

From Conceptual to Concrete: Using Conceptual models to build a monitoring plan



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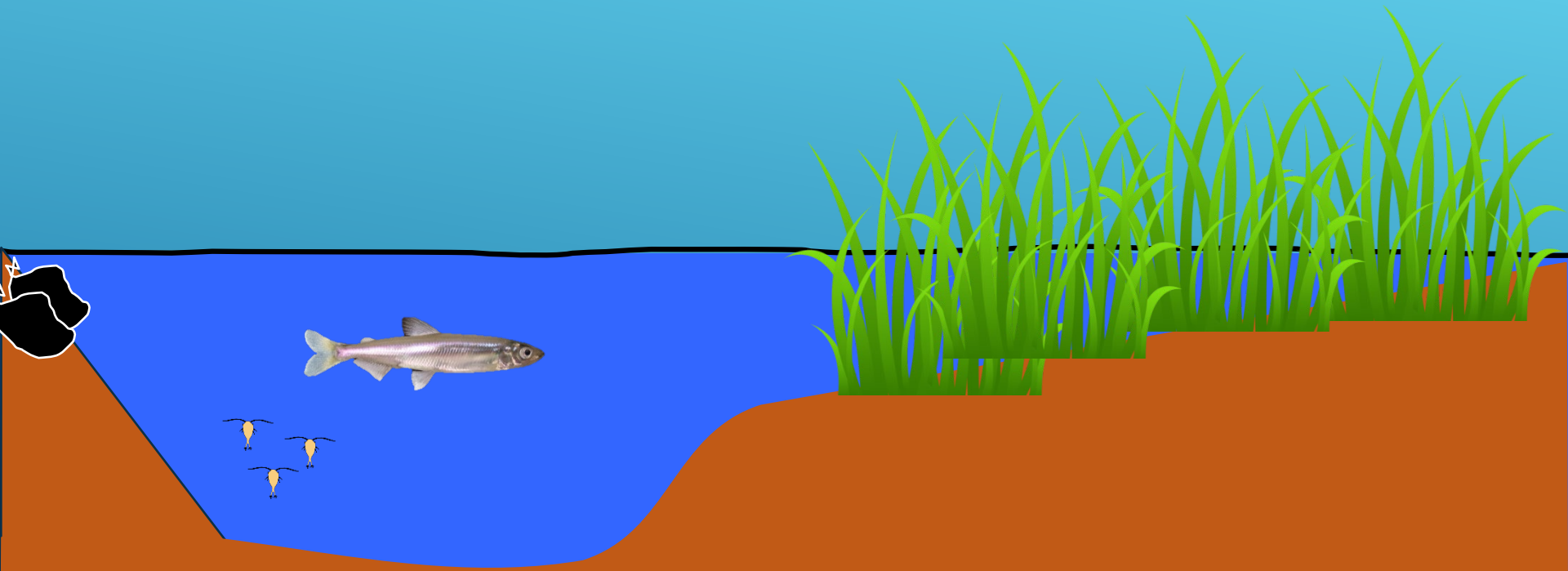
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Department of Fish and Wildlife

Stockton, CA

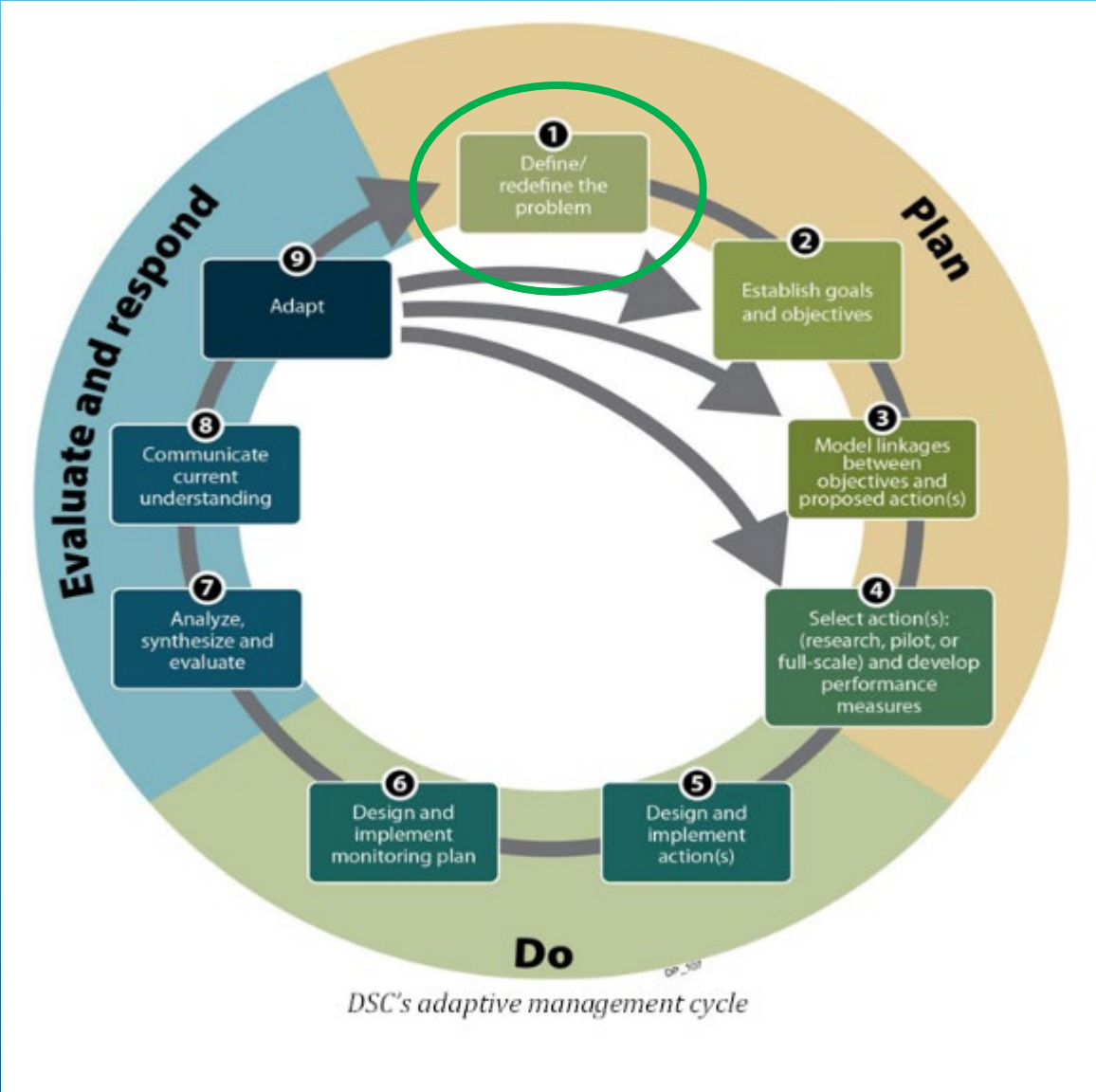
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THE DELTA SMELT



