Klamath Bird Observatory

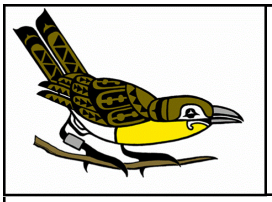
Rogue River - Siskiyou National Forest

Educator Resource Guide

Place-based curriculum and lesson materials

More Kids in the Woods
US Forest Service

www.KlamathBird.org



More Kids in the Woods
Rogue River—Siskiyou National Forest

A hands-on environmental science curriculum guide for kindergarten through high school students

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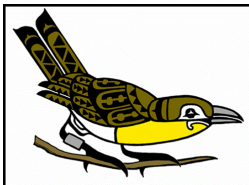
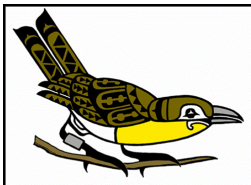


Table of Contents



Introduction letter

Welcome to the Rogue River-Siskiyou National Forest Educator Kit! Here you will find exciting new resources and lesson plans that will guide your teaching about birds, bird conservation, and bird habitats. This kit provides placed-based, science, and natural resources lesson plans specially designed to fit the greater Klamath-Siskiyou Bioregion and the birds and habitats here.

In the following pages, you will find lesson plans organized under the following headings: (1) Birds Biology, (2) Birds as Indicators for the Environment, and (3) Birds, People and Conservation. Each lesson plan is followed by corresponding student journal sheets and any additional relevant materials, such as bird flash cards. Each lesson plan provides background information, simple and clear instructions, helpful teacher tips, supplementary extensions, "fun fact" side panels, and additional field trip ideas. Each lesson plan should be able to stand on its own, without the need for additional research The lesson plans are aligned to academic Standards, allowing you to meet these as needed.

Student journal sheets are provided to advance critical thinking and scientific inquiry learning for each lesson. We encourage you to direct students to collate these journal sheets and make personalized journal cover sheets for their final products. Students can share their birding experiences with family and friends far into the future.

The kit was designed by Klamath Bird Observatory (KBO) educators (www.KlamathBird.org). Funding for curriculum development, teacher training, and resources was provided by the US Forest Service's More Kids in the Woods Grant. Photographic images used throughout curriculum and resources were donated by southern Oregon resident, Jim Livaudais.

Klamath Bird Observatory would like to thank you for your interest in the More Kids in the Woods kit and your endeavors to integrate ecoliteracy into youth education. Klamath Bird Observatory is a non-profit organization advancing bird and habitat conservation through science, education, and partnerships. If you have additional questions about KBO or the Educator Kit please contact us:

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Sincerely,

Jeanine Moy
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About KBO

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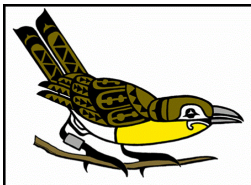
Overview of the Klamath Bird Observatory
The Klamath Bird Observatory is a registered 501(c)3 non-profit organization with a mission to advance bird and habitat conservation through science, education, and partnerships. Our work focuses in the Klamath-Siskiyou Bioregion of southern Oregon and northern California, and extends throughout the western United States and beyond to impact conservation across the Americas. Sound science, with an emphasis on bird monitoring and applied research, forms the core of our programs. Central to our approach are collaborations among scientists, decision makers, and educators that enhance the use of bird monitoring within the adaptive management framework by assuring scientific results target and inform the specific decisions natural resource managers face. Also, recognizing that conservation occurs across many fronts, we nurture an environmental ethic in our communities and the next generation through our outreach activities and educational programs.

Our internship and training programs build international conservation capacity, demonstrating our commitment to full life cycle conservation. We collaborate nationally and internationally within an array of conservation partnerships, including Partners in Flight, the North American Bird Conservation Initiative, and the Avian Knowledge Alliance, working with these partners to leverage their unique capacities to efficiently implement conservation. We take pride in our conservation leadership and our internationally recognized conservation model.

Finally, we are increasing the reach of our educational programs through the dissemination of our award-winning environmental curricula. These actions demonstrate our strategic commitment to environmental and societal stewardship through a program designed to produce benefits for generations by empowering teachers to integrate environmental education into their classrooms and field trips.

More information about us can be found on our website (www.klamathbird.org) and our Facebook page (Facebook.com/klamathbird).



Why study birds?

Scientific Discovery

Birds are fascinating creatures found in almost every habitat, ranging from forests inwilderness areas to urban landscapes. Birds are also vocal, often singing loudly from exposed perches. For these reasons, birds are easily observable and thus amenable to scientific and wildlife study. By studying birds, students can engage in scientific inquiry and critical thinking. Additionally, students can become citizen scientists by sharing their scientific bird data with biologists across the world, thereby helping to protect bird populations and the environment that birds and humans share.

Ecological Services

Birds play an important role in the ecosystem. Birds disperse seeds, control insects, pollinate plants, and serve as prey for predators.

