



AQUARIUM *scholars*

Enhancing Educational Opportunity Across North Carolina

NORTH CAROLINA AQUARIUM SOCIETY



“The North Carolina Aquariums offer one of the largest informal science education programs in the state. The new *Aquarium Scholars* initiative will expand access to these offerings for at-risk students in Title I schools—an effort that can help close achievement gaps in both science and life skills for thousands of students across the state.”

— Brenda Berg, President NC BEST

The
NORTH CAROLINA AQUARIUM SOCIETY
and
NORTH CAROLINA AQUARIUMS,

in Partnership With
NORTH CAROLINA DEPARTMENT OF PUBLIC INSTRUCTION
and
FRIDAY INSTITUTE AT NC STATE UNIVERSITY,

proudly introduce the



This partnership promises to fund access to ocean science and STEM (Science, Technology, Engineering & Math)-based Aquarium programs for low-income students across North Carolina. Corporate and individual donors will have the opportunity to make an immediate and lasting impact on education in our state.



THE PROJECT

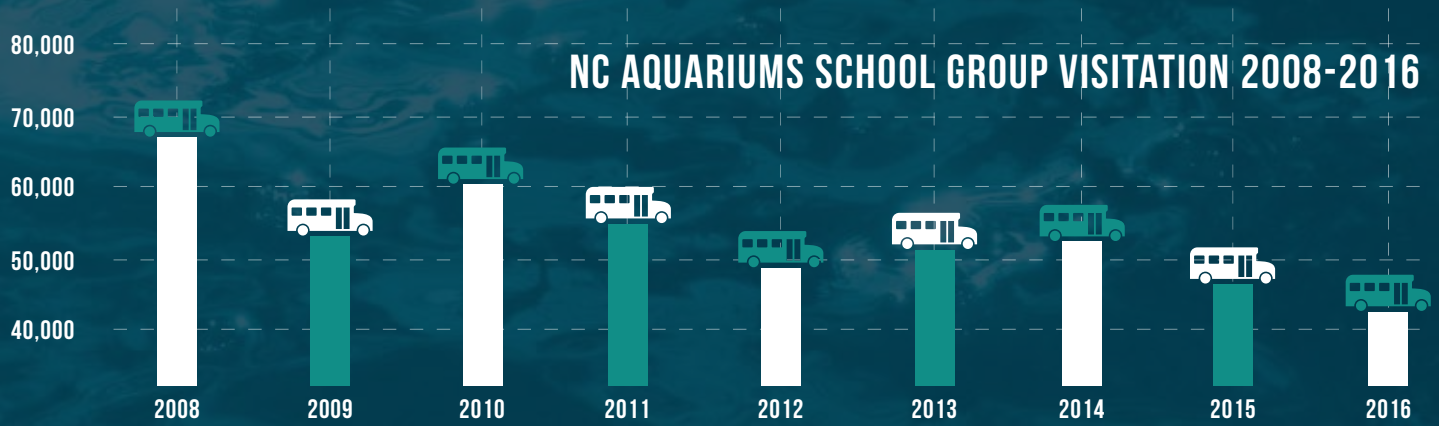
SINCE 1976, THE NORTH CAROLINA AQUARIUMS HAVE BEEN AN IMPORTANT RESOURCE FOR NORTH CAROLINA SCHOOL TEACHERS.

A generation of students, numbering in the hundreds of thousands, have traveled from across the state to the three Aquarium locations at the coast on class field trips. Some classes come simply to tour the galleries of exhibits and experience the coast, but many engage in curriculum-aligned education programs and field trips designed to offer hands-on experiences and expand their understanding of ocean and aquatic habitats. Over time the programming has evolved, and education teams at each facility have refined their offerings and their conservation messaging—in the Aquariums’ classrooms, auditoriums and exhibits, as well as in the marsh, on the beach and in the water. In recent years, outreach programs have been added that take the Aquariums’ unique educational experiences on the road and into school classrooms. Today’s Aquarium programs are well-integrated with school curriculum, employ modern technologies, and are planned using multi-disciplinary and STEM principles. Many feature live animals like sea turtles or alligators, generating palpable excitement in students and their teachers. Best of all, they offer unique out-of-the-classroom learning experiences that meet the Aquariums’ mission—inspiring appreciation and conservation of our state’s aquatic resources.

