

# POCACITO Network 2025

activities and impacts

# 2025 POCACITO activities

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- POCACITO summer camp 2025
- Transatlantic Forum for Environmental and Climate Justice 2025
- Art for Nature series
- Biomimicry Youth Design Challenge BYDC
- German-American Nature-Based Solutions Exchange GANBASE

# POCACITO summer camp 2025

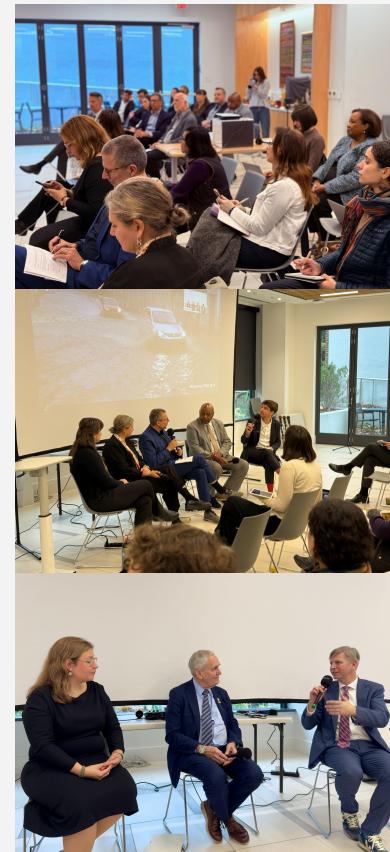
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- 40 high school students from the U.S. and Germany
- July 6-12, Camp Wilkes, Biloxi, Mississippi
- together with Mississippi State University
- <https://www.pocacito.org/pocacito-summer-camp-2025/>
- focus on biomimicry, biodiversity, climate change
- activities included biodiversity mapping, kayaking, seine fishing, drone flying, beach cleanup, planting, cooking, podcasting and zine editing
- outcomes: zine and podcast
- our 2nd year in Biloxi



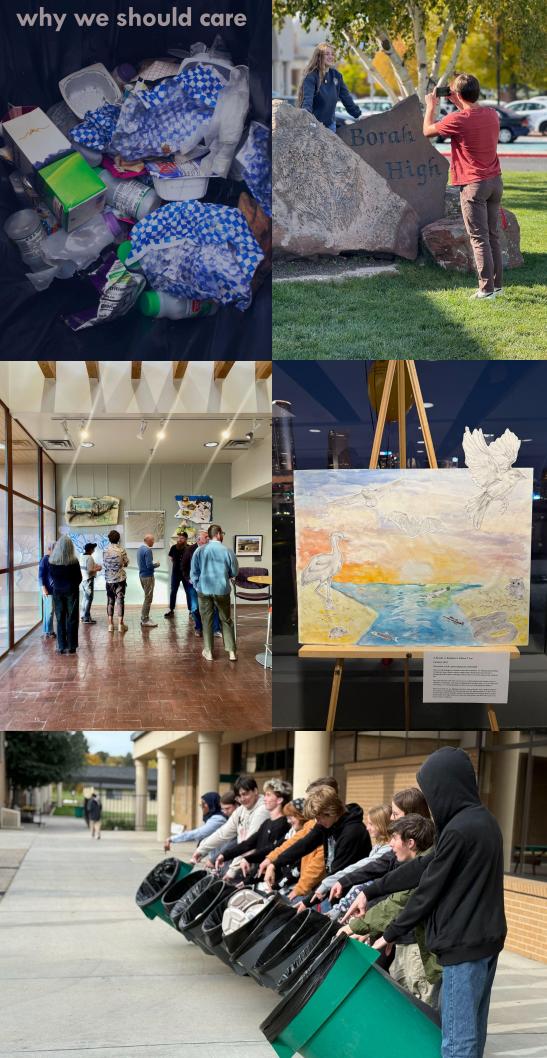
# Transatlantic Forum for Environmental and Climate Justice

- November 19, 2025 at George Washington University in Washington, DC
- theme: Resilience and Disaster Readiness
- <https://www.pocacito.org/tfecj-2025-update/>
- with Member of German Parliament Katrin Uhlig and U.S. Rep. Lloyd Doggett
- Margaret Gnglewski, Associate Professor of German and International Affairs, Faculty Director of Academic Programs, GW Alliance for a Sustainable Future
- Prof. Dr. Uwe Schneidewind, former Lord Mayor of Wuppertal
- Geraldine Gardner, Executive Director, Centralina Regional Council, NC
- Bronwyn Cooke, Community Planning and Policy Manager with the Agency of Commerce and Community Development for the State of Vermont
- Joseph Threat, Chief Administrative Officer, City of New Orleans
- Justin Ángel Knighten, Sustainable Future Fellow, GW Alliance for a Sustainable Future
- Nils Jakubeit, Senior Advisor with German Federal Agency of Technical Relief (THW)
- 50 participants, hybrid



