



Water's Extreme Journey  
An Art and Science Curriculum  
In support of

**OCEANS, LAKES, RIVERS, WETLANDS AND ESTUARIES**

# ACKNOWLEDGEMENTS

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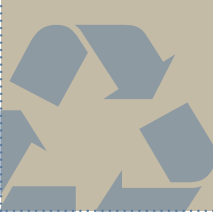
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# ACKNOWLEDGEMENTS

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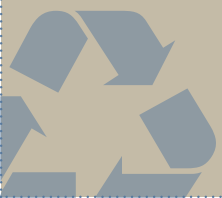
## SPECIAL THANKS & ACKNOWLEDGEMENTS

Special thanks to Dr. Charlie Kennel, Director of Scripps Institution of Oceanography, Nigella Hilgarth, Director of the Birch Aquarium at Scripps, and Harry Helling, Vice President of Research and Education at the Ocean Institute for the genesis of the Wyland Ocean Challenge.

Thank you also to all the amazing programs already out there such as Project Wet, Project Aquatic, MARE, the Jason Project, and many others that have inspired us.

## SPECIAL DEDICATION

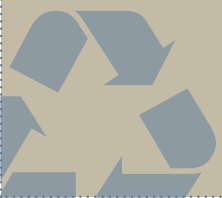
This clean water art and science program is dedicated to all the teachers of the world, true heroes who will shape the young minds of future generations. It is also dedicated to students who hunger for creative ways to learn and the opportunity to be part of the effort to preserve and protect our ocean planet.



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LAST PORTION OF THE PROJECT DESIGN





# WELCOME FROM WYLAND & CHARLIE KENNEL



## WYLAND

Welcome to "Water's Extreme Journey," an innovative art and science educational program developed by the Wyland Foundation, Scripps Institution of Oceanography and the Birch Aquarium at Scripps to instruct and inspire young people everywhere about the importance of the quality of water on our planet.

What your students learn through these lessons and activities is part of a critical path to a sustainable future. To help them on this journey, we are asking principals, teachers, parents and concerned citizens to help guide and inspire them.

Our work is volunteer based and I hope that you will join our quest for cleaner waterways and a healthier ocean. To get involved and learn more about our tools for change, please visit us at [wylandfoundation.org](http://wylandfoundation.org).

Best fishes,

*Wyland*



## CHARLIE KENNEL, DIRECTOR EMERITUS

The Scripps Institution of Oceanography was founded in 1903. Over the past one hundred years our scientists have gained an ever more sophisticated understanding of ocean and earth sciences. The importance of increasing awareness among the public, especially our children, the leaders of tomorrow, of the environmental issues such as clean water is a very important part of our mission at Scripps.

The Birch Aquarium is the gateway to Scripps research and I am delighted by this exciting partnership between the Wyland Foundation and the Birch Aquarium. The Water's Extreme Journey curriculum is a wonderful way to engage children in understanding one of the complex environmental problems that face us today, Science and art depart in opposite directions but end up together on the great circle of human comprehension. And so it is that we at Scripps find ourselves in the same place, and pleased that you have taken the journey with us.

*Charlie Kennel*



# MEET YOUR GUIDES



## WYLAND

World-renowned artist, adventurer, and advocate for our blue planet. Wyland's adventurous spirit has led him across the globe to dive and photograph the amazing marine life. Through his art, Wyland inspires others to take care of our precious water habitats. Wyland is on a mission to paint 100 giant murals around the world to share the beauty of art and his passion for the ocean. His largest mural in Destin, Florida, covers more than seven acres and is larger than his previous mural in the Guinness Book of World Records!



## DR. SYLVIA EARLE

Aquanaut, scientist, explorer, and marine ecosystems protector. Sylvia Earle has been exploring the waters of the world since she was 17 years old. Her keen mind and determination have led her to discover places and things no one has seen before. She earned the nickname "Her Deepness" when she set the world's depth record for diving at 3,281 feet! Dr. Earle uses her research and her writing to encourage others to learn about and protect the world's marine ecosystems. She is an explorer in residence of the National Geographic Society.

## A letter to teachers

*From Wyland and Sylvia Earle*

We both have a great love of the beauty and power of the oceans. We are both long-time scuba divers and love to explore the incredible variety of life found within the world's oceans and waterways. During a discussion of our underwater adventures, we began to compare the pristine reefs and abundant sea life of the past to the way our oceans look today. While, diving today is still an incredible experience, those of us who have been diving for many years have seen a dramatic change. Reefs are sick, marine mammals are becoming more scarce, and the big fish and sharks are now rare sightings in many places. And it isn't just our oceans that are in trouble. Lakes and rivers are polluted and the world's estuaries and wetlands are being destroyed at an alarming rate.

