

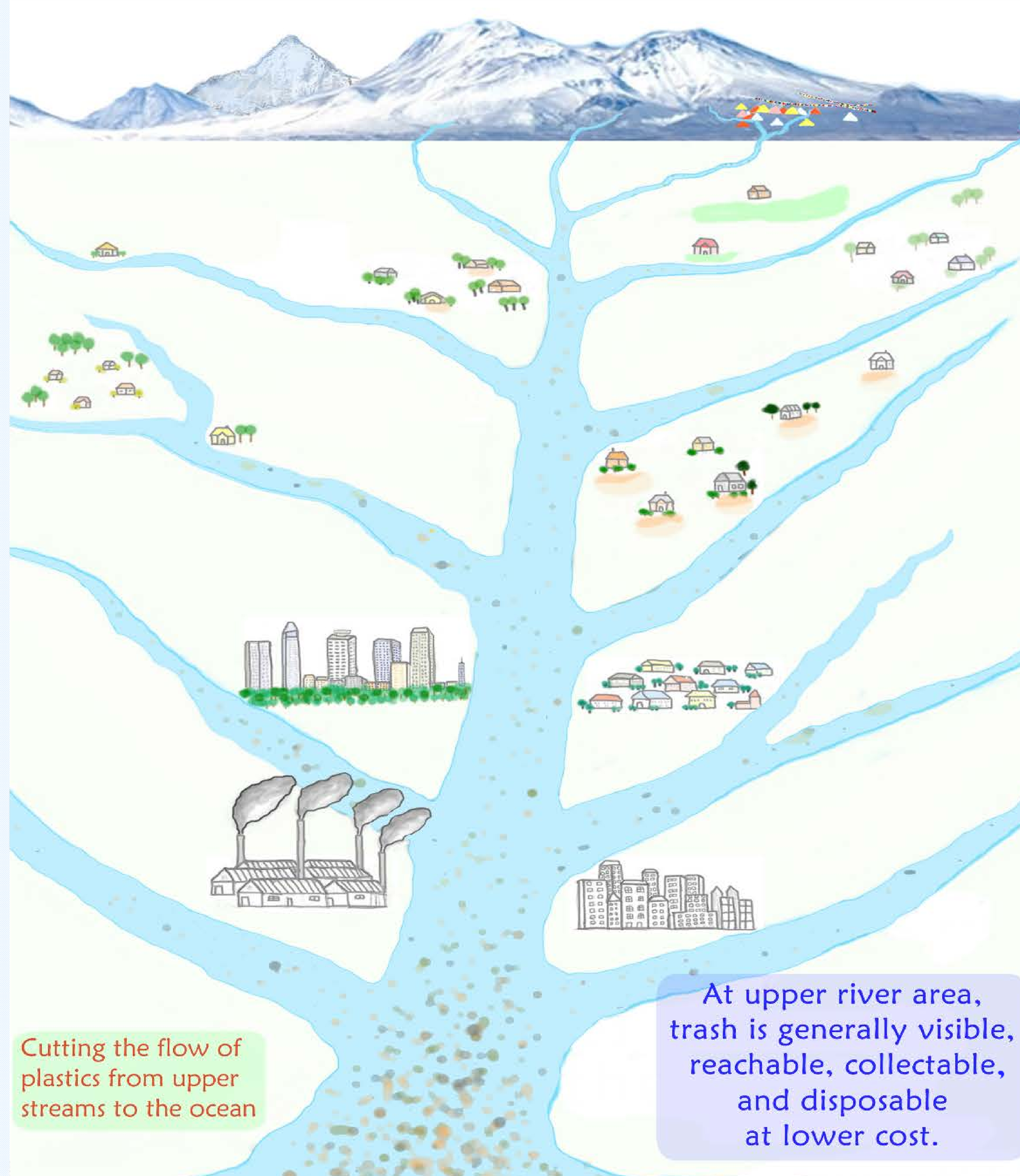
Upper River Outreach Strategy to Decrease Plastic Marine Debris

Islands4Kids
Karin T. Otsuka
Teruo Z. Otsuka
Naoko Otsuka

outreach@islands4kids.org
Phone: 425-202-7744
Redmond, WA 98052



Children of the world, you are the **HAND** that reaches out to save marine creatures



Islands4Kids: A Platform for Multigenerational Marine Debris Education

Islands4Kids is an online platform dedicated to inspiring children and young adults to take a proactive stance towards protecting and preserving their environment.

