TETRA TECH

MICROPLASTICS ECOLOGICAL RISK ASSESSMENT: DRAFT CONCEPTUAL MODEL

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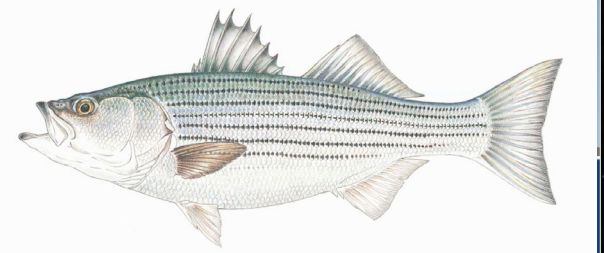
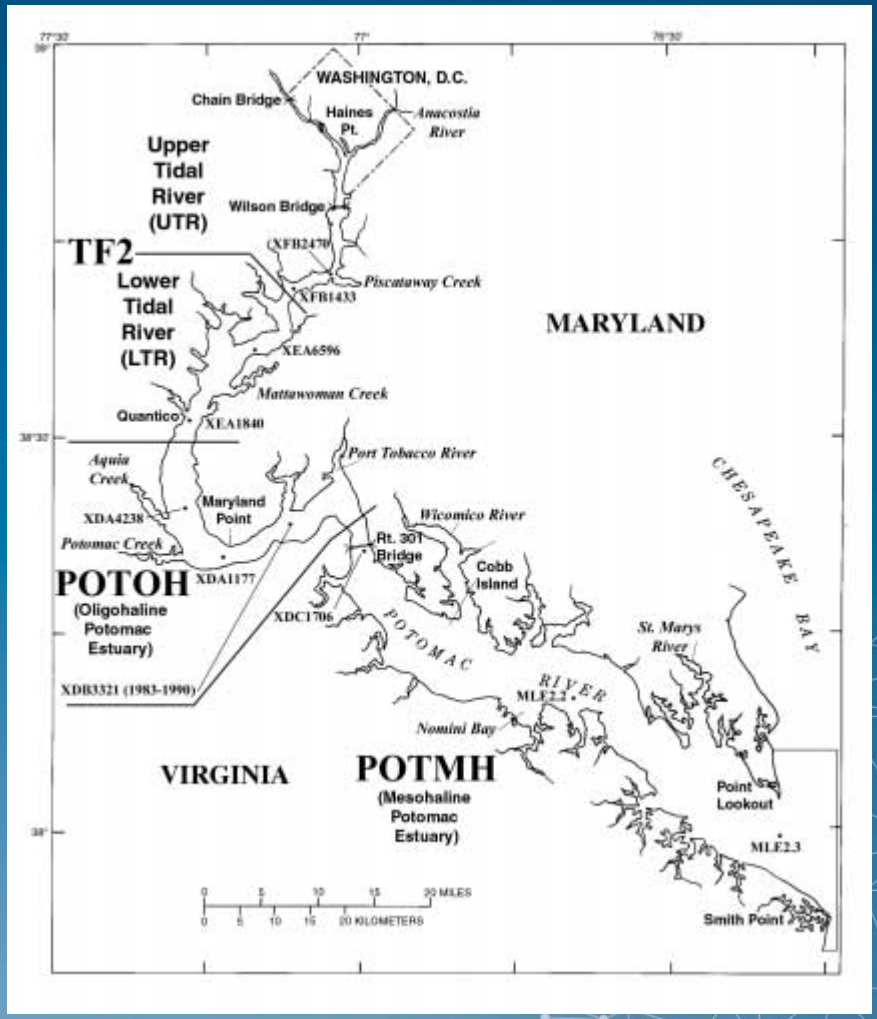


Model Input and Criteria for Inclusion Potomac River Striped Bass 0-2YO[1]

