

# South Bay Salt Ponds Fisheries Monitoring Program



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**South Bay Salt Pond  
Restoration Project**

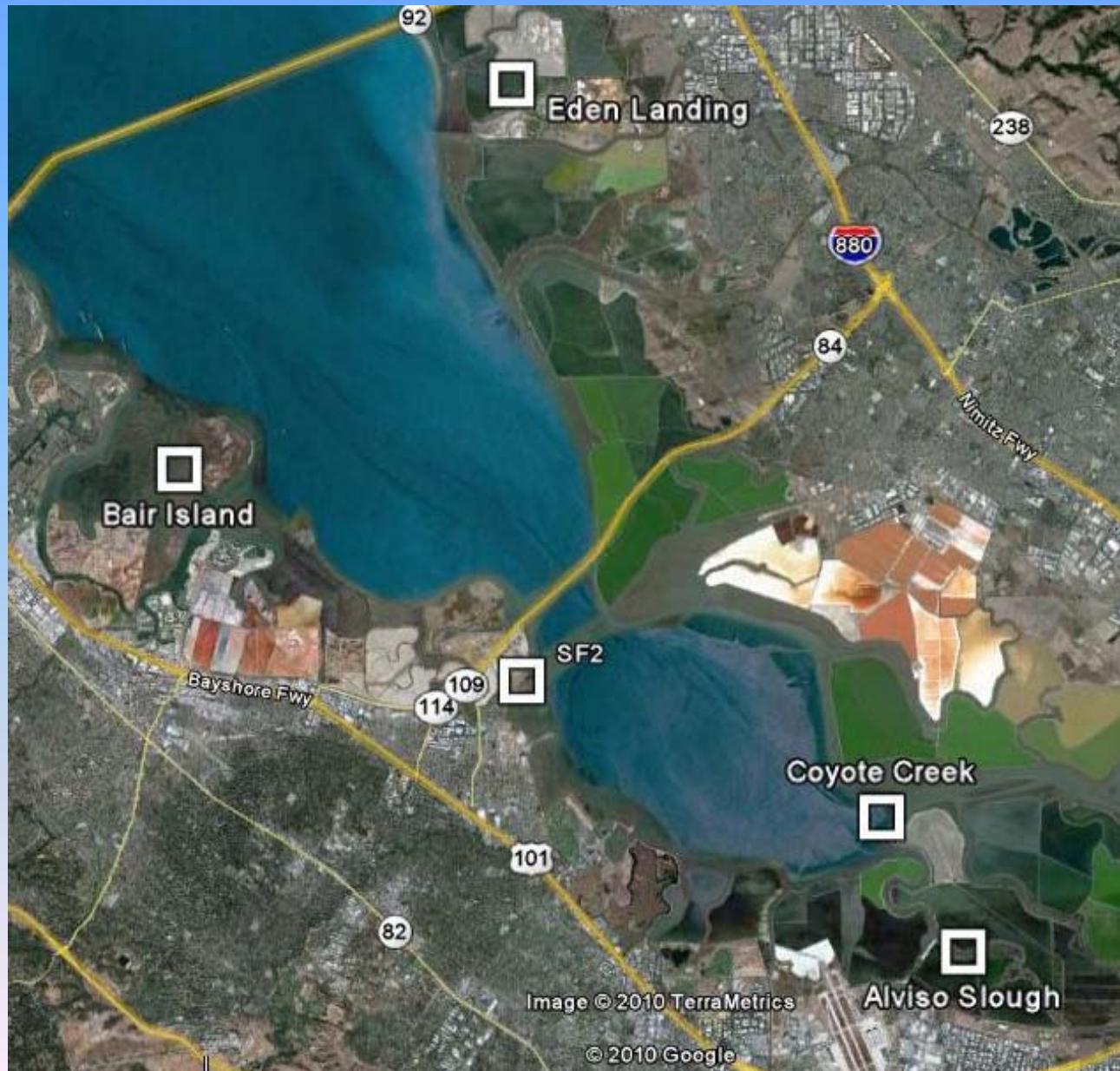
# Project Objectives

- Monitor species abundances and assemblages during restoration
- Investigate the individual and population health of sentinel species in restoration areas



