**SAVE BARNEGAT BAY STUDENT GRANT PROGRAM**

**WIND TUNNEL INDEPENDENT RESEARCH OPPORTUNItY**

Contact Bianca Charbonneau [Bcharbon@sas.upenn.edu](mailto:Bcharbon@sas.upenn.edu) for more information

Please see [Thewindtunnel.weeby.com](http://thewindtunnel.weebly.com/) for more specifics about the wind tunnel

Desired Qualifications:

* Able to work independently
* Able to travel to the wind tunnel in Waretown, NJ
* Willing to work 6-8 hr days while collecting your data
* Good writing skills or the desire to improve writing skills
* Housing can be provided by the wind tunnel at the Rutgers Pineland Field Station if needed

We are looking for a qualified student for a unique opportunity to conduct independent research at the movable bed unilateral flow Waretown Wind Tunnel. Students working at the wind tunnel would be mentored by Bianca Charbonneau, but can be co-mentored as well if applicants have a suitable mentor in mind! Please specify this in applications.

Using the wind tunnel, Bianca has conducted research with coastal dune plants to see how plant shape feeds back on initial dune shape post-storm. More information on the research that Bianca has done in the wind tunnel, as well as on its specifications and capabilities can be found at [Thewindtunnel.weeby.com](http://thewindtunnel.weebly.com/) in the “Press & Info Files site tab.” Specially, the wind tunnel is 1 m wide and 2 m tall and can reach speeds up to 27 mph – please see website for more specific dimensions. The movable bed test area is 1m x 1m and this area can be 3D scanned with sub-millimeter accuracy in x, y, and z dimensions via a permanent class II laser; the laser cannot scan organic matter. The wind tunnel has a sand supply. Students can apply to one of two project options:

**PROJECT 1:** Using the wind tunnel and its accompanying surface scanning technology, the student will measure proto-nebkha/shadow dune formation around the base of different plant species in preestablished stands (monocultures or heterogenous assemblages) of varying densities and or configurations after subjecting the plants to different abiotic conditions with regards to wind speed and duration. Students can alter planting density, shape, wind speed, or test duration. In doing this, the student will be building off of previously conducted work – see wind tunnel’s first publication on website. Students can work with invasive species, Asiatic Sand Sedge (*Carex kobomugi*)*,* and natives American Beachgrass (*Ammophila breviligulata*)*,* and Bitter Panicgrass (*Panicum amarum*) to examine how these plants build and stabilize the dune habitats they create as ecosystem engineers.

\*student must be capable of pushing heavy boxes on wheels, but Bianca can help

**PROJECT 2:** The wind tunnel can be used to test many things that involve wind. Create a completely new research project testing a question that you are interested in exploring. If some specific materials are needed for this or Project I then they can be purchased; we would not expect a student to purchase any materials.