Unfortunately, the Aquariums have seen a decline in the number of school students visiting and participating in these programs in recent years—especially from poorer rural counties. In conversation with teachers and school leaders, the decline is not due to lack of interest, but directly related to available school funding.

School budgets have been squeezed, especially with the steady rise in student population growth. As a result, teachers don’t have the options they once had for off-campus informal learning. In the case of the Aquariums, many school districts are challenged to afford the cost of busses, fuel, etc. needed to make trips to the coast.

Though the numbers are declining, the Aquariums continue to serve a large number of students, with nearly 50,000 visiting the four locations in 2016. The majority of these are from schools in nearby counties, and from private schools, charter schools, and larger urban school districts that have active parent-teacher organizations. In many districts, activities like field trips are funded directly by these parent organizations. Consequently, schools with large numbers of low-income students (best defined as Title I schools in North Carolina) are much less likely to engage in Aquarium field trips or other off-campus learning opportunities.



Though the Aquariums' total public visitation in recent years has been relatively flat (1.2 million annually), school student visitation has declined.

Over the past decade, the Aquariums have developed and staffed a successful school outreach program. This effort has shown steady growth, and in some ways has helped mitigate the declining numbers of visiting school groups. The Aquariums have invested in vehicles, animal transport systems, staffing and associated materials to make the program work, with some of the costs passed along to schools in the form of program fees. Outreach is currently serving about 30-40,000 school students annually, though again, the majority of participating schools are those who can afford the experience.

“Aquarium staff came to Northeast Elementary and conducted Swamp Symphony, Journey through North Carolina, and Squid Squish ... The presentations were interesting and their classroom management skills were extremely effective. The Squid Squish program was AWESOME!!! Other AIG Specialists have used the NC Aquarium (Pine Knoll Shores) for programs at their schools and have thoroughly enjoyed them as well. We will continue to hire your services for as long as our budget allows. The prices are reasonable and the programs are educational and fun. Kudos to you all and to our presenters!!!! Keep up the good work.”

--Wayne County AIG Specialist

Why are school field trips to places like public aquariums important? Recently, researchers have addressed the relative value of such trips and their role in student performance. One recent study presents important evidence that such out-of-classroom learning experiences have measureable positive influence, especially for low-income students. In her 2016 article “A Day at the Museum: The Impact of Field Trips on Middle School Science Achievement” (Journal of Research in Science Teaching), Emily R. Whitesell described how her study:

“...found small positive effects of exposure to field trips on students’ science test scores and proficiency. Effects were largest for Hispanic students and those who qualified for free or reduced-price lunch. This evidence that field trips can contribute positively to student achievement is meaningful for policymakers and administrators, as it suggests schools can provide enrichment experiences that families desire without sacrificing student test scores. The study suggests that field trips might be an effective tool for reducing achievement gaps.”

The NC Aquariums plan to address declining school participation with the launch of *Aquarium Scholars*, a new program designed to assist schools with significant low-income student populations by helping fund their Aquarium education experiences. The project is a collaboration between the Aquariums, the NC Department of Public Instruction, the NC State University Friday Institute, the nonprofit NC Aquarium Society, and a consortium of funders.

With support provided by *Aquarium Scholars*, the Aquariums will plan, staff, market and implement education programming for low-income (Title I) schools across North Carolina. Aquarium programs will engage students with fascinating aquatic animals, important conservation messages and other unique educational opportunities for tens of thousands of students who might otherwise never experience a visit to the Aquariums along the coast. This effort fits well within the Aquariums’ strategic plan in the area of community engagement, by reaching new (underserved) audiences, optimizing community participation, and increasing collaboration with other state facilities (public schools).

Beverly Vance, Science Section Chief for the NC Department of Public Instruction expressed her strong support for the Scholars concept: “Your target to reach tens of thousands of low-income school students is admirable and represents a priority to the NCDPI as we seek to close the gap for students who are under-represented in STEM fields.”



Title I schools are schools with large concentrations of low-income students that receive supplemental federal funds to assist in meeting students’ educational needs. Typically, 40-80% of their students receive free or reduced-price lunches. There are 1,440 such schools in North Carolina.