# Art for Nature

- art program at Maggie Walker Governor's School in Richmond, Virginia, Borah High School in Boise, Idaho, Santa Fe Community College in Santa Fe, New Mexico and Vestavia Hills High School in Vestavia / Birmingham, Alabama.
- with artists Brian Hebert, R. Stein Wexler, Shayla Blatchford and Thomas Heinser
- covering climate change (Birmingham), extractive economies (Santa Fe), recycling (Boise) and the James River (Richmond)
- exhibitions in each location and
- <https://www.pocacito.org/art-for-nature-in-4-schools/>



# Biomimicry Youth Design Challenge BYDC

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- started by Biomimicry Institute
- 52 teams from around the world
- elementary, middle and high school
- focus on the 17 UN Sustainable Development Goals
- <https://www.youthchallenge.biomicry.org/>
- <https://www.pocacito.org/biomimicry-youth-design-challenge-2026/>
- jury selection for awards in each age group and SDG



**Biomimicry Youth Design Challenge 2025**



**Biomimicry Institute**

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**The Aquatic Recycled Trash Accumulation System (ARTAS)**

Stratford Middle School, San Jose, CA, USA, 9th grade



**What is the problem your team solved for the challenge?**

Water pollution is a widespread problem found in various places around the globe. Much can be traced back to land and streams polluted by unsustainable industrial practices or agricultural runoff. These pollutants enter the waterways and eventually end up in the ocean. This causes a damaged ecosystem, and a disturbed food chain. Sources can be found in industries, urban runoff, fertilizer pollution, and more. The water quality in the Bay Area is very poor, especially in the Bay Area, because it once exceeded Water Quality Standards because of these causes.

**How was the solution inspired by nature?**

Our device was inspired by the aqua plough, a system for clearing, leveling, and the compacting of soils, first used in the 19th century. The aqua plough is the result of a lack of water when cultivated. Working banks are often filled with water, which causes the plants to drown. Pufferfish possess flexible skin (puff up skin) and a strong, sharp beak. They use their beaks to create a hole in the sand, which creates a burrow, and initiates the pufferfish to create a pocket for further filtration. Finally, pufferfish compact sand, creating a pocket for water to collect. This creates a water range of 10cm.

**What does your design solution do?**

Our device mitigates water pollution by filtering polluted water. The main part of the RE is based on a beaking shape. Its feeding technique is emulated by the device, trawling across and gathering water with its beak. The beak is a sharp, pointed, and strong beak, which is used to catch and filter trash. The trash is then collected and compacted into a pocket, which is then used to hold the trash. Lastly, the trash is compacted into a larger hole of sand, which is then used to compact sand, which is used to them to provide an efficient navigation system. Therefore, these attract efficiency, thereby water.

**Meet the Team**



**Stephanie**  
9th grade



**Stephanie**  
9th grade



**Stephanie**  
9th grade

**Meet the Project**



**ARTAS**



**Pufferfish**



**Beaking Machine**

**pcocacito.org**

**Bioluminescence Youth Design Challenge 2025**

**HAMMER: Hammerhead-Adapted Modifications for Maximizing Energy Retrieval**

Eastside High School, Sammamish, Washington, USA

What is the problem your team solved for the challenge?

Our project addresses the inefficiency of current wind turbine designs, especially in low or variable wind conditions. We focused on the aerodynamic performance of vertical axis wind turbines by using biomimicry, specifically, tube-like structures on the hammerhead of a hammerhead shark to increase lift, leading to higher energy output.

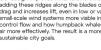
How was the solution inspired?

Our solution was inspired by the hammerhead shark and the humpback whale. The hammerhead's cephalofoil was used to minimize water flow, reducing drag and improving maneuverability. The humpback whale's pectoral fins were used to increase lift and reduce drag by creating a wake deflection flow. We combined these strategies by adding tube-like structures along the entire blade surface of a vertical axis wind turbine. The resulting design is a hybrid between a vertical axis wind turbine and a horizontal axis wind turbine. The fusion of biological insights resulted in a blade design that performs more efficiently across a range of wind speeds and angles, thus continuing engineering challenges.

What does your design solution do?