*Photo courtesy of A. Chandos*

# Study Area





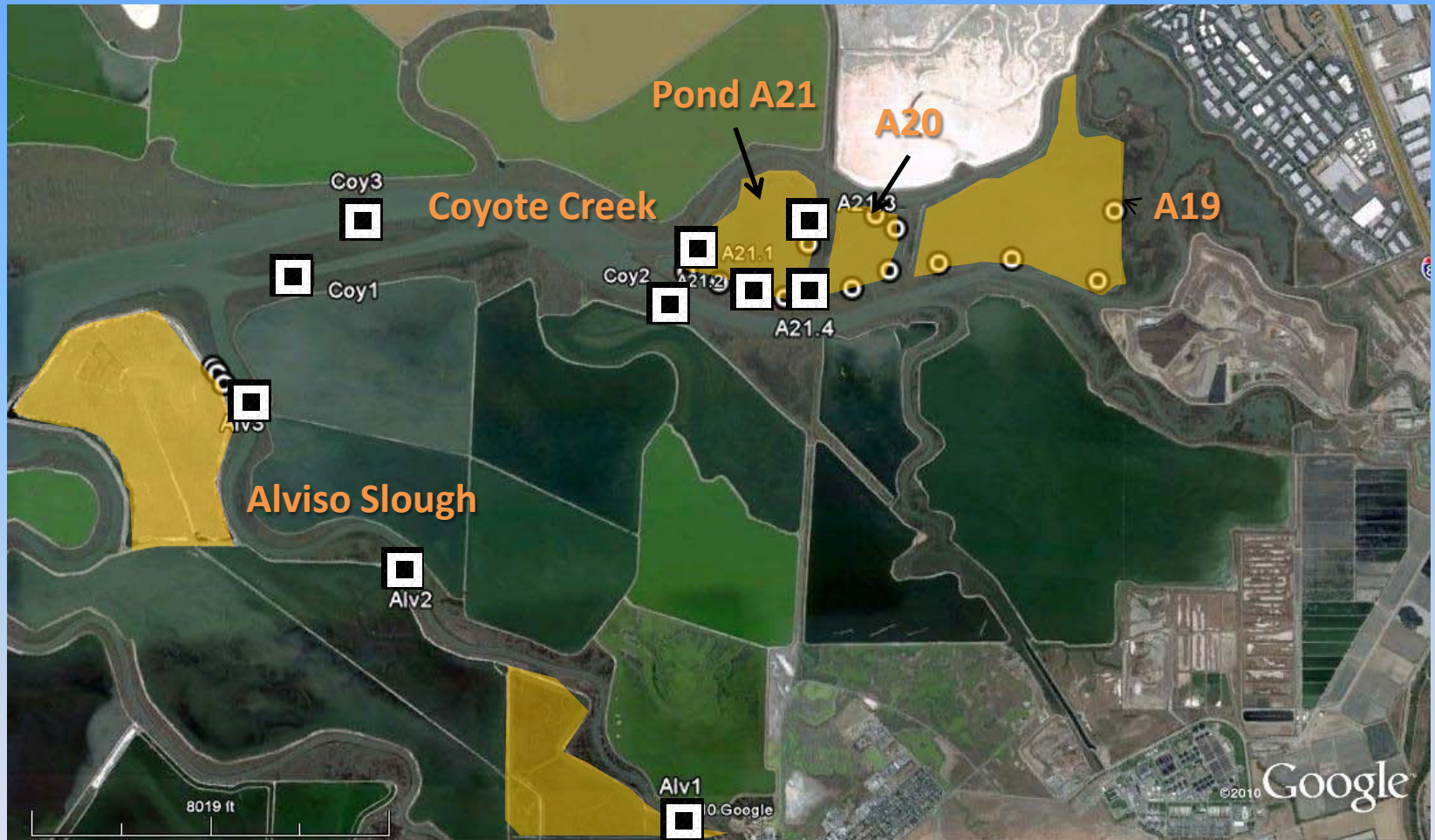
# Bair Island Sampling Sites



▣ = Otter trawl station

⊙ = Trap Location

# Alviso Slough and Coyote Creek

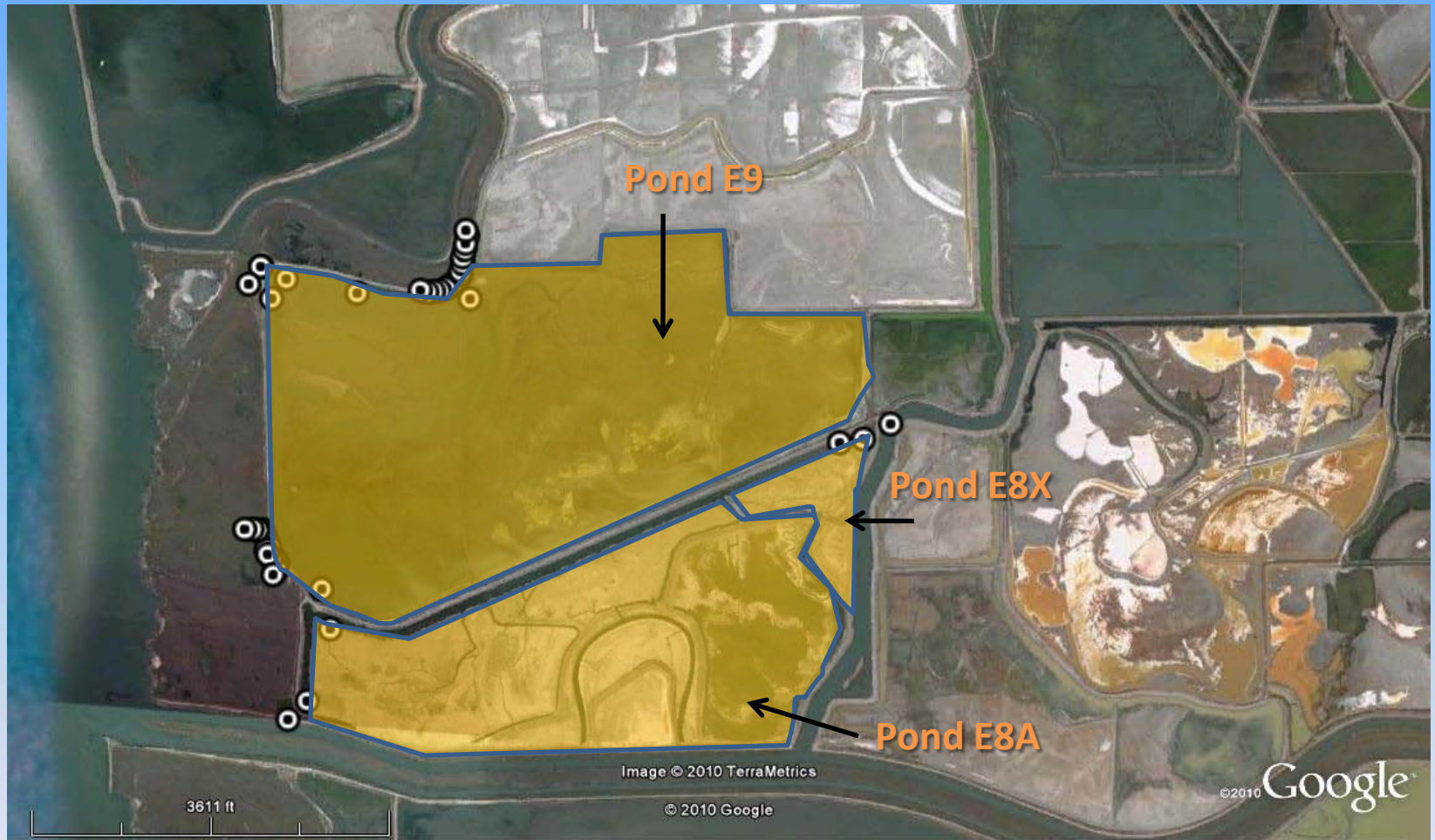


□ = Otter trawl station

○ = Trap Location



# Eden Landing Sampling Sites



▣ = Otter trawl station

○ = Trap Location

# Methods

- A variety of methods have been employed
  - Methods utilized include:
    - otter trawling
    - beam trawling
    - angling
    - minnow trapping
    - clover trapping



# Environmental Parameters

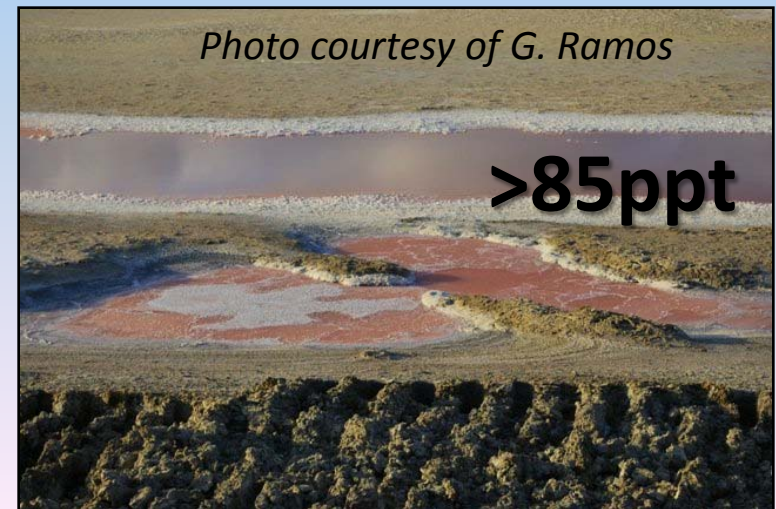
- Recorded at each sampling site
- Parameters measured include:
  - Salinity (ppt)
  - Temperature (°C)
  - Transparency (Secchi depth in cm)
  - Tidal stage
  - Specific conductance ( $\mu\text{S}$ )
  - Dissolved Oxygen (mg/L)



