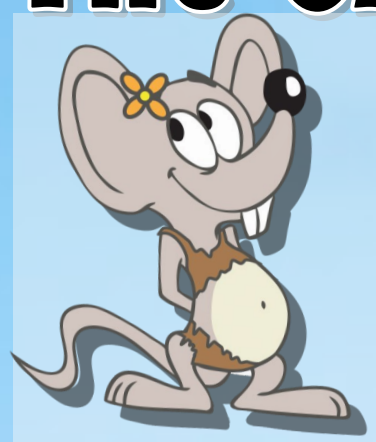
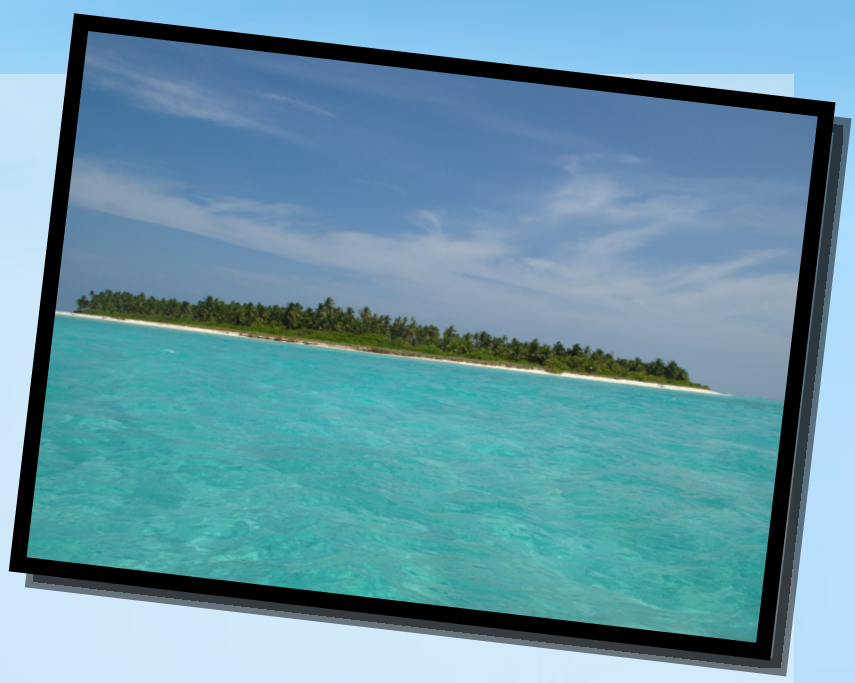
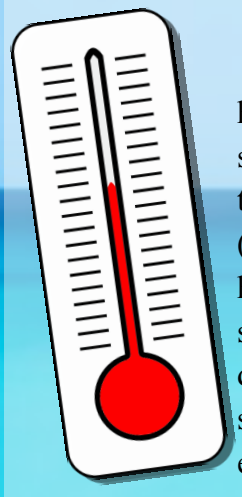
The CASTAWAYS



The Castaways are a small population of Island mice stranded on Castaway Island, an ephemeral, sandbar island formed by sedimentation that collects as Darlost's Island's snowmelt-fed southern river flows into the ocean. Very little is known about the Castaway population of Island mice or their habitats due to the difficulty of sailing or swimming across Castaway Cove's choppy and unpredictable waves. Because the Castaways are composed entirely of Island mice from the Snowmelt Thicket with a few individuals from the Dead Man's Dunes populations, they are assumed to be very similar to their source populations.





Satellite imagery reveals that Castaway Island is 20 acres (8 hectares) in size and is largely dominated by sandy, coastal beaches, with a small, 5-acre (2-hectare) upland area dominated by sandy soils interspersed with patches of beachgrass and a few Paradise Palm trees. Over the last 10 years, as spring and summer temperatures have increased by approximately 1 degree annually, Castaway Island has increased in size by approximately 1 acre (0.4 hectare) each year, although some climate scientists speculate that sea level rise associated with global climate change could halt or reverse Castaway Island's annual expansion. Further, sea level rise could reduce the severity of the unnavigable waves that separate Castaway Island, and the populations of Island mice, from Darlost's Island. Additionally, global climate change could decrease the severity and duration of the cold winter trade winds that kill the beachgrass and dune beetles on the Beach Bum's southern coast and Castaway Island during the winter from November to May. See below for more information from a recent expert elicitation workshop on climate change.

The Castaways are a sink population. Each spring from late March to early May, the cold trade winds subside and signal the return of warmer temperatures across Darlost's and Castaway Islands. Spring temperatures quickly thaw the three snowcapped mountains and Darlost's Island's two rivers begin to flood, scouring vegetation and drowning or washing away Island mice from the four Paradise Palm populations. The floods last for approximately two weeks and wash approximately 50 to 100 Island mice from the Snowmelt Thicket population and approximately 10 mice from the Dead Man Dunes population into the ocean and out toward Castaway Island.

Nearly all the Dead Man Dunes mice drown in the torrential floods before reaching Castaway Island, but all of the Snowmelt Thicket mice make it to Castaway Island, due largely to their ability to glide atop small, oblong shards of wood that resemble surfboards. Once the Snowmelt Thicket mice reach Castaway Island, they form that year's new Castaway population and are distinguished by their generally disheveled and disoriented appearance. Although some drown, fewer Dead Man Dunes mice likely drown in the floods due to their ability to escape the rising floodwaters by seeking shelter temporarily on the Beach Bum's coastal beach immediately to the east.

Satellite imagery reveals that the Castaways attempt to adapt to their new beach habitats on Castaway Island, hunting for dune beetles, feeding on beachgrass, and seeking shelter in the small uplands and underneath the few palms. There are no predators on Castaway Island, and although there are fewer available habitats, environmental conditions during the summer are generally favorable for breeding. However, satellite imagery is unable to detect Island mouse nests, so it is unknown whether the Castaways successfully reproduce. Regardless, as the cold trade winds return in mid-October, drying the beachgrass and killing the dune beetles, the Castaways are stranded on Castaway Island and unable to return to the sheltered palm forests of Darlost's Island. As a result, by early November, the entire population succumbs to starvation and exposure to cold temperatures below 80°F (27°C).

Survey Year	1995 – 2000	2001	2002	2003-2011	2012-2015
# of Individuals (estimated from imagery satellite imagery)	NA	~ 50	~100	~50	~100

CLIMATE CHANGE

- At a recent expert elicitation workshop, climate scientists agreed that there is a 90 percent chance that the cold winter trade winds will shift to the southeast, and that winters on Castaway Island will become warmer, with approximately 50 percent fewer days below 80°F.
- The experts also agreed that under all emission scenarios, the rate of Castaway Island's expansion will exceed the rate of sea level rise, as more flooding from Darlost's Island deposits more sediment into the ocean.