Literature Review

1. Potomac River data
2. Chesapeake Bay/other tributary studies
3. Other Atlantic Coast



[1] See draft for description of 3YO

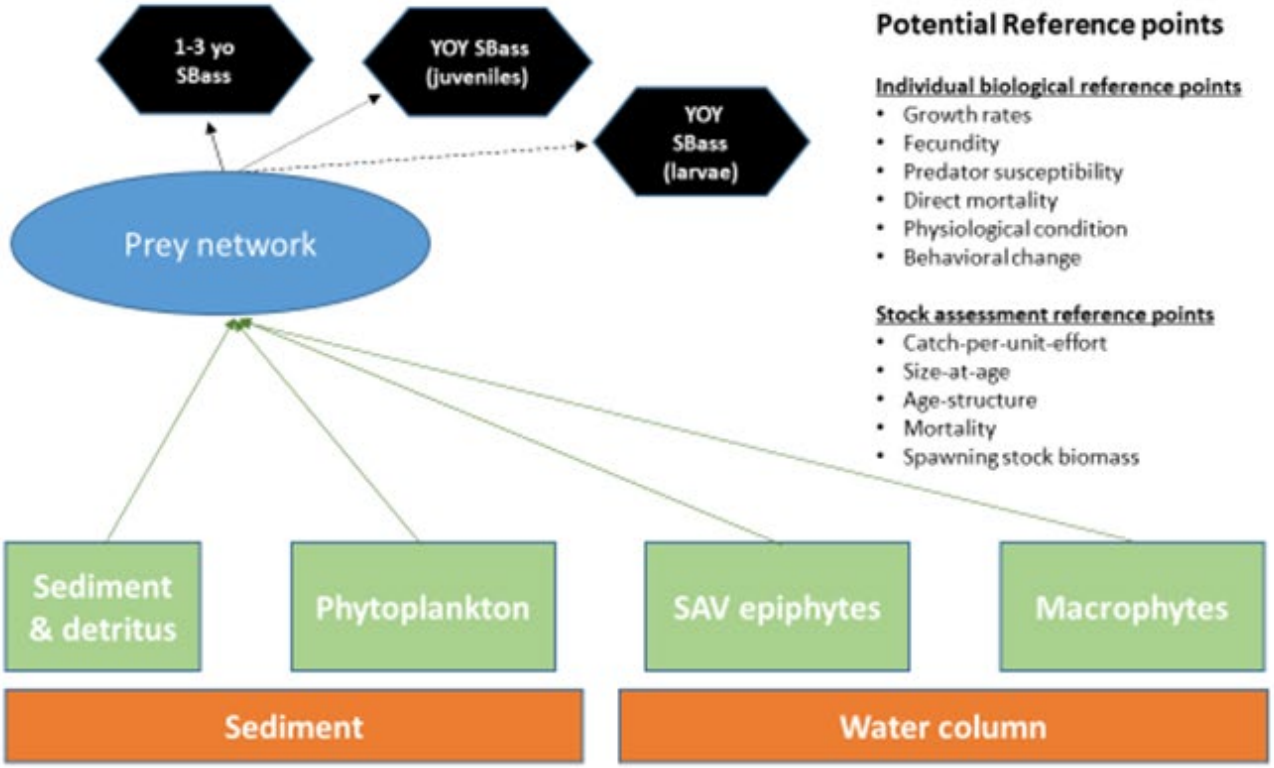
Model Development

1. Biological endpoints of potential interest

2. Qualitative food web interactions that could lead to microplastic intake by Striped Bass;

3. Semi-quantitative food web interaction scenarios for Striped Bass living in different salinity regimes.

Biological Endpoints



Potential Reference points

Individual biological reference points

- Growth rates
- Fecundity
- Predator susceptibility
- Direct mortality
- Physiological condition
- Behavioral change

Stock assessment reference points

- Catch-per-unit-effort
- Size-at-age
- Age-structure
- Mortality
- Spawning stock biomass