DEFINE THE PROBLEM



THE DELTA SMELT



Climate Change

Contaminants

Water Diversion

Habitat loss



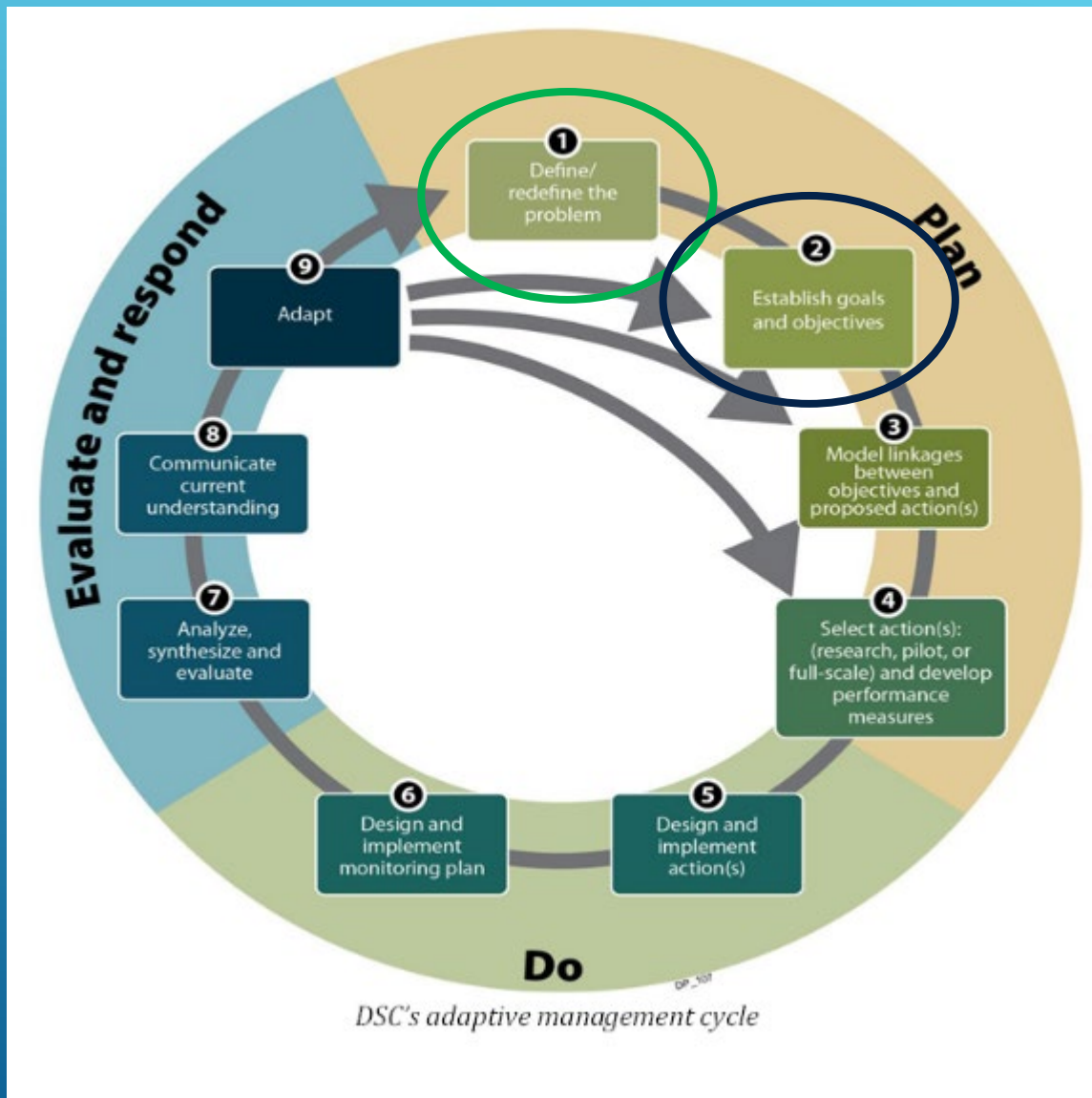
Predation

Food limitation



Invasive weeds

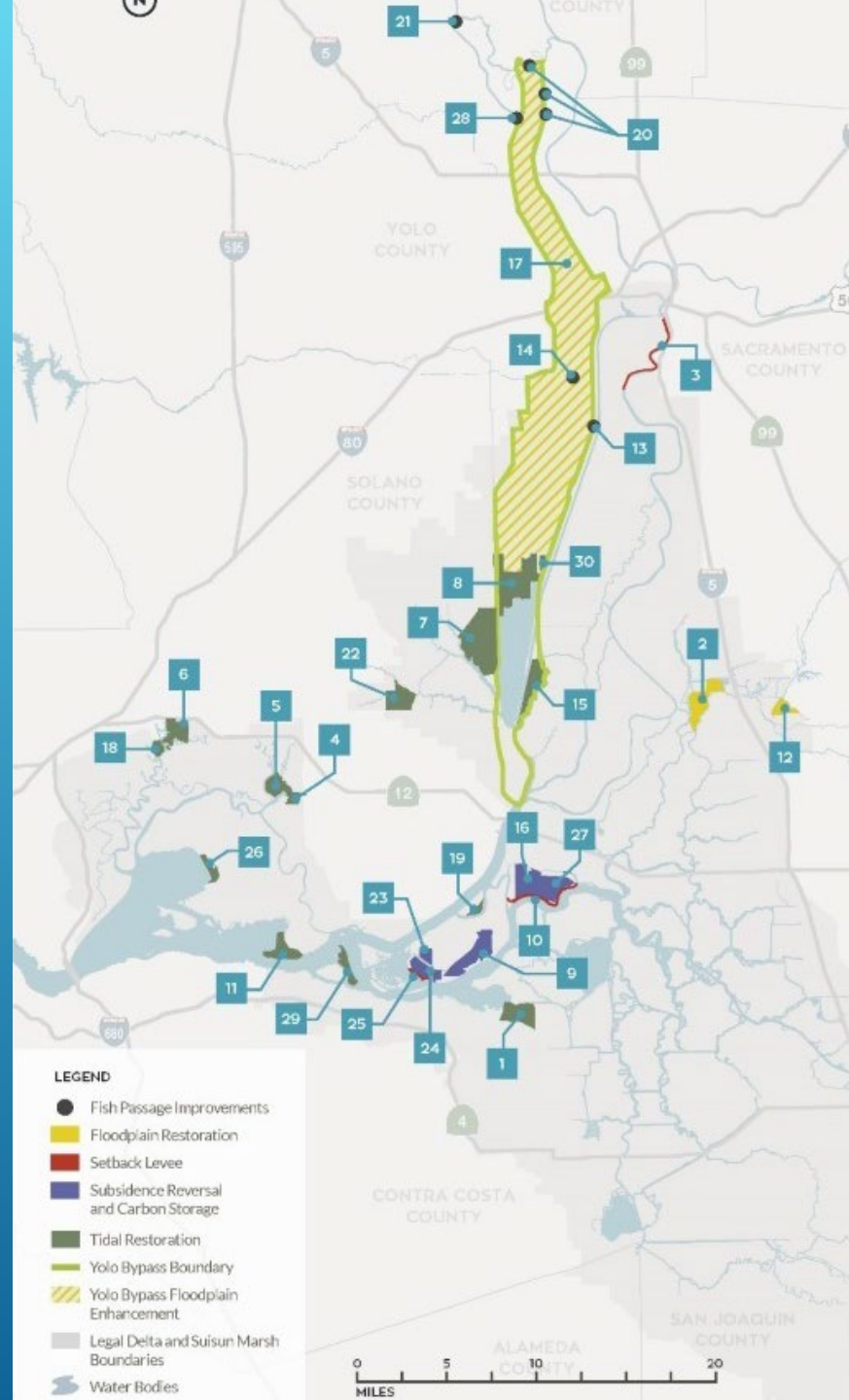
WHAT ARE WE GOING TO DO ABOUT IT?



