

Tatsukushi

Goal

Preserve and restore the underwater view and marine ecosystems, primarily consisting of coral communities that have notably diminished in recent years

Designation:
Ashizuri-Uwakai National Park
Location:
Tosashimizu, Kochi Prefecture
Year Initiated: 2003

Tatsukushi Nature Restoration Committee (as of March 2009)

The Committee is evaluating the restoration approaches: removal of mud sediments from the bay bottom and reduction of watershed runoffs.
Date Established: 9 Sept. 2006
Members: 69
Date Issued the Overall Plan: 28 Mar. 2008
Date issued Implementation Plans: In preparation



Entaku-midori-ishi (*Acropora solitaryensis*)



A damaged coral community



Tatsukushi Bay is located in southwestern Tosashimizu, Kochi, and includes a 49-ha area of four national marine park zones. The Bay is home to abundant marine species such as stony corals owing to the warm Kuroshio Current.

The coral communities are critical habitats for many creatures. Particularly, the Genus *Pavona* has a high academic value because of its large community size. The coastline towns are the major bases for exploring the Ashizuri-Uwakai National Park.

The coral communities, however, have diminished because of degraded water quality by the bay's development and the plague of predaceous species. Moreover, massive

sediment inflow in the 2001 western Kochi flooding has caused the bay bottom sedimentation, killing many of the coral communities. The bay is still prone to turbid water due to locally deposited mud sediments and to watershed-scale sediment runoffs in high rainfall events. All of which have caused the coral communities and their marine environments to degrade, thereby deteriorating the underwater views. The Tatsukushi Project takes a watershed approach to restore the historical underwater views and ecosystems represented by the healthy reef-building coral communities.



High turbid water from the Nishino-kawa River (left) after rainfall, at the confluence to the Misaki River (right).



Poor understory vegetation in a Japanese cypress (*Chamaecyparis obtuse*) forest in the Nishino-kawa River watershed.



A slope failure site showing a lack of vegetation recovery in the Nishino-kawa River watershed.

Approaches

- ▶ Remove mud sediments accumulated in the Tatsukushi Bay → ①
- ▶ Mitigate sediment sources in upstream watersheds.

The bay's excess sediments that limit coral growth should be eliminated by mitigating sediment sources in the upstream reaches, as well as by removing the deposits from the bay bottom. The current status of the coral communities, their surroundings and the bay watersheds has been studied, concurrently to a feasibility study on removing the bed sediments. Because watershed-scale community stewardship is vital, public outreach through information dissemination and environmental education has been promoted.



Mud sediments accumulated in the bay bottom.



Transported large woods in the bay.

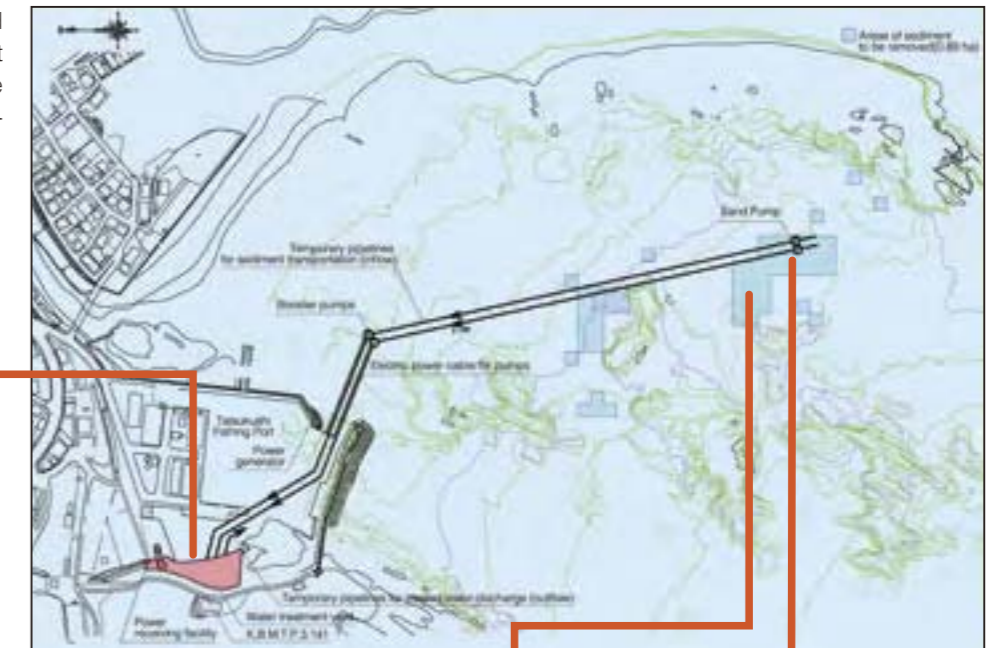


Watersheds draining to the Tatsukushi Bay.

① Removing the muddy bottom sediments

In areas of severe sedimentation, deposited mud sediments will be vacuumed using an underwater pump and discharged up to the treatment plant through a temporary bottom pipeline system. The sediments will be dewatered and properly disposed.

A design for sediment removal system



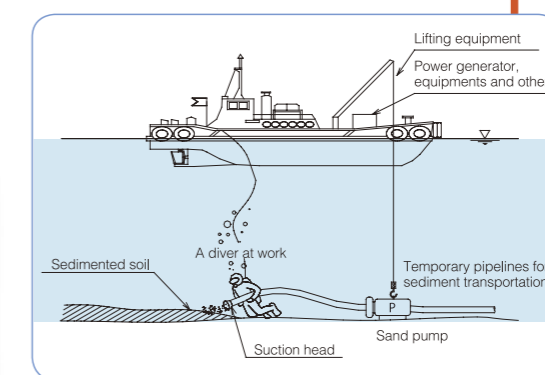
Water treatment plant



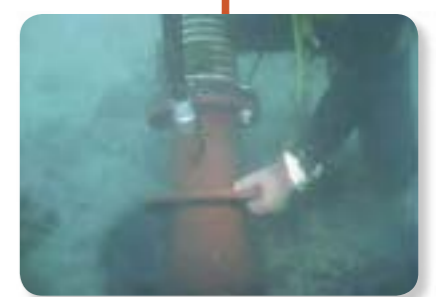
A small-sized crane and dredge pump



Estimating the amount of suspended silt using a flat plate, in monitoring before and after the sediment removal



Workboat operation



Vacuuming mud sediments