 to assist scientists, has grown into a national program, run by different organizations in the participating states, yet unified in the common goal of working with citizen scientists to map, monitor, and share biodiversity data.

NatureMapping builds private and public partnerships among scientists, natural resource agencies, local communities, and schools.

Our accomplishments include:

- *NatureMapping* received the 1995 RENEW America national award.
- *NatureMapping* teachers have won local, state, and national awards.
- *NatureMapping* is the only K-12 biological monitoring program in the United States that has been critically evaluated (Master's thesis 2001).
- The George Lucas Education Foundation featured the *NatureMapping* Adopt-a-Farmer Project on its website and in its *Edutopia* magazine. Since it has been online, Adopt-a-Farmer has become the most popular video and story on the foundation's web site.
- Waterville, Washington fourth-grade *NatureMapping* students were invited to present their work at the opening day ceremonies of the Environmental Systems Research Institute (ESRI) GIS Users Group 2005 Conference. They are the youngest group ever to be invited to present at the plenary session.
- The first small mammal study at a state park in Iowa was conducted by *NatureMapping* high school students.
- State fish and wildlife agencies in Iowa, Virginia, and Washington have stated that they (collectively) have saved millions of dollars of biologists' time through the use of *NatureMappers'* efforts.



WHO WE ARE

FOUNDING DIRECTORS

Karen Dvornich, *National Director*

*Outreach Coordinator, Washington Cooperative Fish and Wildlife Research Unit,
University of Washington*

Karen has 20 years of experience working in the computer and telecommunications fields. She earned both a BS in Animal Behavior (1982) and a BS in Zoology (1991) from the University of Washington. Karen has also volunteered as a docent at the Woodland Park Zoo for 20 years and has been wildlife rehabilitator since 1982.

Margaret Tudor, *Education Director*

*Project WILD Coordinator, Washington Department of Fish and Wildlife
Co-director of the Pacific Education Institute (PEI)*

Margaret brings her K-12 education experience to the *NatureMapping*. She is inspired to involve students in meaningful scientific projects that benefit fish and wildlife and increase environmental awareness. Margaret received a BS in Geology (1974), University of Adelaide, Australia; a Master's in Environmental Health Education (1979), University of Hawaii; and a PhD in Science and Environmental Education (1989) University of Wisconsin.

THE *NATUREMAPPING* BOARD

The *NatureMapping* Board comprises representatives from each member state. Each state, in turn, has a steering committee with 20–40 cooperators, including governmental and non-governmental agency personnel, educators and students, scientists, non-profit organization staff, and business and general public representatives.

WASHINGTON

Karen Dvornich, *University of Washington*

Margaret Tudor, *Washington Department of Fish and Wildlife*

Dan Hannafious, *Hood Canal Salmon Enhancement Group*

VIRGINIA

Jeffrey Trollinger and Lou Verner, *Virginia Department of Game and Inland Fisheries*

IOWA

Jim Pease and Jason O'Brien, *Iowa State University*

ARKANSAS

Becky McPeake and Suzanne Wiley, *University of Arkansas*

IDAHO

Chris Gertschen, *Sawtooth Institute, Idaho State University*

WISCONSIN

Rick Icuzial, Sarah Schmidt, Paul Tweed, *Beaver Creek Reserve*



NATURE MAPPING IN ACTION

EDUCATING FOR THE FUTURE

fish & wildlife contribute to the quality of life

Case Study: Chase Middle School, Spokane, Washington

Since 1997, as part of an ongoing project, Chase Middle School eighth graders have observed and recorded wildlife at seven sites surrounding their school.

Each year, hundreds of students use binoculars and field guides to discover numbers and locations of different species. Students interview community members to learn which historically present wildlife no longer inhabit their watershed. They also conduct research on geology and native and introduced plants.

The students then make tables and graphs reflecting the information they have gathered added to data collected from prior years. They produce a newspaper with their results, including an opinion column about the future management for their watershed. The Washington Software Foundation and Battelle awarded two Chase Middle School teachers with the 1999–2000 Innovation in Teaching Awards for the use of The *NatureMapping* Program in their curriculum.

Case Study: Orchard Prairie Grade School, Spokane, Washington

Seventy-three species of wildlife were observed and recorded during twelve *NatureMapping* expeditions throughout the Little Spokane Watershed. Sixteen different habitats were identified. Students are working on a computer project created in GIS to display their information. A biodiversity skit created and performed by the K–7 *NatureMapping* students has been taken “on the road” to other schools and community organizations. Response shows that teachers find that it clearly describes the process and effectively communicates students’ understanding of biodiversity.



“I want to thank you for letting us know that what we do is actually important to the state and that we really do matter.”

7th grade student, Spokane, WA

“I can easily see NatureMapping as a central unifying activity for the entire curriculum.”

Elementary school teacher, Auburn, WA

“I work as the planning director for a small Vermont community. This sounds like such a wonderful project, and I would love to get something going here with kids in school.”

“NatureMapping can make a significant difference for a more healthy, thriving, and restorative Little Spokane Watershed.”