"Islands" is a metaphor for our platform that provides information about environmental issues in a way that is accessible and fun for children and young adults to explore. "Kids" are our future, and our metaphor for hope.

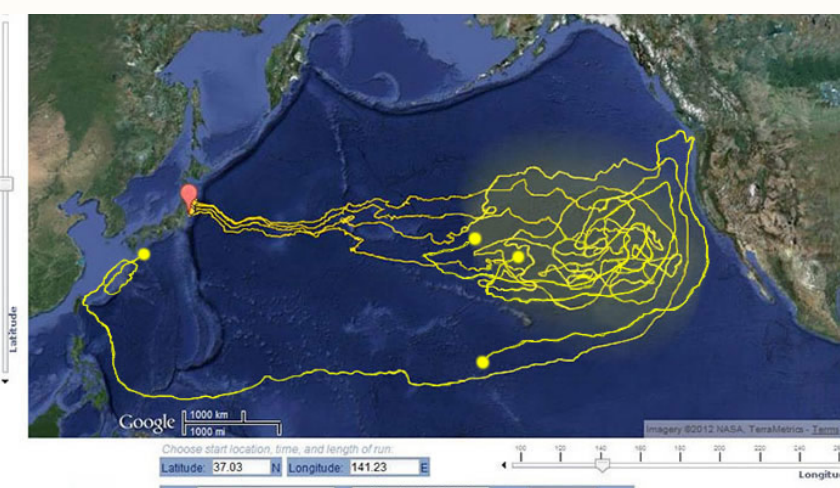
One of our main goals is to better involve children and young adults with various activities in their communities that will lead them towards sustainable living practices. There is an urgent need for us to change our consumptive behavior and instill a need for the preservation of the environment. Through Islands4Kids, we hope to be the catalyst to inspire this change in our younger generations, to guide their actions in building a healthy, sustainable environment for the future.



Ocean Shores, Washington – July 2014

Marine Debris Research: Ocean Shores, Washington

Since 2010, we have been conducting marine debris research at Ocean Shores, Washington. Two to three times a year, we engage in follow-up surveys to determine trends of Asian originated marine debris arriving to the Pacific Northwest. With each data collected, we can more accurately observe the general path and accumulation of Asian originated marine debris. This can further be used to predict frequency and timeline of debris washed ashore to our shoreline in advance.



Another research objective is to observe plastic marine debris through a microscopic lens. Debris traveling from Asian countries may be carrying an abundance of biological and microscopic hitchhikers with unique stories to tell. We utilize these dynamic images as powerful visual aid resources.



During our July 2014 Marine Debris Arrival Survey, we found a 2 inch lightbulb that held Amphipoda, a group of macroplanktons. While much of the metallic components of the bulb has degraded, the filament remains. We might see this lightbulb as marine debris, but for these marine critters, it is already their home.

Communicating Our "Upper River Outreach Program"

Rivers are the largest supply source of plastic debris to the ocean. The United States has almost 250,000 named rivers and according to the National Geographic, there are about 1,654,000 rivers in the world. We need to create a straight forward strategy to attain comprehensive collaboration to end the flow of plastic debris into river systems.

When we successfully deliver the message to children, they can share with family members about what they learned about marine debris. Their words have the power to inspire their families to participate in decreasing the amount of plastics discharged to nearby rivers. When people living in nearby cities see this successful transformation, they may also strive to follow their achievement protocol.



SEE the issue firsthand



PARTICIPATE with family and friends



SHARE data, methods, and stories to other communities

Nurturing a Proactive Generation of Environmental Stewards

One of our characteristic approaches is through "Cross Generational Collaboration". Through cross-generational discussion with small children and young adults, we can increase the frequency of dialogue about marine debris among all generations. This function will be principally initiated by family members (grandparents, parents, older brothers and sisters), teachers, and community leaders of all ages and fields.

Most of our time and resources are therefore allocated to developing the learning materials used to communicate the information. We apply easily comprehensible explanation (not using much scientific, technological, or professional terms) and create original images and visual aids to enhance curiosity and wonder. The overall impact of each lesson will be an unforgettable experience for nurturing skilled environmental stewards on the worldwide scale.

