

# Working Systemically

STRAW: Students and Teachers Restoring a Watershed



The way we treat rivers reflects the way we treat each other:  
—Aldo Leopold

The STRAW Project coordinates and sustains a network of teachers, students and community members as they plan and implement watershed restoration projects which include water monitoring, habitat mapping, riparian restoration, and bird and aquatic insect monitoring.

Participating teachers receive scientific advice and training in environmental project-based learning as well as watershed curriculum integrating science and the arts.



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## Restoring the North Bay

The STRAW Project evolved out of the student-initiated Shrimp Project, which connected students and teachers with ranchers in order to restore creek habitat. More than half of all STRAW restorations occur on ranchland with the ranchers serving as teachers, leaders and partners. Since 1993, classes of students have worked with teachers, ranchers, biologists and community members to help save endangered species in the North Bay through watershed restoration.

Classes are mapping riparian habitat, carrying out water-monitoring tests, researching riparian wildlife populations, clearing debris from creeks and implementing public education campaigns to clean up watersheds. Students inspired through these activities are encouraged to write poetry, create murals, paint artwork, make videos, and write songs about their experiences.

Students involved in the project benefit from working alongside experts in the field of riparian renewal who are engaged in the preservation and restoration of the natural health and beauty of watersheds and wetlands.

The STRAW Project includes a bird monitoring program that enables participants to design and implement watershed projects with a particular focus on migratory and non-migratory birds, and a biological assessment component that monitors aquatic insects as an indicator of creek health.

The partners in this effort share a common vision of sustainability and concern for our children and their future. They recognize a need to understand our place in nature, and to know more about watersheds and ecosystems and the cycles of life in order to create sustainable communities.

*"If you, who are valley streams  
and looming mountains,  
can't throw some light  
on the nature of ridges and rivers,  
who can?"*

*Gary Snyder*

*From We Wash Our Bowls in this Water*



# A Collaboration of The Bay Institute and the Center for Ecoliteracy

## The Bay Institute

Dedicated to the protection and restoration of the ecosystem of the San Francisco Bay, the Sacramento-San Joaquin Delta and the rivers, streams and watershed tributary to the estuary.

## Center for Ecoliteracy

Dedicated to fostering experience and understanding of the natural world.

## Participating Partners

Adopt-a-Watershed

AmeriCorps Watershed Project

Friends of Corte Madera Creek

Marin Conservation Corps

Marin County Resource Conservation District

Marin County Stormwater Pollution Prevention Program (MCSTOPPP)

Marin Municipal Water District

North Bay Riparian Station

Point Reyes Bird Observatory

Prunuske Chatham Inc.

River of Words

Romberg Tiburon Center for Environmental Studies

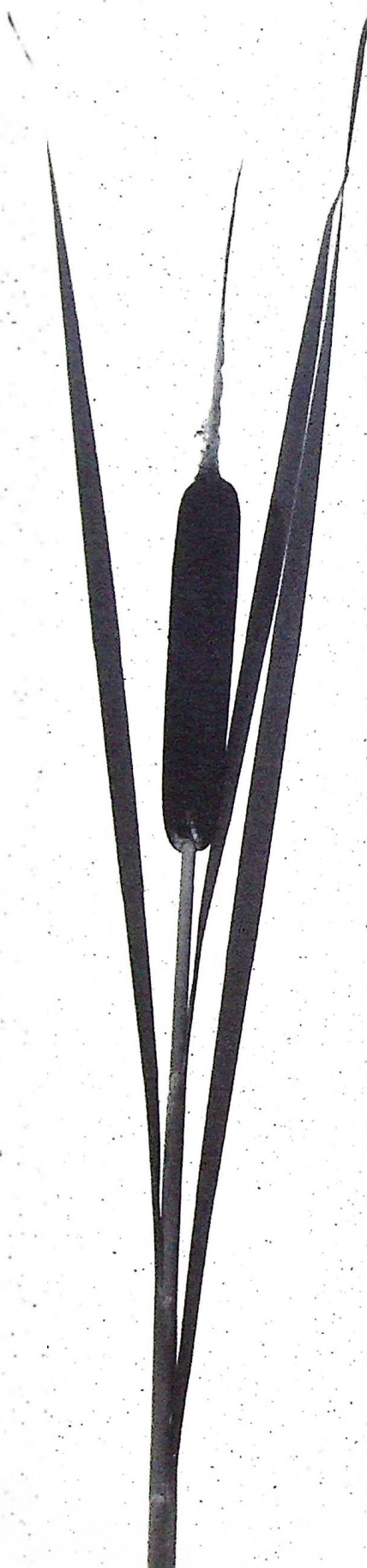
Save the Bay

School Environmental Education Docents SEED

Southern Sonoma Resource Conservation District

The Richardson Bay Audubon Center and Sanctuary





## STRAW Network Schools

Belaire School, Tiburon  
Brookside School, San Anselmo  
Country Charter School, Occidental  
Davidson Middle School, San Rafael  
Dixie School, San Rafael  
Drake High School, San Anselmo  
Edna Maguire School, Mill Valley  
Gallinas School, San Rafael  
Greenwood School, Mill Valley  
Hill Middle School, Novato  
Kent Middle School, Kentfield  
Lagunitas School, Lagunitas  
Liberty School, Petaluma  
Manor School, Fairfax  
Marin Country Day School, Corte Madera  
Mary Silveira School, San Rafael  
McNear Elementary School, Petaluma  
Mill Valley Middle School, Mill Valley  
Miller Creek School, San Rafael  
Montgomery High School, Santa Rosa  
Novato Charter School, Novato  
Old Adobe School, Petaluma  
Old Mill School, Mill Valley  
Ross School, Ross  
San Jose Middle School, Novato  
San Pedro School, San Rafael  
San Rafael High School, San Rafael  
San Ramon School, Novato  
Sobriety High School, San Rafael  
Tam Valley School, Mill Valley  
Tomaes High School, Tomaes  
Two Rock School, Two Rock  
Vallecito School, San Rafael  
Wade Thomas School, San Anselmo