COMMUNITY AWARENESS

Snohomish County Public Works

The Surface Water Management Division was awarded a grant from the Environmental Protection Agency to use *NatureMapping* to study the French Creek habitat. “The *NatureMapping* project fieldwork concluded at the end of August, 1997; 1,133 records were tabulated. Volunteers observed 19 mammal, 6 reptile and amphibian, and 70 bird species at eight study sites. Volunteers spent more than 300 hours working on this project,” said Janet Carroll, Senior Planner, Surface Water Management Division. Their work provided current information on wildlife usage throughout the watershed.

Land-Use, Bainbridge Island, Washington

Bainbridge Island, Washington. During the planning process for the Comprehensive Land Use Plan for the island, citizens expressed very real concerns about the actual and potential loss of wildlife on the island. They concluded that wildlife, in all of its forms, contributes to the quality of life on the island. Wildlife habitat and corridors had to be mapped to complete the plan. Students at Woodward Middle School on Bainbridge had been using The *NatureMapping Program* since 1993, so the City Planning Department asked them to monitor the island’s wildlife. The data were used as part of Bainbridge Island’s Watershed Stewardship Program.

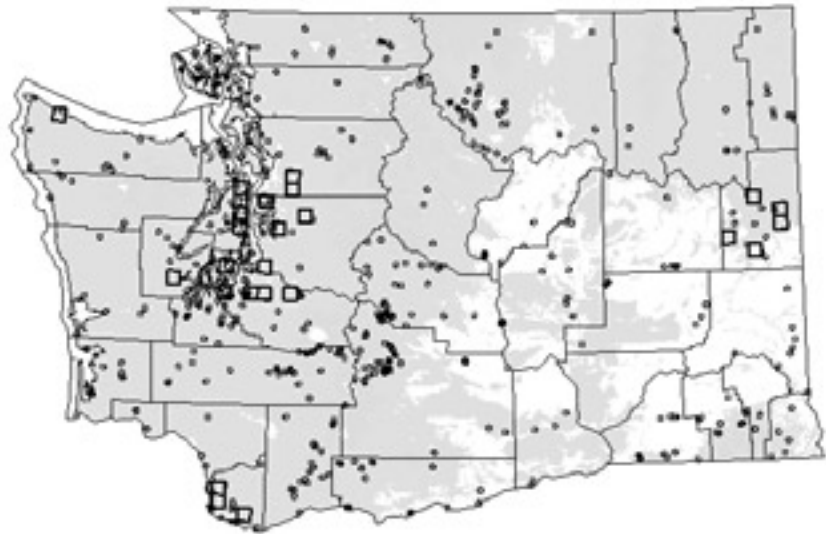
ADVANCING SCIENCE

By the end of 2004, *NatureMappers* from Virginia, Iowa, and Washington had submitted more than 235,000 quality-controlled observation records, each documenting a separate wildlife sighting. With the help of GIS technology, The *NatureMapping* Program is creating maps, which show students and citizens their data overlaid onto predicted species distribution maps created by their state's Gap Analysis Project. These *NatureMapping* maps are available online at: <http://gapanalysis.nbii.gov> (select "Research & Applications").

Preliminary analysis shows some species are expanding their range. Waterville, Washington farmers and students are finding short-horned lizards where researchers didn't expect to find them—in dryland wheat fields.

In many cases the *NatureMapping* Program's data and observations are the best or only source of distribution data for many species. This program is servicing a very real need for communities, land planners, and researchers by supplying current wildlife and habitat information and showing citizens of all ages that their efforts can make a difference in the environmental welfare of their state.

"My hope is to spread the NatureMapping Program across the country so that others may benefit as well," says Karen Dvornich, National Director. "In so doing, all parties will have the opportunity to learn about fish and wildlife and their habitats, make better land management decisions, and enhance the quality of their lives and the lives of future generations."



Current public observations (□) fill in gaps of data for the Pacific chorus frog.

HOW YOU CAN HELP

support our workshops, projects & websites

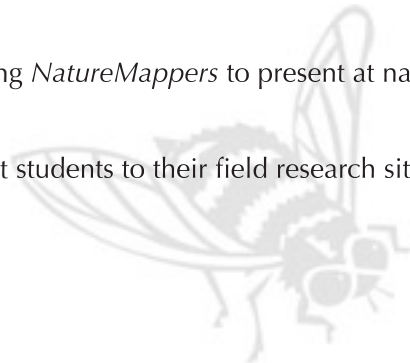
Funding the *NatureMapping* Program is a good way for you or your company to reach a multitude of audiences and to be part of a team, striving to learn more about the natural world. With your financial support, you'll foster the budding naturalist in everyone who does not have the time or ability to spend days in a wilderness area, but who can make a real difference by collecting biodiversity data right in his or her own backyard and neighborhood.

We have spent 13 years developing and testing education materials and research protocols. We have begun long-term citizen science projects linking universities, natural resource agency researchers, school districts, and their communities. Members of the public, in increasing numbers, are looking to *NatureMapping* for its workshops, web information, and projects.