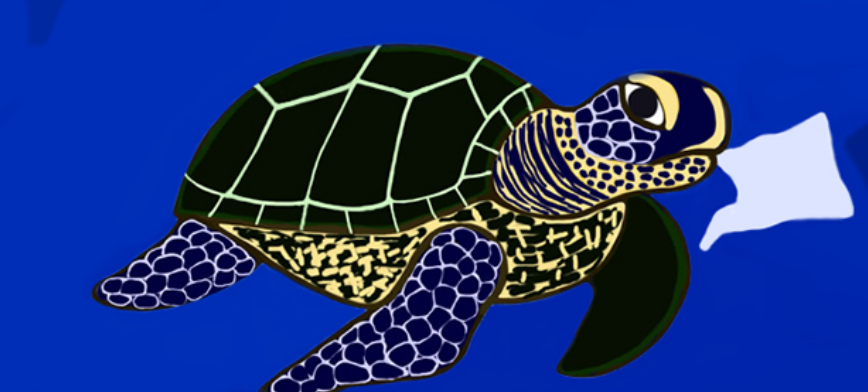
Visual Storytelling for Long-term Retainment



Wow, so colorful!
Dinner time!
With the ocean full of marine debris, mama albatrosses mistakenly feed plastics to their chicks. They do not receive the proper nutrition to grow. They will never fly. Pick up litter and help them fly.

In this wide blue ocean,
Swaying, swaying along the waves
Abandoned bags drift in the ocean...

Here comes a young turtle
Joyful to see a yummy jellyfish
Munch, munch, munch
Gulping down whole...



Plastic bags look like jellyfish, which are one of the sea turtle's favorite foods. When sea turtles eat plastic bags, it clogs their intestines and causes them to feel full. These sea turtles stop eating the food they need and die from malnourishment. Every year, many sea turtles die eating plastic bags as they mistake them for jellyfish.

Ending the Flow of Marine Debris

What is BAOteCS? (Broad Area Outreach Technology Study)

BAOteCS is a curriculum dedicated to online education for children worldwide on marine debris issues, with programs for grades K-6 and 7-12.

By offering activities and questions, BAOteCS is intended to build critical thinking skills for children to apply their own thoughts and creativity to tackle marine debris issues. In doing so, we hope to initiate and organize widespread collaboration of young minds around the world, particularly of those who are living in upper river communities.

Our mission is to provide children and young adults with the toolkit to confront environmental issues and encourage them to use their imagination and passion to consider innovative solutions.

The Broad Area Outreach Technology Study (BAOteCS)

Upper River Outreach Program to Decrease Plastic Marine Debris

"Our target approach for reducing marine debris is to stop the flow from the original location they are being littered at, from riverside towns and cities that are hundreds or sometimes thousands of miles inland from the ocean."



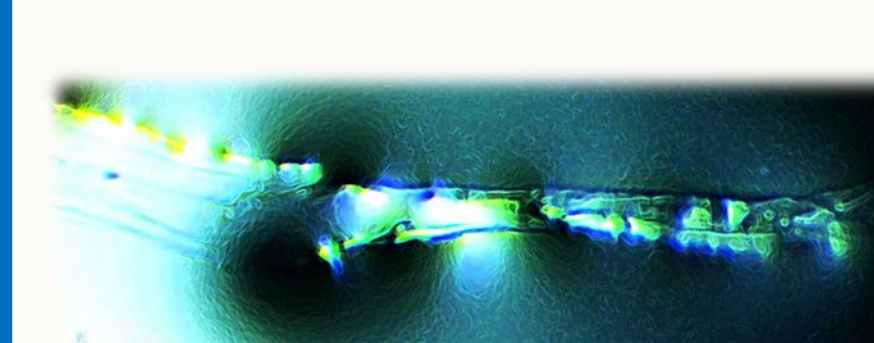
Marine Debris Curriculum Overview (Grade: 7-12)

- LESSON 1: What is marine debris?
- LESSON 2: Why is trash in the ocean and how did it get there?
- LESSON 3: Biodegradation timeline of marine debris
- LESSON 4: How the ocean environment, marine ecosystem, and human populations respond to marine debris
- LESSON 5: The international scale of marine debris and its downstream flow to accumulate in the ocean
- LESSON 6: Two basic approaches to reduce the input and buildup of marine debris
- LESSON 7: Marine debris education through visual aids and microscopic creativity
- LESSON 8: Re-imagining the application of marine debris after clean-up
- LESSON 9: Spreading awareness through posters and signs
- LESSON 10: Environmental terms and definitions
- LESSON 11: Safety procedures and survey materials to organize marine debris clean-up activities
- LESSON 12: How marine debris travel across the Pacific Ocean and the significance of organizing "exit and arrival surveys".