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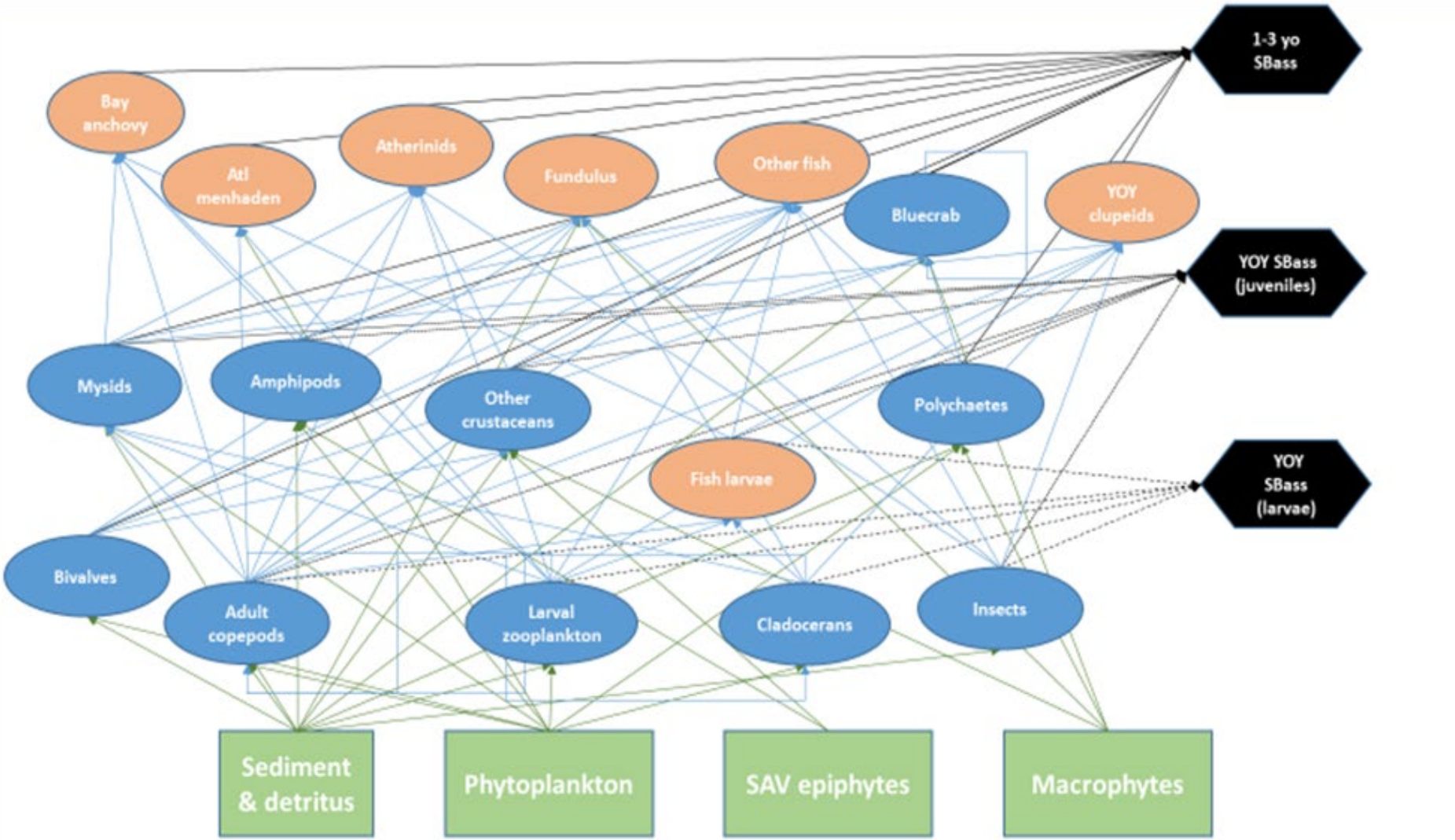
Qualitative food web interactions



