

Update on Salton Sea monitoring programs.

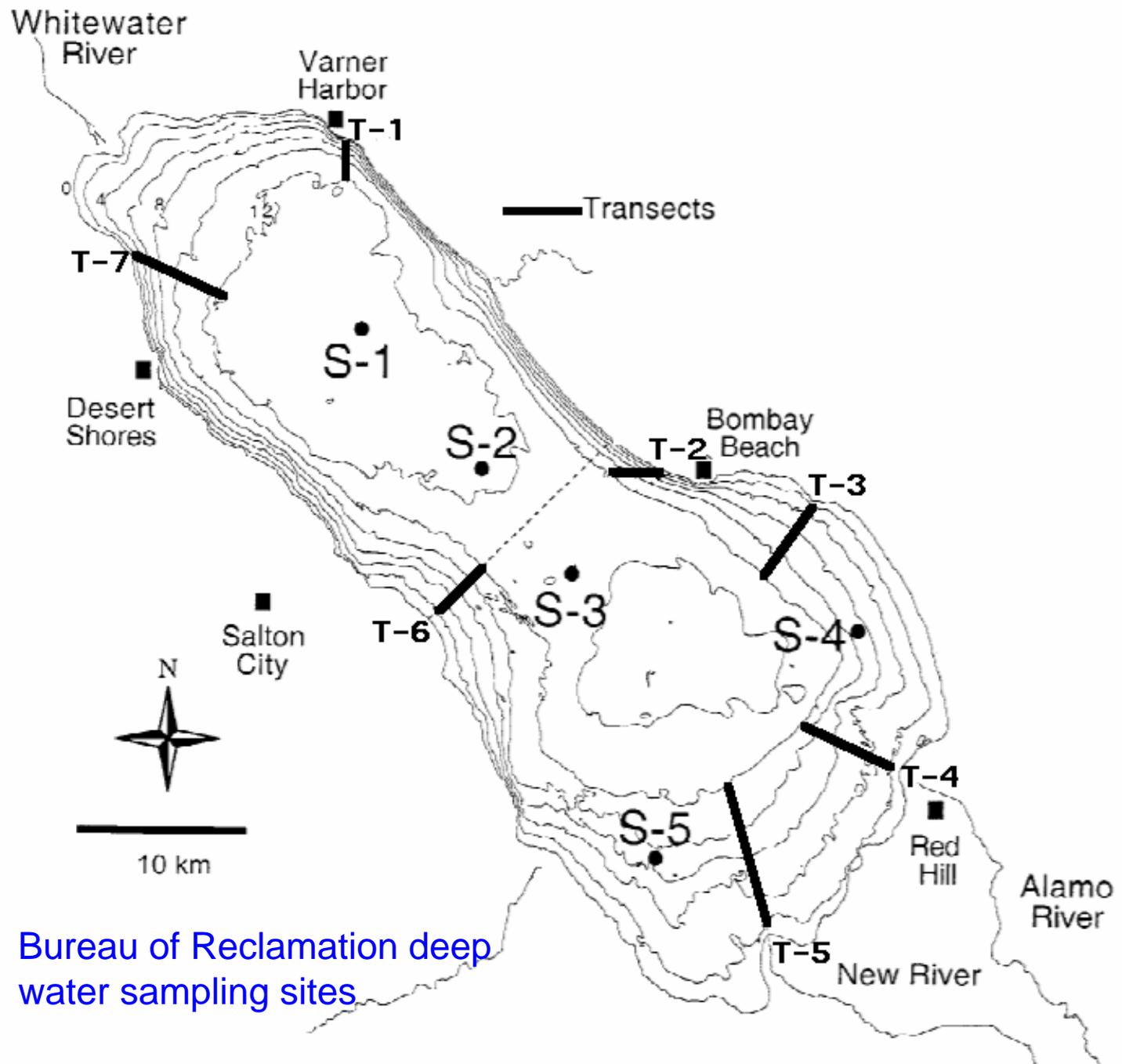
- ◆ USGS Science Office and its collaborators hold expert workshops to identify high priority research needs for the Salton Sea
- ◆ Workshops identified long-term monitoring, integrated monitoring as a high priority need
- ◆ Problem of who was going to collect and synthesize data, and who would pay.
- ◆ Long-term integrated monitoring includes regular evaluations of water quality, fish, bird, and invertebrate populations

