

## **New Technologies Being Used to Study Erosion of Corte Madera Marsh**

*by Laurie Williams (2019)*

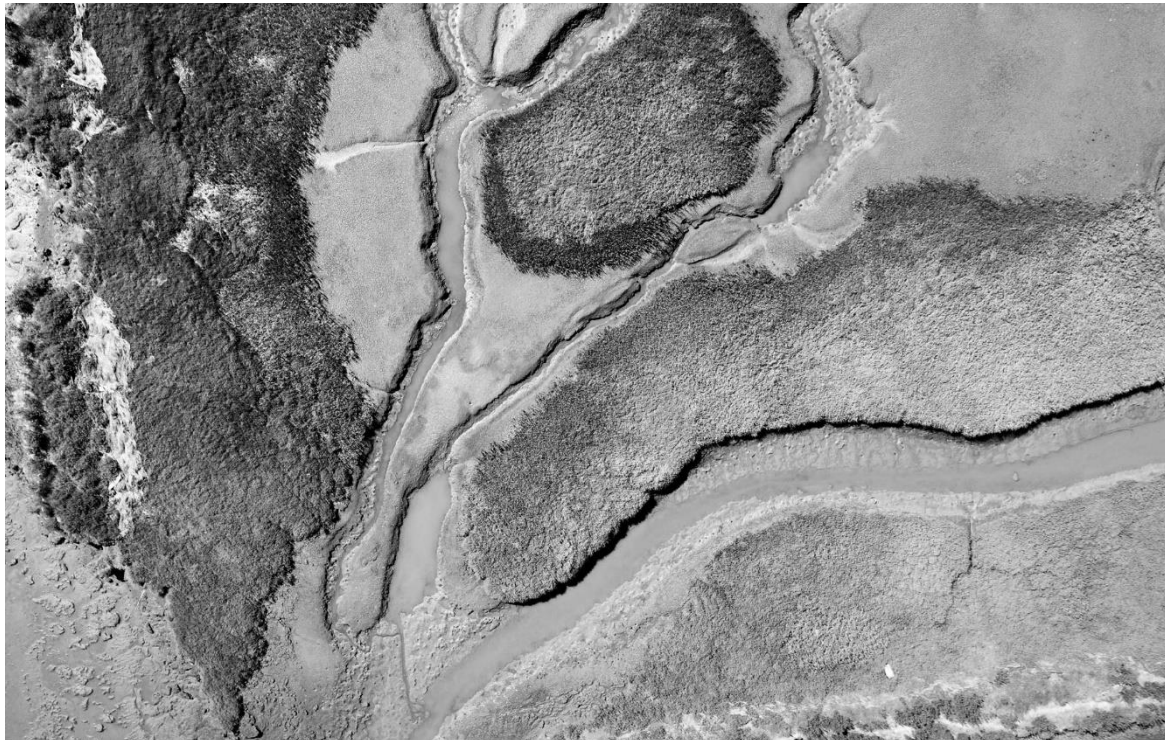
In the fall of 2018, scientists used a drone (otherwise known as an unmanned aerial vehicle) to survey baseline elevations in the Corte Madera Marsh in order to study marsh erosion and resiliency to sea level rise caused by climate change. Follow-up survey efforts in 2019 will measure how much the marsh has eroded over the winter. The project, which is funded by a grant from the Marin Community Foundation, is overseen by San Francisco State University with involvement from San Francisco Estuary Institute (SFEI).

The study seeks to understand detailed mechanisms of marsh erosion that will help engineers restore mudflats and marshes that can reduce wave energy and decrease marsh erosion. If we want our marshes to keep pace with climate change, we need to understand the forces that build up and erode marshes and the potential impacts of increased numbers and intensities of storms on marshes in Corte Madera and around the Bay.

One of the main benefits of the drone survey is that scientists did not have to access the sensitive marsh by foot, as with traditional survey methods. This is important in sensitive habitat that supports listed species such as Ridgway's rail and salt-marsh harvest mouse.

In order to proceed with the flights, researchers needed approval from the California Department of Fish and Wildlife (DFW), which owns the land. To protect birds and wildlife, the drones were flown higher than usual, at 200 feet instead of 100 feet. A DFW land manager closely monitored the drone flights and used a bird scope to observe the behavior of the birds to ensure that the drone was not disturbing them. Pete Kauhanen of SFEI remarked that the "drones did not appear to disturb the wildlife, and scientists noted that in a few instances, foraging birds approached the drone as it was taking off and landing."

The article "Drones: An Asset or a Menace?" in a previous issue of *Creek Chronicles*, and now archived on Friends' website, describes regulations affecting the recreational use of drones. Friends of Corte Madera Creek Watershed does not support the recreational use of drones where such use may harass wildlife or disturb the enjoyment of nature



*A drone's eye view of a section of Corte Madera Marsh. Photo courtesy of San Francisco Estuary Institute*

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