THE HOPE OF RESTORATION



CALIFORNIA
ECO RESTORE
A STRONGER DELTA ECOSYSTEM.



CDFW Fish Restoration Program

map from: <http://resources.ca.gov/ecorestore/>

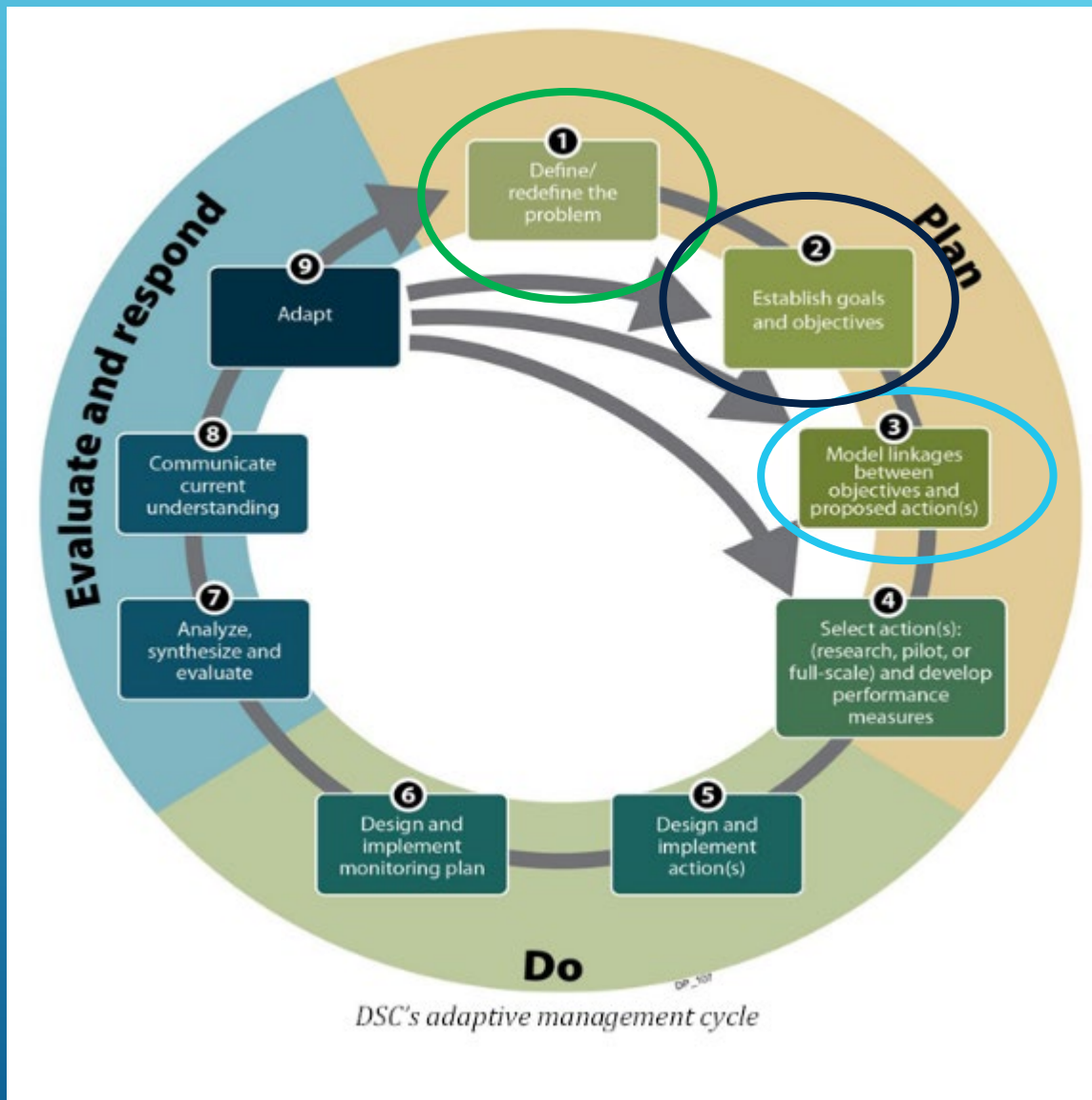


FISH RESTORATION PROGRAM

CDFW Fish Restoration Program

http://wdl.water.ca.gov/iep/about/tidal_wetland_monitoring.cfm