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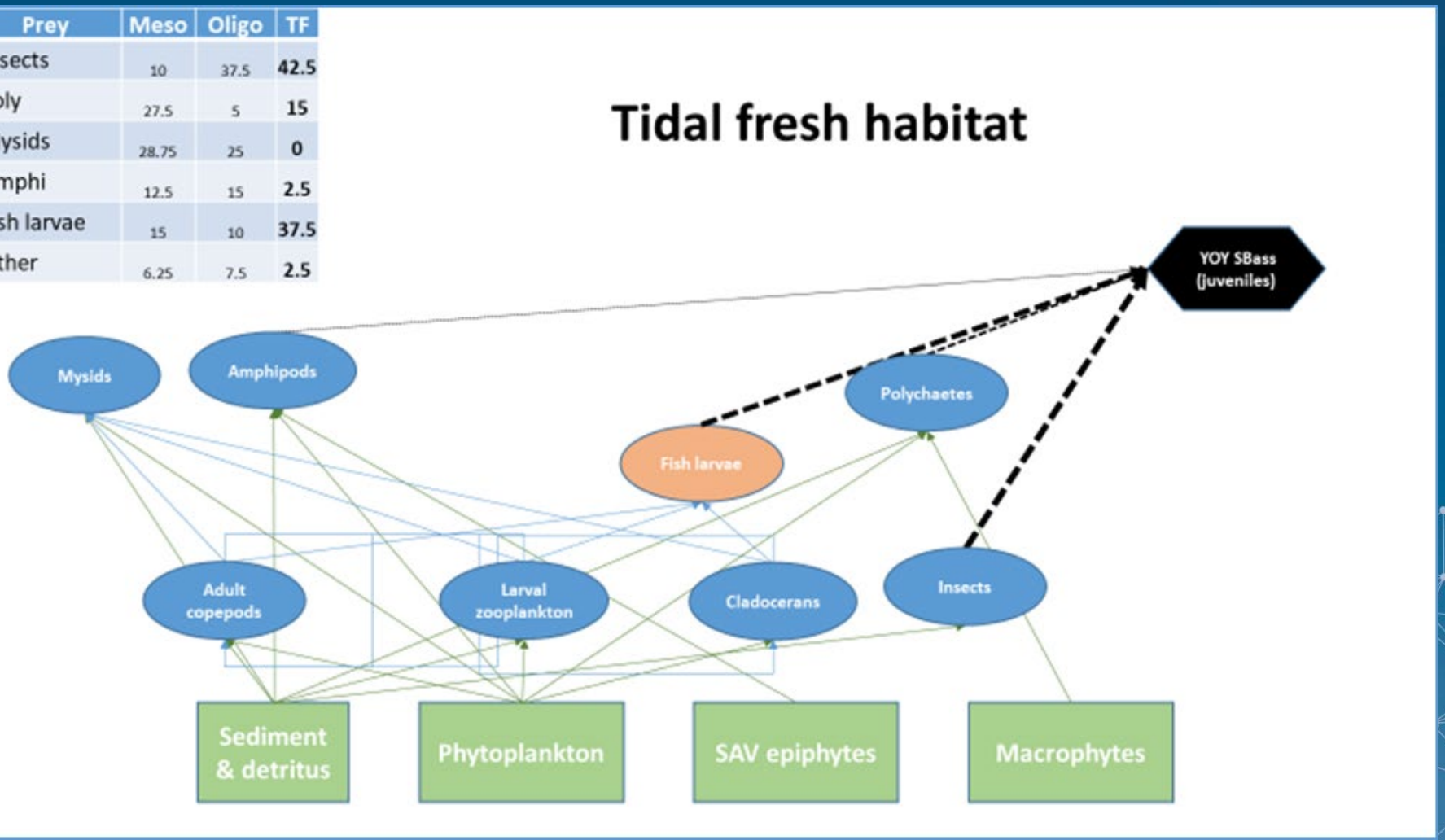
Potomac River

Semi-quantitative food web interaction

Prey	Meso	Oligo	TF
Insects	10	37.5	42.5
Poly	27.5	5	15
Mysids	28.75	25	0
Amphi	12.5	15	2.5
Fish larvae	15	10	37.5
Other	6.25	7.5	2.5



