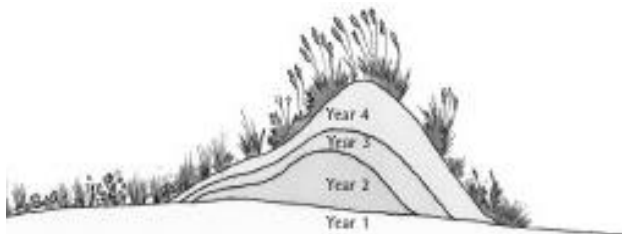


• **Why do we plant grasses?** Plants make a dune able to withstand wind & waves. A coastal dune without plants is basically a pile of sand that can wash away over time, like a sand castle. Plant roots & their microbes give the dune structure & act like a net binding the sand together. Meanwhile, leaves provide surface cover, reduce erosion, & trap sand that blows off of the beach in the wind, & as a result the dune grows bigger & is stabilized.

• **Why are there fences by dunes?** Fences act like plants to catch windblown sand, helping the dune grow. Plants grow in time with the dune & create a habitat. Fences need to be reinstalled or lifted & do not offer root stabilization belowground. When you walk on the ramp-like sand piled in front of fencing, you are walking on & hurting the progress of a growing embryo dune. Stay away from the slope in front of fences, that's the dune slope!

• **How does a dune grow?** Sand blows down the beach, hits a plant, & falls to its base. The plants can become buried, but are adapted to this & grow out of the mounding sand. With time, more plants grow & the root system gets more complex, offering more stability & protection in the event of storms!



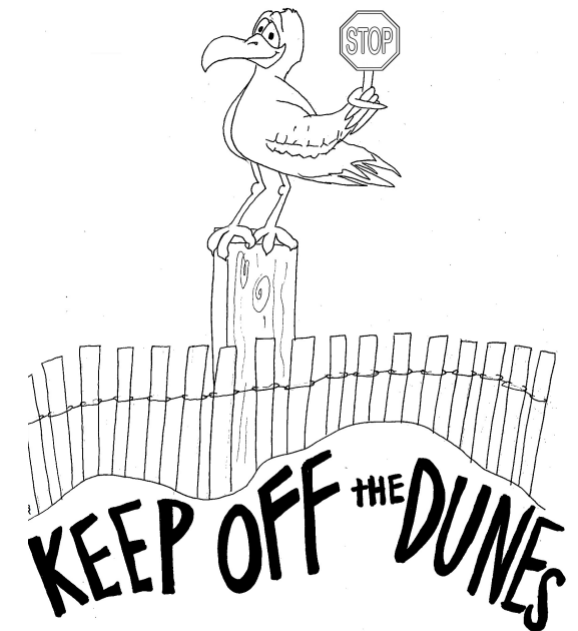
Created by Bianca Reo Charbonneau, PhD –

AKA – Dr. Dune Goon

*Please visit
TheDuneGoon.weebly.com
For more dune resources,
questions, or if you want to get involved!*

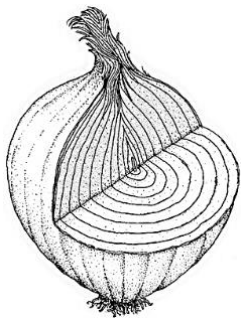


DUNE FUN & FACTS



FOREDUNE FUN & FACTS

Foredune: shore-parallel ridge closest to the ocean in the backshore formed by plants. Home to many plants & animals found nowhere else on Earth (endemic). First line of defense as a natural buffer, protecting upland areas from the wind & wave action that are a natural part of our coasts.



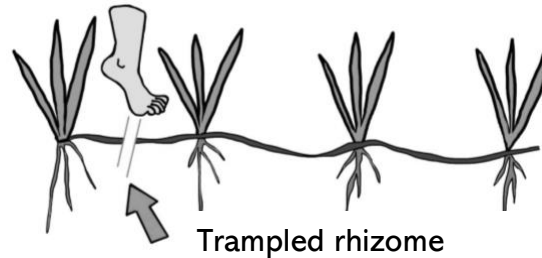
They are stockpiles of sand that you can think of as an onion. Dunes take the destructive energy of waves by being hit & absorbing the wave energy by having a layer of sand washed away in the ebb carried into the ocean

• **What makes dunes strong?** In a storm, erosion depends on (1) foredune height relative to storm surge height (this is why maintaining wide beaches is important, the wider the beach the more sand & bigger the dunes), (2) the depth of the dune system (because this is how many layers your 'dune onion' has), & (3) the vegetation which stabilizes the dune.

• **How do dunes protect us?** Dunes absorb high tides & storm energy by acting like a barrier, physically blocking waves. They are stockpiles of sand that you can think of as an onion. Dunes take the destructive energy of

• **What animals live on dunes?** Vertebrate & invertebrates call dunes home, foxes, gulls, birds, turtles, crabs & endangered monarch butterflies are among the most common. The butterflies love & need Seaside Goldenrod's (*Salidago sempirviren*) fall flower nectar.

• **Why can't I walk on the dunes?** The plants are all connected by underground stems called rhizomes which help them survive burial & the harsh hot & dry dune habitat. The rhizomes allow connected plants to share resources like water & nutrients. When you walk on dune, you break rhizomes & roots, making the plants less adapted to survive. For example, a buried plant cannot get sunlight, but can still survive & grow out of the burial if its connected parent plants share resources.



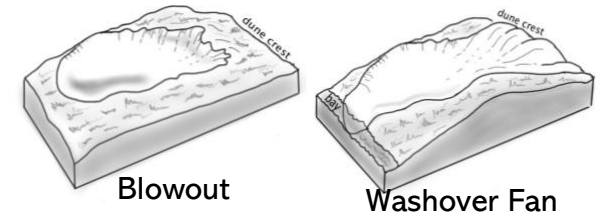
• **Why aren't there trees on the foredune?**

Only a handful of plants worldwide can survive the tough foredune habitat. Salt coming off the ocean, low nutrients & water, & no shade make it so that trees are killed. After storms, many bayside trees may be killed from the salt water intrusion!

• **Do storms just erode dunes?** No, on the contrary! Barrier islands move landward (migrate or rollover) in response to the rising sea level. They move landward by having sand

deposited from the oceanside to the bay, as well as on top of the dune. This moves the system inland & makes it taller. By migrating they avoid being drowned by the sea. Up to a meter of sand can be deposited on top of the foredune in storm, & the plants will grow out of this, making the system 1m taller!

• **What are areas with no plants?** These are blowouts (wind-formed) or washovers (wave-formed). They are natural & created by storms uprooting plants, leaving a barren depressions. Plant will slowly grow over time, but do not walk in these sensitive areas!



• **Why are dunes different all over?** Dunes are categorized by highly variable local conditions with varying beach width, height, plant species, plant density, & cover. When there are storms these factors create variable sand erosion & deposition all over!

• **How can you help?** (1) Volunteer with local environmental organizations in dune upkeep events & plantings; (2) keep off the dunes & keep your distance from fences so you do not slow down growth or damage the plants; (3) teach people why dunes are important & help others understand why they are our best management choice; & (4) if someone is on the dunes then make them get off AND teach them why they need to keep off!