Out of that discussion grew the idea to join forces for this art and science program about water, water pollution and the challenge of keeping the world's water supply safe and clean. All of the water systems are connected. Rain falls in the mountains, turning into rivers that flow into lakes, wetlands, estuaries, and eventually the ocean where currents drive it across the planet. Along with the water goes everything it has picked up along its journey, including pollutants.

Many people don't realize that choices they make every day have impact on the quality of our freshwater supply and our oceans. Pollution that happens in one body of water will spread to others. So how could we let people know that they can make a difference? We decided to combine our passions for art and science to create a fun and inspiring educational program.

It is our belief that art and communication are essential to the sciences. After all, what good is knowledge if it is not shared with others? The combination of art and science throughout history has produced some of the most innovative and important minds the world has known. We hope you and your students will embrace this challenge, enjoy the adventure, and help the planet!



## ABOUT THE PROGRAM

This program is founded on the concept that we protect what we know.

For people in most industrialized nations, clean water hasn't been a topic of great concern. We turn on the tap and out comes clean water. We hear about water shortages and begrudgingly turn off our sprinklers for a while or run our dishwashers less frequently. We can't see below the surface of the water and we don't often hear about less fortunate countries where people are faced with a daily struggle to obtain enough clean drinking water to survive.

Though we may not have been aware of it, even our countries have been struggling to keep water supplies clean and plentiful. If you think about it for a moment, the signs are there; water shortages happening more often, warning signs at beaches and lakes closed to swimmers, produce that is unsafe to eat because of contaminated water, high levels of mercury and other pollutants in seafood, and aquatic animals paying the price due to human impacts on their environment.

It is time to acknowledge this important issue and take steps to clean up what we've damaged and protect what remains. One of the first and most important steps we can take is to inspire our youth to make better choices and take action. This program leads students through an exploration of an aquatic ecosystem – from the properties of the water to the animals that rely on it and finally to the human impacts – good and bad.

This program is designed to engage students and leave a lasting impression. These children will never again look at a body of water and see only the surface – they will have the ability to see the weird and wonderful inhabitants below. They will understand how these creatures and the habitats they live in enrich our daily lives. They will understand that clean water connects us all and is essential for survival.


Children are amazingly creative thinkers and passionate beings. Armed with an understanding of the connections between the actions of people, clean water, and the health of the planet they will become active stewards of our environment.

# GOALS FOR THE PROGRAM

- To educate and inspire students to become better stewards of our aquatic habitats
- To foster excitement about science through visual arts
- To provide supplemental tools to teachers for art and science education
- To encourage teachers and students to use creativity to address today's environmental issues

## HOW TO USE THE PROGRAM

The program teaches students about the importance of clean water through the exploration of aquatic ecosystems. You will use a combination of art, science, field notebooks and special student supplements called “Eco-guides” to help students understand the connections between people, water, animals, and the health of the planet.

OPTION 1: Create your own unit of study and include the lessons with the  icon to teach your students art techniques and ecology. Students will use their new skills and knowledge to go “Wyland style” and create a beautiful large-scale group mural illustrating the aquatic ecosystem studied.

OPTION 2: If you don't have the flexibility in your classroom to do a whole unit of activities, pick and choose individual lessons that cover science standards you need to meet. Each activity can be used as a stand-alone lesson and has an art project built right in.



For contest information and entry rules ...

Visit <http://www.wylandfoundation.org/wyland-art-contests-for-kids/>



Enter your school's  
**BEST** artists in the  
Nationwide Art  
& Science Contest,  
Oct 1- Dec. 15

