

## Conceptual Model of the Salton Sea Physical/Biological Ecosystem

The original idea in creating a model system was (and still is) to help all of us in visualizing the many facets research work which converge on the restoration of the Sea. Obviously, we all come from different disciplines, and to do our work, we need to converge on some simple conceptual framework that we can all live with. Sometimes it is hard to visualize how the elements of a discipline not familiar to us, might relate to one another, and it is even harder to picture how it all relates to our own field of knowledge.

Example: if I know the ecology of birds at the Salton Sea, I can configure a relational model which can be fitted into the physical scheme. But if I want to understand how bird ecology interacts with avian diseases, I would have to see a model which tells me where the critical contacts are taking place which tie ecology of birds to the ecology of their disease-causing organisms. Clearly, bird ecology and pathogen ecology are separate but related processes. What I need to know is: where do the two cycles meet in such a way that causes thousands of birds to become infected? It may turn out, that knowing those flash points alone, still leaves a number of question unanswered. Other factors (temperature, salinity, etc) may all influence the outbreak of a disease. A temperature model and a salinity model is then needed, but these too, must show variation or relationships on the same conceptual model level. Theoretically, all four (birds, pathogens, temperature, salinity) can all fit together in this fashion. If this works, then knowledge on hand in each discipline could be related to knowledge on hand in all the others.

Some points to keep in mind:

- a. This is a conceptual approach, which avoids details, by virtue of its very nature.
- b. The purpose is to reduce variation known to each of us in our respective fields to a level simple enough to accommodate all of the different disciplines. Anyone can "work forward" from the basic model.
- c. If nothing else, we can all agree that the system is composed of physical elements, like:  

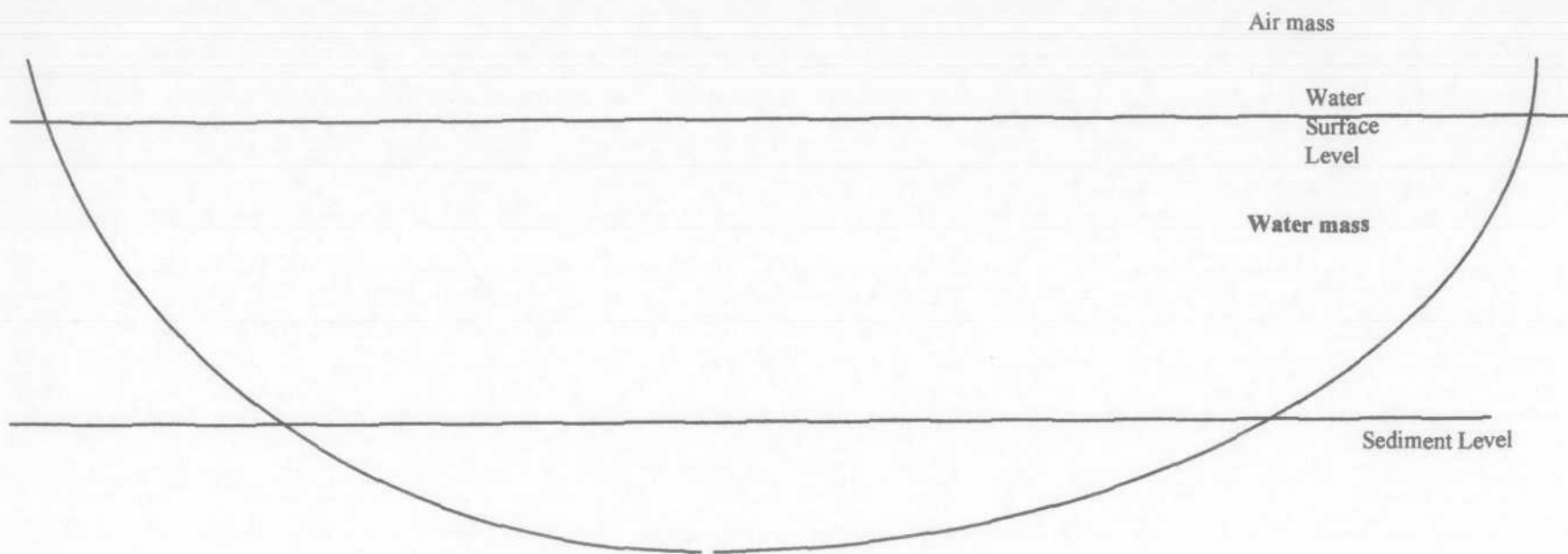
Air, Water, Sediment and Land surrounding the Sea and the interfaces between some of these elements
- d. If you know how parts of your system relate to one another, then you can fit those into a simple relational scheme and "drop" them into the model.
- e. Important to remember that this is a spatial scheme, i.e. it attempts to determine what is happening where. It is non-quantitative, except that the relative strength of an interaction can be indicated by the thickness of the arrow (line) between the component parts.
- f. This not a temporal model, although several planes can be stacked together to show changes through time.
- g. If it is possible for each discipline to use the same basic approach (no matter how simplistic) to show relational linkages, then even those not familiar with that discipline can visualize these processes.