ADAPTIVE MANAGEMENT

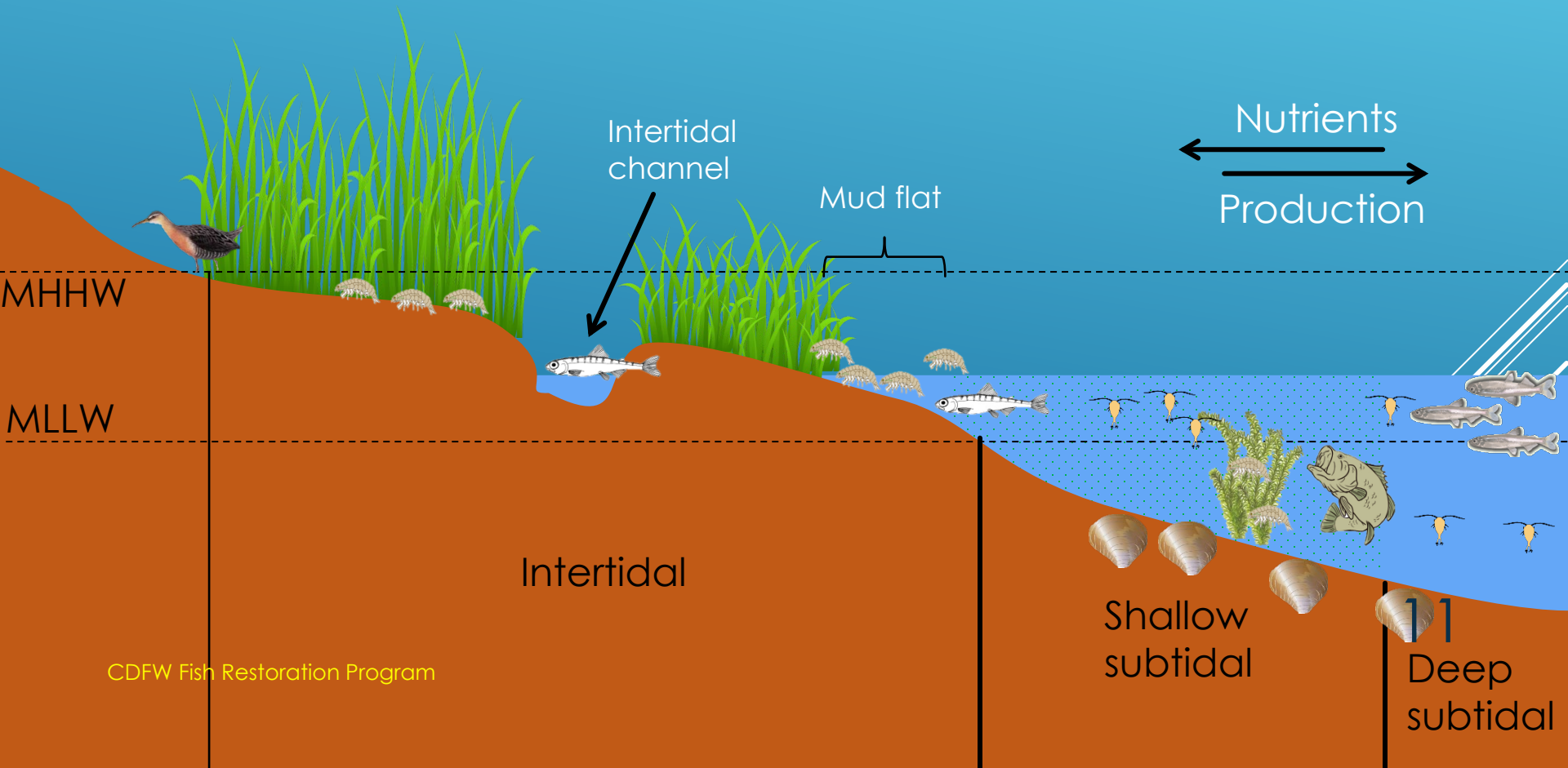


IEP TIDAL WETLANDS MONITORING PROJECT WORK TEAM

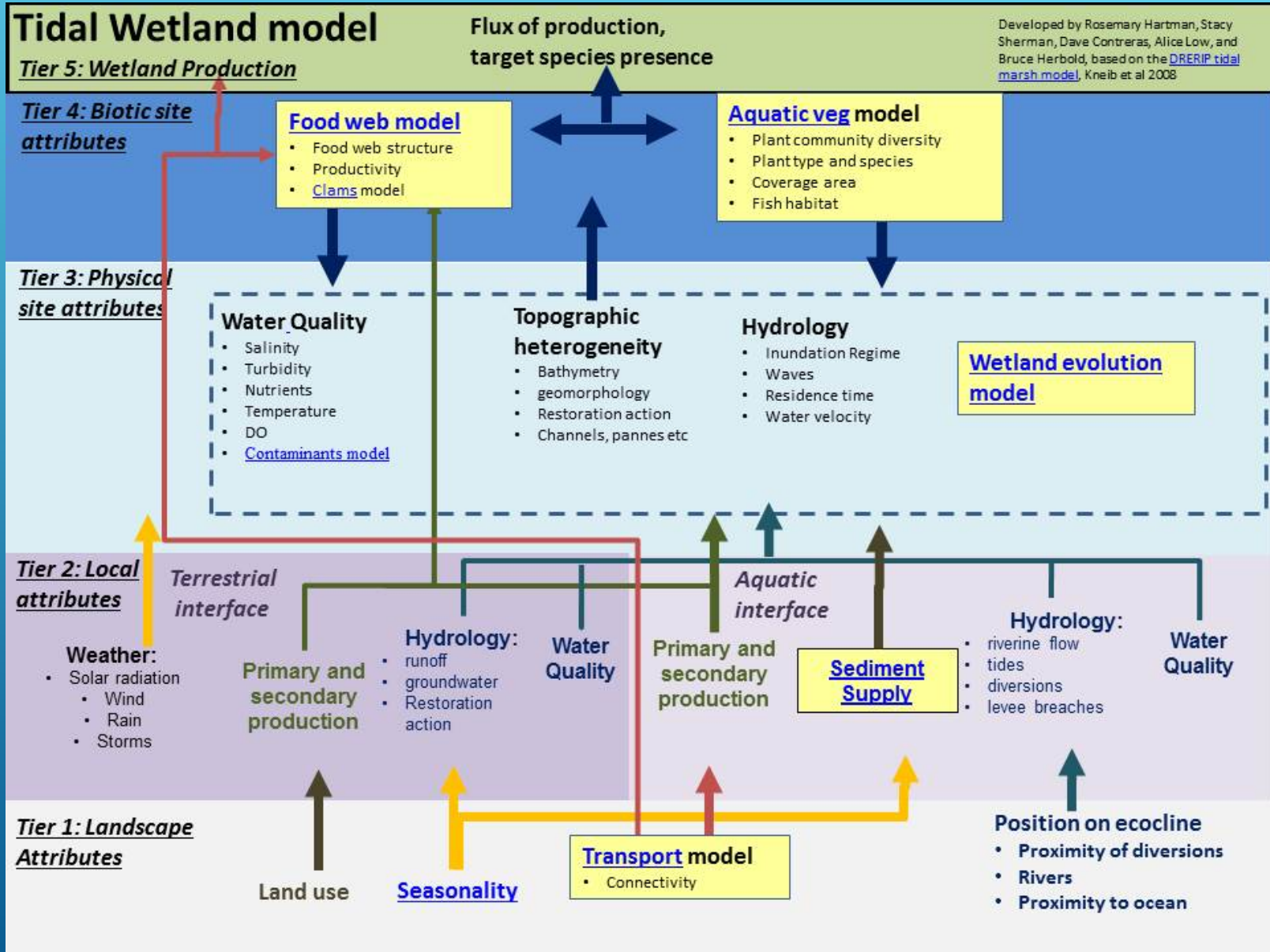




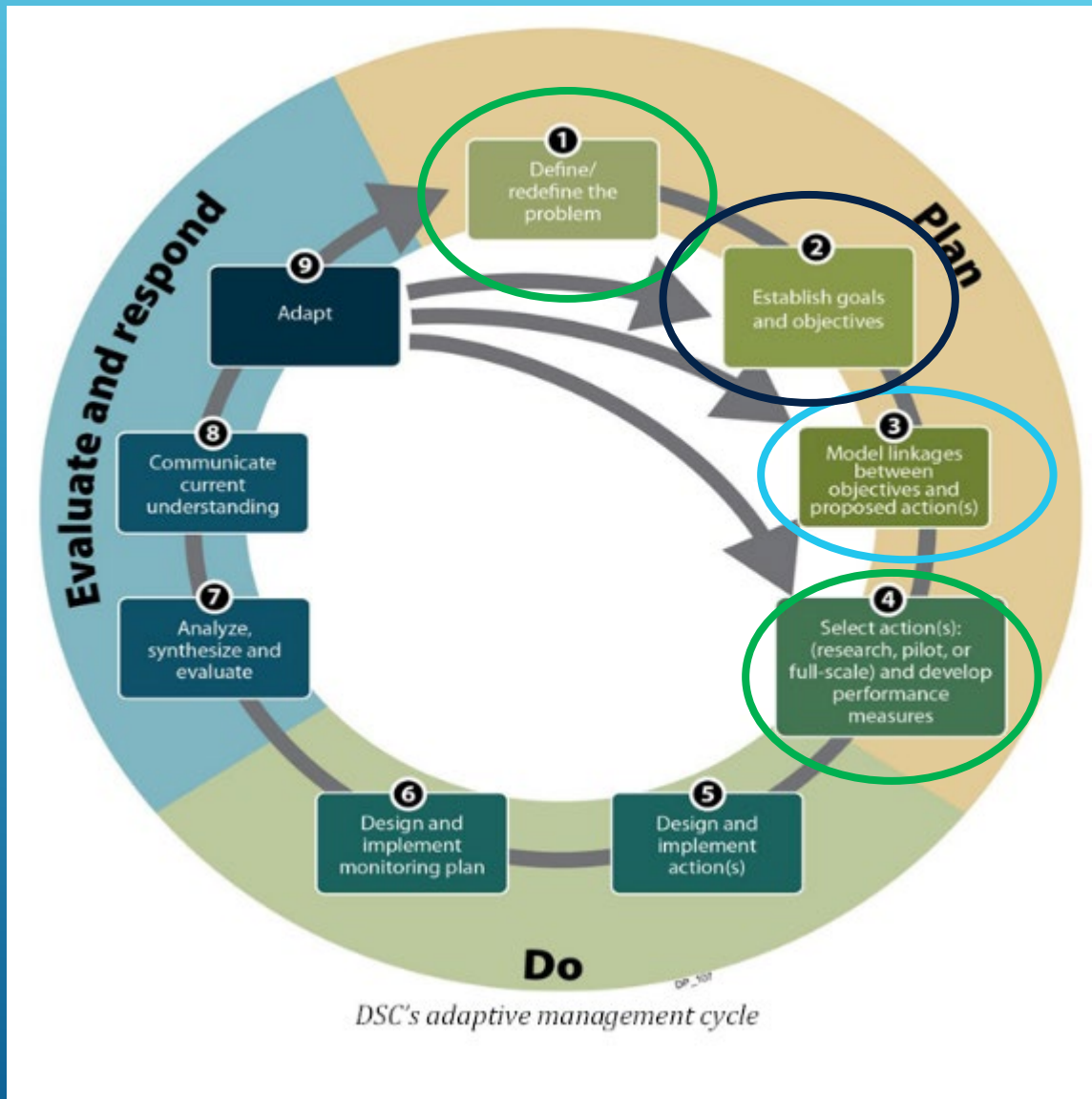
CONCEPTUAL MODELS



CONCEPTUAL MODELS



SELECT PERFORMANCE MEASURES



DEFINED QUESTIONS AND HYPOTHESES

