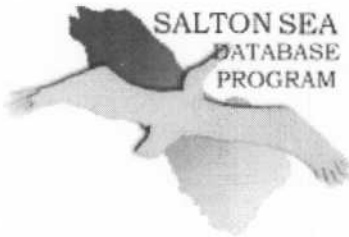


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Baseline Recon Studies

Synthesis Report

Reconnaissance of the Biological Limnology of the Salton Sea

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EXECUTIVE SUMMARY

A 12-month, intensive, reconnaissance of key biological components of the Salton Sea ecosystem will be carried out. The work is primarily descriptive in nature. It is intended

to serve as a principal database for the NEPA/CEQA evaluation of the Salton Sea Restoration Project. It will allow much to be demonstrated or inferred about the functioning of this system and how it might change in response to perturbation.

The 10 participating scientists represent several areas of limnology, oceanography, marine biology, and systematics. Two of them, plus three of the technical staff listed, have been conducting research on the Salton Sea for several years. Collectively they have written ten scientific articles (published,

in press, or in preparation) on it. The detailed nature of the proposed reconnaissance reflects this experience, especially the knowledge gained during our January 1997 - July 1998 monitoring program and our work with experimental Salton Sea microecosystems.

The proposed reconnaissance has four major elements: a biotic inventory, a limnological survey, a survey of algal toxins and a synthesis of data gathered by our current monitoring program.

The biotic inventory will attempt to determine what species are in the Sea and will focus on six groups of microbes (cyanobacteria, diatoms, dinoflagellates, chrysophytes, raphidophytes, and

ciliates) that are especially abundant in the Sea and difficult for non-specialists to identify. Several of these are known toxin-producers. This inventory will result in species lists and illustrated mini-catalogs for these groups at the Sea. These will be both published in scientific journals and put online for use by other Salton Sea researchers. Some attention will be given to other taxonomic groups on an ad hoc basis.

The limnological survey will monitor spatial variation in the zoobenthos, zooplankton, phytoplankton, temperature, and salinity at two-week intervals at five fixed stations (three midlake, two nearshore).

The survey of algal toxins will entail periodic mass collections of phytoplankton, polychaetes and amphipods at six nearshore sites along the eastern shore of the Sea. Phytoplankton samples will be characterized by quantitative taxonomic analysis and by HPLC determination of pigment profiles. Algal and invertebrate samples will be extracted with solvents, and the extracts tested for

toxicity and any toxins present identified. This testing and identification of toxins will be carried out by Scripps Institute of Oceanography and the National Wildlife Health Center.

Synthesis of our 1997-1998 monitoring program will entail analysis of backlogged water chemistry and plankton samples, data analysis, interpretation, and report writing. This past monitoring program has used three of the five fixed stations that will be used in the new reconnaissance program.

GENERAL OBJECTIVES

The purpose of this one-year research program is to characterize key components and processes of the Salton Sea ecosystem and how these vary temporally and spatially. It responds to needs spelt out under Biological & Physical Limnology in the Salton Sea Research Management Committee. s RFP (see Exhibit A).

General objectives of the proposed work are as follows:

A. BIOTIC INVENTORY: To determine what species are in the Sea, giving

special attention to

groups that are abundant there but poorly known (cyanobacteria, diatoms, dinoflagellates, chrysophytes, raphidophytes, ciliates) and to compile illustrated catalogs of the biota.

B. LIMNOLOGICAL SURVEY: To carry out a 12-month survey of some of the major biological properties of the Sea, in coordination with other surveys, those on the fish community in particular.

Specific subprojects will focus on:

1. Benthos: To document seasonal variations in abundance of dominant macroinvertebrate species (esp. amphipods, barnacles and polychaetes) and attached algae at different depths and on different substrates and to characterize properties of these substrates.

2. Plankton: To document seasonal and spatial variations in abundance of phytoplankton and zooplankton species, including dominant groups such as ciliates that have previously gone unstudied in the Sea, and with special attention to toxic species.

C. SURVEY OF ALGAL TOXINS: To harvest phytoplankton, amphipods and polychaete worms at about one month intervals throughout the year to test for the presence of algal toxins that may be involved in some bird dieoffs at the Sea.

D. SYNTHESIS OF 1997-1998 MONITORING DATA: To complete sample analyses, data analysis, synthesis and interpretation of physical, chemical, and biological data gathered from a Salton Sea monitoring program conducted during the period January 1997 - October 1998.