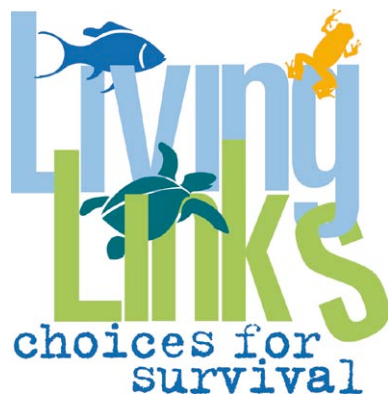


**PROPOSAL TO THE NEW HORIZONS FOUNDATION**  
**Living Links: Choices for Survival**  
**New England Aquarium**



**Requestor:** Caroly A. Shumway, Ph.D., Principal Investigator for Aquatic Biodiversity, New England Aquarium.

**Amount requested:** \$110,100

**Purpose of grant:** To provide support for essential educational and environmental exhibit components within the New England Aquarium's NSF-funded exhibit on aquatic biodiversity, *Living Links: Choices for Survival*. Funding from the New Horizons Foundation will allow for the addition of innovative exhibit elements not supported by current funds.

**Background:** Aquatic biodiversity is staggering in number, incredibly beautiful, of inestimable benefit to humankind, and – because of its reliance on terrestrial, freshwater and marine ecosystems – disappearing quickly. The New England Aquarium (NEAq), with funding from the National Science Foundation (NSF), is currently developing a \$2.9 million exhibit to address the important threat of the loss of aquatic biodiversity. We are increasingly excited with our evolving ideas and visions. Our exhibit has expanded to incorporate the most up-to-date messages, cutting-edge science, and state-of-the-art design experience. However, the amount received from NSF and NEAq is insufficient to mount a truly blockbuster exhibit on this important topic. We need additional funds amounting to \$110,100 in order to maintain our vision for this exhibit.

The exhibit raises awareness of the vulnerability of freshwater and marine biodiversity and rallies a call to action. *Living Links* places a strong emphasis on the importance of links throughout — both the ecological links between different species and ecosystems, as well as the links which connect humans with the natural world.

*Living Links* invites visitors to travel with sea turtles, frogs and fish through an interconnected mosaic of habitats. Using live animals, recreated ecosystems, graphics and interactives, the exhibit is designed with a wide range of ages and learning styles in mind. Engaging interactive elements (Frog Diversity Chorus, Predator Dinners, and It's Your Choice computer interactives) help visitors appreciate how aquatic life affects and depends upon the environment. Visitors will see how their individual and collective choices impact the quality of both aquatic and human life. Audiovisual and graphical components link distant biodiversity with local species; this can be tailored to fit the regional needs of our partner institutions.

This exhibit will reach 3 million people across the United States. It will remain for two years at NEAq (2002-4), and then will travel across the country to our partners: Birch Aquarium (San Diego), Folsom Children's Zoo (Lincoln, NE), Pittsburgh Zoo (PA), Hatfield Marine Science Center (Newport, OR), and Seacoast Science Center (Rye, NH). Additional institutions are also interested in renting the exhibit.

The New England Aquarium has a strong commitment to conservation. This is reflected in NEAq's many well-known research and conservation programs, ten years of successful fieldwork, and the development of innovative conservation-related public policy, grassroots efforts, and educational programs and exhibits. The Aquarium supports *Living Links* for its new and creative ideas, and its efforts to change the general public's attitudes and practices toward the environment.

We have identified several exhibit items, outlined below, that we have cut or reduced out of necessity, but are loath to lose. Many of the exhibit's messages and goals will be dramatically reduced if these items are cut. Therefore, we are seeking additional monetary support.

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**Exhibit elements:** Exhibit elements for which we seek funding include both educational and environmental exhibit components designed to emotionally connect the visitor with aquatic life and biodiversity. Exhibit elements include:

- Educational Components
  - Aquatic Biodiversity Book & Poster
  - Sediment Dump Interactive
  - Educational Station
- Environmental Components
  - Words on Water
  - Entry/Exit Experience
  - Human Stories & Tough Choices
  - Marovo Lagoon Video Projections

*Aquatic Biodiversity Book & Poster (Appendix A)* \$25,000

A celebrated Hudson River artist and children’s book author and illustrator, Thomas Locker has agreed to work with our exhibit staff to produce a unique companion children’s picture book and poster for *Living Links*. Mr. Locker has been writing and illustrating children’s books since 1982, and his paintings have been published in over 30 books to date. Many of these books reflect his profound respect for the natural world – an effect that will be called upon for this publication as well. Mr. Locker has been honored with numerous awards for his illustrations, including the prestigious Christopher Award, the John Burroughs Award, and the New York Times Award for best illustration. This book and poster will be distributed throughout the United States.