THE PLAN

THE NC AQUARIUMS AND JENNETTE'S PIER HAVE DEVELOPED A REPUTATION FOR PRODUCING A ROBUST OFFERING OF POPULAR AND EFFECTIVE CONSERVATION PROGRAMS AND OUTDOOR EXPERIENCES FOR VISITING SCHOOL STUDENTS.

Aquarium educators also target schools and their teachers for outreach programs, distance learning opportunities and teacher training workshops. They have experience working with teachers across the state in providing programs that meet the North Carolina Standard Course of Study (NCSCOS) and utilizing Next Generation Science Standards. Coupled with access to a wide array of fascinating live animals and pristine natural habitats just out the back door, the Aquariums and Jennette's Pier are well-positioned as leaders in informal science education.

Aquarium Scholars will make the Aquariums' unique education programs available to teachers and students who otherwise might never have the opportunity to experience them. The NC Aquarium Society will secure grants and sponsorships for *Aquarium Scholars* from agencies, corporations, foundations and individuals. Fortunately, *Aquarium Scholars* is designed to be scalable; the number of students reached through the program will grow with fundraising success. With a projected budget of \$800,000 over three years, tens of thousands of students will participate. The Society is a 501(c)3 nonprofit, and all contributions are tax-deductible. The Society will restrict the *Aquarium Scholars* Fund for use in five budget areas:

FIVE BUDGET AREAS FOR AQUARIUM SCHOLARS FUND



AQUARIUM
VISITS



OUTREACH



DISTANCE
LEARNING



MARKETING



EVALUATION



AQUARIUM VISITS

Through *Aquarium Scholars*, teachers from North Carolina Title I schools who are scheduling an Aquarium visit can request a mini-grant award to help cover the cost of fuel/busses, substitute teachers, and associated Aquarium program fees. The mini-grant awards, through online application, will be available on a first-come, first-served basis, and are subject to the availability of funding and open dates. Awards will be made by the Society, with checks distributed to the schools prior to their visits. The mini-grants will be tiered (range of \$300-\$1,000) based on such factors as class size, distance from the Aquarium location, etc. Funding availability will be greatest for middle school classes. Students typically tour exhibit galleries and nature trails with their teachers, and many also take part in fee-based, scheduled programs and activities presented by Aquarium educators. These include live animal encounters, marsh or beach field trips, lab studies and others.



OUTREACH

Teachers schedule fee-based Outreach programs with Aquarium educators who then travel to their schools in specially-outfitted vans designed for hauling and sustaining live animals. On the planned *Aquarium Scholars* site, teachers from Title I schools can request mini-grant awards to cover the cost of their programs. This includes travel costs, which usually make up the largest portion of the program fees. These mini-grant awards will also be made on a first-come, first-served basis, and are subject to the availability of funding and scheduling. Awards will be made by the Society, with checks distributed directly to the participating Aquarium. The mini-grants will be tiered (range of \$300-\$1,000) based on such factors as class size, distance from the Aquarium location, etc. Funding availability will be greatest for middle school classes.



DISTANCE LEARNING

One of the fastest growing areas of Aquarium programming is happening online, through the technologies of distance learning. These programs (mostly fee-based) are also scheduled in advance with teachers; participants may be across the state or around the world. Using a live video conferencing and many of the same amazing animals and conservation topics, Aquarium educators share compelling messages with students in real time. Demand for these programs is growing as schools advance their capabilities to engage in remote programming. With support from *Aquarium Scholars*, teachers from any schools interested in distance learning can connect with the Aquarium to schedule a program, with a limited number available on a first-come, first-served basis, subject to scheduling limitations. These experiences are particularly valuable for schools in our western counties who might be unable to arrange overnight accommodations for visits to the coast. Funding from *Aquarium Scholars* will support equipment, supplies and technologies for these programs.



MARKETING

In order to maximize the potential of *Aquarium Scholars*, the Aquariums will produce marketing materials targeting Title I teachers and principals. These efforts will promote the availability of the programs, feature stories of their success, and provide recognition for our *Aquarium Scholars* partners. Modest funding for printed materials and postage, web and email support, and various media expenses will be directed for these efforts.