Our design improves wind turbine efficiency by minimizing turbulence structures from marine animals. By adding these ridges along the blades of a vertical axis wind turbine, the design reduces aerodynamic drag and increases lift. The resulting design is a hybrid between a vertical axis wind turbine and a horizontal axis wind turbine. The fusion of biological insights resulted in a blade design that performs more efficiently across a range of wind speeds and angles, thus continuing engineering challenges.

**Meet the Team**



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**Meet the Project**



Alaska Bifurcated Hammerhead Shark  
Sammamish, WA

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 **Bioluminary Youth Design Challenge 2025**

**Frigatebird-Inspired Glider**  
International group of students based in New Delhi, India and USA

💡 What is the problem your team solved for this challenge?

In many disaster-prone areas, millions of people struggle to access food, medicine and supplies due to damaged infrastructure and limited transport. Design in meeting these logistic needs can lead to remote health clinics, food banks, and other facilities that can transport essential items to isolated locations where conventional transportation cannot reach.

💡 How was the solution inspired by nature?

Our design was inspired by the frigatebird, a seabird that can soar for days without flapping its wings. We wanted to create a glider that can fly for long distances using minimal energy. The glider's primary feature is to use a 'heat' inspired wing design and lightweight, durable materials in our glider. Just like the frigatebird, our glider uses the natural heat of the sun to move forward. This allows the glider to travel long distances using minimal energy. Biological principles directly shaped our design, helping us create a glider that is efficient, durable, and can travel long distances.

💡 What's the next design step after?

Our frigatebird-inspired glider is designed to deliver the supplies to areas that are inaccessible due to disasters or rough terrain. Built from lightweight yet durable materials, it can withstand harsh environments and long flights. The glider's design is highly efficient, allowing for smooth and stable flights for long-distance flights. Observing how the frigatebird glides efficiently with minimal energy, we have incorporated these natural principles into our design. We are currently in the research and design phase. These nature-based insights directly guided our decision on structure, materials, and aerodynamics, optimizing the glider for long-range, stable, and sustainable flight in remote locations.

**Meet the Team**



**OUR TEAM**

**Meet the Project**



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 **Biomimicry Design Challenge 2025**

## ROOTED PASSAGE

Orange Cube Seoul, Seoul, South Korea, grades 10 + 11

3 June 2025 | [pocacito.org](https://pocacito.org) | For the challenge:

The students on our team addressed one about root primroses and arachnids falling into deep agricultural fields in South Korea, where they cannot escape without human help. While the existing canals are essential for rice farms, they pose a serious threat to wildlife.

 How was the solution inspired by nature?

Our solution was inspired by mangrove roots and free frogs that pass through muddy mudflats. We observed the way the roots of the mangrove plants grow in the soft, wet soil, which became our inspiration for the stable leg structure of the ring. Moreover, free frogs use hexagonal toe pads to grip the soil, which inspired us to use hexagonal shapes to increase the grip and prevent animal traction better. By combining these strategies, we created a biomimetic, stable, and grippable bridge. This design is a combination of two different challenges and requirements. The integration of natural inspirations ensures both structural integrity and effective usability for animals to escape.

 What does your design solution do?

Root Passage is a modular escape bridge that helps small animals to safely exit deep canals. It addresses the problem by offering a stable and grippable path, which is designed to accommodate different animals. The bridge is designed to be modular, incorporating the characteristics of mangrove roots and tree frog pads, enhancing its structural stability and traction even in heavy rain. To ensure the safety of the animals, we conducted extensive research and obtained inspiring information from nature. We followed the National Institute of Ecology's guidelines for escape passages, including dimensions, and slope ratios, to ensure our design is feasible for practical implementation.

**Meet the Team**



**Meet the Project**



[pocacito.org](https://pocacito.org)

## → German-American Nature-Based Solutions Exchange GANBASE

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- one week in June in Northern Germany
- one week in October on the US Gulf Coast
- <https://www.pocacito.org/german-american-nature-based-solutions-exchange-ganbase/>
- <https://www.pocacito.org/ganbase2025/>



# Impacts

- 40 students at summer camp + 25 students at planting day
- reached 100 students in school arts program
- reached 250 students online in biomimicry program
- reached 250 participants at in-person workshops and conferences
- in-person activities in
  - ◆ Biloxi, Mississippi
  - ◆ Birmingham, Alabama
  - ◆ Boise, Idaho
  - ◆ Bremen and Hannover, Germany
  - ◆ Galveston, Texas
  - ◆ Gulf Shores, Alabama
  - ◆ New Orleans, Louisiana
  - ◆ New York, New York
  - ◆ Richmond, Virginia
  - ◆ Santa Fe, New Mexico
  - ◆ Washington, DC