Funds will support commissions for the artwork (at a reduced rate) and publication costs for the book and the poster through Fulcrum Press (Mr. Locker’s publisher).

*Sediment Dump Interactive* \$17,500

This interactive allows visitors to understand how deforestation and sedimentation affect aquatic life through the direct manipulation of rainfall and the observation of sedimentation in water. Visitors will also be given examples of individual actions that they can do to help reduce the environmental impacts of deforestation, erosion, and sedimentation. The root systems of trees and other plants form a vast underground web that holds the top layer of the earth in place. When this root system is destroyed or removed as a result of deforestation, the problems of erosion and sedimentation become rampant. Sedimentation can block life-sustaining sunlight from reaching underwater plants and corals, smother the eggs and larvae of fish and amphibians, and choke and kill corals and other filter feeding organisms.

Funds would support the development, construction, and maintenance of this important interactive element.

*Educational Station* \$5,000

Central to the ideals of *Living Links* is the goal to educate and empower the general public regarding their *choices for survival* – the actions that each individual can act upon in order to effect an actual change. These choices and actions are interwoven into text, graphics, and videos throughout the exhibit. The addition of an educational station will allow educators to work directly with our visitors, therefore supporting and expanding to overall effect of the exhibit’s message of conservation action.

Funds will support construction of this component, storage facilities, and the augmentation of already existing educational materials.

*Words on Water (Appendix B)* \$27,000

David Small, while a graduate student in the MIT Media Lab, designed and perfected a method of computer animation and video projection that creates the realistic effect of words flowing through bodies of water. Previously, he has used this technique to project words and phrases onto streams and waterfalls.

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Mr. Small, now president of the Small Design Firm, has agreed to work with the *Living Links* exhibit team to create an original piece for inclusion in our exit experience. Words and phrases evoking individual actions and choices will be projected onto vertical walls of flowing water. Visitors will be invited to interact with these flowing words by placing their hands into the water, and by also making their own personal pledges of action on an adjacent pledge wall.

Funds would fully support the development of this element, as well as the necessary hardware to achieve the desired environmental effects.

*Entry/Exit Experience (Appendix C)*

\$22,000

Visitors enter and exit *Living Links* through a multi-sensory tunnel which introduces them to the grand diversity and interconnectedness of all life on earth. A collage of projected images, words, and sounds present images of biodiversity, compelling quotations, and basic exhibition questions (ie. where are you going?; what about the kids?; how was your day?). This experience is the first introduction the visitor will receive to the incredibly immersive quality of the exhibit to come, and also serves as a reminder that we, too, are an integral part of the natural world.

As visitors exit the exhibit, the three distinct stories (turtles, frogs, fish) and linked habitats unite. Artists' representations of biodiversity and citizens in action to protect our planet line the walls of this area. The Power of One video serves as a provoking and emotional call to action for visitors. The Biodiversity Mural, created by Boston school children through community outreach programs, dramatically illustrates the links between and among land, freshwater, and the sea. Finally, the Pledge Wall allows visitors to leave their departing thoughts for others to read, and to pledge future action towards the conservation of aquatic biodiversity. From this inspirational and contemplative space, visitors exit the exhibition with answers to our three simple questions, and many new - and not so simple - questions of their own.

Funds would support many components within these two essential experiences. These funds will allow for the addition of moving projected images and words, ambient sound (the recorded voices of local children pledging to carry out a conservation action), and environmental lighting and design effects throughout the two modules. Funds will also support the design and construction of two vast curving walls of water, both of which will run from floor to ceiling and will serve as surfaces for powerful video projections (the Power of One video; and Words on Water, described below).