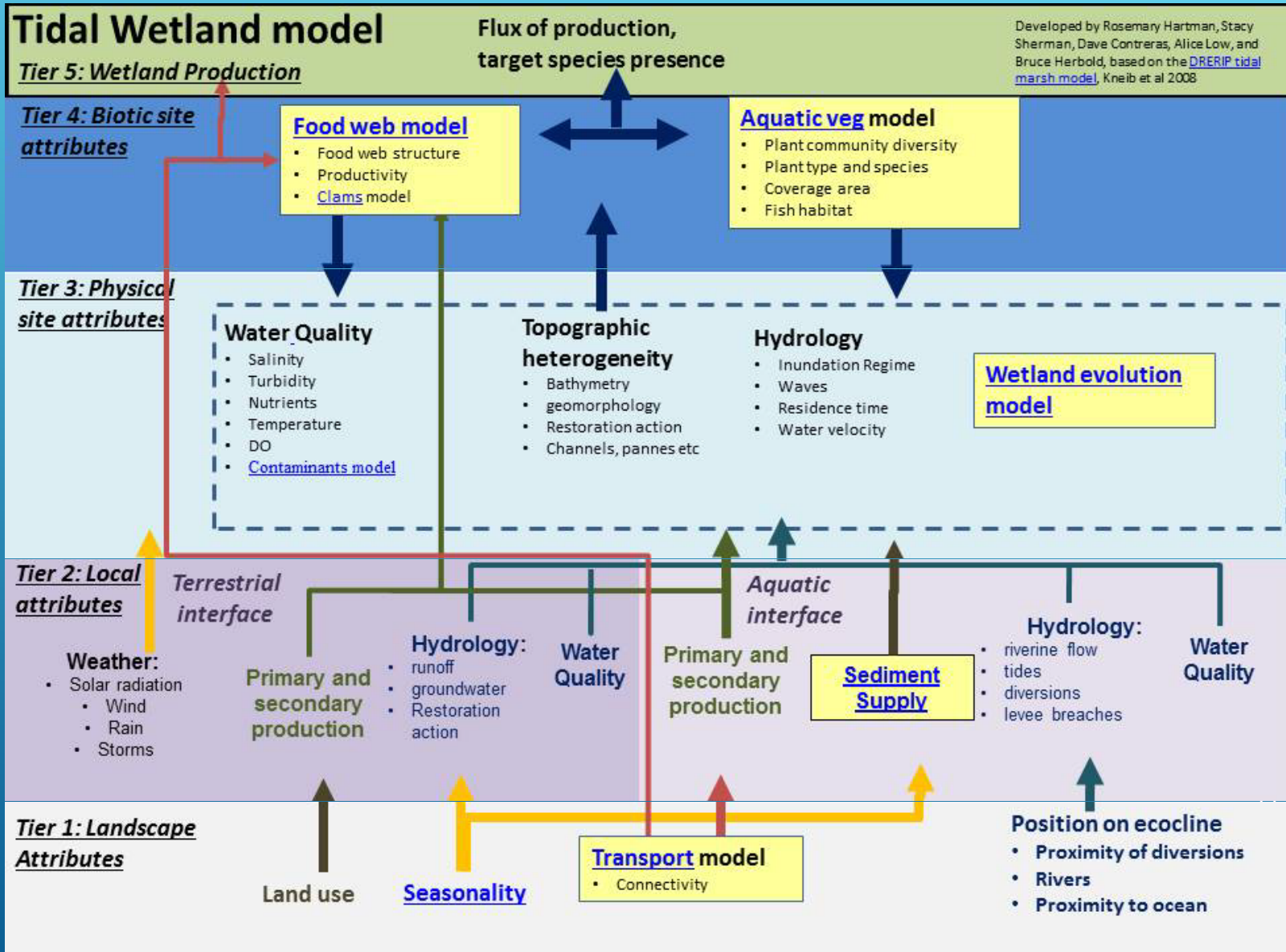
- ▶ Tidal wetlands are good for fish.
- ▶ The increase in amphipods caused by tidal wetland restoration will lead to increased body condition in juvenile salmonids.
- ▶ Tidal wetland restoration may increase contribution of wetland-associated invertebrates to the pelagic food web.

