

Field Protocol

Dune restoration method using Christmas trees



Winter 2023

STEP #1 – ASSESSING A POTENTIAL ZONE

To increase the likelihood of success:

- The dune should be high enough above the water line so the area does not often flood over the trees as this will most likely result in the loss of the restorative structure. It is important to have enough space in front of the structure to allow for a rapid accumulation of sand during the summer months.



- The trees should be placed right against the eroded dune as this will reduce the likelihood of damage to the restorative structure and better mimic the natural shape of the dune.



STEP #2 – INSTALLATION

1. Prepare stakes used to hold trees in place. (Note – using smaller trees (1.5 m) helps with transport and allows a faster accumulation of sand).
 - a. Cut 2"x 3"x 8' studs into 3 32" pieces.
 - b. Drill ½" hole into the top portion of the stake (approximately 3" from top).
 - c. Use a sledgehammer to burry stake in the sand dune (approximately 50% should be embedded in sand)



2. Secure trees to stakes.

(Note – we recommend using biodegradable materials for dune restoration to help minimize garbage on the beach after storms.)

- a. Lay tree on its side, parallel to the ocean (1). Place the tree so its stump overlaps the stake that is now embedded in the sand (2). Ensure the stump is placed on the side of the stake opposite to the ocean (to reduce likelihood of receding waters pulling the trees into the ocean) (2).



b. Use biodegradable rope to tie tree stump to stake.

- i. First, pass the rope through the drilled hole of the stake and make a double knot (or more secure knot) (1).
- ii. Then, take the rope and wrap it securely around the tree and the stake several times to firmly secure the tree to the stake.
- iii. Make a double knot or other tight knot.



3. Tie the second tree stump to the top of the first tree.

- a. Overlap the stump of the second fir tree with the top of the tree that is already secured to the first stake (1).
- b. Place a second stake where the trees overlap (2). Embed stake in the same manner as in step 2a.



c. Secure overlapping trees to the second stake in the same manner as in 2b, but this time tying both tree top and stump to the stake (3).



4. Continue adding trees, stump to top.
 - a. Add a stake for each additional tree (at each intersection).



5. We recommend adding a sign to inform the public about the project and to help protect this infrastructure. Marram Grass (*Ammophila breviligulata*) can be planted in front of the structure to encourage rapid revegetation and better ecosystem recovery.

