Dunes Climate Ready Grant Update

February 2016-April 2016

DUNES CLIMATE READY GRANT QUARTERLY UPDATE
The Dunes Climate Ready Grant (Coastal Vulnerability and Adaptation Study) is funded by the State Coastal Conservancy's Climate Ready Program. It is designed to further understanding of how climate change will impact Humboldt's coastal dunes and test the effectiveness of different adaptation strategies. As part of the education and outreach component of the grant, quarterly email updates are sent to email subscribers keeping them up to date on the progress of the grant.

Third Quarter Update
February 2016-April 2016

Summary
During the third quarter, winter surveys were completed, impacts of higher tides (due to El Niño) to the beach profile were mapped, resprouts were treated at the Lanphere adaptation site, a native beach grass nursery was planted at the Humboldt Coastal Nature Center, historical photo analysis was begun, and native beach grass plantings and driftwood were used at the Eel River Estuary and Preserve adaptation site. Community outreach included a public meeting, newsletter article, field tour and community presentations. Details of these activities are described below.

Winter Field Surveys
The winter survey was completed in early April after a very challenging season of El Niño weather and tides. All 73 transects were completed. During much of the survey, equipment was limiting, and towards the end of the season State Parks loaned their survey equipment (RTK) to the general effort which helped considerably. It is anticipated that the summer survey will be much easier, faster and more efficient due to a combination of acquired skills, better weather, and more accessible beaches/tides (although delays may be encountered due to Western Snowy Plover nesting).

El Niño and Scarping
It was extremely fortunate that the largest scarping
event occurred in early January, soon after surveying commenced. This meant that it was possible to capture most of the scarping in the transects. USFWS staff, with help from some landowners, are currently mapping the extent and height of the scarping along the littoral cell. Beach and foredune rebuilding is occurring remarkably quickly in many areas due to the large amount sediment delivered by El Niño storm activity, including higher than predicted tides, storm swells, wave action and river flooding. In April, collaborators from the University of Victoria trained USFWS staff in the use of a kite system that utilizes a GoPro camera suspended from a kite to take low elevation video which can be used in monitoring the recovery of scarps.

**Lanphere Adaptation Site**
The Lanphere Adaptation Site was manually treated for resprouts of European beach grass (Ammophila) by the California Conservation Corps as well as CDF fire crews. Due to the postponement of initial removal of European beachgrass until after the fire season, insufficient mortality of Ammophila had occurred by the end of March to allow for planting of experimental treatments before the rainy season ended. Instead, resprouts were sprayed with a combination of glyphosate/imazapyr in late March during an interval of sunny weather. After the rains begin in the fall, the area will be planted with different combinations of native dune grass and dune mat species to test different adaptation strategies comparing different vegetation types and the movement of sand over the foredune crest.

**Eel River Adaptation Site**
In early March approximately 1,100 culms (stems with with rhizomes attached) of *Elymus mollis* (native dune grass, also referred to as Elymus) were collected on the North Spit and planted at the small foredune breach/washover site on the Eel River Estuary Preserve. Driftwood was moved to the western edge of the planting area. The transplanted *Elymus*, as well as the driftwood effectively trapped sediment, but by mid-May over half of the plantings had become buried due to the large amount of sediment that began moving through the site as the beach rapidly built up at the end of the winter. The objective of this adaptation method was to rebuild the foredune while allowing some sediment to pass into the backdune. At least under the conditions of this winter, modifications will be needed to allow continued foredune building under the volume of sand transported and the winds experienced. Of the plantings that were not buried, survival was very high. Alex Blessing will be monitoring growth of surviving plants, and there is a plan to repeat the topographic survey more frequently at this site to follow changes in the foredune this summer.

**Friends of the Dunes Adaption Site**
Approximately 1,400 Elymus culms were harvested from the Lanphere Dunes by CDF crews and planted at a site behind the foredune where Ammophila had previously been eradicated by FOD.
Ideally, planting would have extended seaward to the crest of the foredune, but additional Ammophila treatments are still needed, so supplemental planting is scheduled for the fall. Monitoring will be carried out by FOD, and a survey transect is located bisecting the site to track sediment deposition.

**Historic Shoreline Analysis**
Consultants Julia Clark of GHD and Kelsey McDonald began carrying out the historic shoreline analysis for the southern and northern portions of the study site respectively. Kelsey has scanned historic photos obtained from the archive at Humboldt County Public Works Department and is currently reviewing and assembling other available imagery to gain a better understanding of historic shoreline changes based on the air photo record. This information, together with survey data, will be used to develop a preliminary analysis of sea level rise vulnerability.

**Outreach**
A public education meeting was held on February 27 at the Humboldt Coastal Nature Center. The meeting involved a brief presentation followed by small group discussion with table hosts designed to capture participant’s questions, likes and concerns in a manner that fostered dialogue and encouraged interactive discussion. While feedback on the meeting format was positive, the attendance was lower than hoped for, possibly due to the early morning time frame. Future public meetings will be scheduled during the evening, a little further into the project, with the goal of increasing participation.

On March 26, a guided walk was held at the Humboldt Coastal Nature Center. Candace Countryman, one of the project Field Technicians set up an RTK base station and demonstrated how data was collected. Participants viewed the newly planted native dune grass nursery site. Presentations about the project were given to the Arcata Sunrise Rotary Club, the Association of Retired Federal Employees and the staff at Humboldt County Planning Department and Public Works.

**Dunes Climate Ready guided walk will be held**
**Saturday, July 16, 2-4pm,**
at the Eel River Estuary Preserve near Ferndale **RSVP is required.** You can reserve your spot by calling 444-1397, or emailing info@friendsofthedunes.org. Visit friendsofthedunes.org for more information. Sign up for Dunes Climate Ready email updates [here](#).

**For additional background information visit the following websites:**
- Humboldt Bay National Wildlife Refuge
- University of Victoria Coastal Erosion and Dune Dynamics Lab
- State Coastal Conservancy
- Friends of the Dunes