1. Enter individual artwork or
2. Enter a group mural



NATIONWIDE ART CONTEST

PREVIOUS WINNERS

GRADE K CLINTON CLARK III



GRADE 1 RAIDER ALVEREZ



GRADE 2 NINA PROCOPIO



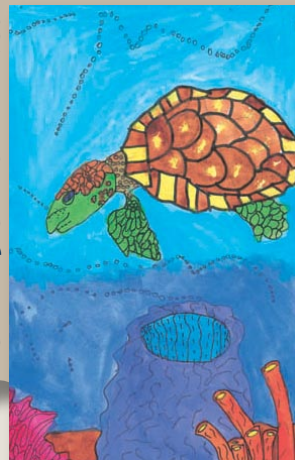
GRADE 3 KATIE MACMASTER



GRADE 4 LAURA TAYLOR



GRADE 5 CHELSEA KRINGS



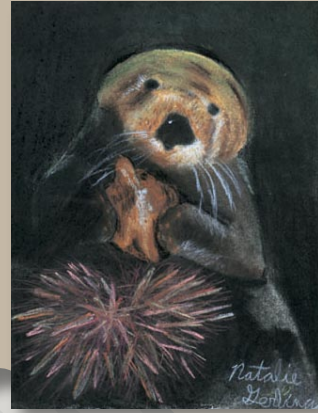
NATIONWIDE ART CONTEST

PREVIOUS WINNERS

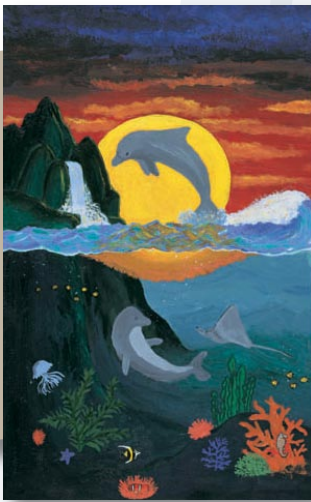
GRADE 6 MICHAEL YOUNGMAN



GRADE 7 NATALIE GERLING



GRADE 8 ESTHER MARIE PAPP



GRADE 9 MEGAN DRAKE



GRADE 10 TINA O'DELL



GRADE 11 DAWNYEL ELLIOTT





NATIONWIDE ART CONTEST

PREVIOUS WINNERS

**GRADE 12 MELISSA JARRETT**



**K-6 MURAL CATEGORY • 4TH GRADERS  
BELL GARDENS ELEMENTARY • BELL GARDENS, CA**



**7-9 MURAL CATEGORY • 8TH GRADERS  
SUMMIT INTERMEDIATE • ETIWANDA, CA**



**10-12 MURAL CATEGORY • 10-12TH GRADE  
SCHOOL OF NOVA • FORT LAUDERDALE, FL**



**10-12 MURAL CATEGORY • 11-12TH GRADE  
JOHN MARSHALL HIGH SCHOOL • LOS ANGELES, CA**

# Certificate of Appreciation

Awarded to

\_\_\_\_\_ FOR OUTSTANDING STEWARDSHIP IN CONSERVATION



With sincere gratitude, we acknowledge your commitment to our marine life and your dedication to clean water for the 21st century.

*Charlie Kennel*

**Charles Kennel**, Director Emeritus  
Scripps Institution of Oceanography

*Wyland*

**Wyland**, Environmental Marine Life Artist

*Sylvia Aree Earle*

**Dr. Sylvia A. Earle**, Marine Biologist

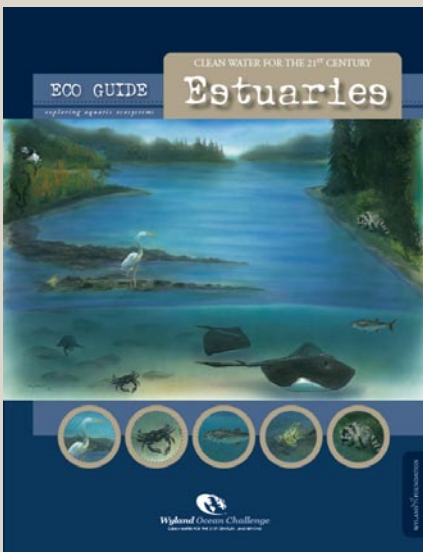


CLEAN WATER FOR THE 21ST CENTURY  
**PROGRAM COMPONENTS**



### TEACHER'S GUIDE

The teacher's guide contains everything you need to succeed: Detailed art and science activities, masters of student activity sheets, pull-out classroom aids that are ready to laminate, science background information, tips for using art in your classroom, and national education standards alignment charts.



### STUDENT ECO GUIDES

The Eco-guide is a full color student supplement with articles, fun facts, people profiles, lots of images, and a set of organism cards. There are five different Eco-guides to choose from and all correspond with the activities in the teacher's guide. The Eco-guides contain general information relating to the type of water ecosystem and include a feature on a specific water body. For example, if you choose the Rivers eco-guide, your class can study any river and will have information on the Mississippi to draw comparisons.