Integrated long-term monitoring activities

- ◆ Monthly surveys of key species, e.g. pelicans, cormorants, grebes and other species around Key areas identified by PRBO recon studies
- ◆ Monthly ground surveys of standard survey route of agricultural fields in the Imperial Valley
- ◆ Attempting to conduct aerial surveys with ultralight aircraft and video cameras – problems with ability to conduct surveys in proper time frame

Integrated long-term monitoring activities

- ◆ Science Office purchased YSI multiparameter water probe.
- ◆ SSA runs multiple sampling stations, complete depth profile every 2 meters, for pH, temperature, conductivity, TDS (by calculation), DO, turbidity, Chlorophyll a.
- ◆ Bureau of Reclamation does quarterly sampling and some the same locations, concurrent with SSA for QA/QC. Additionally BOR collects water samples for detailed laboratory analysis.



Bureau of Reclamation deep water sampling sites

Pileworm population assessment study

- ◆ Recon baseline studies conducted in 1999 by SDSU on pileworm populations
- ◆ Science Office, Salton Sea Authority, Cal Fish and Game, and Bureau of Reclamation coordinate monitoring program, but pileworm evaluations were missing.
- ◆ Pileworms critical as food base for fishery

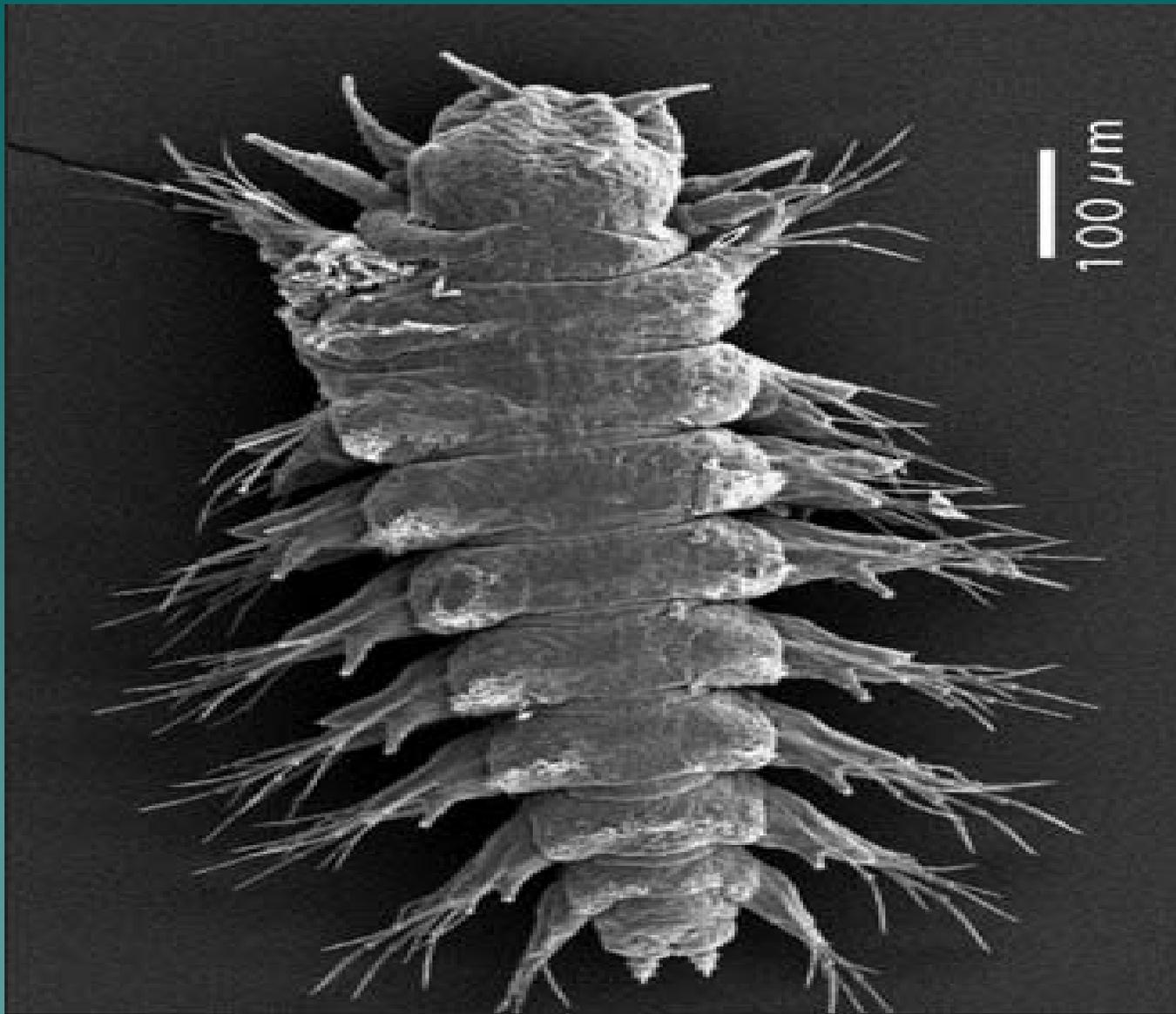
Pileworm population assessment study

- ◆ Decline of fish population without concomitant monitoring of water quality and food base left us with many speculations and no facts
- ◆ CDFG and DWR prompted BOR to provide funding to make pileworm population assessment
- ◆ Original team of SDSU scientists funded in record time to meet April sampling dates

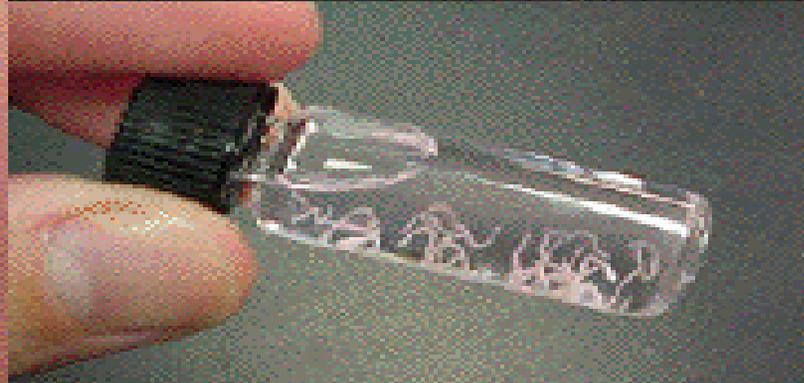
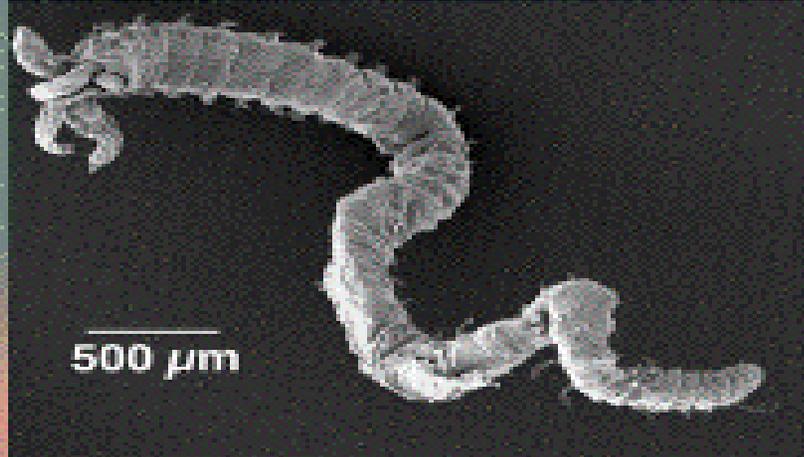
**Springtime abundance of the pileworm
Neanthes succinea at the Salton Sea,
California, 1999 vs. 2004, with
observations on salinity stratification**

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Pileworm larva
Neanthes succinea