## Funding Partners

Center for Ecoliteracy  
California Department of Education  
The Dean Witter Foundation  
Fred Gellert Family Foundation  
The William and Flora Hewlett Foundation  
Marin Community Foundation  
The Marin Wildlife and Fisheries Committee  
National Fish and Wildlife Foundation  
Wildlife Conservation Board



## Creek As Classroom

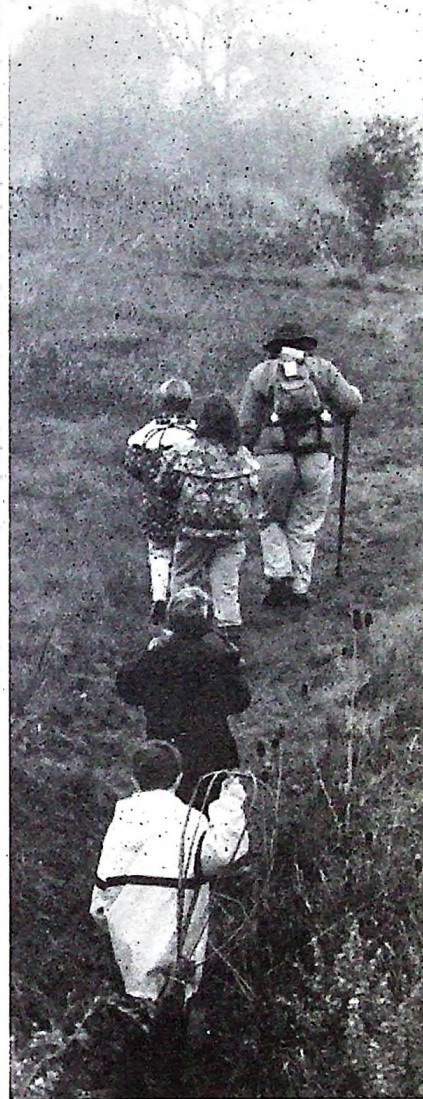
Students and teachers using creeks as classrooms have many rich opportunities for integrating academic disciplines with real life situations. Project STRAW offers an experience of immersion in the environment allowing students to perform field studies in bird, aquatic insect and water monitoring. As student research enriches the individual learning experience, it also contributes to the total body of knowledge collected on a particular species or in a particular segment of the watershed.

An integrated curriculum utilizes the creek as a context for teaching subject matter in the state frameworks. Math, history, science, literature, writing, art and music can be enriched and anchored by the energy and excitement found in the watershed.

Learning experiences in the creeks, fields and shores of the watershed bring about foundational shifts in behaviors and attitudes. Team building takes place as a natural outgrowth of working together in nature. It builds confidence, a sense of adventure, and a newfound respect for the beauty and intricate relationships of the natural world.

As students come to understand their relationship to natural systems and cycles, they can begin to form a context for more sustainable and equitable patterns of living. Key to this understanding is the watershed and the lessons it has to teach.

The Project incorporates the study of environmental science with an educational poetry and art program. Adding the arts as a component to the restoration work encourages students to assimilate and express the experiences they share while working together in the watershed. The Project marries the resources of the literary, artistic and environmental communities in the service of education.



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*When you work together  
on the creek, what you have  
is not just a rehabilitated creek,  
you have rehabilitated people.*

*—Rancher Paul Martin*



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*Effective watershed management involves learning as much about the motivation, needs, and hopes of your fellow watershed residents as you learn about the hydrology, geology, and biology of the watershed.*

—Dennis Bowker

Napa County  
Resource Conservation District

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## Educators Network

During the 1999-2000 restoration season, 80 classes will participate in watershed projects through the STRAW Network. The Network provides educators with specialized leadership training in environmental project-based learning activities, information on scientific techniques for bird research and aquatic insect monitoring, and a watershed curriculum complete with support and training for integration with the arts.

The STRAW Network offers an annual Summer Teachers' Leadership Institute that provides inspiration, energy, and technical support for teachers planning watershed projects in the coming year. In addition, fall and winter Network meetings and a spring celebration are part of the ongoing support available through the program.

## Restoring a Sense of Place

All nine counties of the Bay Area are united by the San Francisco Bay. It influences the weather, climate, transportation, economy, agriculture and water supply. The mutable marine environment shapes the perspective of those who dwell here.

The natural history of the Bay chronicles a place of incomparable beauty, teeming with life. The first Europeans to reach the Bay described a sparkling setting where the wings of waterfowl, congregated in the millions, drummed like a resonant thunder.

The STRAW Project stimulates and increases a focus on the health of San Francisco Bay and the watershed that surrounds it. Timely focus is needed to preserve the life of this grand estuary. Working together teachers, students and community members find encouragement and tools to accomplish ambitious, scientifically driven watershed restoration work.

The Project transfers its sense of grounded optimism to participants, young and old. This is work that engages the senses and imparts hope for the future. Participants find that in working together to restore the San Francisco Bay watershed, they are also rebuilding a sense of place and belonging.