Data from Boynton et al 1981

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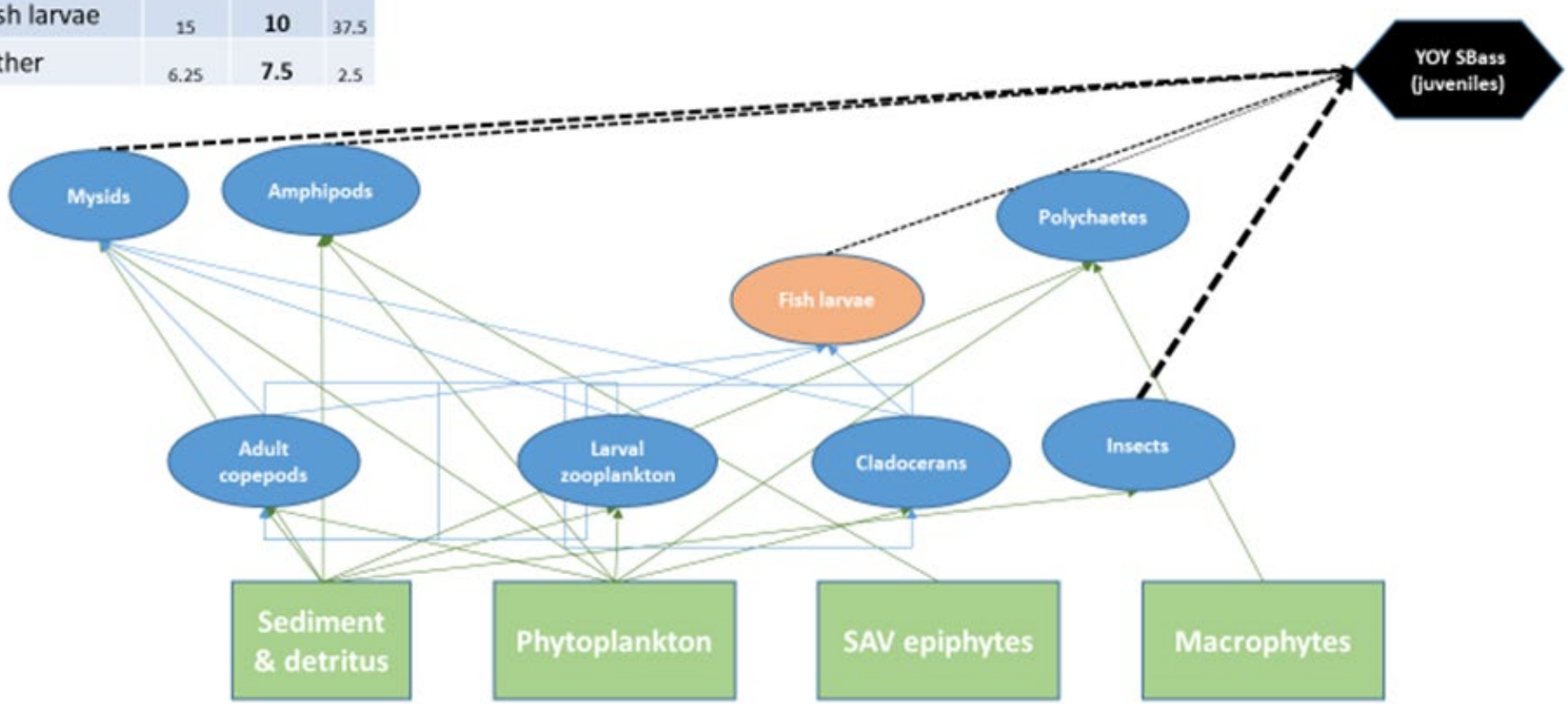