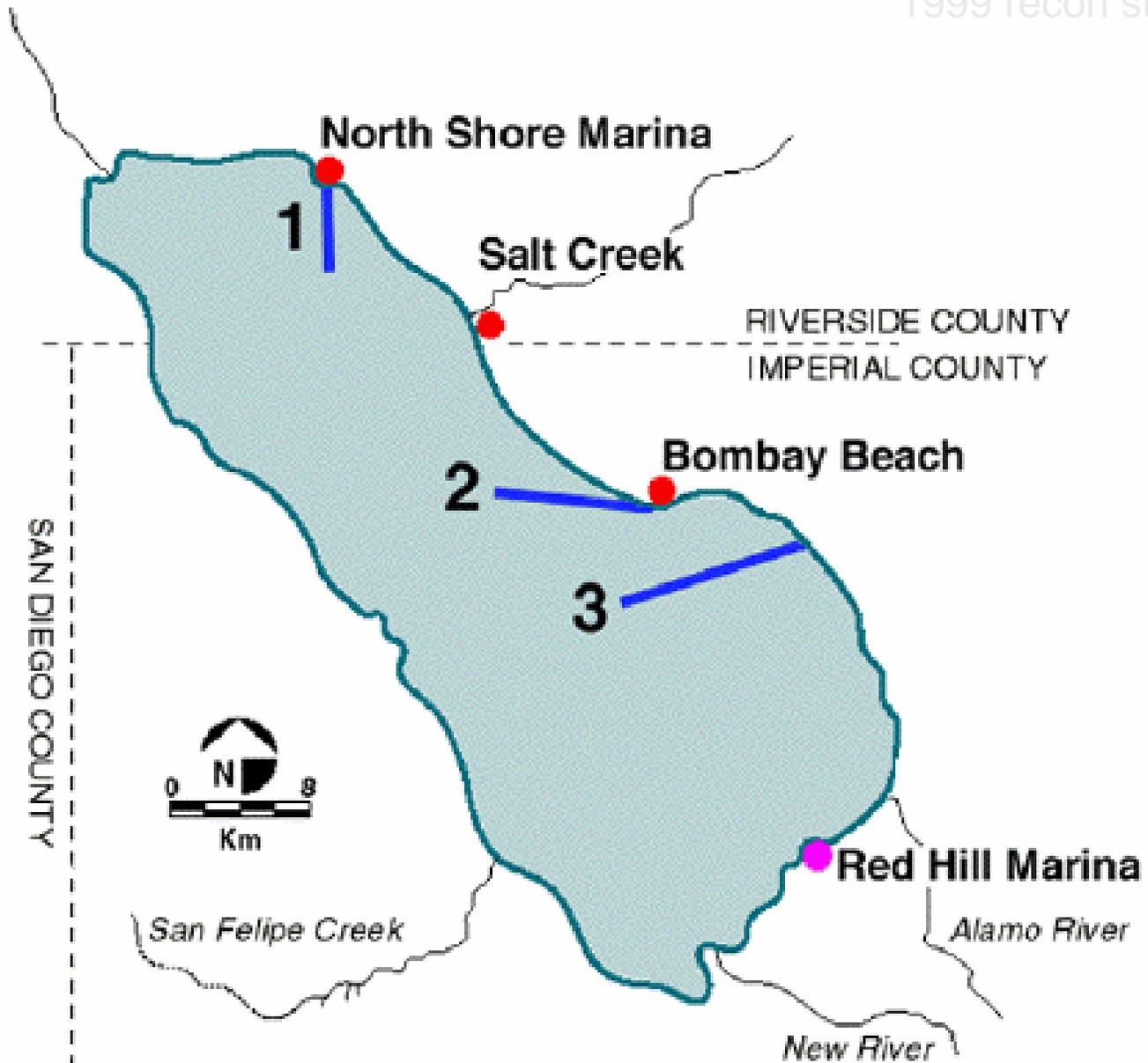






COACHELLA VALLEY

1999 recon study



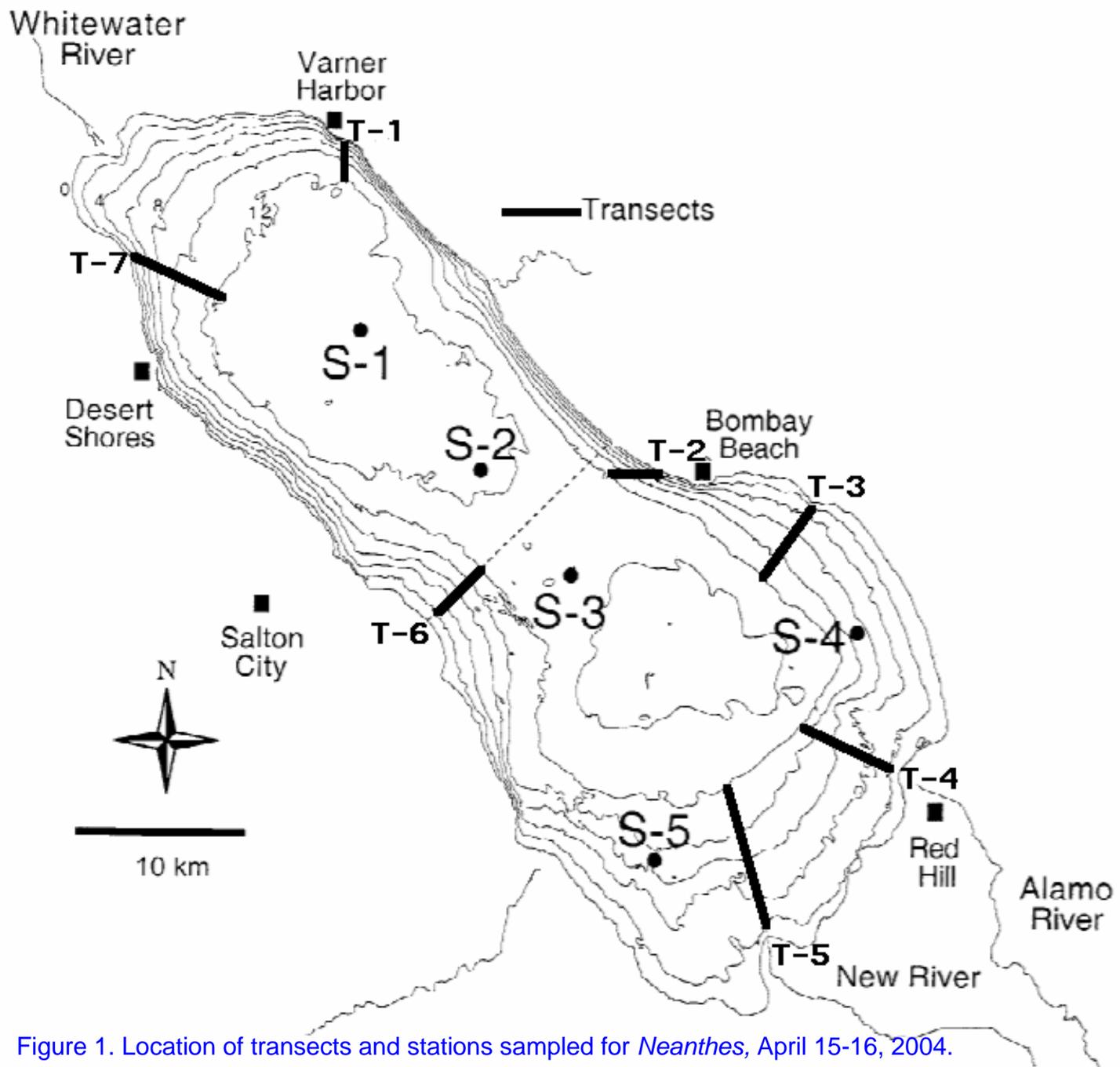


Figure 1. Location of transects and stations sampled for *Neanthes*, April 15-16, 2004.

1999 vs 2004 sampling efforts

- ◆ 1999 sampling at 3 transects
 - ◆ 2, 4, 6, 8, 10 m depths
 - ◆ Depth, Temp, DO, specific conductivity
 - ◆ Grab samples taken for biomass and numerical comparisons
- ◆ 2004 sampling at 3 original plus 4 more transects
 - ◆ 2, 6, 10 m depths
 - ◆ Depth, Temp, DO, specific conductivity
 - ◆ Grab samples taken for biomass and numerical comparisons

Major findings

- ◆ Densities at 2m depth stations, no difference between 1999 and 2004
- ◆ Densities at 6 and 10 m stations less in 2004 than in 1999
- ◆ Probable cause was presence of strong halocline (Salinity stratification difference between 2m and other depths causing anoxia (loss of oxygen))
- ◆ Halocline not observed in 1999

Major findings

- ◆ Worm densities greatest in areas of coarse sediments (sand or barnacle shells)
- ◆ Worm densities lowest at 2m locations near or downstream of freshwater inflows and at 10 m locations where anoxia occurred
- ◆ Anoxic conditions are not new, but probably occurred earlier in the season during 2004 than in 1999