*Human Stories & Tough Choices (Appendix D)*

\$10,000

Human Stories videos and the Tough Choices comment board allow visitors to literally step into the shoes of others and hear their stories relating to sea turtles and frogs (Human Stories), and to then share their thoughts and comments with other visitors (Tough Choices comment board). Each module (turtles, frogs) contains three Human Stories, which are brief interviews of individuals (ie. scientists, children, fishermen, educators, conservationists) reflecting upon life with either sea turtles or frogs. Visitors are invited to step into the shoes of these different people, which then triggers the accompanying videos (ie. tennis shoes might prompt a recorded interview with a child). In this manner, visitors will be exposed to the different relationships people may have with either sea turtles or frogs. Visitors are also invited to share their own opinions, questions and comments on the Tough Choices comment board, adjacent to the Human Stories videos. The New England Aquarium will post current news articles and relevant questions. Visitors will have the option to either respond to these postings, or to list their own questions for others to consider.

Funds would support the construction of these two important exhibit elements. These funds will also support the acquisition of videos and photographs, monitors, and sound systems.

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*Marovo Lagoon Slide Projections (Appendix E)* \$3,600

Visitors will explore the beautiful linked habitats of Marovo Lagoon in the Solomon Islands, South Pacific. With a waterfall only steps away, visitors will enter into a recreated, multi-sensory aquatic environment that runs from a freshwater waterfall, through mangrove swamps, past a giant clam lagoon tank, to an incredible coral reef tank. Visitors can enter and exit the winding path at many points through an undulating plastic partition which doubles as a projection surface. In sharp contrast to the lushness of the living environment, the projections will reveal the very real threats to these amazing habitats caused by deforestation.

Funds would allow for the projection of rotating large, high quality images. This will allow us to create a more dynamic and exciting space than basic static projections would permit. These images will allow visitors to compare the beauty of the surrounding recreated habitat with the harsh reality of environmental conditions in Marovo today.

**Expected outcome:** We are all very excited about this exhibit. We believe that this exhibit has the power to fulfill our goals: to increase knowledge, to promote awareness, and to inspire conservation action. And, because this exhibit is designed to travel, this important message will be carried throughout the country to be seen by at least 3 million people. Additional funding from the New Horizons Foundation would allow us to truly mount the blockbuster exhibit that this highly important topic merits.

**Organizational capability statement:** The New England Aquarium, which opened in 1969, offers 1.3 million visitors annually the opportunity to view exciting exhibits and participate in educational and public programs that interpret current regional and global aquatic issues in engaging ways.

The New England Aquarium has created exhibits, K-12 educational programs, and research and conservation programs that have led the way for other aquariums worldwide. In 1992, recognizing increasing threats to aquatic life, the board of trustees adopted our proactive mission: *To present, promote, and protect the world of water*. NEAQ's conservation commitment is reflected in its well-known research and conservation programs, based on fieldwork, and the development of conservation-related public policy, grassroots efforts, and education. These programs, and partnerships with universities and research institutions, provide links to current scientific thinking conveyed to our audiences in exhibit and programs. We have built a track record in innovative traveling exhibits, including *Georges Bank: The Fight for Survival* (Seacoast Science Center); *Topex/Poseidon* (3 Maine Malls); *Sounds of the Sea* (Birch Aquarium, pending); *Island of the Sharks* (Pacific Science Center; Liberty Science Center; Cincinnati Science Center; St. Louis Science Center); *Jellies* (National Aquarium; Science Museum of Virginia; New Mexico Museum of Natural History and Science; Underwater World, Australia; Tennessee Aquarium; Texas State Aquarium); and *Ponds: The Earth's Eyes* (Lake Champlain Basin Science Center). *Living Links: Choices for Survival* is the most recent addition to this impressive list.

**Exhibit team:**

*Dr. Carol A. Shumway*, Principal Investigator in Aquatic Biodiversity, Departments of Conservation and Research. Dr. Shumway is also an Adjunct Assistant Professor of Biology at Boston University. Her program in Aquatic Biodiversity includes the creation of *Living Links: Choices for Survival*; development of *Scientists Without Borders*, a program to link young scientists with communities in need of biodiversity research; *Changing Hearts and Minds*, a values-based approach to environmental stewardship in the South Pacific; and assistance with freshwater biodiversity conservation and livelihood security in the Congo on a USAID-funded project. She also writes and conducts research on conservation policy, the use of behavior in conservation, and the evolution of brain and behavior. Dr. Shumway has eleven years of experience in international conservation ranging from governmental policy (USAID) to grassroots work (The Nature Conservancy), primarily in rainforests, coral reefs, and freshwater fishes of

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Africa and the South Pacific/ Asia region. In 1992-93, she was the Environmental and Science Advisor for AID's South Pacific Regional Program in Fiji.