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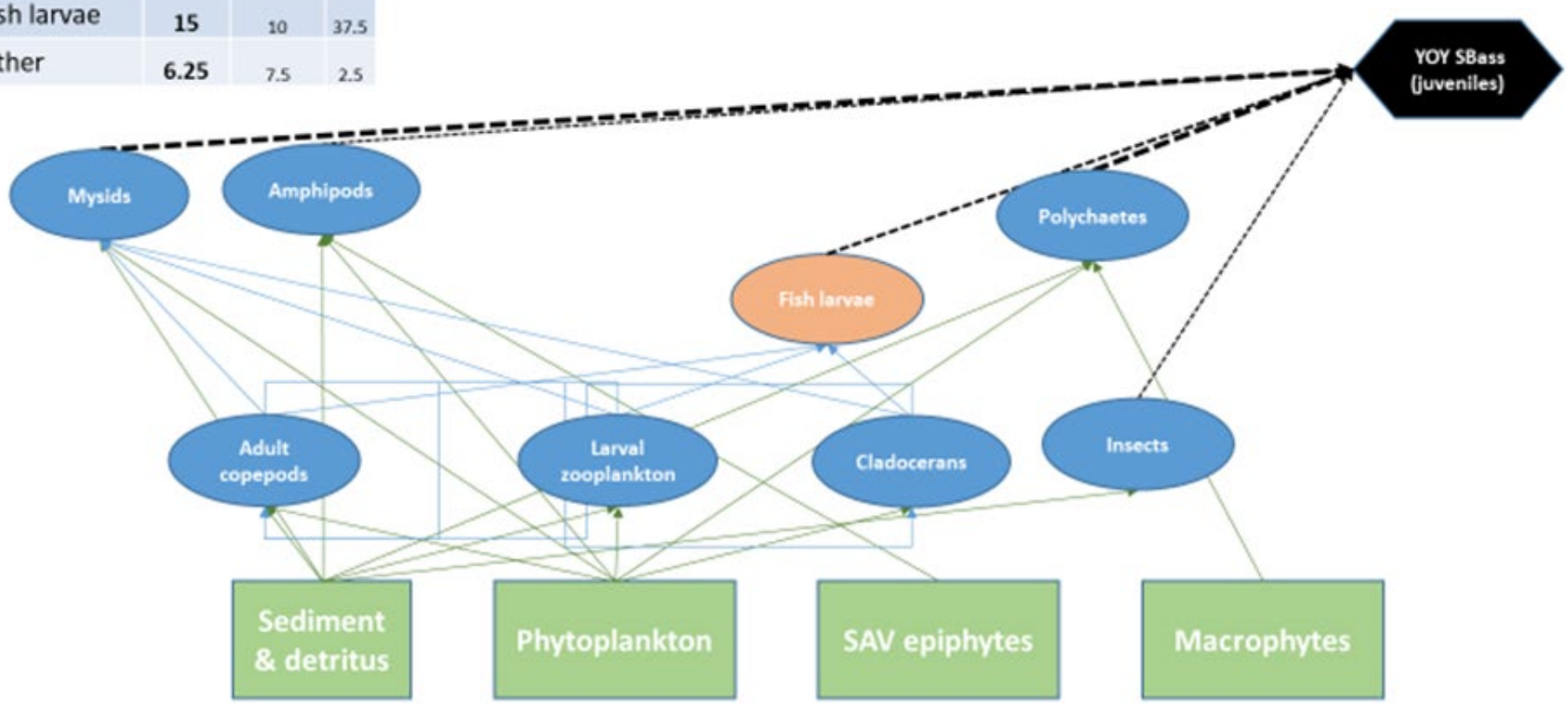
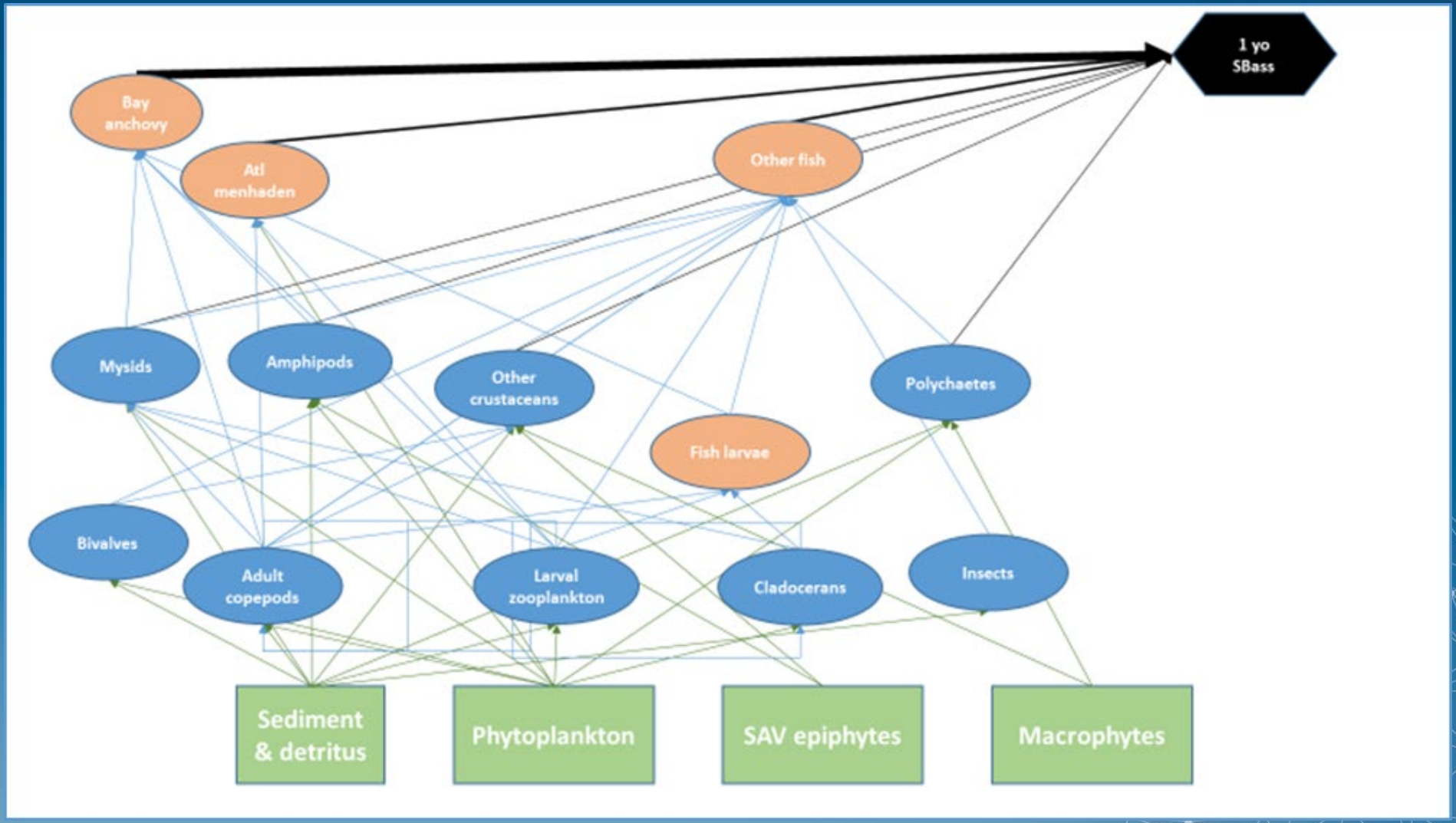


