

Dauphin Island Shoreline Monitoring Citizen Science Program

Beach Profile & Tar Ball Monitoring
for Oil Spill Response Planning



*Community member participating
in beach profile surveying*

Shoreline Monitoring Citizen Science Program

This citizen science program provides coastal community members an opportunity to gain expert knowledge of oil spill planning and response by participating in a project where quantitative beach dynamics and tar ball data are collected. The program aims to:

- Develop a community-based, shoreline data collection program focused on creating an understanding of shoreline environments.
- Provide new perspectives for the community and enable them to better understand the shoreline environment, the disruption caused by oil spills, the potential environmental changes, and socio-economic impacts.
- Collect two critical data sets that typically are lacking at the time of a spill response: seasonal beach and sediment dynamics, and background shoreline oiling.



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Participants of the program receive training from Dr. Ed Owens, an internationally recognized expert on oil spill shoreline response, and Dr. Mark Kulp, University of New Orleans Associate Professor and Director of the Coastal Research Laboratory.

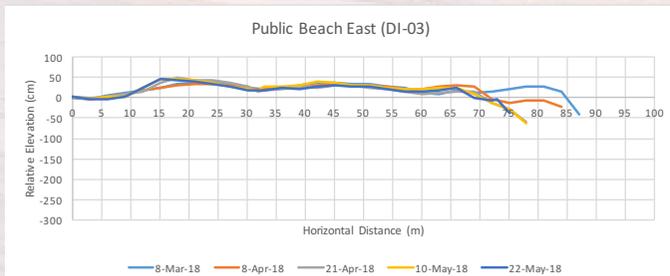
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<https://sites.google.com/view/dicitizenscience>

Through these field activities, participants:

- Learn first-hand the key geological and oceanographic parameters that influence oil behavior and treatment options.
- Learn the value of shoreline data required for effective oil spill treatment plans.
- Develop skills as a citizen scientist while collecting important shoreline data.
- Undertake beach profiling and tar ball surveys on their local beaches.
- Generate valuable long-term data relevant to analyzing the effects of oil spills on the shoreline.



Volunteers on-site preparing for profiling



Survey results from collected beach profiling data

Why Monitor Beach Profiles?

- Beach profiling is a simple technique that measures and documents seasonal, cycles and storm-induced changes on a particular beach.
- Beach profiling provides an indication of whether a beach is likely to rebuild or erode at any given point in time.
- In the event of an oil spill, understanding the beach dynamics and the beach stage (whether the beach is in an erosional or constructive phase of a beach cycle) is an important element for recognizing the potential burial of oil by beach sediments or removal of oil during periods of beach erosion.



Volunteers using the rod-and-horizon profiling method
Volunteers are trained to use the rod-and-horizon method to collect beach profile data. Currently, there are seven profiles sites on Dauphin Island that have been monitored by volunteers 2 to 3 times every month since March 2018.

Why Monitor for Tar Balls?

There is a long history of tar balls on the Gulf Coast beaches from Texas to Florida due to natural offshore oil seeps. Background surface oiling is defined as the chronic (long-term, continuous) concentration or frequency of oil residue or tar balls that may be present on a shoreline without an acute or specific input source (such as an oil spill event). Tar ball data are collected from 100-meter transects established at the profile sites.



Tar ball of unknown origin, 4 cm in length.

Data Management

Each survey produces raw data, including:

- 1) Pre-survey safety briefing
- 2) Project-specific survey forms by transect
- 3) GPS data
- 4) Photographs
- 5) Completed survey forms

Beach surveys produce beach elevation data relative to a fixed supratidal starting point. Bi-monthly and post-storm surveys are completed depending on team availability. Generated data are quality checked by the data manager and input into the database housed at the Canizaro Livingston Gulf States Center for Informatics (GULFSCEI) on The University of New Orleans campus. These data will be available for all end-users including public queries and for long-term preservation after project completion at NOAA's NCEI (National Centers for Environmental Information).