Indicator Species

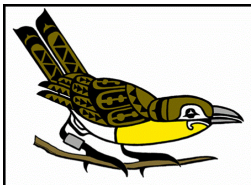
Birds are also great indicators of habitat health as they are highly sensitive to environmental change. If they are living in an unhealthy habitat their populations will quickly decline. Also, their habitat relationships are relatively well-known. Each bird species can be thought of as a "measuring stick" for an element of a healthy habitat. For example, an abundance of Yellow Warblers in a riparian habitat indicates that the habitat supports abundant insect populations, upon which the Yellow Warblers feed. Birds are also relatively easy to observe and study, so bird monitoring studies are cost-effective. For these reasons, scientists use birds to monitor the health of forests and other environments. The More Kids in the Woods Educator Kit provides lesson plans focusing on the relationships among birds, habitats, and conservation.

Stimulating the Local Economy

Birding has become one the fastest growing outdoor recreational activities. Birding results in low ecological impact and wildlife disturbance, and it can provide substantial economic benefit to local communities. Birders spend large amounts of money on birding gear such as binoculars, field guides, and spotting scopes, and they also support local businesses during their birding trips. Birders stay in hotels, dine in local restaurants and cafes, and join local birding tours. Birding trails nationally and internationally are being developed to encourage birding in local areas and its associated economic benefits.

Inspired Learning for Ecoliteracy

Throughout human history birds have inspired the creative and scientific minds of inventors, engineers, scientists, and artists across the world. Birds can inspire students in a variety of ways that align with individual learning styles. Inspired learning about local environments can lead to both healthier lifestyles for students and a more sustainable society. Ecoliteracy is the understanding of ecosystem principles and the ability to use those principles for creating a sustainable human society. This powerful concept is emerging as a new educational paradigm that has the potential to transform human communities and the natural environment upon which we depend.



Why use the More Kids in the Woods Educator Kit?

1. Place-based
Lesson plans provide activities about birds and habitats of the Klamath-Siskiyou Bioregion. Using a lesson plan is a great way to guide a student's learning about and interest in the local environment. These lessons enable students to connect with the world outside the classroom through learning about biology, science careers, current issues, and ideas for how to be active stewards of the earth.

2. Fun & Exciting
The More Kits in the Woods Educator kit provides hands-on resources and interactive lesson plans to be used in the National Forest, or your classroom and schoolyard. The lessons' activities vary to accommodate a variety of learning styles and encourage active learners.

3. Easy to Use
The More Kids in the Woods Educator kit includes simple and clear instructions and procedures that are easy to follow. You do not need to be a bird expert to teach about birds! You will be able to pick up a lesson plan and have all the information and resources at your fingertips. Lesson plan materials include worksheets, visual aids, and more.

4. Engaged Students
Students actively participate in learning by writing in student journal pages. Completed journals are a great way for students to share their scientific discoveries with family and friends.

5. Scientific Inquiry
Lesson plans have been designed by a science and education organization to reflect scientific accuracy and offer innovative ways to encourage scientific inquiry and learning. Through the use of the More Kids in the Woods lesson plans students will engage in bird counts, collect bird data, create graphs, and draw conclusions about their studies.

6. Academic Standards
Having trouble teaching to Science Standards in your classroom? The lesson plans in this kit are aligned with Oregon Science Standards. Search for additional lessons by Oregon State Standards, Common Core Standards and Next Generation Science standards on the Klamath Bird Observatory website: www.KlamathBird.org

7. Citizen Science
Students can become citizen scientists through recording and archiving "real data." Citizen science allows students and the general public to contribute data to real scientists and help them answer conservation questions.

8. Non-formal education
The lesson plans can also be used with non-school groups or by non-formal educators and education centers as well.

More Kids in the Woods and Restoration

More Kids in the Woods

Support for this curriculum was provided by the United State Forest Service as part of the More Kids in the Woods (MKIW) program. During the fall 2012 and spring of 2013, the Klamath Bird Observatory's Education Program implemented the MKIW program as a comprehensive education program designed to exemplify a sustainable model of environmental education. In an effort to maximize the reach of benefits for students, the program was designed to increase the capacity of local teachers to engage underserved students in place-based outdoor experiences that foster ecological understanding, connection to the natural world, and a stewardship ethic. This goal was attained by promoting quality science education by creating opportunities for students to develop scientific reasoning and career skills, by modeling exemplary field trips for teachers, and by training teachers on the use of innovative core curriculum resources.

This More Kids in the Woods Program was produced through collaboration with the Rogue River—Siskiyou National Forest. This educator's guide serves as a resource for teachers to independently teach hands-on, placed-based, science and interdisciplinary lessons. All lessons have been designed with background information specific to the greater Klamath-Siskiyou bioregion, yet activities and concepts can be adapted to other places as well. The lessons in this guide aim to challenge students to think critically about 21st century conservation challenges.