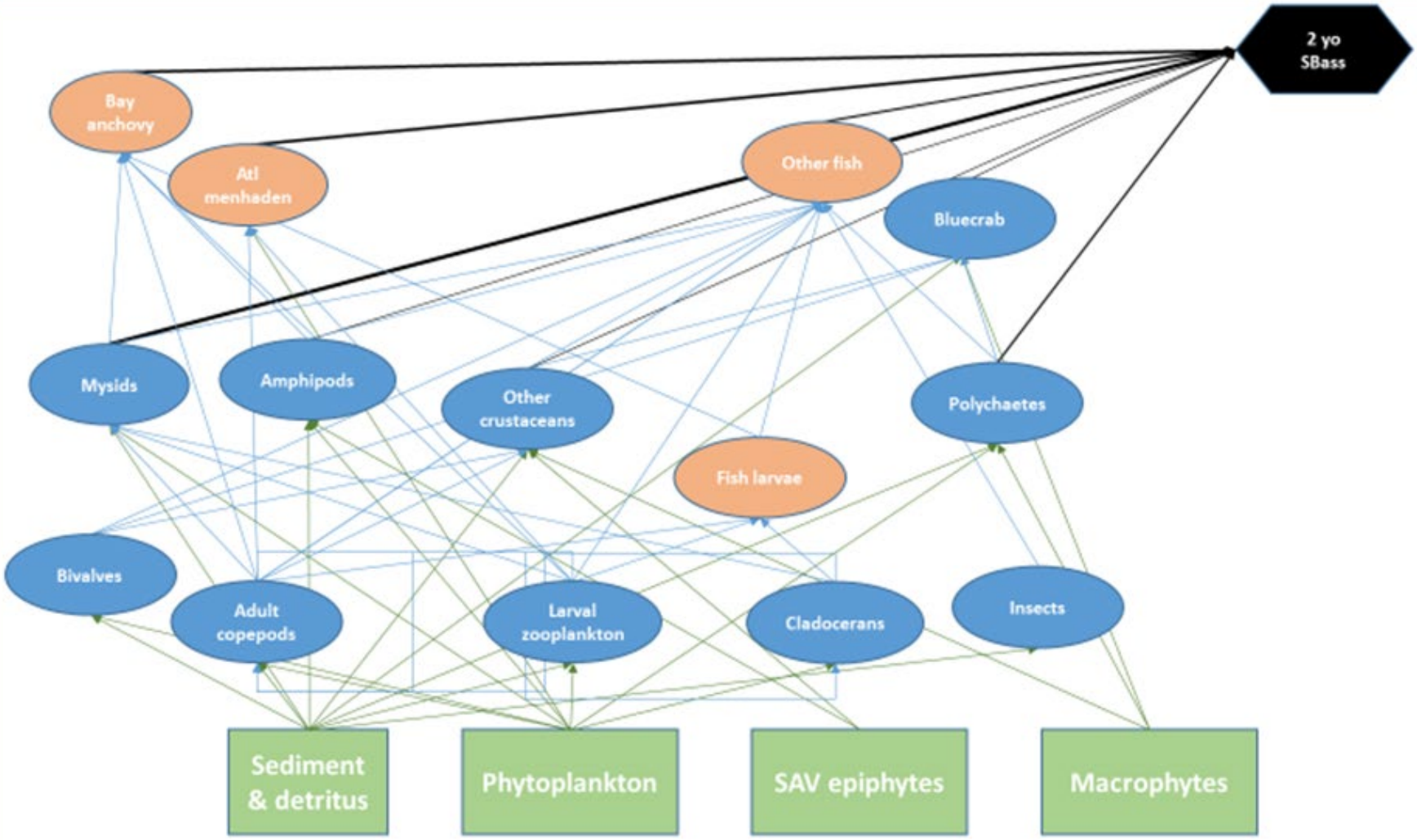
Data from Boynton et al 1981

Baywide diet: 1YO



Data from Ihde et al, 2015

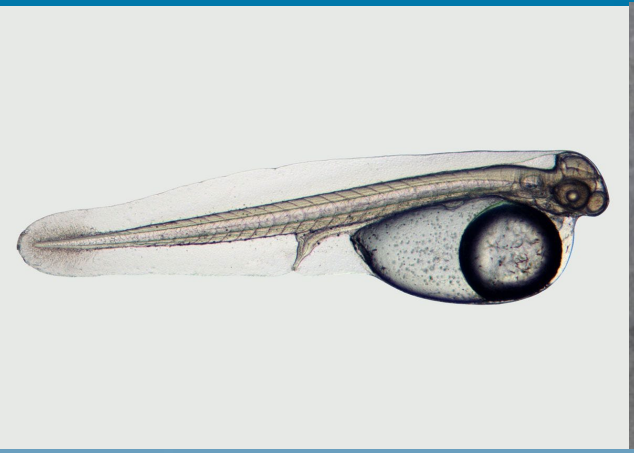
Baywide diet: 2YO



Data from Ihde et al, 2015

Next Steps for Model

- Incorporating comments/recommendations
- Abiotic factors
- Quantifiable network development



Environmental Factors, Sources, Fate, and Transport