*Dr. William Spitzer*, co-principal investigator. Dr. Spitzer is director of education, responsible for leadership, development, delivery and evaluation of programs reaching 1 million + Aquarium visitors, youth, and community members. He has extensive experience in informal science education and exhibit development. He was principal investigator for the NSF-funded exhibit *Sounds of the Sea*.

*Peter Johnson*, director of design. Peter has extensive experience in architectural and graphic design, project management, exhibit design, consulting.

*Linda Ziemba*, senior exhibit designer. Linda has 18 years of extensive experience in theatrical and learning environments for museums and aquariums.

*William Enright*, project manager. Bill has extensive experience in project management, graphic design, and fabrication of exhibits.

**Budget information:** Please see attached sheet for the New England Aquarium's FY2001 Operating Budget. NEAq is a registered 501(c)3 organization. Documentation is available upon request. Living Links: Choices for Survival is funded by the National Science Foundation (\$1,428,000) and the New England Aquarium (\$1,474,000). Support provided by the New Horizons Foundation would allow for the addition and/or improvement of various discrete exhibit elements not sufficiently covered by current funds. We are actively seeking additional outside funding for these and other exhibit elements.

*Living Links: Choices for Survival*  
Proposal to the New Horizons Foundation  
Itemized Budget

<b>Educational Components</b>	<b>\$ 47,500</b>
Aquatic Biodiversity Book & Poster	\$ 25,000
Sediment Dump Interactive	\$ 17,500
Educational Station	\$ 5,000
<b>Environmental Components</b>	<b>\$ 62,600</b>
Words on Water	\$ 27,000
Entry & Exit Experience	\$ 22,000
Human Stories & Tough Choices	\$ 10,000
Marovo Lagoon Slide Projections	\$ 3,600
<b>TOTAL</b>	<b>\$ 110,100</b>

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New England Aquarium  
FY 2001 Operating Budget  
(January 1 – December 31, 2001)

**Support and Revenues**

Gifts	\$	1,448,000
Grants	\$	3,692,000
Admissions - Individual	\$	9,669,000
Admission - Group	\$	877,000
Membership	\$	2,150,000
Sales - Boat Programs	\$	1,370,000
Sales - Miscellaneous	\$	1,221,000
Sales - Events	\$	877,000
Sales - Gift Shop	\$	3,136,000
Sales - Food	\$	4,809,000
Contracts	\$	3,112,000
Interest Income	\$	120,000
Miscellaneous Income	\$	647,000
<b>Total Revenues</b>	<b>\$</b>	<b>33,128,000</b>

**Expenses**

Salaries & Wages	\$	9,024,000
Wages Overtime	\$	89,000
Professional Fees	\$	774,000
Fringe Benefits	\$	2,187,000
Membership/Tuition.Books	\$	143,000
Travel/Entertainment	\$	247,000
Supplies	\$	1,050,000
Utilities	\$	1,021,000
Repairs and Maintenance	\$	549,000
Exhibit/Equipment	\$	307,000
Outside Services	\$	4,319,000
Postage/Shipping	\$	199,000
Telephone	\$	163,000
Insurance	\$	377,000
Advertising	\$	1,137,000
Publications/Promotions	\$	299,000
Corporate Meetings	\$	42,000
Applied Overhead	\$	-501,000
Interest Expense	\$	1,325,000
Miscellaneous Expense	\$	135,000
Cost of Goods Sold	\$	2,470,000
Cost of Grants and Contracts	\$	6,209,000
Contingency	\$	50,000
<b>Subtotal</b>	<b>\$</b>	<b>31,615,000</b>
Bond Amortizations	\$	1,500,000
<b>Total Expenses</b>	<b>\$</b>	<b>33,115,000</b>
<b>Excess Revenue Over Expenses</b>	<b>\$</b>	<b>13,000</b>