



Freshwater Outreach Program

Research & Education Vessel Use Report 2024

Founded in 1986, the Robert B. Annis Water Resources Institute (AWRI) has a mission to integrate research, education, and outreach to enhance and preserve freshwater ecosystems. The outreach program has been key to fulfilling that mission.



**GRAND VALLEY
STATE UNIVERSITY**

ROBERT B. ANNIS
WATER RESOURCES INSTITUTE

2024 by the Numbers

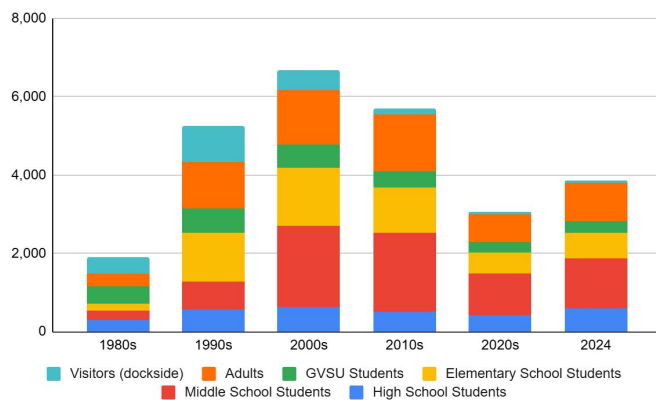
The outreach program offered **197 cruises** in 2024. Nearly **4000 visitors from 105 groups** experienced aquatic science on the *D.J. Angus* and *W.G. Jackson*.

Groups on the vessel included public, private, charter, and parochial schools, as well as homeschool co-ops and informal learning groups like camps and scouts. Colleges and universities also participated, including **7 GVSU courses**, 7 additional GVSU departments and events, and 8 other regional institutions of higher learning.

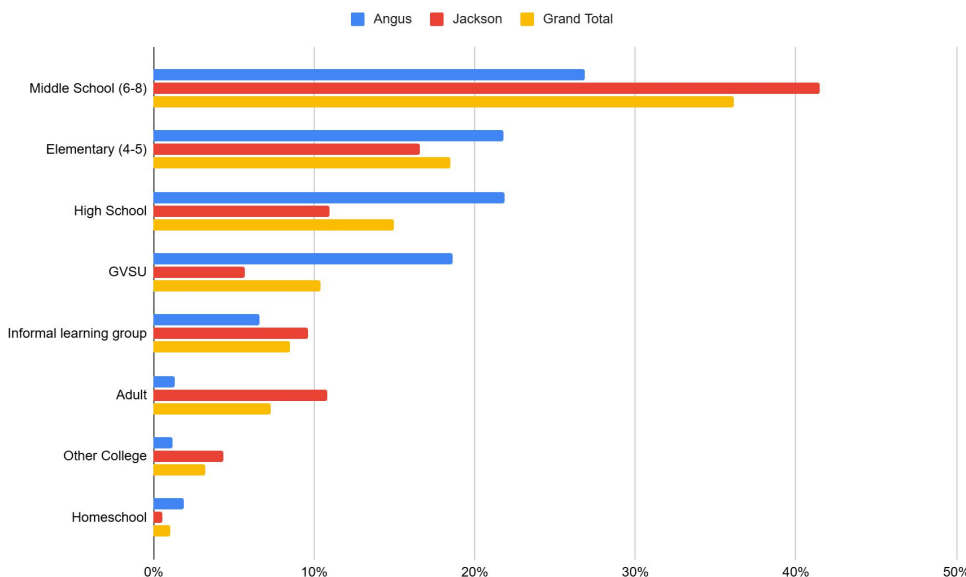
Groups visited the vessels from **14 Michigan counties**. We also welcomed **3 statewide groups** and **2 national conferences**.