Defining Ecological Conservation and Restoration

Conservation biology attempts to preserve and maintain existing habitat and biodiversity. Ecological restoration refers to intentional activities to accelerate the recovery of an ecosystem with respect to its integrity and sustainability. Restoration ecology operates on the assumption that human disturbance of ecosystems is reversible and thus humans can positively affect ecosystems to promote habitat and biodiversity recovery.

Common restoration projects include those related to erosion control, reforestation, wetlands creation, removal of non-native species, reintroduction of native species, and habitat improvement for targeted species. As natural ecosystems continue to be impacted by human actions, ecological restoration will become an increasingly important component of conservation efforts and ecosystem management.

The United States Forest Service has a vested interest in ecological restoration for national forests and grasslands. Some of the most prominent threats facing Forest Service lands are related to fire, climate change, and beetle infestation. The U.S. Forest Service also facilitates restoration on state, tribal, and private lands by working with partners in an "all-lands" approach. This work provides many benefits for the health of ecosystems and humans, as well as job creation in rural communities. Currently, the Forest Services is pursuing policies and initiatives to increase the pace of forest restoration with the aim of moving beyond stakeholder conflicts experienced in the past.
See the following for local Forest Service restoration project examples.

U.S. Forest Service. *Increasing the Pace of Restoration and Job Creation on Our National Forests.* United States Department of Agriculture, February 2012. Online. April 1, 2013
available: http://www.fs.fed.us/publications/restoration/restoration.pdf

Restoration in National Forests

Rogue River - Siskiyou National Forest

Located in southwestern Oregon and northern California, the Rogue-Siskiyou National Forest covers about 1.8 million acres from the Siskiyou Mountains east to the crest of the Cascade Mountains. The Rogue River and Siskiyou National Forests were established separately by President Theodore Roosevelt in 1908 and 1905, respectively, before being consolidated in 2004.

This region is dominated by two geological regions: Cascade Range and Siskiyou Mountains. The Cascade Range is characterized by volcanic cone-shaped peaks, while the geologically old Siskiyou Mountains present a complex system of mountains and drainages. The geologic diversity combined with a unique climate history allows for a high diversity of landscape and life forms. The Rogue River-Siskiyou is the most floristically diverse National Forest in the country. The landscape and botanical diversity are exemplified in various habitats like open oak wood woodlands, dense conifer forest, rocky ridge tops, and wild river drainages.

Restoration project spotlight: Ashland Forest Resiliency Restoration Project (AFR)

Like many forests throughout the western United States, the mixed conifer forests of southern Oregon are adapted to frequent fire, among other disturbances. A healthy and sustainable forest is able to recover from such disturbances as fire, drought and disease. Forest fires have been widely suppressed in western coniferous forests in the last 150 years. This human influence has shaped the way forests are structured and function. Formerly open forests have grown dense with young Douglas-fir, white fir and madrone in the understory. This change causes a buildup of potential forest fire fuels and increases the risk of large catastrophic fires that older "legacy trees" and other forest inhabitants cannot survive.

In 2010 a collaborative forest restoration project was adopted for the Ashland Watershed, located in the Rogue River-Siskiyou National Forest of southern Oregon. This ten-year stewardship project was designed to reduce the risk of severe wildfire in the 7,600 acres of watershed, in order to protect water quality, older forests, wildlife, people, property and quality of life. The stewardship agreement involves U.S. Forest Service, the City of Ashland, The Nature Conservancy, and the local non-profit forestry management organization Lomakatsi Restoration Project. The project is science-based and involves additional partnering organizations such as the Klamath Bird Observatory to implement and monitor the forest management practices (see below). The AFR project also involves the community through providing local jobs and workforce training, as well as providing education opportunities for adults and young students.

Spotlight on Restoration

Key Objectives of the AFR Project:

Reduce the risk of large-scale wildfire
Help large, old trees survive fire, insects and disease
Restore a healthy forest ecosystem
Uphold and protect critical watershed values

Watershed Values:

Human life and property
Older forests
Abundant, clean drinking water
Wildlife habitat
Ecological sustainability

plan also prioritizes:

saving the largest trees
preserving habitat for wildlife dependent on older forests
preserving stream-side habitat thereby ensuring water quality
protecting unstable slopes and erodible soils.

Using birds as indicators to monitor forest ecosystem health:

Habitats and birds are linked by specific relationships and habitat degradation can quickly lead to declines in bird populations. Gathering data about bird populations in a given habitat is an inexpensive and reliable way to monitor the health of an ecosystem. In 2012, as part of the Ashland Forest Resiliency Project, the Klamath Bird Observatory (KBO) conducted bird surveys to study the effects of fire and fuel reduction on ecosystem health. Previously, in 2005 to 2007, KBO had completed bird surveys in the project area prior to thinning and controlled burns in order to provide baseline information about bird communities in the Ashland Watershed. Continued monitoring of ecosystems such as the Ashland Watershed will allow scientists and land managers to further develop knowledge and management strategies that promote human and ecosystem health.

Forest fires are part of healthy conifer forest ecosystems. Through restoration projects, people can choose to manage forest conditions and forest fires for the benefit of both human society and wildlife.