What a waste! Novel insights into marine fish fecal production, composition, and sinking rate

PRESENTER:
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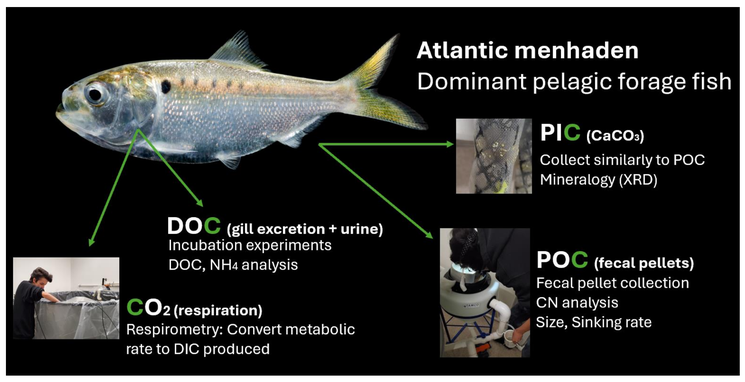
BACKGROUND

Fish contribute to carbon export, but **uncertainty is large**, and **no empirical carbon production rates exist** for any marine fish. Empirical rates will constrain our current estimate and inform regional and global ocean carbon budgets, which **do not consider fish.**

METHODS



RESULTS

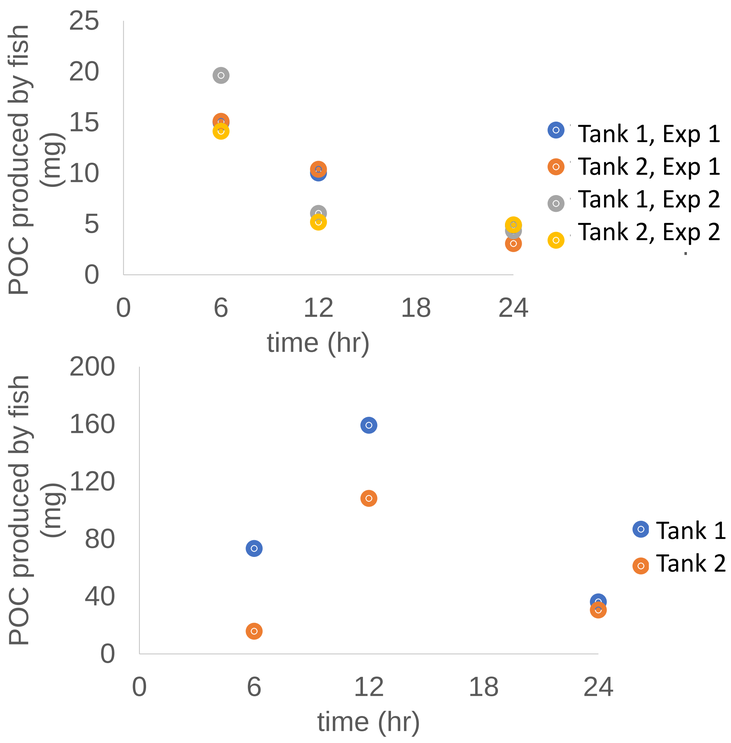


Fig. 1 (top) POC produced by fish on a copepod-only diet. **Fig. 2 (bottom)** POC produced by fish on a commercial diet. Between diets, both carbon amount and peak production times vary, indicating diet affects assimilation time and amount egested.

CONCLUSIONS

Diet may influence fish carbon production rate and fecal pellet characteristics, which both have implications for carbon export.