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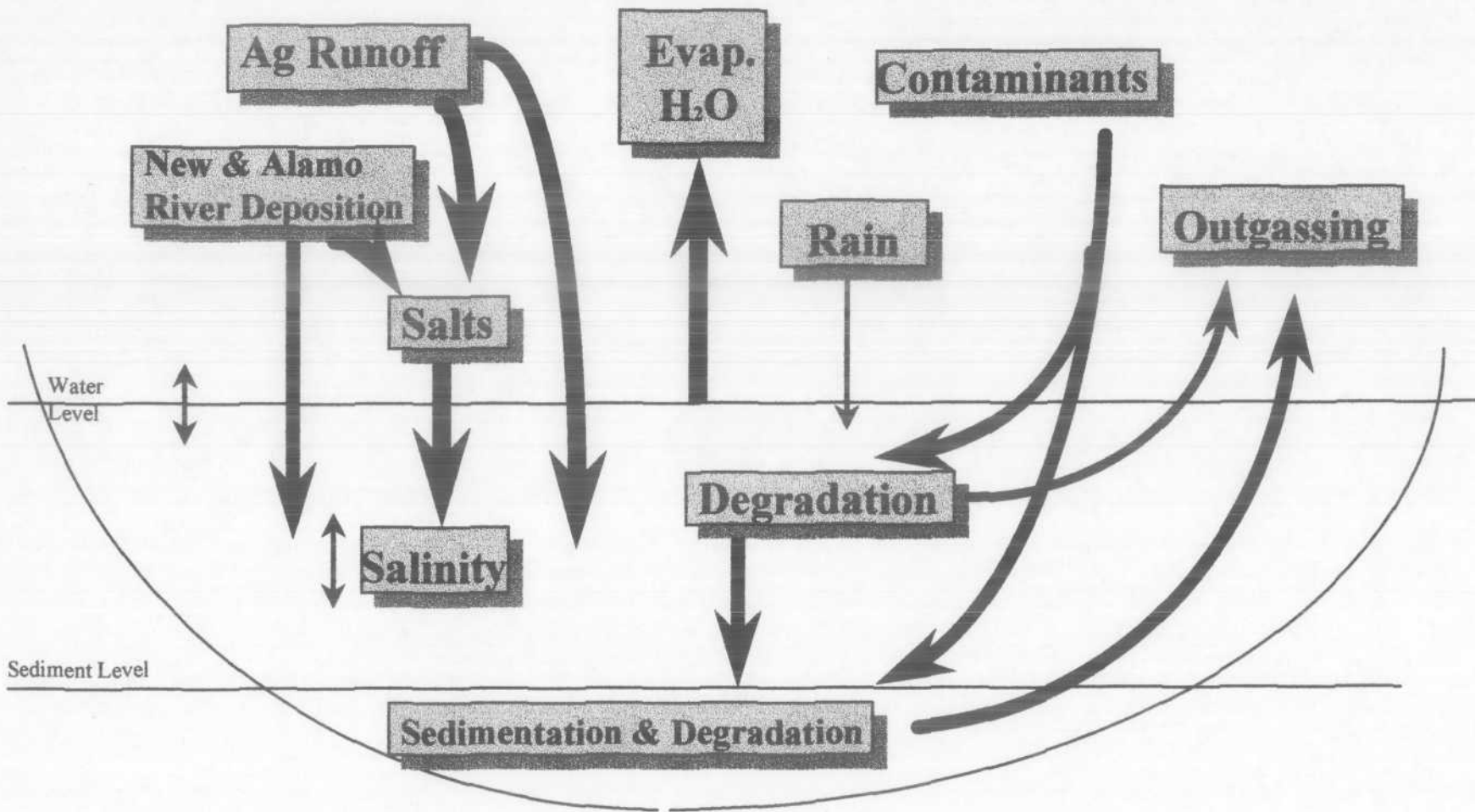
# SALTON SEA TEMPLATE