Choose from the following Eco-guides:

**Lakes** (includes a feature on the Great Lakes)

**Rivers** (includes a feature on the Mississippi River)

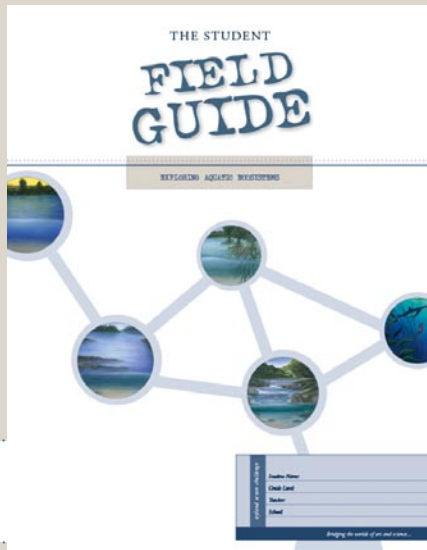
**Wetlands** (includes a feature on the mangroves and the Everglades)

**Estuaries** (includes a feature on the Chesapeake Bay)

**Ocean** (includes features on California Kelp Forests and the Coral Reefs of the Florida Keys and the Gulf of Mexico)



# CLEAN WATER FOR THE 21ST CENTURY PROGRAM COMPONENTS



## STUDENT FIELD NOTEBOOKS

Students will conduct much of their work in field notebooks that can be used to help you assess their learning. Included in this guide are masters you can copy and give to the students or you can have them create their own.



## CERTIFICATE OF APPRECIATION

Each student that participates in the program should receive a certificate of appreciation. A master is included in this guide for you to copy for your students. The certificate is signed by: Wyland, explorers and scientist Dr. Sylvia Earle, as well as Charles Kennel from the Scripps Institution of Oceanography.











## WYLAND FOUNDATION WEB SITE

[www.wylandfoundation.org/programs/teacher-resources](http://www.wylandfoundation.org/programs/teacher-resources)

Find additional resources, photos, video clips, and new activities on our web site.

# ALIGNMENT CHARTS

	A. SCIENCE AS INQUIRY	B. PHYSICAL SCIENCE	C. LIFE SCIENCE	D. EARTH & SPACE SCIENCE	E. SCIENCE & TECHNOLOGY	F. SCIENCE IN PERSONAL & SOCIAL PERSPECTIVES	G. HISTORY & NATURE OF SCIENCE
1. WATER: PICTURE OF A LIMITED RESOURCE	●					●	
2. WATER CYCLE ART	●	●		●			
3. WATERSHED MODELING		●		●		●	
4. MESSAGE IN THE WATER	●	●	●	●	●	●	
 5. THE COLOR OF WATER	●	●	●	●			
 6. STORM DRAIN STENCILS	●		●			●	
7. ME TO THE SEA						●	
8. AROUND THE WORLD			●			●	
9. TRASH TO TREASURE	●		●			●	
 10. FISH, FINS, FORM & FUNCTION			●				
 11. CAMOUFLAGING CRITTERS			●				
 12. COLORS FOR SURVIVAL			●				
 13. SIZING IT UP	●		●				
14. CHOMP! FOOD WEB MACHE	●		●			●	
15. ECOSYSTEM SCRAMBLE: A COLLAGE OF BENEFITS			●			●	
16. SHARE IT WITH THE WORLD			●			●	
 17. HUMAN IMPACTS			●			●	
18. CAREER VIGNETTES						●	●
 19. WYLAND STYLE! ABOVE/BELOW MURAL			●			●	
20. GET INVOLVED						●	
A. THE ART & SCIENCE CONNECTION	●					●	●
B. WHAT IS WATER?	●	●					
C. POLLUTION & SOLUTIONS	●	●	●			●	
D. MARINE MAMMALS: KEYSTONES			●			●	