J. Hobbs



# Summary of Environmental Parameters-Salinity



- Sloughs and SF Bay
- Freshwater influence
- Ponds with no tidal action

# Summary of Environmental Parameters (cont.)



- Temperatures varied from 19-24°C
- Turbidity was high at all sites
- Dissolved oxygen was highly variable, ranging from 3.5 mg/L to saturation.

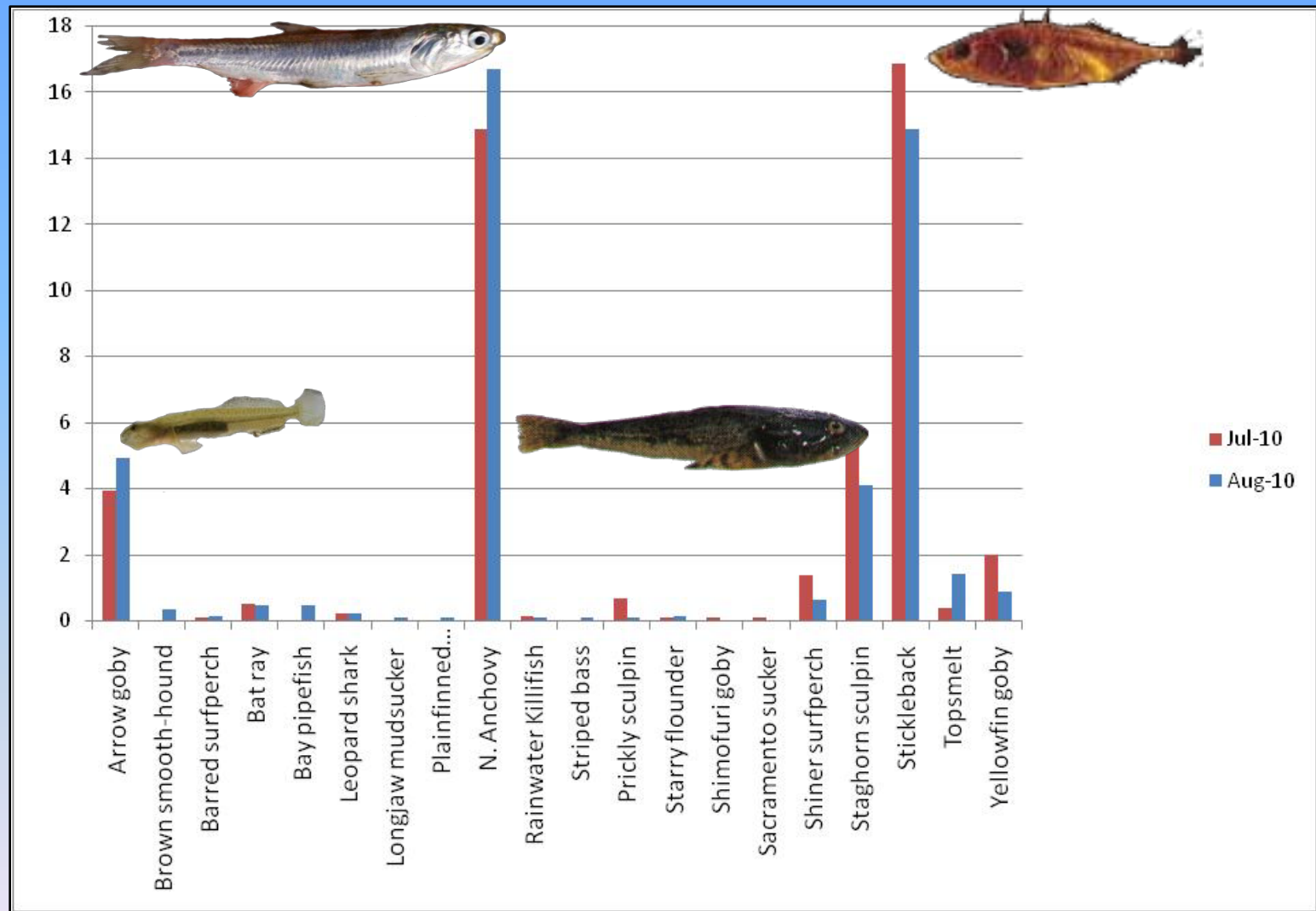


# Fish Abundance and Distribution

- >1400 Fish 22 species



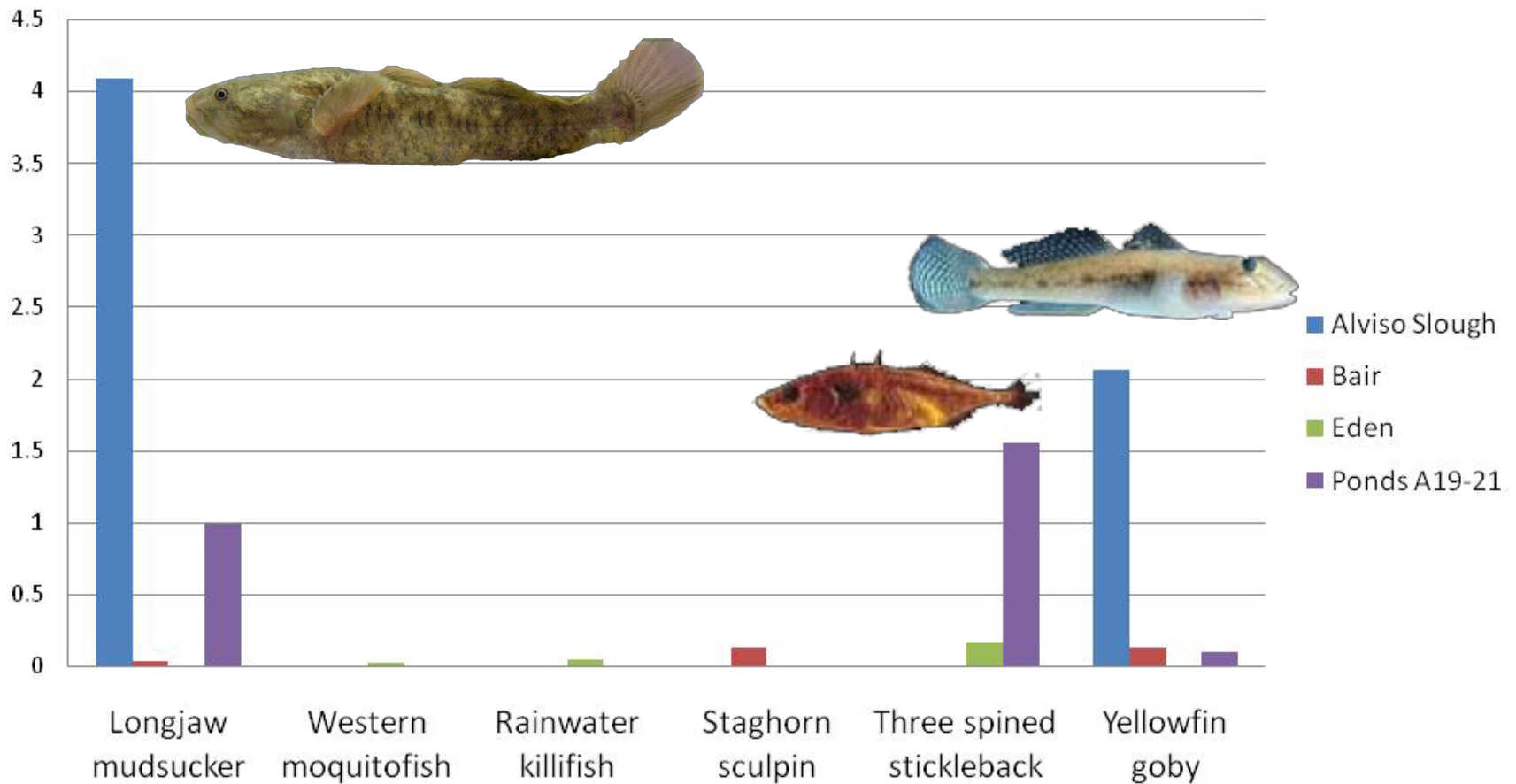