(working diagram)



2

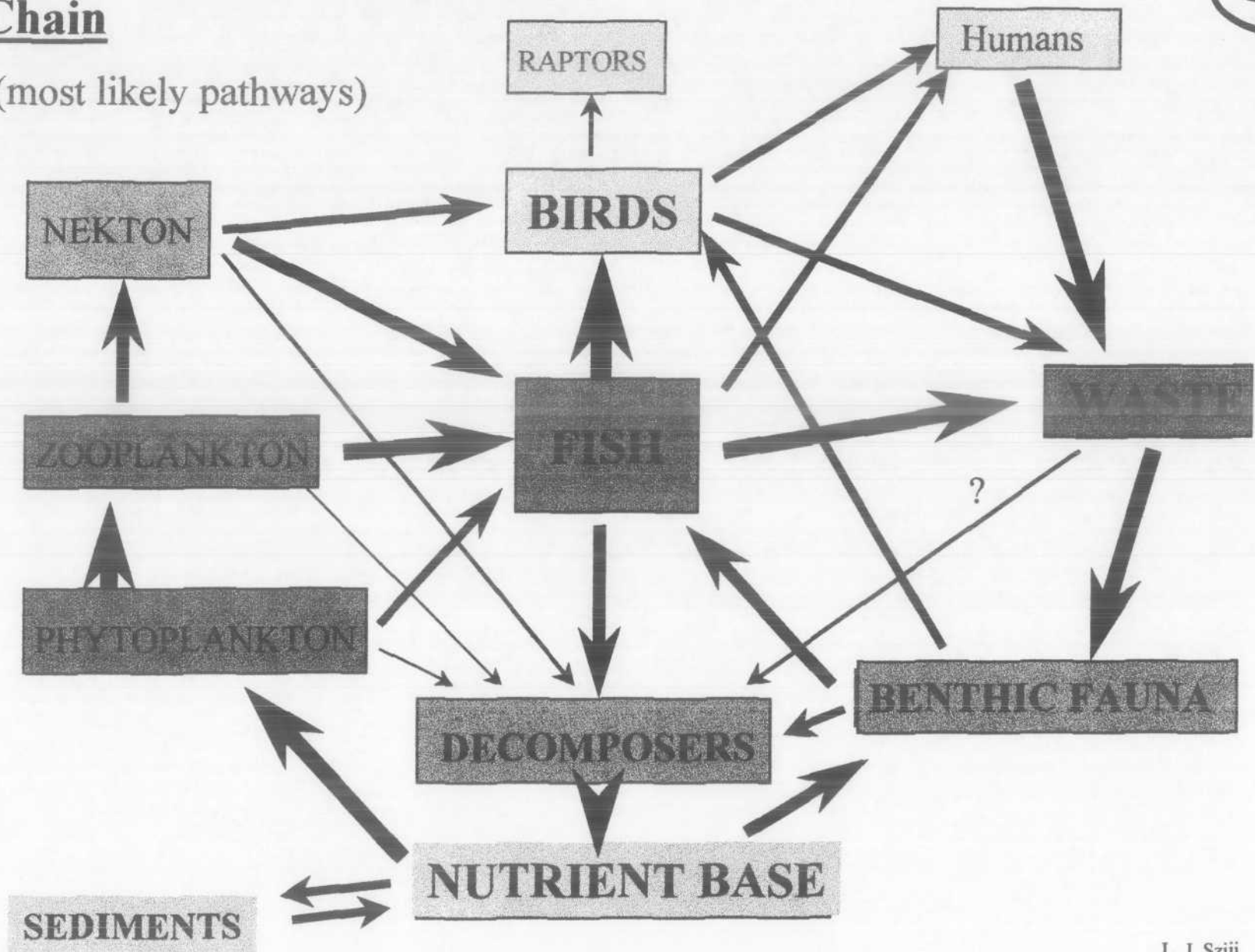
# SALTON SEA Physical Model



# Salton Sea Water-based Food Chain

3

(most likely pathways)