NATIONAL VISUAL ARTS STANDARDS

ALIGNMENT CHARTS

	A. SCIENCE AS INQUIRY	B. PHYSICAL SCIENCE	C. LIFE SCIENCE	D. EARTH & SPACE SCIENCE	E. SCIENCE & TECHNOLOGY	F. SCIENCE IN PERSONAL & SOCIAL PERSPECTIVES	G. HISTORY & NATURE OF SCIENCE
1. WATER: PICTURE OF A LIMITED RESOURCE	●	●			●	●	
2. WATER CYCLE ART	●	●			●	●	
3. WATERSHED MODELING						●	
4. MESSAGE IN THE WATER	●	●				●	
5. THE COLOR OF WATER	●	●				●	
6. STORM DRAIN STENCILS	●	●	●		●	●	
7. ME TO THE SEA	●	●	●		●	●	
8. AROUND THE WORLD	●	●	●	●	●	●	
9. TRASH TO TREASURE	●	●				●	
10. FISH, FINS, FORM & FUNCTION	●	●	●			●	
11. CAMOUFLAGING CRITTERS	●					●	
12. COLORS FOR SURVIVAL	●	●			●	●	
13. SIZING IT UP						●	
14. CHOMP! FOOD WEB MACHE	●	●	●		●	●	
15. ECOSYSTEM SCRAMBLE: A COLLAGE OF BENEFITS	●	●	●		●	●	
16. SHARE IT WITH THE WORLD	●	●	●			●	
17. HUMAN IMPACTS	●	●	●		●	●	
18. CAREER VIGNETTES	●	●			●	●	
19. WYLAND STYLE! ABOVE/BELOW MURAL	●	●	●			●	
20. GET INVOLVED ( <i>Will vary</i> )						●	
A. THE ART & SCIENCE CONNECTION				●		●	
B. WHAT IS WATER?	●					●	
C. POLLUTION & SOLUTIONS	●					●	
D. MARINE MAMMALS: KEYSTONES	●	●		●	●	●	





Bringing People Together for Clean Water and Healthy Oceans

# TEACHER'S GUIDE

HOW TO USE FIELD NOTEBOOKS IN YOUR CLASSROOM



## HOW TO USE FIELD GUIDE NOTEBOOKS

### HOW TO USE IN THE CLASSROOM:

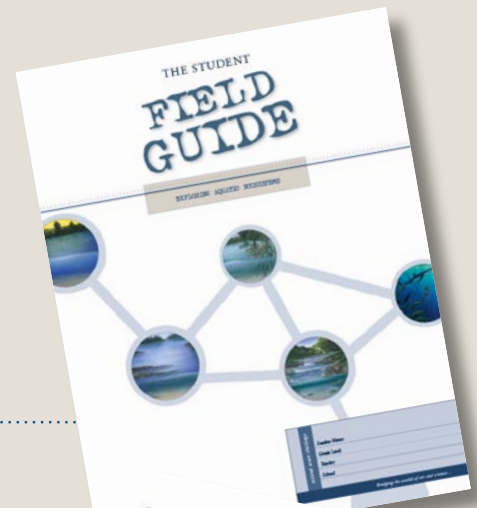
Field notebooks are great tools for scientists and artists. They also prove to be valuable in the classroom as well. The activities in this guide call for students to document their learning in field notebooks by sketching, recording observations, writing thoughts, creating stories, and answering questions.

The students' field notebooks will help them as they build their knowledge of aquatic ecosystems by allowing them to reflect on and keep a record of what they have learned. The field notebooks will also help you assess what the students have learned and the type of progress they are making. Some students are hard to assess by traditional means so by reviewing the notes, sketches, and activity sheets in their notebooks you will have another tool to evaluate the depth of their learning.

The field notebooks for this program should be a place for students to not only complete the required work, but a place for them to do additional sketching and record their thoughts on aquatic ecosystems at any time. Each lesson has a student activity sheet that should be added to the student's notebook when it is completed. If you do not wish to copy the student activity sheets, you may have students do that work directly in their field notebooks. The notebooks will be a unique and artful record of student learning.

To create the field notebooks, you can copy the template we've provided or have students create their own. Some good options for the notebooks are three ring binders and folders that will allow pages to be added as students work through the activities. We recommend taking a little time before beginning the program to introduce it to the students and let them create the covers for their field notebooks.

