BAHAMAS AWARENESS OF MANGROVES (B.A.M.)

An Education Program for Tomorrow's Guardians

ABOUT THE PROGRAM

Since 2015, the Khaled bin Sultan Living Oceans Foundation (LOF) partnered with FRIENDS of the Environment (FRIENDS) to successfully run the Bahamas Awareness of Mangroves (B.A.M.) program. LOF worked with two high schools in Marsh Harbour – Abaco Central High School and Forest Heights Academy and since its inception, hundreds of students have completed the program.

The B.A.M. program is an immersive, yearlong experiential education program that engages students and teachers to learn about, restore, and monitor mangroves. B.A.M. utilizes project-based learning, a teaching method, which allows students to explore real-world problems and acquire deeper knowledge over extended periods of time. Additionally, the program is designed to strengthen Science, Technology, Engineering, Art, and Math (STEAM) education.

B.A.M.'s custom designed curriculum combines professional development for teachers, experiential learning, field experience, and program evaluation. The core of the program takes place over eight months when students execute hands-on scientific investigations.

YEAR 1 INVESTIGATION – GRADE 10 BIOLOGY STUDENTS

Each student grows 3 mangrove propagules (seedlings) in their classroom. They plant their propagules in different types of soil and hypothesize which soil they will grow best in. Over an eight month period, students measure the growth of each one. At the end of the project, students analyze the data collected and draw conclusions from it to determine whether their hypothesis was correct.

YEAR 2 INVESTIGATION – GRADE 11 BIOLOGY STUDENTS

Students establish quadrats or plots that allow them to consistently monitor the mangrove forest. Using scientific instruments, they collect data from their plot including non-living factors such as geographic location, salinity, dissolved oxygen, temperature, pH, and soil texture, and living factors such as the tree diameter, height, and tree species. Throughout the school year, students use the data they collect to make calculations and begin writing a mangrove report. At the end of the year, the students analyze the data and draw conclusions to determine health of the mangrove forest.

THE PROBLEM

There is a decline in out-of-school science learning around the world, especially outdoor environmental education experiences. Through the Bahamas Awareness of Mangroves (B.A.M.) program, the Khaled bin Sultan Living Oceans Foundation takes students out of the traditional classroom setting and provides them with this opportunity.

The B.A.M. program has proven advantages. Students who participate in the B.A.M. program are more likely to:

- have a positive attitude towards science
- apply and retain classroom knowledge deepening their understanding of science
- gain practical scientific experience and STEAM skills
- solve real-life problems
- develop a conservation ethic

"In the end we will only conserve what we love. We will only love what we understand. We will only understand what we have been taught."

— Baba Dioum

BEYOND THE CLASSROOM

The B.A.M. program offers a well-rounded immersive learning experience that takes students beyond the classroom and into the outdoor environment. The effectiveness of the program is due to:

- An in-depth two-year mangrove education program with hands-on review and reinforcement activities
- A combination of classroom teaching methods reinforced by field experience
- A custom developed curriculum aligned to Bahamian educational standards
- Preparatory and follow-up work that helps to link outdoor and indoor activities

STUDENTS' TESTIMONIALS

"*My favorite part of the program was going in the water experiencing different things that I've never seen before in my life that are right in my own environment.*"

– Wade Woodside, Abaco Central High School, B.A.M. Year 1 Program

"*B.A.M. has given me an experience like no other and because of it, I feel as though my science/ research skills have been sharpened. Additionally, my appreciation for mangroves and marine ecosystems has grown exponentially.*"

– Raevyn Bootle, Forest Heights Academy, B.A.M. Year 2 Program

"*This program has allowed me to regain my appreciation for my environment. I am proud to say that now I'm more interested in my environment and willing to continue the journey of protecting it.*"