# SALTON SEA FOOD CHAIN

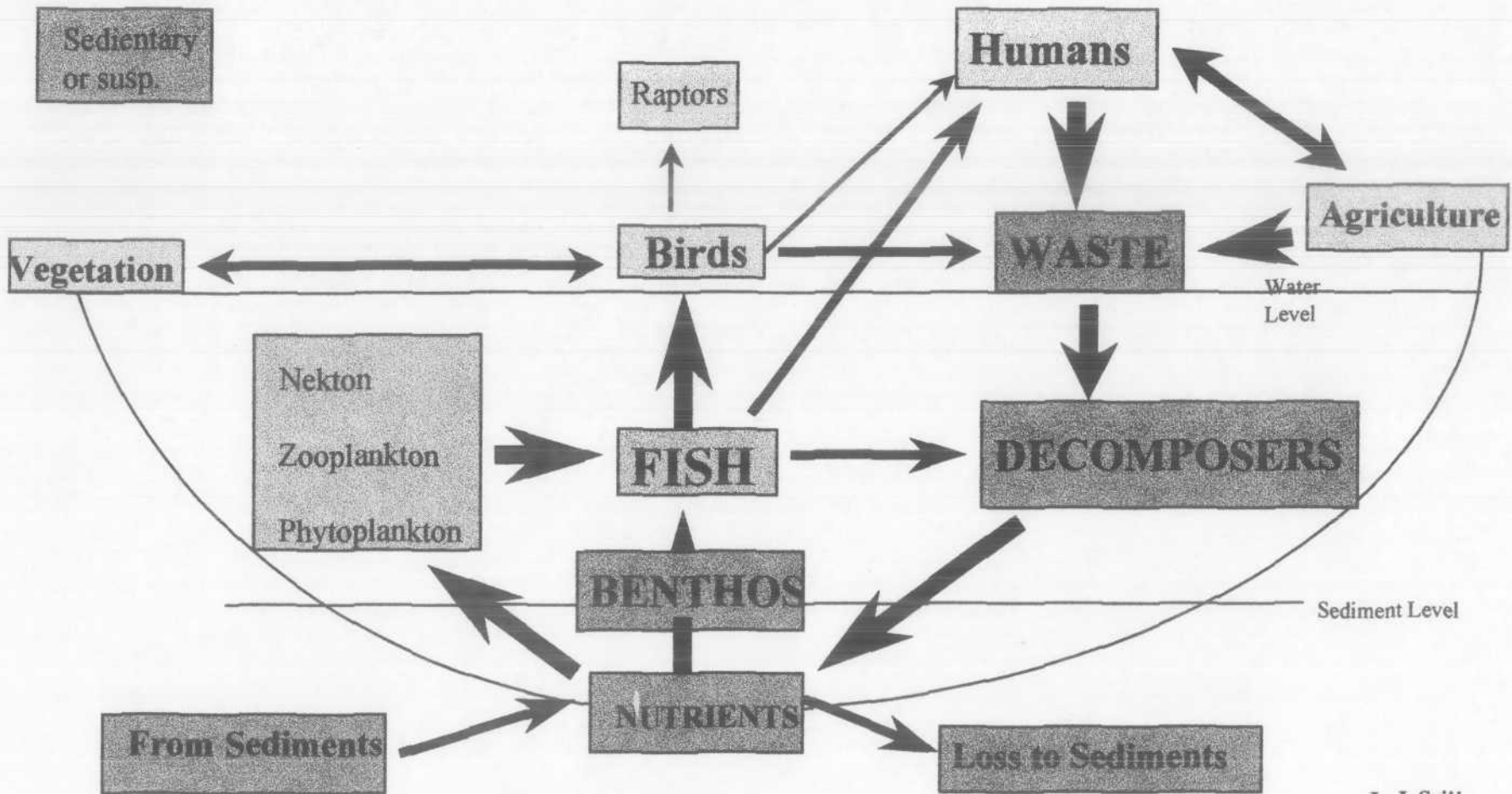
(working diagram)

Legend:

Terrestrial

Aquatic

Sedimentary or susp.



# SS Conceptual Model: 3D Version