Field Notebook Cover



Field Notebook page for sketching



Field Notebook page for writing



THE STUDENT

# FIELD GUIDE

EXPLORING AQUATIC ECOSYSTEMS



*wyland ocean challenge*

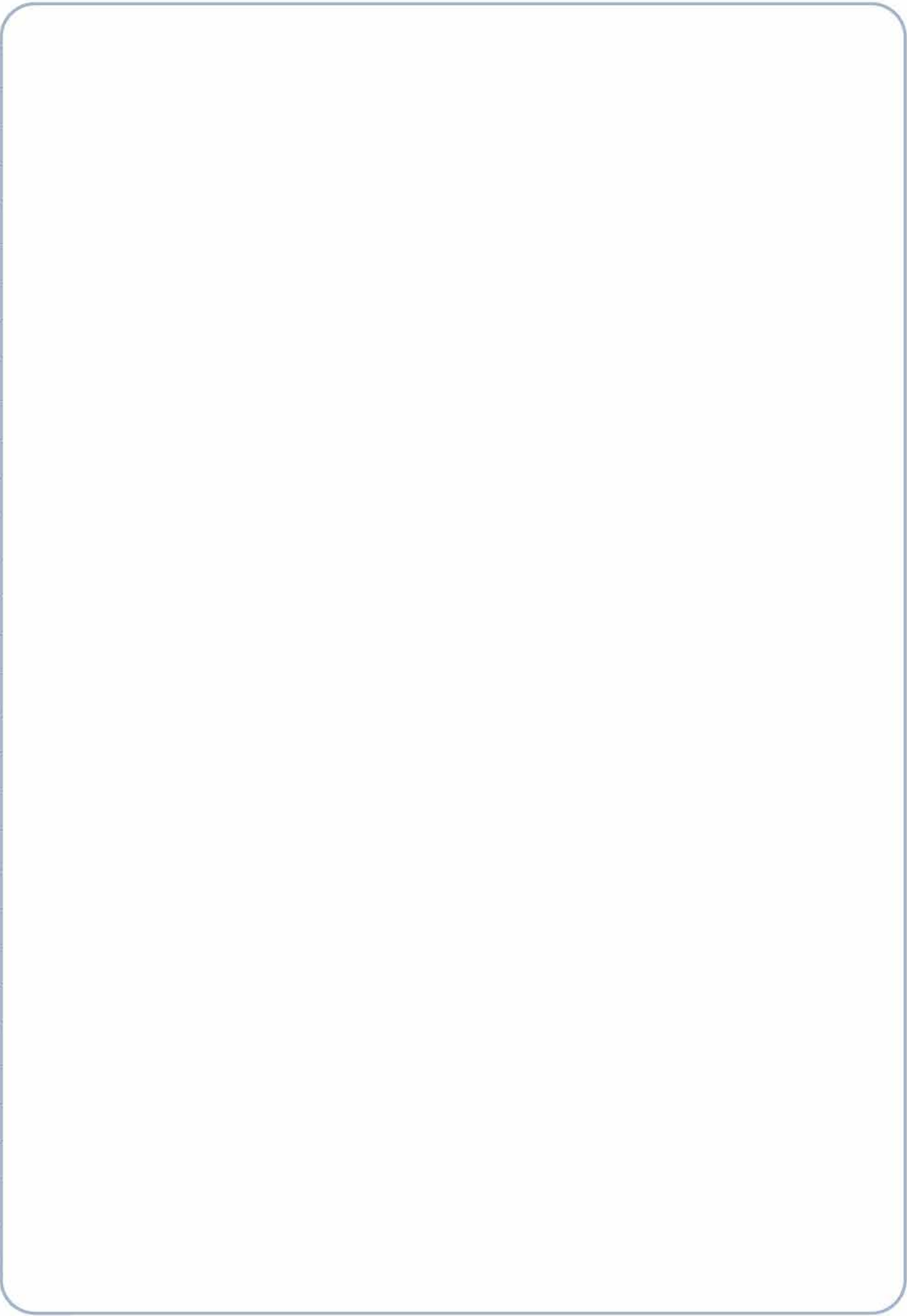
*Student Name:*

*Grade Level:*

*Teacher:*

*School:*

Bringing People Together For Clean Water and Healthy Oceans







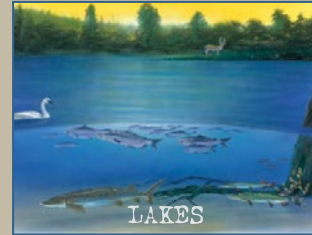
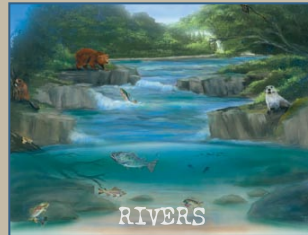


Bringing Together People For Clean Water And Healthy Oceans

## Art and Science program

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Dive into Wyland's world – the world where art and science meet. You don't have to be an artist or a science expert to enjoy this program with your students.



Explore the weird and wonderful world of aquatic ecosystems above and below using tools and techniques from science and art. Be prepared to test your critical thinking skills and turn loose your creativity. All you have to do is choose an ecosystem for your class to study (river, lake, wetland, estuary or ocean) and plunge into the adventure!



## ACKNOWLEDGMENTS

Thank you to the following organizations. Without their help, this program would not have been possible.



**ASSOCIATION  
OF ZOOS &  
AQUARIUMS**