Too Big

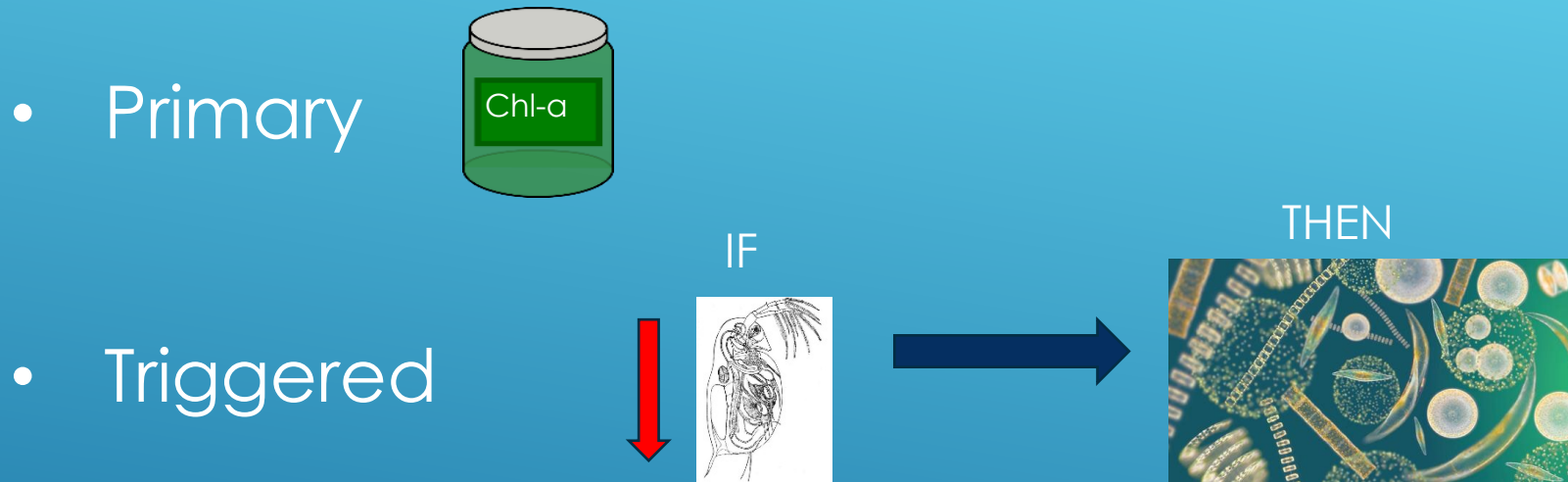
Too Small

Just Right

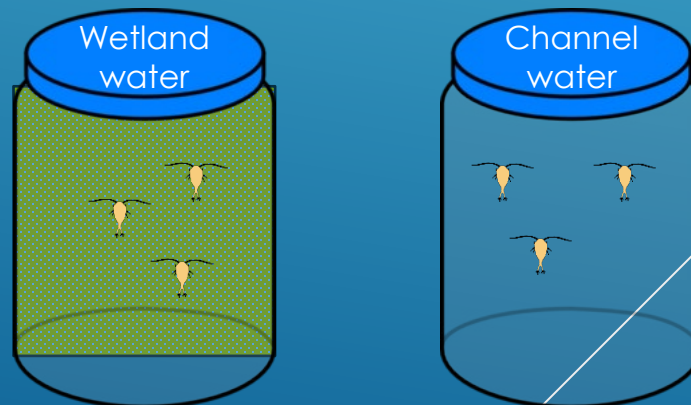
CHOOSING PERFORMANCE METRICS



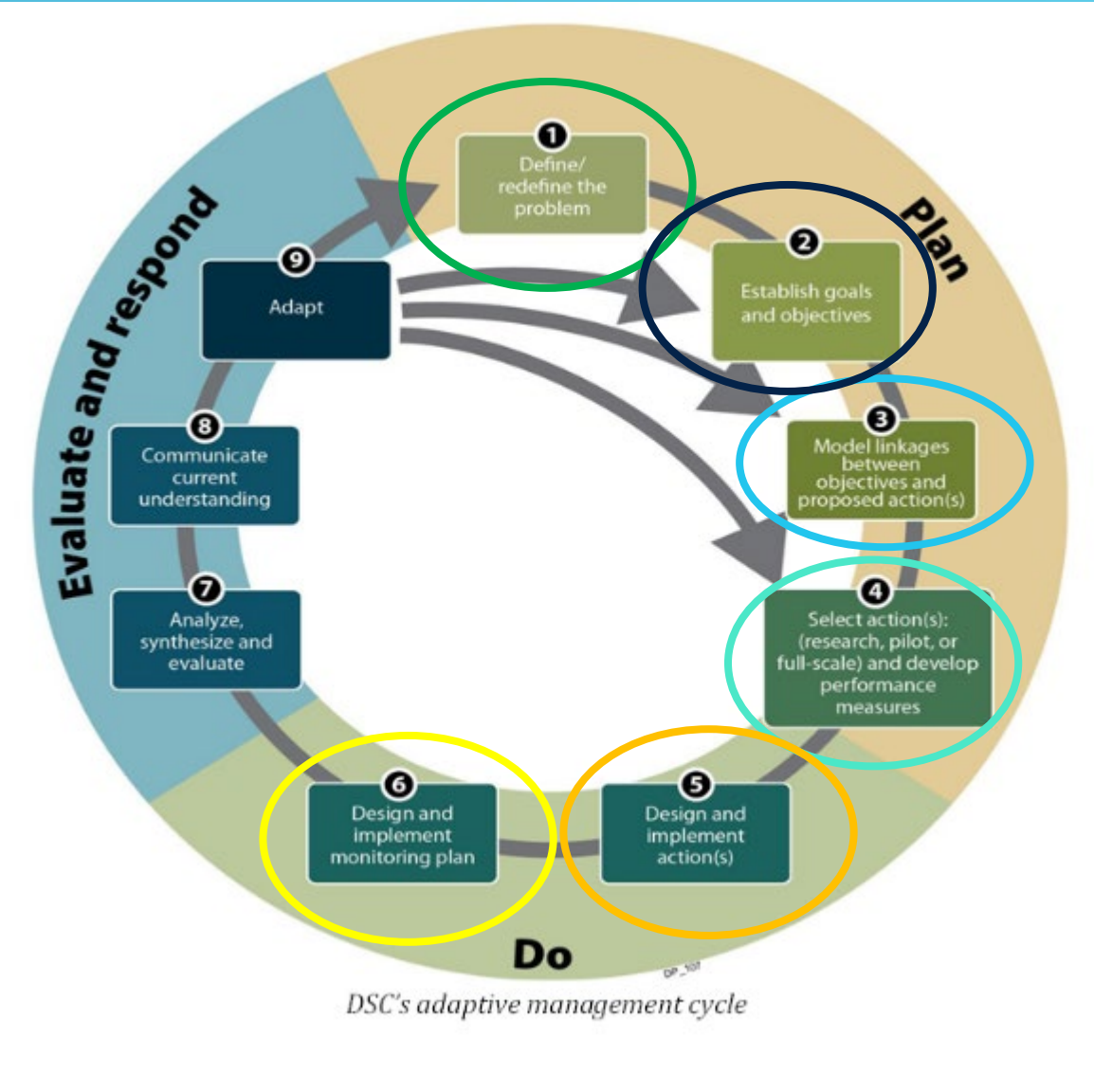
MONITORING METRICS



- Higher function/
special study



DEVELOP A MONITORING PLAN

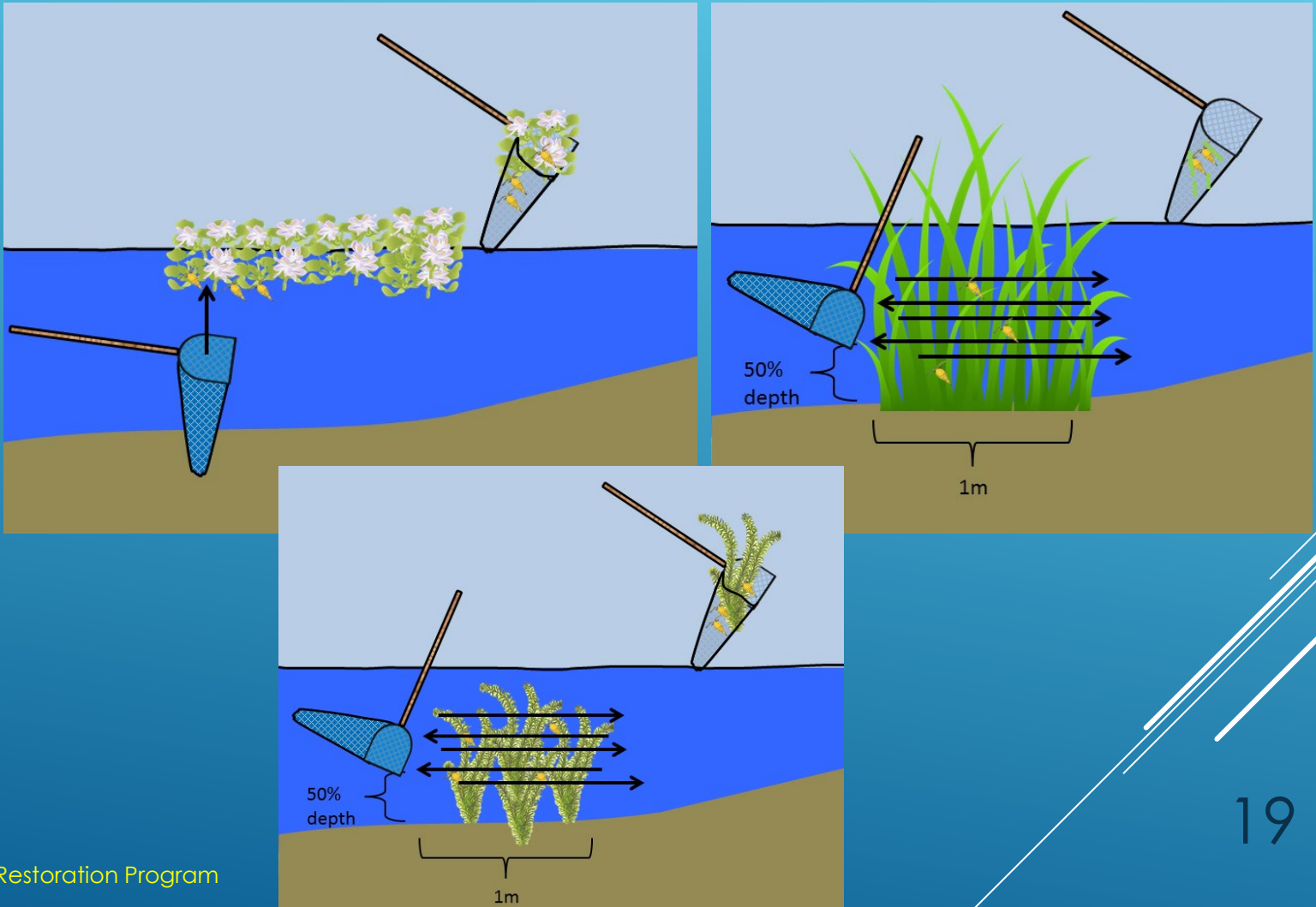


MONITORING FRAMEWORK