# Otter Trawl Catches-Sloughs



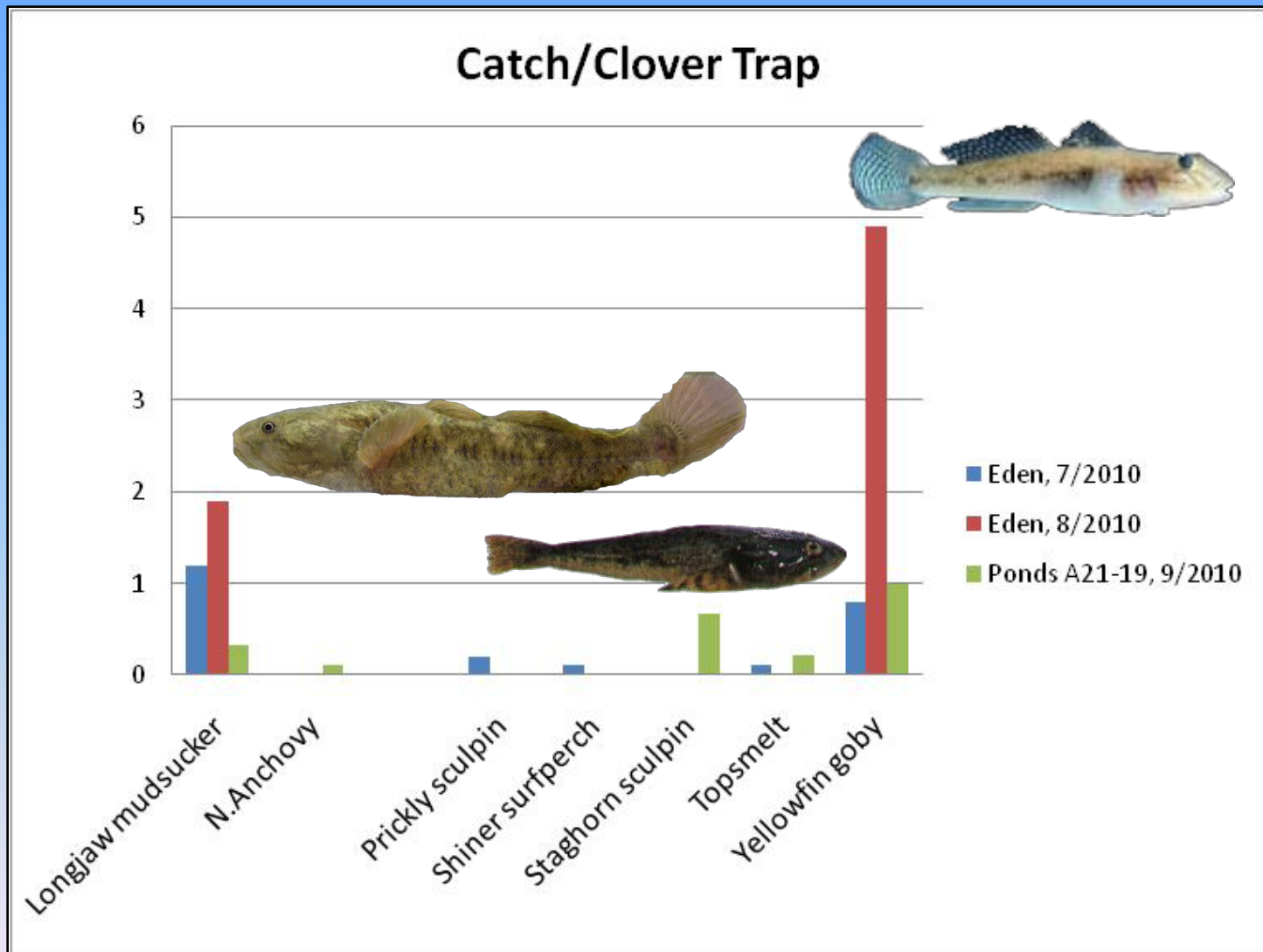


# Minnow Trapping-Intertidal creeklets

Average Catch per Minnow Trap

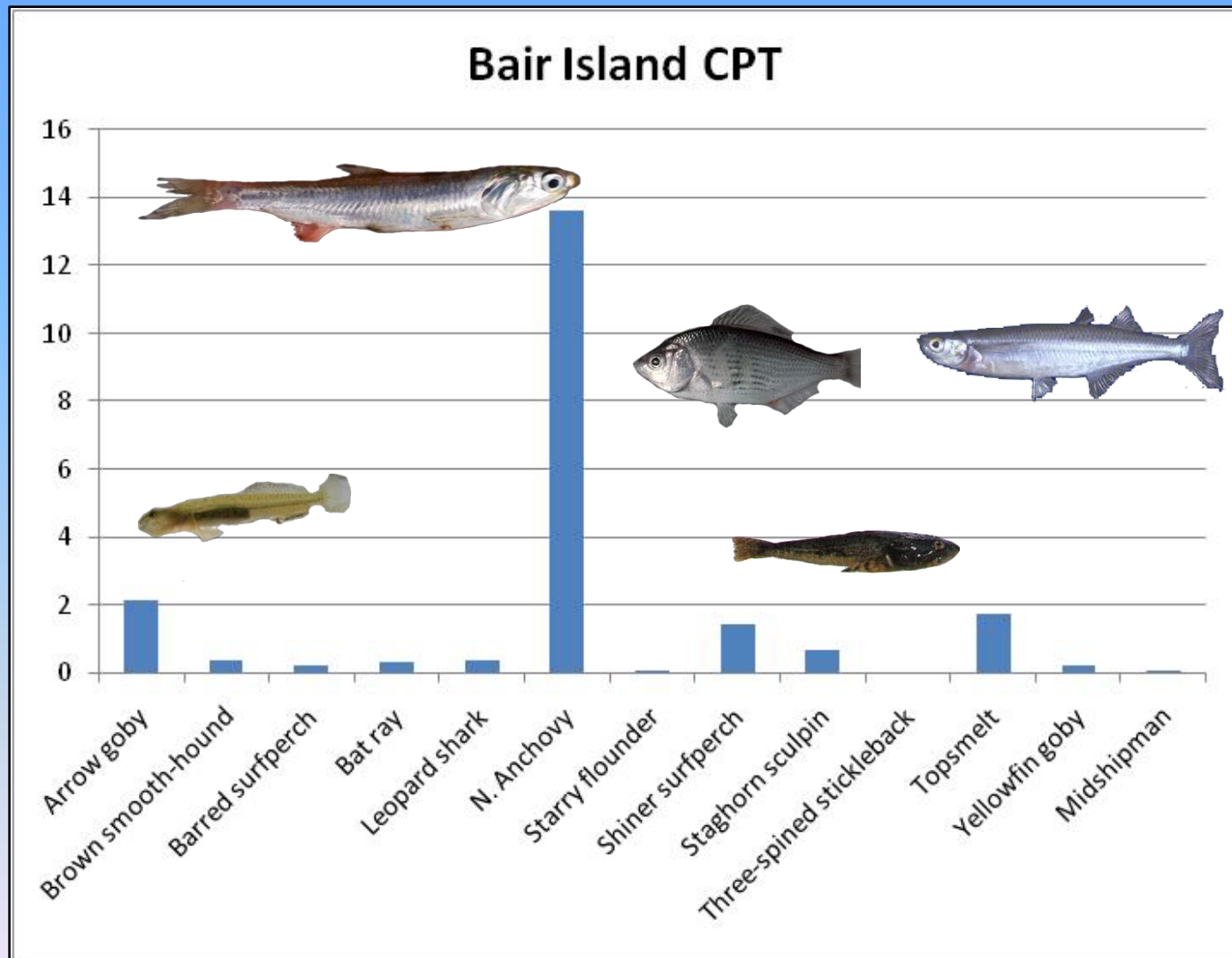


# Clover Trapping in Ponded Habitat

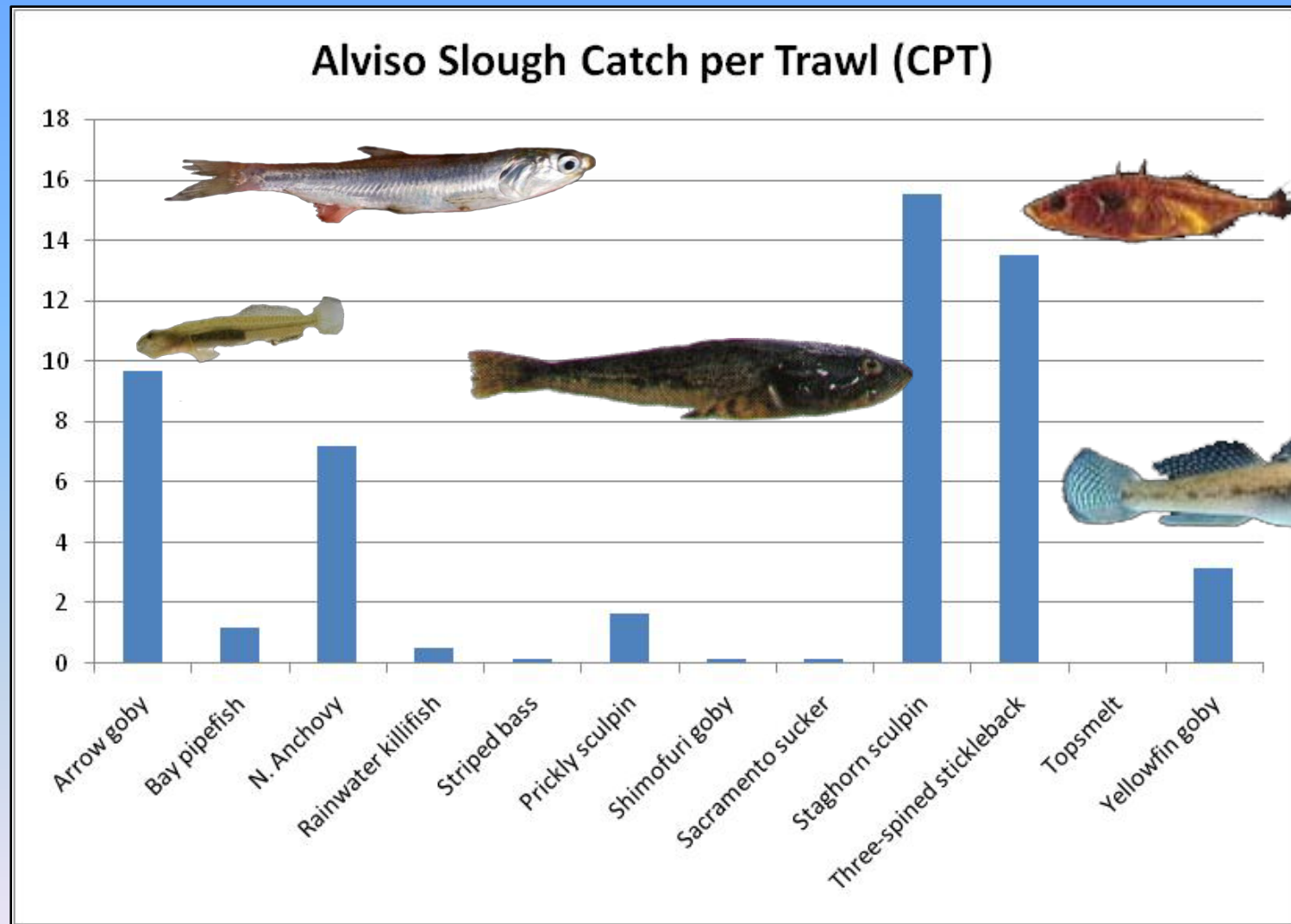




