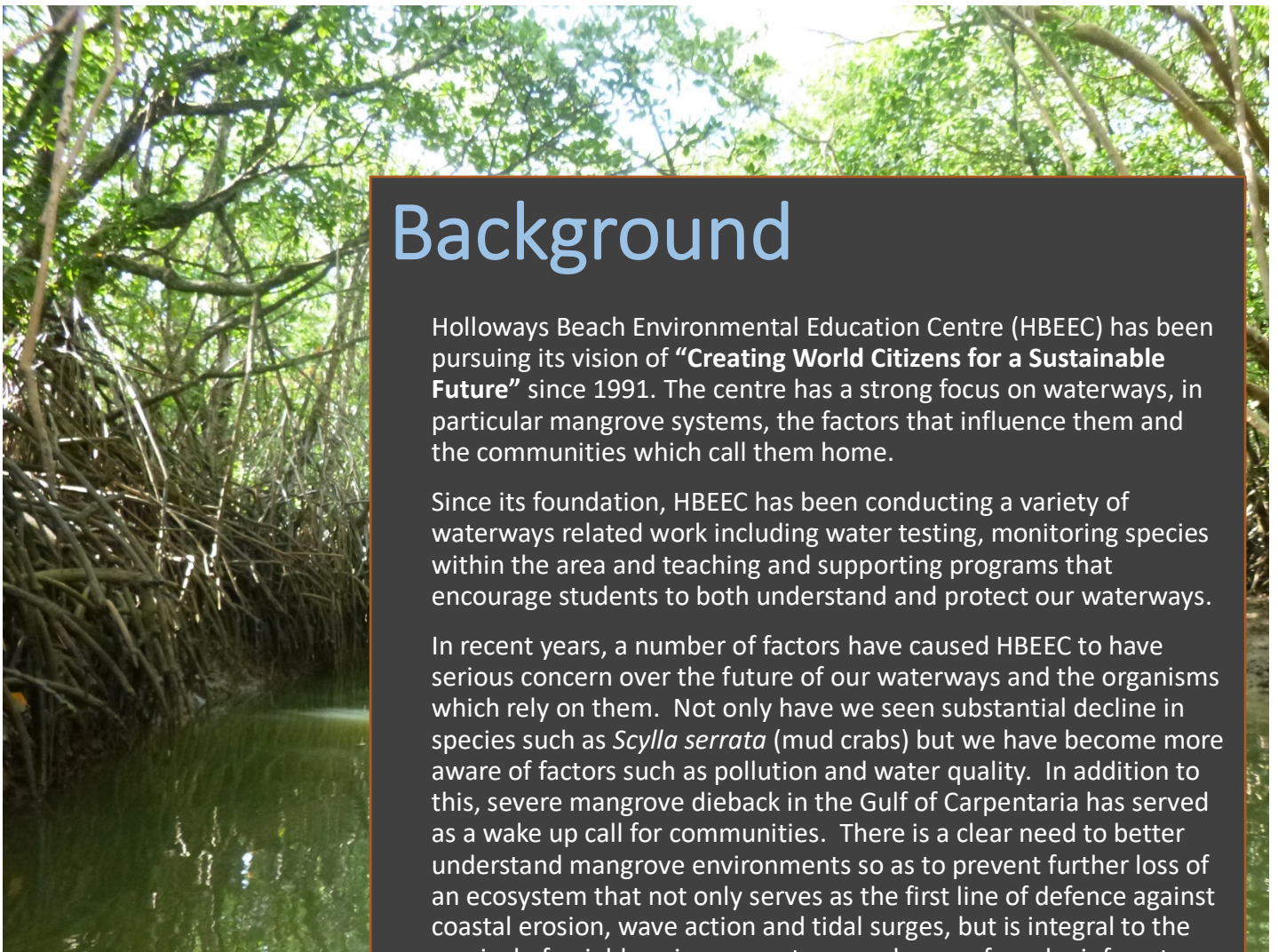


STEM Waterways Citizen Science Project



CONNECTING STUDENTS AND COMMUNITY TO BETTER UNDERSTAND OUR WATERWAYS



Background

Holloways Beach Environmental Education Centre (HBEEC) has been pursuing its vision of “**Creating World Citizens for a Sustainable Future**” since 1991. The centre has a strong focus on waterways, in particular mangrove systems, the factors that influence them and the communities which call them home.