We need to build capacity to handle this demand. Because *NatureMapping* coordinators and partners are researchers, field biologists, and environmental educators, residing in universities and federal and state natural resource agencies, we do not have the financial resources to meet this demand. Our newly created non-profit organization allows us to raise funds, which can go directly towards supporting projects, workshops and maintaining our websites.

Your contributions will be used to:

1. Provide community education and training.
2. Distribute our materials at a reasonable cost.
3. Provide local support for teachers and community members.
4. Contract with experienced *NatureMapping* teachers to support new *NatureMapping* teachers.
5. Provide stipends and mileage to retired teachers and natural resource professionals helping the public.
6. Contact businesses to "lend" their employees as mentors or trainers.
7. Adopt one of our projects through annual donations.
8. Provide feedback to the community through customized online newsletters and maps.
9. Pay for travel costs of outstanding *NatureMappers* to present at national conference.
10. Pay for schoolbuses to transport students to their field research sites.



WHERE DO YOU FIT IN?

DONOR?

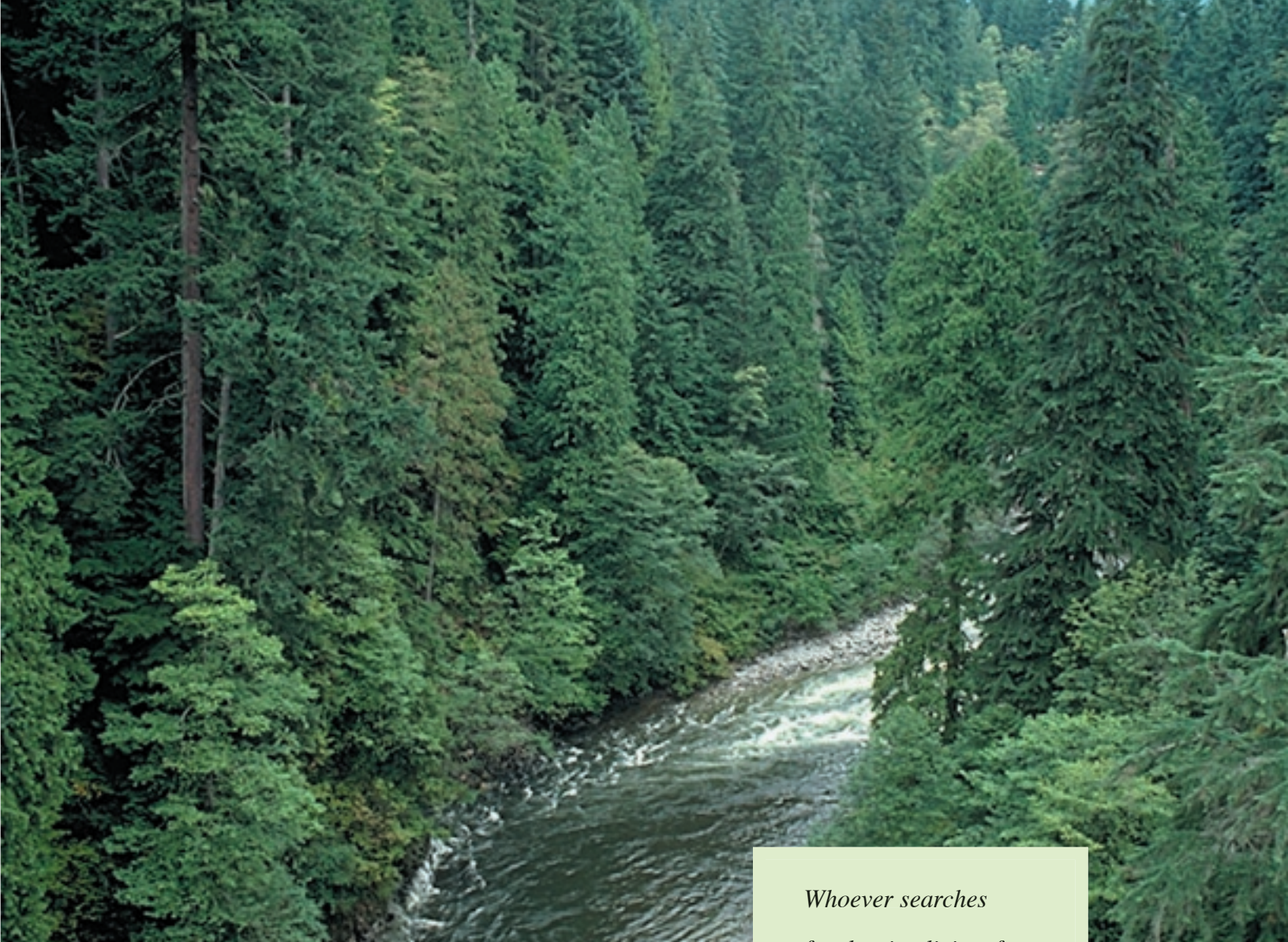
ADVISORY BOARD?

VOLUNTEER?

HANDS-ON BOARD?

BUSINESS PARTNER?





*Whoever searches
for the simplicity of
nature finds beauty
everywhere*

George Sumner

the *Nature Mapping* Program

<http://www.fish.washington.edu/naturemapping>