# Otter Trawl Assemblages

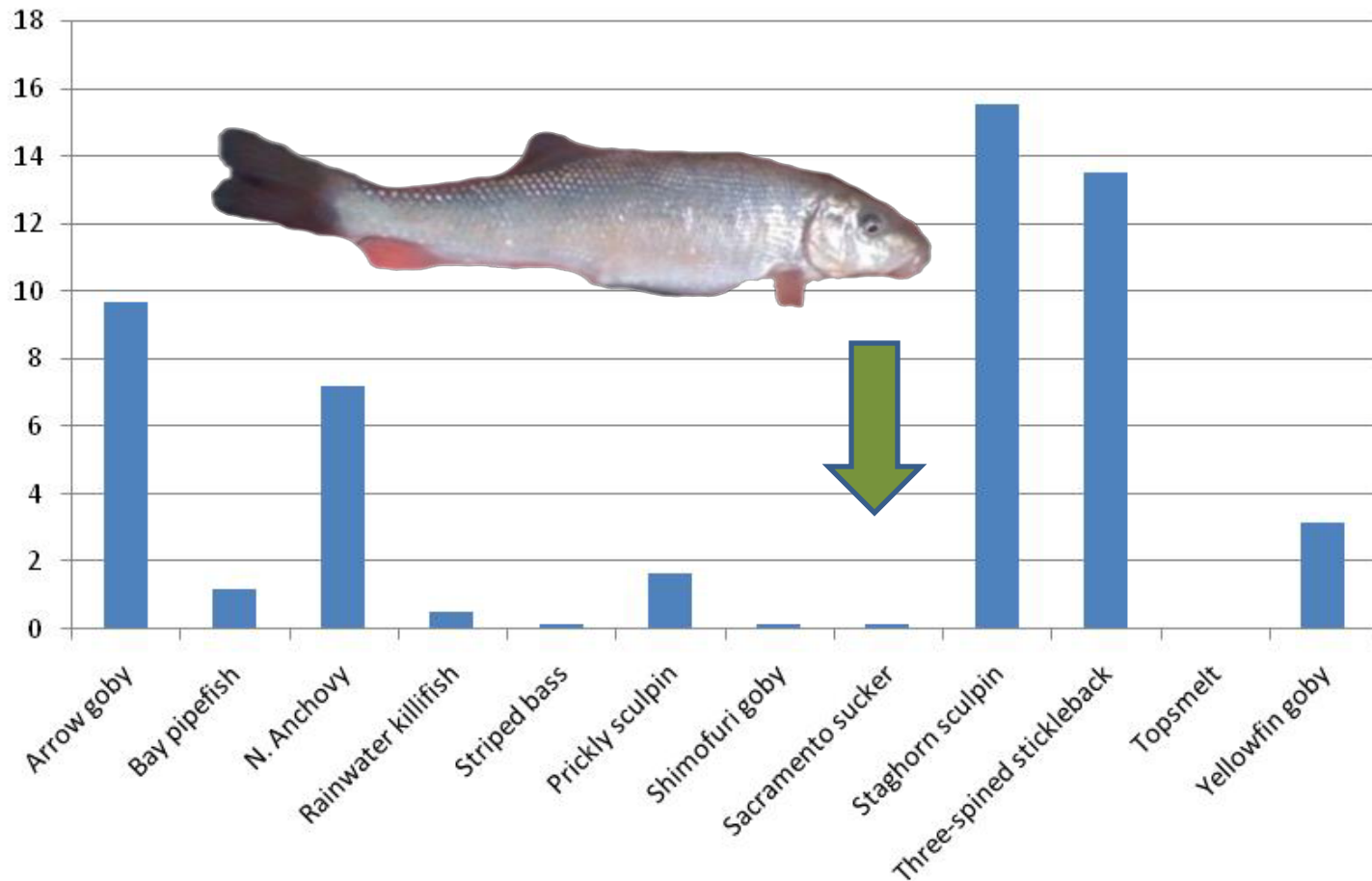


# Otter Trawl Assemblages



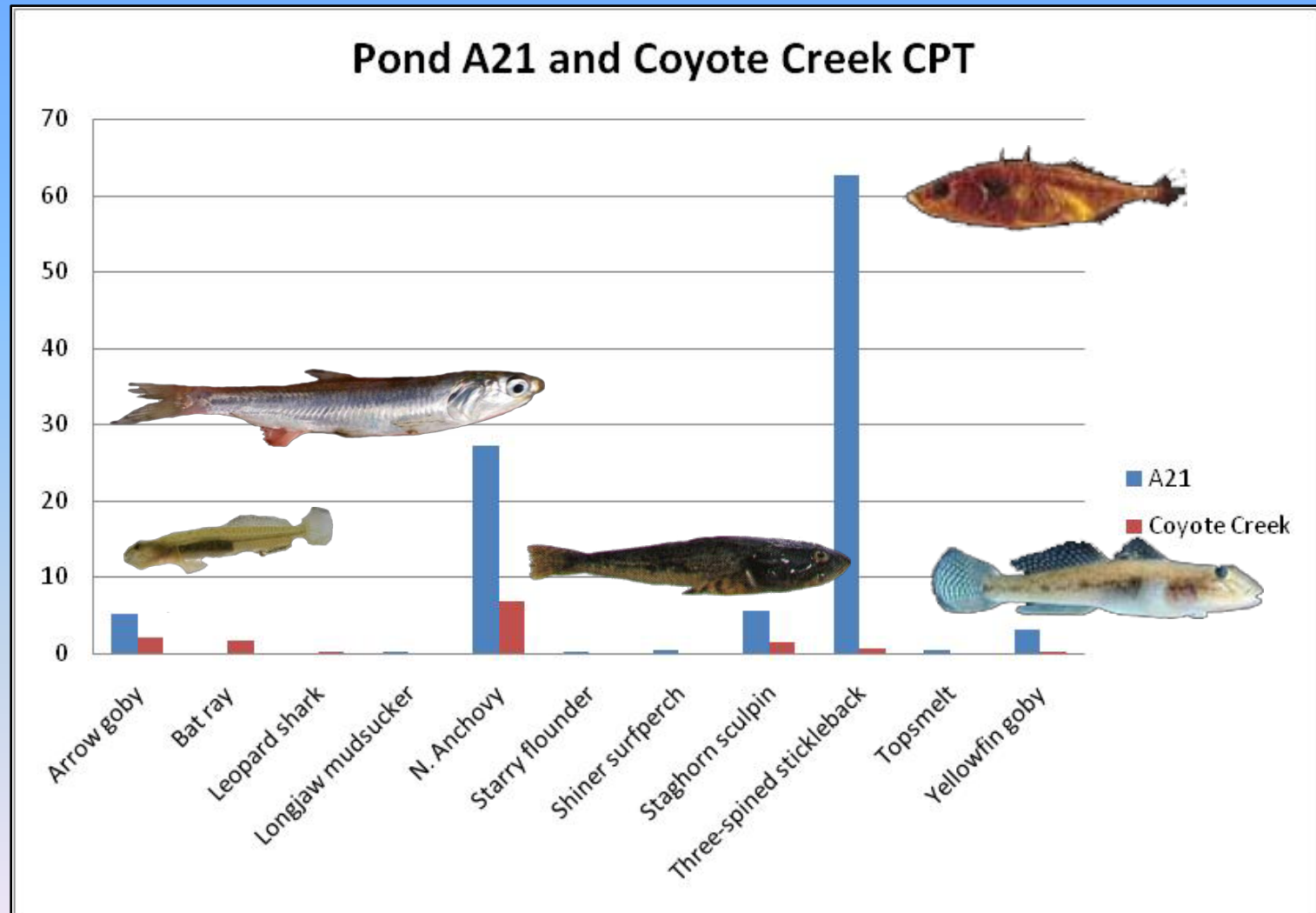
# Otter Trawl Assemblages

Alviso Slough Catch per Trawl (CPT)