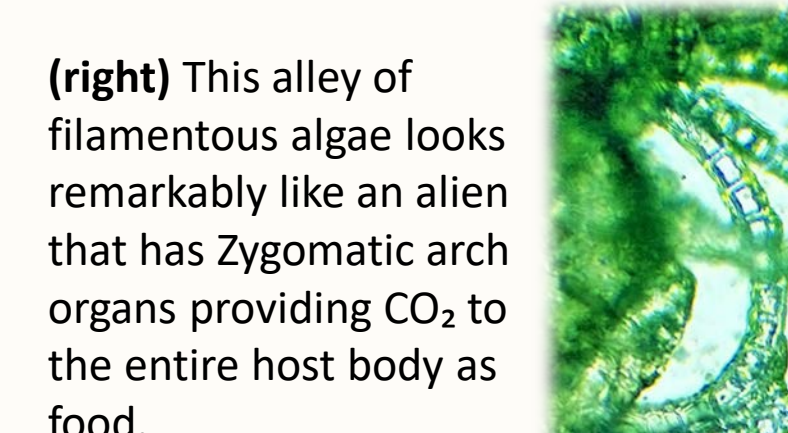
Course description link: <http://marine-debris.org/course-descriptions.html>

Visualizing the Hidden Life on Marine Debris Through a Microscopic Lens

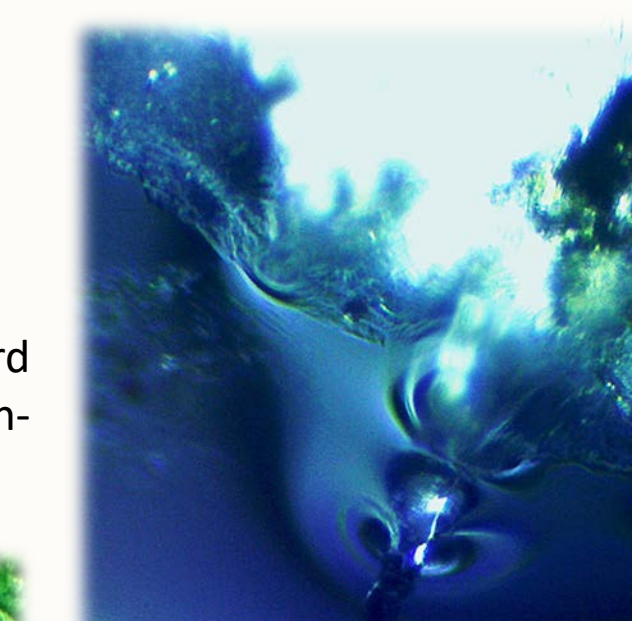
Islands4Kids is creating digitally enhanced, aesthetically appealing visuals of planktons that were found on plastic marine debris at Ocean Shores. They are created not only to display scientific photographs, but to leave a lively, dynamic, and strong impact on children.



(left) This Pseudonitzschia pungens (Grunowes leve) is reminiscent of a sharp biotech sword gleaming on a pitch-black night.



(right) This alley of filamentous algae looks remarkably like an alien that has Zygomatic arch organs providing CO₂ to the entire host body as food.



(above) While preparing to observe Prorocentrum sp (Dinophyceae), we accidentally knocked the microscope, causing the Prorocentrum on the glass to dive into the immersion oil.

Building a Safe Social Network for Children and Young Adults

We are working to develop a safe social network exclusively designed for "marine-debris.org" users to exchange, share, and provide feedback to one another. This social network is the one of the key functions of BAOteCS to corroborate values of assessed learning programs and collect resources to develop advanced methods of outreach.

In an age of growing technological capabilities and means of communication, there is an increase in accessibility to a wide variety of terminal devices through telecommunication systems in growing regions. To keep up with these broadening networks, we are working on expanding our BAOteCS learning program on a worldwide scale. To connect to the international community, we will work towards:

1. Creating a multi-language website (English, Spanish, Chinese, Japanese, and French)
2. Creating a responsive website that can be supported by a multitude of devices in developed and developing countries.