EVALUATION

It's important for the Aquariums to implement a comprehensive evaluation plan for *Aquarium Scholars*. This effort will serve to provide meaningful feedback for teachers, funding supporters and Aquarium staff, who can use metrics for program adjustments. The NC State University Friday Institute for Innovation (www.fi.ncsu.edu) has extensive experience in classroom innovation and evaluation, and has agreed to partner and contract with the Aquariums to develop and oversee this plan. Dr. Jeni Corn, the Institute's Director of Program Evaluation, will lead this effort. In her recommendation letter, she states that her research interests "focus on impact of informal education settings on learning, innovative STEM opportunities for underrepresented students, scale of innovations, and utilization of innovative evaluation approaches." The Institute is already doing similar work for other school-based programs in the state.

With support from *Aquarium Scholars* partners, the Aquariums and the Aquarium Society will underwrite the necessary planning, equipment, technologies, supplies, animals, services, staffing and marketing to implement the program. The planning effort will be led by the Aquariums' education curators who are experienced in organizing and delivering programs on this scale.

The Aquariums' programs have been refined through the years and are compelling, memorable and highly effective. The mix of program subjects varies by location and is always evolving.

AQUARIUM PROGRAM EXAMPLES



SQUID SQUISH

Cephalopod investigation features a squid dissection



ROVS AND SCIENTIFIC DISCOVERY

Explore amazing remote-operated vehicles and discover their use in undersea exploration



SCALY SKIN, NO FINS

Explore the world of reptiles and touch an alligator, turtle and snake



SEA TURTLE TRAILS

Threatened sea turtles and their conservation story are among the most popular of Aquarium programs



LIVING SEASHELLS

Live mollusks reveal their secret lives under the sea



GREEN ENERGY

Hands-on programs available from our Platinum LEED-certified Jenette's Pier location include Solar Science, Wonders of Wind, and Geothermal-Hot & Cold



FEATHERED FRIENDS

Students learn about the important role birds play in our environment and get up close and personal with a screech owl



RIVER BASINS OF NC

Learn about the state's rivers and how our diverse ecosystems are connected



SWAMP SYMPHONY

Reptile and Amphibian comparisons highlight the world of frogs, toads and turtles



OCEAN RX

Students learn about medicines from the sea and the amazing research that might one day lead to cures for cancer and other diseases



THE RESULTS

SUCCESS FOR THE AQUARIUM SCHOLARS PROGRAM WILL BE MEASURED IN DIFFERENT WAYS, WITHIN A PLAN TO BE DEVELOPED IN PARTNERSHIP WITH THE FRIDAY INSTITUTE.

Student and class evaluations will place special emphasis on two key performance factors—increasing understanding and growing interest. The Aquarium education team has a solid track record of measuring and evaluating their programs, and these same methodologies will be used to monitor the *Aquarium Scholars* programs. These include both user-satisfaction surveys and student performance analysis. Since most programs will feature pre-and-post testing, our team will gather data on the effectiveness of key educational messages. Additionally, school, class and student participation levels, geographical distribution, revenue analysis, booking rate, etc. are measurements that will be compiled into a report to be made available to *Aquarium Scholars* sponsors annually.

THE AQUARIUM SCHOLARS PARTNERSHIP, ONCE FULLY-IMPLEMENTED, WILL YIELD MANY POSITIVE RESULTS FOR SCHOOL STUDENTS AND TEACHERS ACROSS THE STATE.

Some Intended Outcomes include:

- *Tens of thousands of low-income students*, especially those from rural counties, will gain exposure to the wonders of North Carolina's aquatic life through Aquarium visits and programs.
- Many of these students will experience *unique out-of-the-classroom learning opportunities* (and trips to the coast) that they might otherwise never receive.
- The NC Aquariums will reverse the trend of declining student participation by *targeting underserved schools* and *expanding awareness of the Aquariums* across the state of NC.
- Programs will spark interest in participating students, increasing their knowledge and understanding of habitats, wildlife, conservation issues, and ocean science—*while ultimately propelling them toward enhanced science achievement*.
- Students will learn from new perspectives, develop new skills, and engage in discovery—in ways that are different from traditional classroom methods.
- Students will better understand the connectivity between man's activities and their impacts on the natural world.
- Students will gain insights and be *motivated to explore careers in aquatic science*.
- Success will breed success; supporting donors will continue to expand opportunities for low-income students thus sustaining the future of the *Aquarium Scholars* program.

