

## **Pescadero Lagoon Breach 2012**

### **FAQ's**

**Background.** Pescadero lagoon is an extremely complex ecosystem, with eight special status plant species, ten wildlife species and two stream corridors. There are three federal threatened species: the Central California Coast steelhead, the California red-legged frog, and the Western snowy plover. There are two federal endangered species: the tidewater goby and the San Francisco garter snake. In addition, the Western pond turtle is the only native turtle in California and it is listed as a Species of Concern by the California Department of Fish and Game (CDFG). Although coho salmon are not currently found in the Pescadero Creek watershed, the watershed, including the lagoon, is designated critical habitat for this species.

For the last 11 years in a row, steelhead in Pescadero lagoon have died immediately following the initial fall breach of the sandbar that separates the lagoon from the Pacific Ocean. Last year, 235 dead steelhead were collected, including pre-spawn adults. This year, state and federal agencies (i.e., California Department of Parks and Recreation [State Parks], CDFG, U.S. Fish and Wildlife (Service), the National Oceanic and Atmospheric Administration [NOAA] Restoration Center, and NOAA's National Marine Fisheries Service) are partnering to try to prevent a fish kill from occurring again this year and to gather information to better understand this lagoon ecosystem for long-term management purposes.

**Question.** What is the project?

**Answer.** The project would manually breach the Pescadero lagoon sandbar up to two times this year, using hand tools such as shovels to dig a pilot channel. This interim project is an attempt to prevent low concentrations of dissolved oxygen, which have been blamed for the fish kill, from forming in the water column.

**Question.** Why are fish dying?

**Answer.** Fish die when there is a lack of oxygen. During a typical year, after the sandbar forms, water quality in the lagoon degrades (e.g., very low or depleted levels of oxygen in the bottom portion of the water column). During a typical fall breach event, the large volume of oxygen-poor or oxygen-depleted bottom water in the lagoon is quickly mixed into the remainder of the water column which can deplete oxygen concentrations, affect pH, and release concentrations of toxic hydrogen sulfide. Re-suspended sediment on the bottom of the lagoon also uses up oxygen. It is believed that during the typical fall breach, there may not be enough dissolved oxygen in the water column for fish to breathe.

**Question.** Why are fish kills regularly occurring in Pescadero?

**Answer.** Pescadero Lagoon is unique. It is a large central coast estuary that retains much of its natural variability. Currently the sandbar generally forms in late fall to early winter. Prior to the early 1990's the sandbar generally formed in late spring/early summer. As stated previously, low freshwater inflow

along with the rapid evacuation of surface water rich in oxygen and the release of hydrogen sulfide gas, seem to be the causes of a fish kill.

**Question.** Will monitoring occur?

**Answer.** Yes. There will be array of instruments within the lagoon to collect continuous data during and after project implementation. The following will be monitored: dissolved oxygen; salinity; and temperature. There are all measurements of water quality.

**Question.** Why is this project occurring?

**Answer.** This project is an effort to prevent fish from dying and see if an early breach can provide a temporary reset of the lagoon until fall rains and freshwater inflows are adequate to maintain water quality and/or sufficient to keep the mouth of the lagoon open. It is possible even with the implementation of this project that a fish kill may occur this year. Even if that occurs, the information collected from this project may help inform decisions to prevent fish kills in future years.

**Question.** If there is no fish kill this year, does that mean the project was a success?

**Answer.** While one of the project's objectives is to avoid a fish kill this year, it is not the single measure of success. Water quality is also important and will be monitored before, during, and after project implementation. Overall, it is anticipated that this interim project will contribute to a better understanding of how this lagoon system responds to manual breaching. The results obtained will help inform future management decisions.

**Question.** Why is the NOAA Restoration Center, and not State Parks, taking the lead on this project on State Parks property?

**Answer.** NOAA and the Service believe that the interim project should be conducted as soon as possible in an attempt to prevent the death of steelhead this year and a Federal Agency is better able to facilitate the permitting process. CDFG and State Parks are collaborating as partners on project permitting and implementation.

**Question.** The regulatory agencies in general do not encourage lagoon breaching. Why is this project different?

**Answer.** The resource agencies typically approve of coastal lagoon sandbar breaching only for purposes of flood control and public safety. Many lagoons support state and/or federally listed species and sandbar breaching can degrade their habitat. The objective of this project is to conserve federally listed steelhead where there is a high likelihood of a fish kill if no action is taken. Unlike flood control and public safety programs which typically involve annual sandbar breaching, this project is being proposed as an interim measure while other management approaches are evaluated.

**Question.** How might this project affect California red-legged frog, tidewater goby, San Francisco garter snake, western snowy plover, other plants and animals or critical habitat for any listed species?

**Answer.** The proposed project is a manual breach this year only that will lower the water level within the lagoon slightly earlier than occurs naturally every year and is, therefore, not expected to negatively affect any species or their habitats. The maintenance of water quality at levels where a fish kill is avoided is expected to benefit critical habitat for all species within the lagoon.

Western snowy plovers have recently bred successfully on Pescadero State Beach. The agencies are coordinating this project which will occur after any plover chicks have matured enough to fly. The Project also incorporates monitoring to ensure no nesting or rearing plovers are disturbed. The breach itself involves a minimal disturbance to the sandbar to create the breach. Due to the timing of the project and the minimal footprint on the beach, we believe that the project will not have a significant effect on the plover.

**Question.** Is this project going to happen every year?

**Answer.** No. The project is being implemented this year only. Before decisions are made regarding future actions, the effects of the interim project on the system as a whole, including other listed species that depend on complex marsh and lagoon habitats, must be determined and potential cumulative effects of continuing the action evaluated. The agencies are working collaboratively on the formation of a Science Panel to answer questions that will help inform future management decisions regarding the function of Pescadero Marsh/Lagoon for the benefit of all species.

**Question.** What happens next?

**Answer.** After the sandbar forms, the water quality parameters outlined in the environmental document will be monitored. The sandbar will be left in place for at least seven days. Based on the water quality monitoring, NOAA will dig the pilot channel, implementing the manual breach. Prior to implementation, NOAA will educate the volunteers on-site about sensitive species avoidance and best management practices that they must adhere to in the marsh. After the breach occurs, biological and water quality will be monitored and volunteers will stand ready with their shovels: depending on conditions, there could be a second breach sometime before the first of the year.