For more detailed information about the outreach program's reach, please contact: *Christina Catanese, AWRI Education Specialist, at catanesc@gvsu.edu*

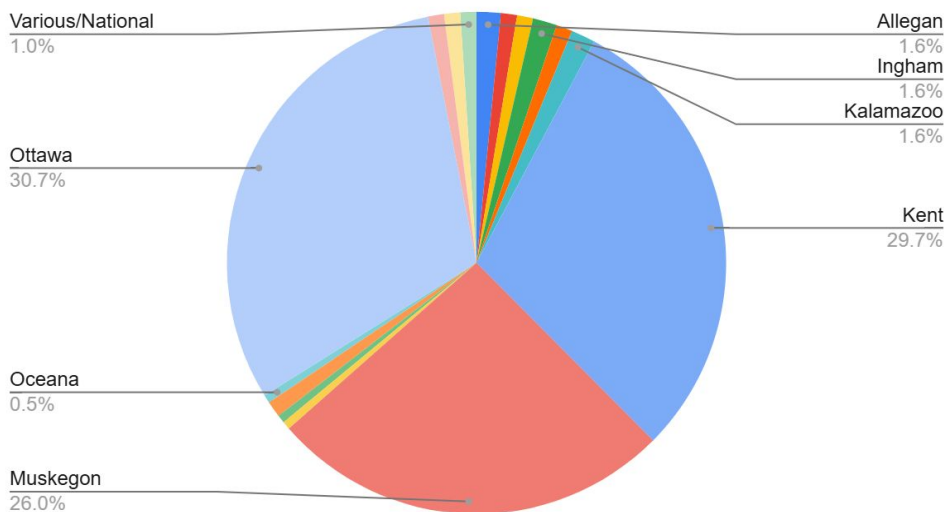
2024 Total Passengers on Cruises, compared to decade averages



Percentage of Visitors by Age Group, 2024



Percentage of Cruises by County, 2024



What They're Saying: Feedback from 2024 cruise participants

"Students are real life scientists." "Making connections to the place we live and play." "Direct and immediate relevance." "This should be required for every high school student in Michigan." "Students loved being part of the scientific process in a meaningful way."

Program Highlights



Faculty and staff from AWRI labs are inspiring the next generation of scientists. At every landside program this year, students heard exciting presentations that highlight real-life experiences and demonstrate tools of the trade of aquatic science. We have also enjoyed visits of AWRI researchers on select cruises, such as Dr. Bopaiah Biddanda on a cruise for GVSU's Climate Change Education Solutions Summit.



More area districts are seeking to bring students in large numbers to experience our programs. Muskegon Public Schools and Spring Lake Intermediate School have initiatives to bring every 5th grader to our site for cruises and hands-on science.



Through a multi-year partnership with the Lakeshore Museum and other area STEAM programs, we provided transportation subsidies to **6 Muskegon county schools** in 2024. This funding is provided by the Howmet Foundation.

We continued our partnership with the Boys and Girls Club of the Muskegon Lakeshore and the West Michigan Environmental Action Council (WMEAC) for a third summer. Students grades 1-8 from five summer program sites participated in cruises and dockside experiences on the *W.G. Jackson*.



The outreach program collaborated on a research project with AWRI's Otter Lab. Midge fly larvae and sediment samples collected by visitors during educational cruises were analyzed for mercury by lab staff and a joint summer intern. Due to bioaccumulation of heavy metals up the food chain, the concentrations in chironomids are important to the overall toxicity issues in our region given its industrial history.

Recognizing the interdisciplinary nature of water and the need to support diverse learning styles, we have integrated art-based activities into some of our programs. Students developed graphic data visualizations based on data from the Biddanda Lab's Muskegon Lake Observatory (at right, a graph of temperature and dissolved oxygen over one year shows the impact on fish of low DO in the summer months). Playing homemade instruments, they also used data points as musical notes to hear the seasonal changes measured in local waterways.



"We talk about human impact in class already, but doing the data collection was huge for them."

"Many of us had never done anything like this, and it was so memorable."

"Students were able to experience math, reading, writing, science, and social studies."

"You could hear them starting to have more educated guesses and answers to questions."

Annis Water Resources Institute Aquatic Science Cruises

Over 196,000 people reached since 1986



***Our programs connect people in West Michigan
with local waters through experiential learning.***

*Participants explore our lakes as freshwater scientists, and
learn about water chemistry, lake food webs, human impacts,
and more*

Offered onboard GVSU's research vessels *D.J. Angus* (docked in Grand Haven) and *W.G. Jackson* (docked in Muskegon), the program serves classes, youth groups, and other organizations.

Boat trips for 4th grade through adults run from April to October.
Land-based programming is also available in Muskegon
for kindergarten and above.

For school groups, these experiences are easily integrated with science curricula to meet state standards.

Visit our website to learn more
and find out how to schedule a trip!

<https://www.gvsu.edu/wri/education/>