SCHEDULE OF IMPLEMENTATION:

SPRING 2017

- Develop Proposals
- Solicit Partnerships

FALL 2017

- Announce Partnerships;
- Complete Program Planning & Registration Processes

END OF YEAR 2017

- Secure Contributions
- Initiate Marketing and Evaluation Plans

WINTER 2017-2018

- Launch website
- Continue Marketing

WINTER-SPRING 2018

- Full Program Implementation
- Continue development of new partners



THE CONCLUSION

AQUARIUM SCHOLARS WILL EXPAND THE NC AQUARIUMS' HIGHLY-REGARDED EDUCATION PROGRAMS BY TARGETING UNDERSERVED SCHOOLS ACROSS THE STATE.

Through a partnership of private corporations, foundations, individuals and government agencies, the nonprofit NC Aquarium Society will provide funding for teachers from Title I schools in North Carolina to have their classes participate in onsite programs at the coast, host Aquarium Outreach, or sign on for distance learning experiences—all at little or no cost to the schools. Over the next several years, tens of thousands of students will participate, increasing their knowledge, skills and understanding of North Carolina's aquatic habitats, wildlife and conservation issues. For many, they will be inspired to know and experience more; their exposure to live animals and hands-on processes will spark interest in science and enhance their personal achievement.

CALL TO ACTION

The North Carolina Aquarium Society invites you to join our growing list of private contributors in support of *Aquarium Scholars*. Your gift to the nonprofit Society is tax-deductible, and represents an investment in the young people of this state who otherwise might never participate in Aquarium education programs. These enriching experiences will open doors for low-income students through non-traditional learning, challenge their critical thinking skills, and spark interest in wildlife and science careers. Join us in building a brighter future for students across the state!

**FOR MORE INFORMATION, CONTACT: JAY BARNES, DIRECTOR OF DEVELOPMENT
919-877-5500, EX. 231 | DEVELOPMENT@NCAQUARIUMS.COM**



PUBLIC SCHOOLS OF NORTH CAROLINA

DEPARTMENT OF PUBLIC INSTRUCTION | June St. Clair Atkinson, Ed.D., State Superintendent

WWW.NCPUBLICSCHOOLS.ORG

March 3, 2016

Mr. Jay Barnes
Director of Development
NC Aquarium Society
3125 Poplarwood Court, Suite 160
Raleigh, NC 27604

Dear Mr. Barnes,

The Science Section of the North Carolina Department of Public Instruction (NCDPI) strongly supports your pursuit of funding to secure sponsorships for the *Aquarium Scholars* program. I am pleased to be a collaborative partner to support your team's effort to provide access to STEM-based Aquarium education programs for students attending Title I schools across the state.

Currently, I serve as the Section Chief of K-12 Science in the Division of Curriculum and Instruction with the NCDPI. As such, I have opportunity to sponsor annual meetings of non-formal educators such as the staff with the NC Aquariums. It is worth noting that members of the Aquarium have been active participants over the years. During these meetings, participants discuss the current science standards to ensure that their programs align to the NC Science Standard Course of Study. Thus, I am confident that the efforts of the *Aquarium Scholars* program will prove to be beneficial to students and teachers.

Your target to reach tens of thousands of low-income school students is admirable and represents a priority to the NCDPI as we seek to close the gap for students who are under-represented in STEM fields.

It is with great confidence in your future success that I extend my support in your endeavor to provide access and equity to the wonderful programs at the NC Aquariums via the *Aquarium Scholars* program for NC's Title I schools. I look forward to serving in an advisory capacity should you have need.