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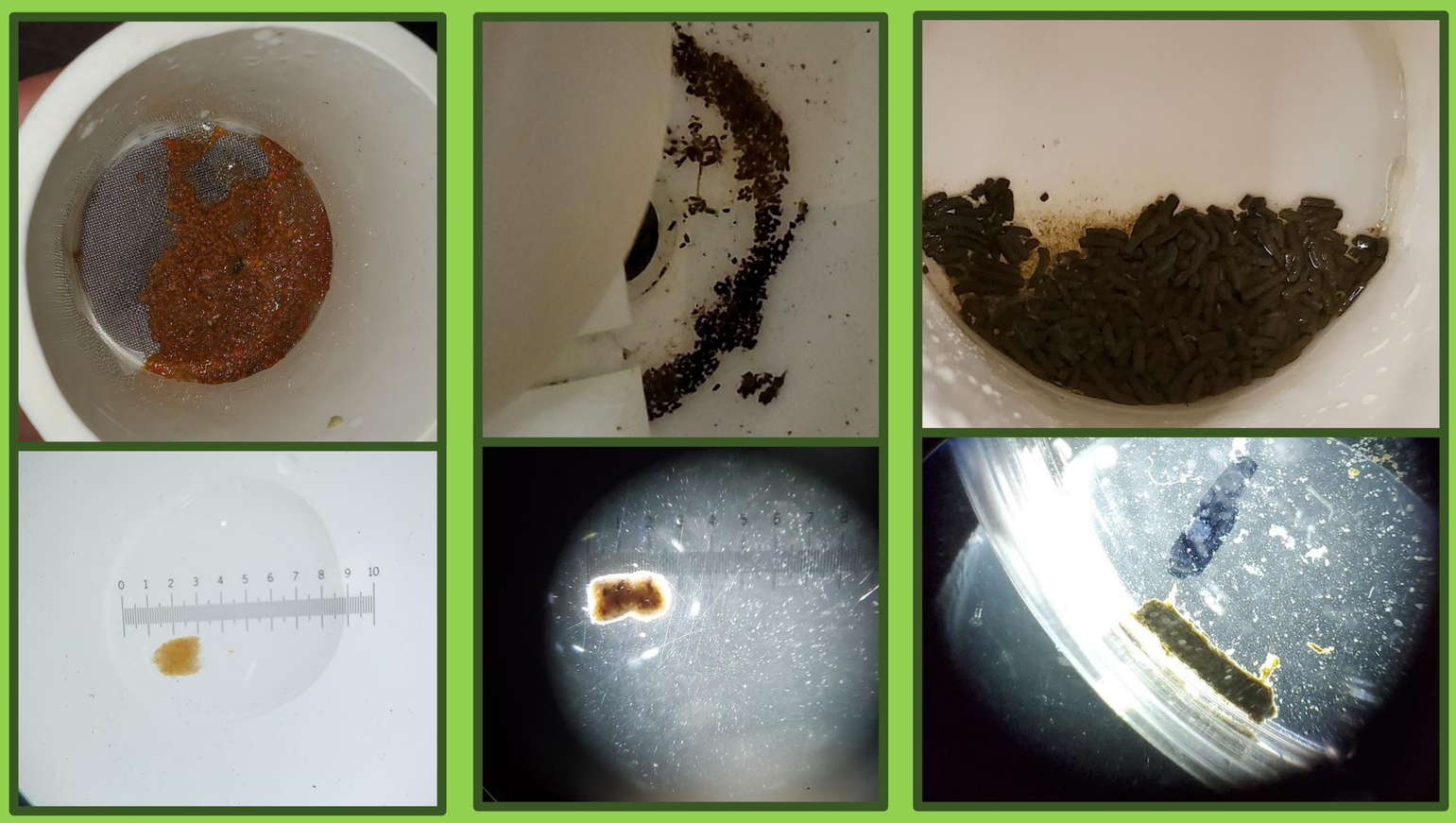
Fish fecal pellets can sink **100s to 1000s** of m d^{-1}, but both sinking rate and carbon content depend on **diet**.



Copepod diet FPs | Commercial diet FPs | Wild diet FPs

	Copepod diet	Commercial diet	Wild diet
Sinking rate (m d^{-1})	517 (±194)	2042 (±427)	7893 (±1917)
Normalized sinking rate (m d^{-1} mm^{-3})	196 (±136)	852 (±290)	435 (±153)
C content (µg C/mg pellet)	15.7 (±3.4)	13.4 (±n/a)	24.7 (±3.7)

What about your other experiments?

- Menhaden don't seem to produce a significant amount of DOC (**Fig. 3**) – **but there are caveats!** Ask me about this!
- **Bony fish produce new PIC** to osmoregulate (**Fig. 4).** PIC may ballast FPs? I would like to model this!
- **Metabolic rate** challenging – but not impossible! – to collect. Ask to me about methodology!

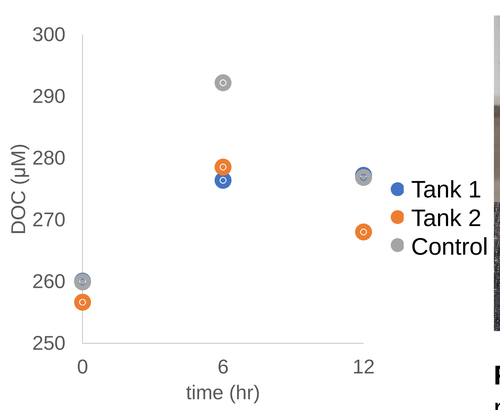


Fig. 3. DOC produced by feeding Atlantic menhaden over 12 hours.

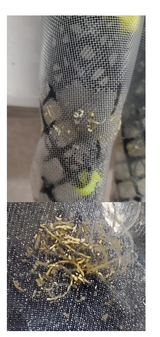


Fig. 4. PIC produced by Atlantic menhaden.

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Special thanks to Arizona State University School of Ocean Futures for funding my travel to attend the Ocean Science Symposium.