- ▶ Effectiveness
- ▶ Large scale
- ▶ Long term
- ▶ Comparable
- ▶ Fish centric



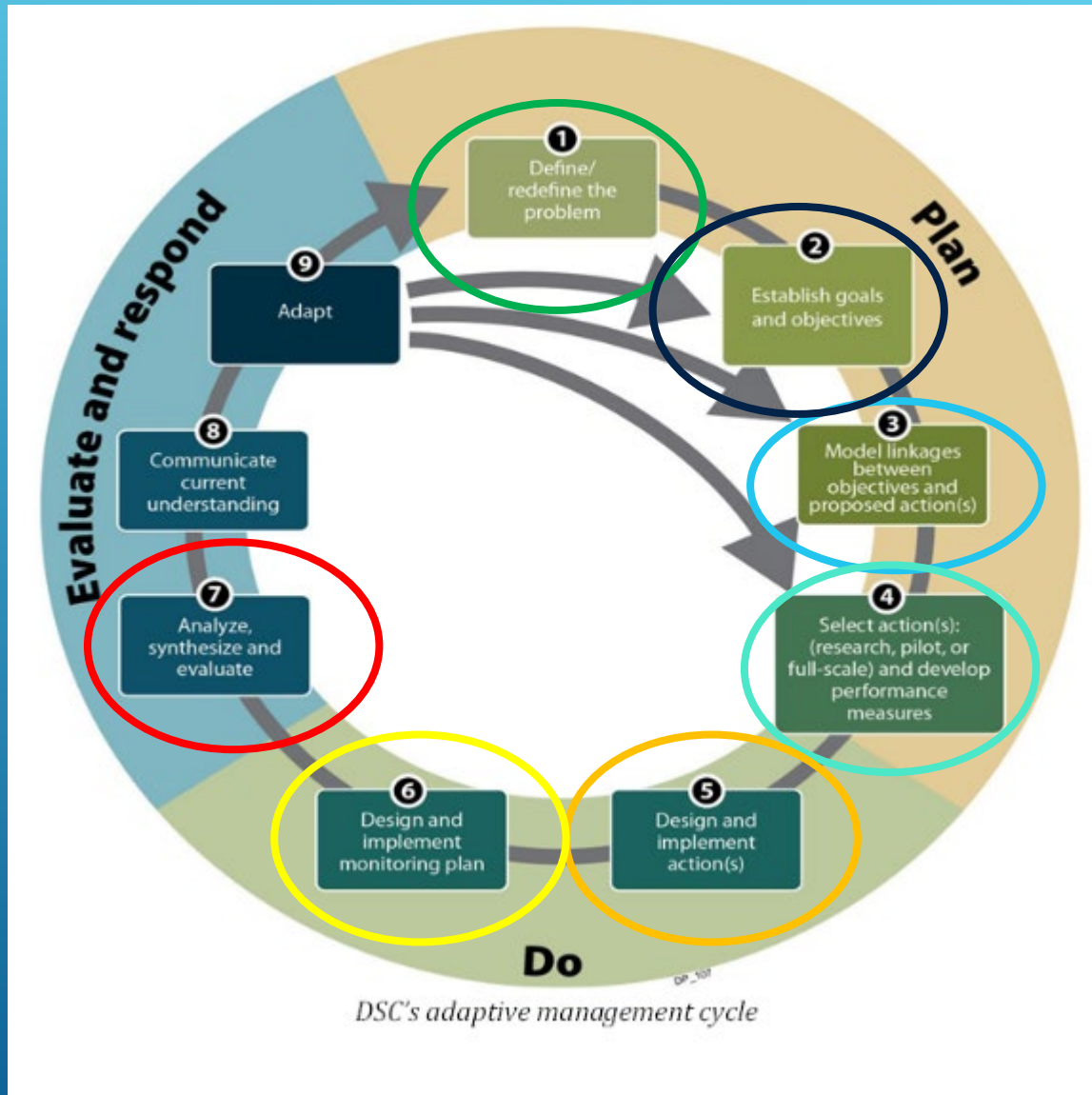
STANDARD METHODS



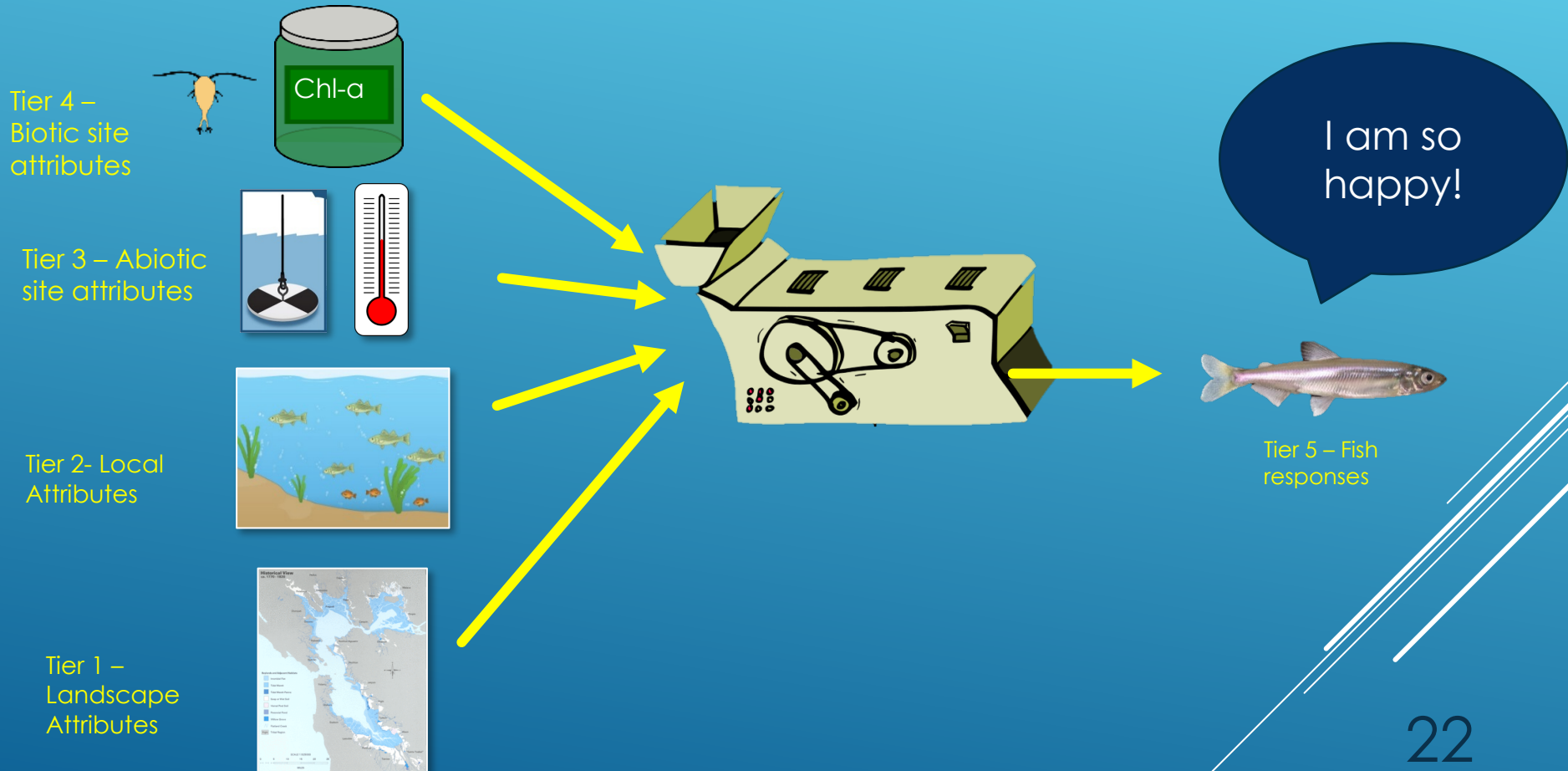
METHOD TRIALS



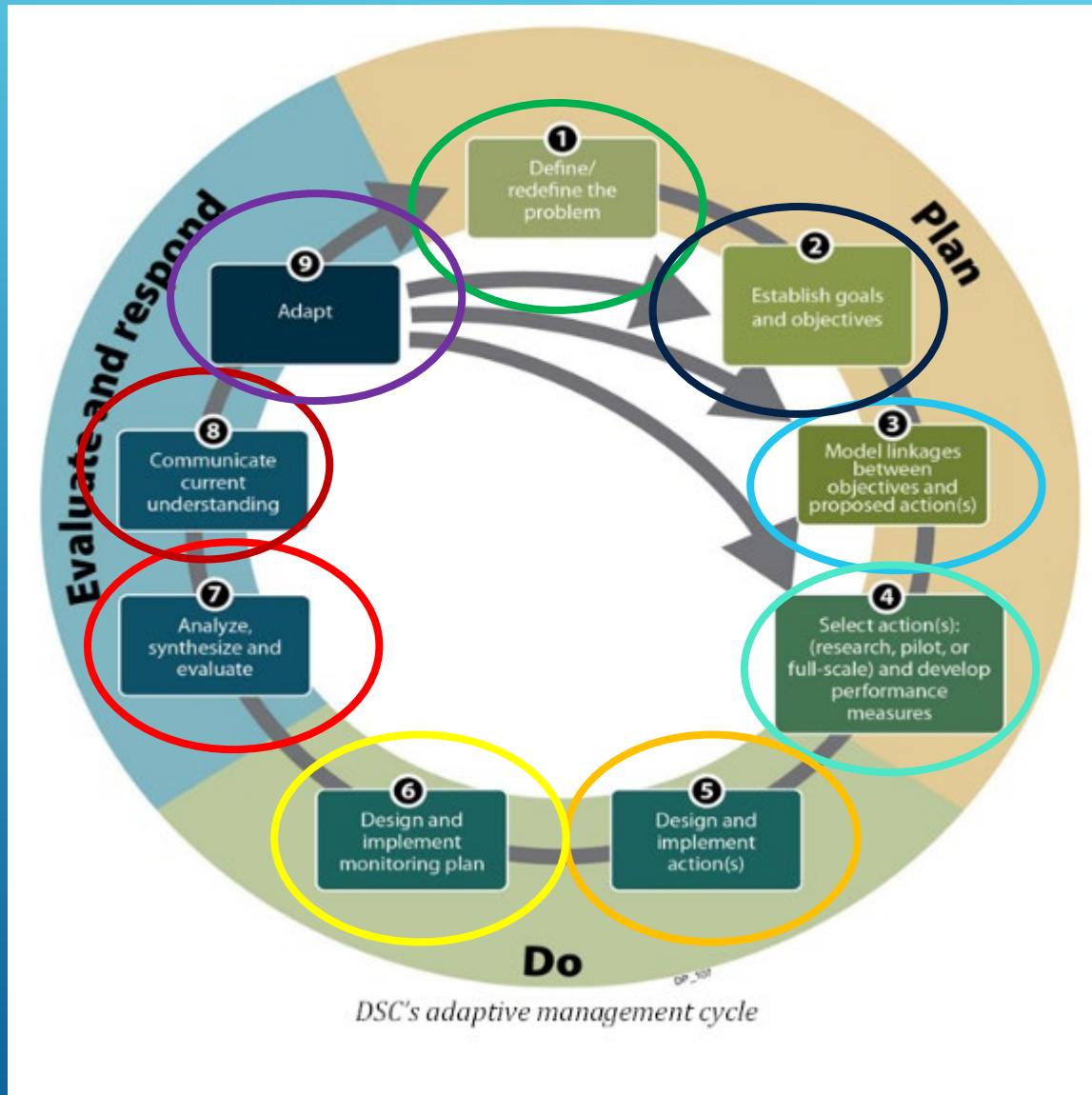
ANALYZE AND SYNTHESIZE



DATA ANALYSIS



COMMUNICATE AND ADAPT



- ▶ Thank you to the
 - ▶ FRP Monitoring Team
 - ▶ FRP Implementation Team
 - ▶ IEP Tidal Wetlands Project Work Team
 - ▶ All the authors of the Conceptual Models Technical Report
 - ▶ Special thanks to Stacy Sherman and Dave Contreras, for exhaustive editing of the tech report.

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QUESTIONS?