Sincerely,

Beverly Vance

K-12 CURRICULUM AND INSTRUCTION-SCIENCE

Beverly Vance, Science Section Chief | Beverly.Vance@dpi.nc.gov
6352 Mail Service Center, Raleigh, North Carolina 27699-6352 | (919) 807-3936 | Fax (919) 807-3826
AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER

December 1, 2016

Jay Barnes
Director of Development
NC Aquarium Society
3125 Poplarwood Court, Suite 160
Raleigh, NC 27604
Jay.Barnes@ncaquariums.com

Dear Mr. Barnes,

On behalf of the Friday Institute for Educational Innovation, I am pleased to provide a letter of endorsement and support for the new Aquarium Scholars program. I understand that this new effort intends to expand the Aquariums' unique educational offerings to new audiences—low-income schools across the state who are unable to afford the travel expenses and program costs associated with these experiences.

The Friday Institute for Educational Innovation is the research and development arm of the North Carolina (NC) State University College of Education. NC State University is a land grant institution and the state's largest university in the 16-campus system. The core work of the Friday Institute is to advance education through innovation in teaching, learning, and leadership. We conduct research, create resources, provide services to educators and policymakers, and advocate for the improvement of teaching and learning. Our work focuses on innovations that help prepare all students to live and work successfully in the 21st century.

As the Director of Evaluation Programs at the Friday Institute, I serve as Principal Investigator of several large, statewide STEM evaluation and research studies of innovations in schools, museums, and community college settings. My research interests most closely aligned to this project focus on impact of informal education settings on learning, innovative STEM opportunities for underrepresented students, scale of innovations, and utilization of innovative evaluation approaches.

We appreciate this opportunity to collaborate with the North Carolina Aquarium Society as your research and evaluation partner for this important new initiative for the Aquarium education program.

Sincerely,



Jeni O. Corn, Ph.D.
Director of Evaluation Programs
Friday Institute for Educational Innovation
College of Education, NC State University

FAQ'S

What is Aquarium Scholars?

Aquarium Scholars is a new partnership between the NC Aquariums, NC public schools and the nonprofit NC Aquarium Society, through which donors help fund access to STEM (Science, Technology, Engineering & Math)-based Aquarium education programs for low-income students across the state.

Who is asking for the funding?

The NC Aquarium Society, the nonprofit support group for the three NC Aquariums. The Society is ranked among the top 200/aquarium nonprofits in the U.S. by Charity Navigator.

Who will implement the project?

The NC Aquariums' education teams, with locations at Fort Fisher, Pine Knoll Shores, Roanoke Island, and Jennette's Pier in Nags Head. The Aquariums are a Division of the NC Department of Natural & Cultural Resources.

How will the funding be used?

Aquarium Scholars will allow NC teachers and students in Title I schools to take class trips to the Aquariums, receive Aquarium Outreach programs in their classrooms, and/or participate in Aquarium Distance Learning programs, with little or no cost to the schools or students.

Who will benefit?

The thousands of K-12 students and teachers who engage in Aquarium programs. The emphasis will be reaching schools across the state, especially those who cannot afford these programs or who otherwise don't have access to them (Title I).

Why is this needed?

The Aquariums have seen a decline in education participation from schools in recent years. Tightening school budgets are largely to blame, though schools from more affluent areas and private schools continue to participate at higher levels.

What outcomes are expected?

Over the next several years, thousands of low-income school students will participate in programs that incorporate STEM science and meet the state's curriculum guidelines, teaching them about North Carolina's amazing aquatic ecosystems and inspiring them to connect with science and nature. This effort may raise test scores and help narrow the achievement gap between low-income students and other students.

How will success be measured?

The Aquariums will engage with the Friday Institute at NC State University to develop a measurement matrix to track school participation by number, location and frequency, as well as qualitative measurements related to student achievement.

Who are partners on the project?

We are seeking multiple sponsors for Aquarium Scholars, and to date have received support from a number of corporate and private foundations. The Aquariums and the Society will provide additional matching support in personnel, facilities, equipment and supplies. Others involved include the NC Department of Public Instruction, the NC Science Teachers' Association, and The Friday Institute at NC State University.

When does the project begin?

Announcement of Aquarium Scholars was in 2016. The project launches in early 2018 after funding has been secured.

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The Aquarium's educational messaging looks to the future, and inspires young people to better understand our ecosystems, marvel at their beauty, and play an active role in conserving them.

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