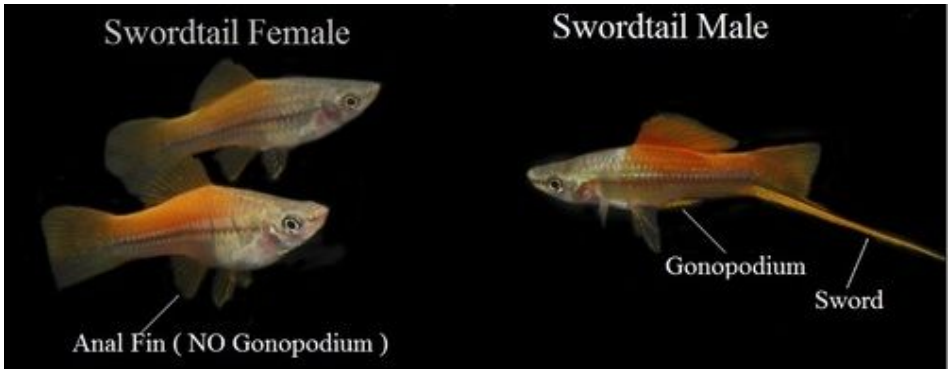
Paternal Investment in Northern Pipefish

Background

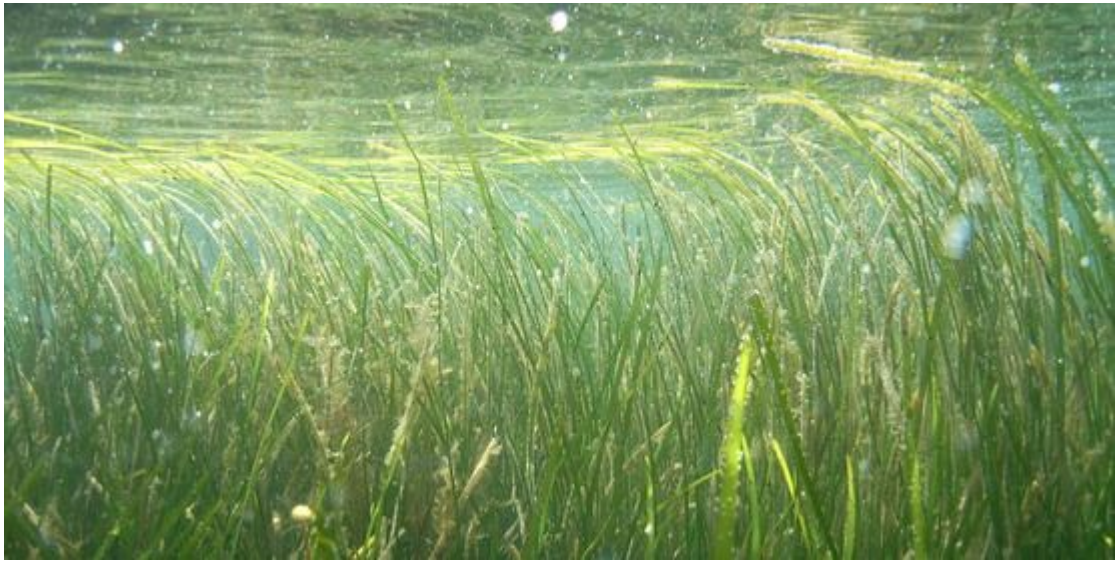
- Big Question in Evolution:
  - How is sexual selection determined?



- Most species have female pregnancy
  - More “expensive” gametes
  - Males compete for females

Background

- Family Syngnathidae
  - Male pregnancy
  - Gametes still more expensive
  - Sometimes females compete for males
- Syngnathidae Fuscus (Northern Pipefish)
  - Male pregnancy
  - Low rates of multiple mating
  - Nutrient poor eggs (Ripley)



Goal #1: Correlation between Female size and egg size/dry weight

- Is there a correlation between these two variables?
  - Could suggest whether or not size is a characteristic of sexual selection
  - Females are significantly bigger than males
  - We hypothesize that larger females have larger eggs

Experimental Design #1

- Collect pipefish at Shinnecock Bay, NY, USA (40°51'22.37"N, 72°30'3.063"W)
- Using a subset of the female pipefish collected (n=10) measure all pipefish SL
  - SL= nose to beginning of tail
- Take eggs (n=5) from each female
  - Measure diameter
  - Dry and weigh
  - Take average weight

Goal #2: Quantifying Male Investment in Offspring

- Do males invest energy in offspring besides sperm?
  - Most species male investment is in the form of providing food to female, protecting young
  - Due to male pregnancy could male also be directly providing nutrients to eggs?

Experimental Design #2

- Collect pipefish, ideally 30+
- Bring pipefish to lab and breed
    - After breeding each pair hold them separately in divided tanks
- When fry are hatched collect a sample from each breeding pair to dry and weigh
- Breed pair again
- Collect newly fertilized eggs, dry and weigh
- Compare egg weight to fry weight

So far...

- Lots of reading!
- Set up tanks
  - Connecting, checking water quality, salinity levels
  - Have to gather parts
- Collecting Wednesday (hopefully)