– Gregory Cox, Forest Heights Academy, B.A.M. Year 2 Program

PROGRAM GOALS & OUTCOMES

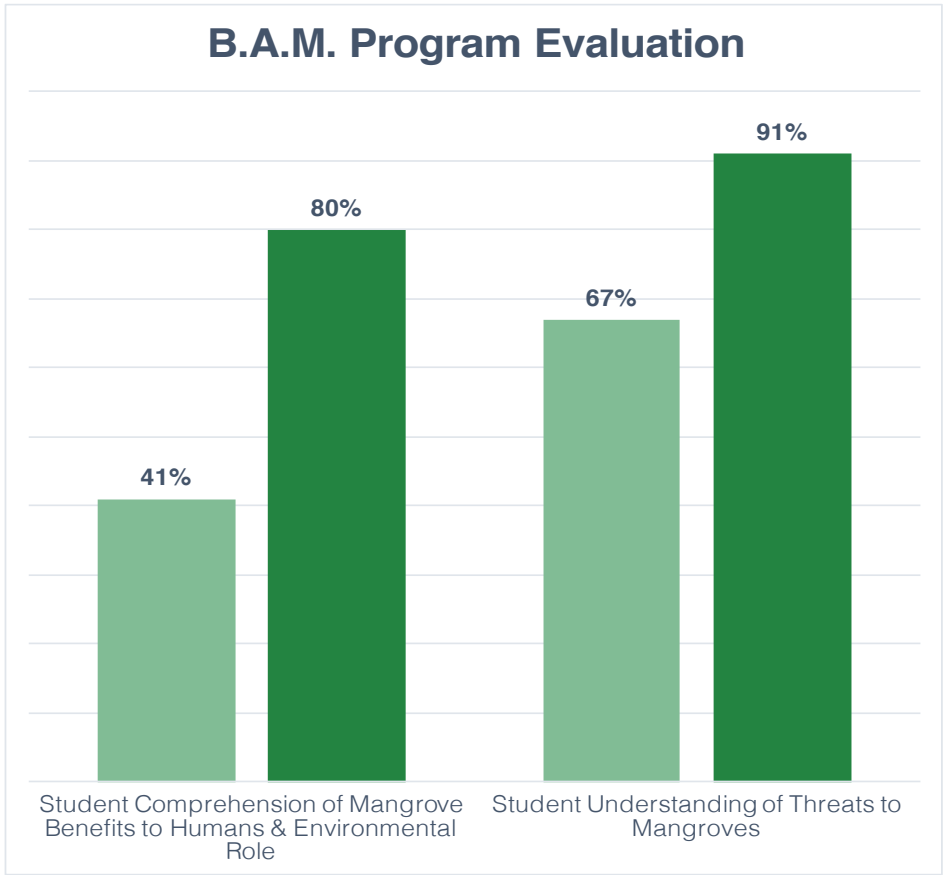
The goal of the B.A.M. program is to provide a unique outdoor environmental education experience that not only creates ocean and environmentally literate individuals, it also fosters awareness and concern about the mangrove ecosystem and its associated problems. Ultimately, the outcome of the program is to shape students' attitudes and behaviors concerning the mangroves, creating environmentally responsible citizens.

PRODUCING MEASUREABLE RESULTS

Surveys revealed that students increased their *comprehension of the benefits to humans and environmental role* (41% to 80%) and their *understanding of the threats posed to mangroves* (67% to 91%) immediately after entering the B.A.M. program.

"The Bahamas have been increasing investment in better student performance in math and science. Bahamian students will be living in a high-tech world where STEM-related skills will be required to thrive in the workforce. It is widely recognized that experiential learning boosts and interest in STEM, especially when it occurs in younger students. Statistics from the Bahamas Junior Certificate examinations "underscore there is a dire need for educational intervention through hands-on learning and exposure."

(thebahamasweekely.com, "Science, technology, leaders invite Bahamian students to STEM camp," Aisha Bowe, July 15, 2014)



Prior to B.A.M. implementation

After B.A.M. implementation

Khaled bin Sultan Living Oceans Foundation

www.livingoceansfoundation.org

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