Since its foundation, HBEEC has been conducting a variety of waterways related work including water testing, monitoring species within the area and teaching and supporting programs that encourage students to both understand and protect our waterways.

In recent years, a number of factors have caused HBEEC to have serious concern over the future of our waterways and the organisms which rely on them. Not only have we seen substantial decline in species such as *Scylla serrata* (mud crabs) but we have become more aware of factors such as pollution and water quality. In addition to this, severe mangrove dieback in the Gulf of Carpentaria has served as a wake up call for communities. There is a clear need to better understand mangrove environments so as to prevent further loss of an ecosystem that not only serves as the first line of defence against coastal erosion, wave action and tidal surges, but is integral to the survival of neighbouring ecosystems such as reefs and rainforests.

The Project



HBEEC in collaboration with partners including Scientists from TropWATER, Cairns Regional Council, Dawul Wuru Aboriginal Corporation and more, would like to invite teams from high schools in the region to take full access of our site and facilities to actualise their own STEM Waterways Citizen Science Project.

Your team may choose to:

- use underwater cameras to collect information on particular species or conduct fish surveys (cameras available)
- build and install sensors in Thomatis Creek for continual data collection
- investigate water quality and as a determiner of species population numbers or general waterways health
- develop an awareness campaign, website, app and/or signage to bring attention to a waterways issue
- develop an aquaculture system or farming technique to reduce pressure on natural ecosystems
- suggest or develop a new and more effective method of tagging *Scylla serrata* mud crabs or another species
- design new fishing methods or planktonic sampling methods to give us greater information on species
- Investigate the microbiology, rainfall, plankton, algae or another factor of import to the waterways
- do something entirely of your own design

The **STEM Waterways Citizen Science Project** is designed to enable school teams to learn to: study aspects of waterways in depth, identify areas of scientific importance and interest, engage in good STEM practices and gain access to technologies and experts in order to create viable data and information that is a valuable contribution to local, and potentially global knowledge on these essential systems.

The program is targeted at middle high school students (years 9 and 10), but is open to any year level or multi-age groups. Schools should select a small group of students based on their ability, interest and capacity to engage and collaborate on a project. Groups would ideally be between 4-8 people strong and have a knowledgeable and enthusiastic key teacher who is willing to lead their school's team.

Project groups will have access to:

- Boats
- Microscopes
- Extensive data collected by the centre
- Teachers and experts
- Underwater cameras for species/environmental surveillance
- Water testing results and activities conducted both with probes and via professional testing at Cairns Regional Council's laboratory facilities
- Direct access to Thomatis creek and Holloways Beach
- Environmental Sensors
- HBEEC grounds and facilities
- Spectrometer



The HBEEC site has been booked for a 3 day camp from 31st October to the 2nd of November for the **STEM Waterways Citizen Science Camp** where students will share and implement projects, take part in expert workshops and engage in other learning activities. In addition to this, we aim to have an intensive day at the centre in term 2 or 3 to familiarise students and teachers with the site and facilities and help formulate projects.

Teams will need to commit to attending both the camp in term 4 and an earlier day long orientation to the site and the project (date yet to be determined) and engaging in additional project work as determined by the team's project needs.

This Citizen Science project is a great chance to provide an intensive STEM/entrepreneurial activity for the students and for them to work with outside organisations to ensure that data and results can be submitted and used as valid data by interested parties.

2018 is the inaugural year of the project, we welcome your suggestions and input.

If you wish to nominate your school to be involved in the project, please fill in the group nomination form attached.

If you wish to give suggestions and/or feedback or wish to know more about the project, please contact Terri Mulqueen

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