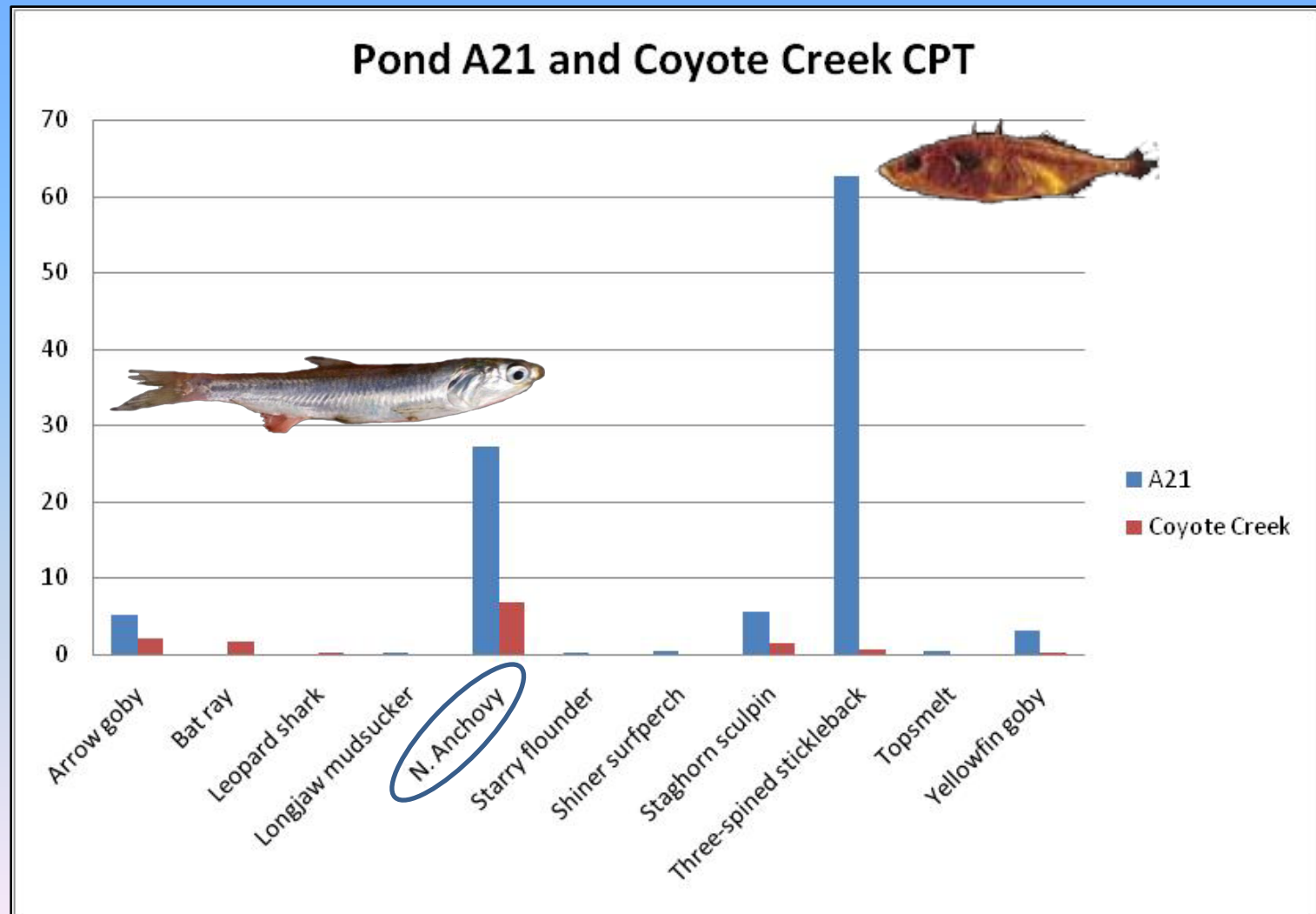




# Otter Trawl Assemblages



# Otter Trawl Assemblages



# Northern Anchovies....

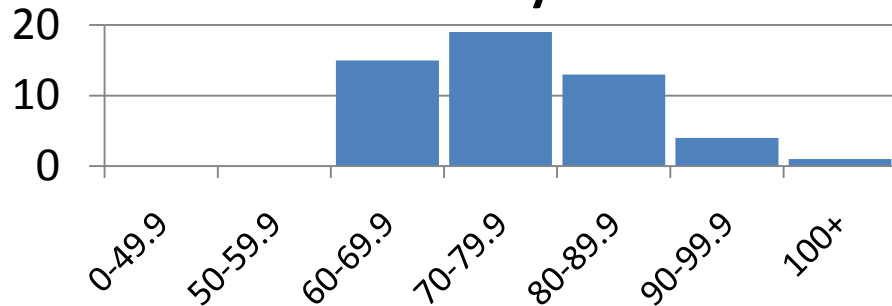


*A. Chandos*

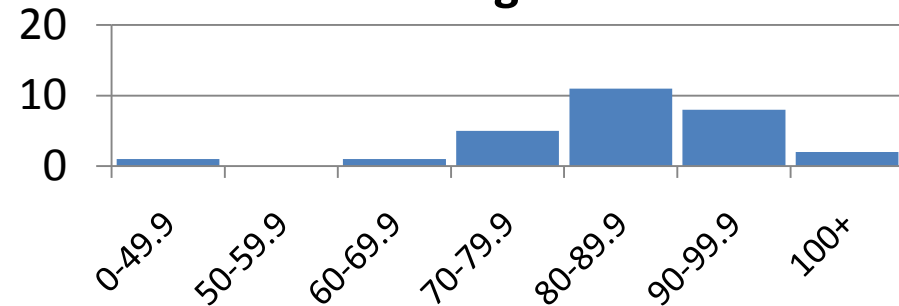


# Northern Anchovy Size Structure

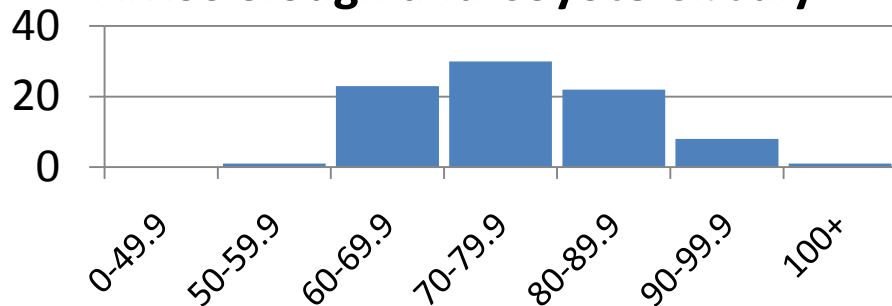
**A21 July**



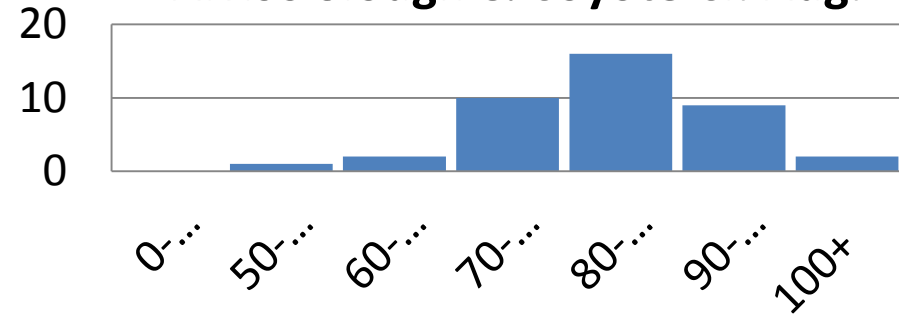
**A21 August**



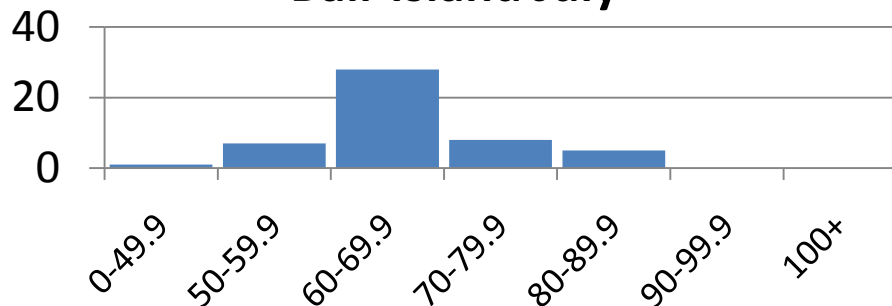
**Alviso Slough and Coyote Cr. July**



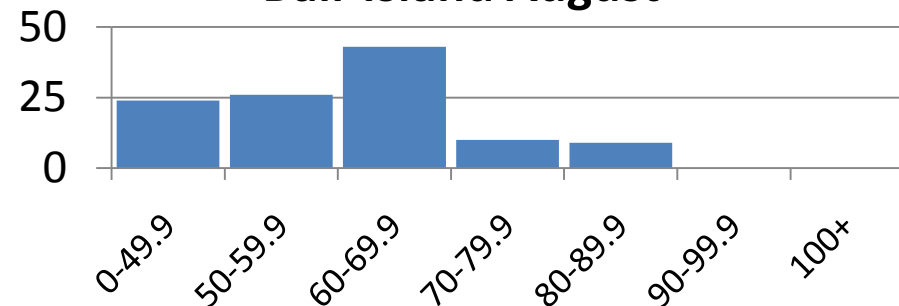
**Alviso Slough & Coyote Cr. Aug.**



**Bair Island July**



**Bair Island August**



# Predator exploitation of restored ponds...

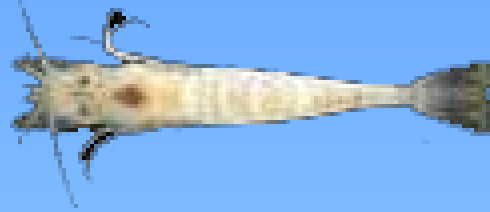


Location	Catch Rate
Bair Island Tidal Flat	1.6 Fish/Hour
Bair Island Tidal Flat	0.2 Fish/Hour
A21 Mouth	2 Fish/Hour
A21 Mouth	4 Fish/Hour
A21 Mouth	0.3 Fish/Hour



# Common Invertebrate Bycatch

- *Crangon sp.* (Bay shrimp)
- *Hemigrapsus oregonensis*
- *Geukensia demissa* (Ribbed mussel)
- *Palaemon macrodactylus* (Oriental shrimp)
- *Musculista senhousia* (Asian mussel)
- *Mya arenaria* (Soft shell clam)
- *Corbula amurensis* (Overbite clam)
- *Philine auriformis* (Sea slug)
- *Cancer magister* (Dungeness crab)
- *Cerithidia sp.* & *Battilaria sp.*
- Decorator crab (ID pending)





# Conclusions



- Otter Trawling appears to be affective
- Several euryhaline species from the northern estuary are present
  - Maybe more?
- Restored ponds have higher diversity and abundances of fish
- Anchovies appear to be larger in brackish sloughs
- Future projects...

# Acknowledgements

## Funded by:

- Resource Legacy Fund
- NOAA
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- DFG
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