Seasonal changes influence nutritional state of the jellyfish (Clytia gregaria) off the northwest coast

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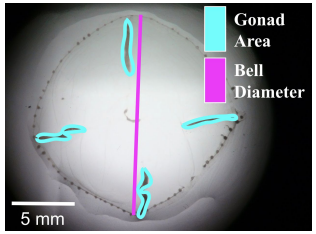
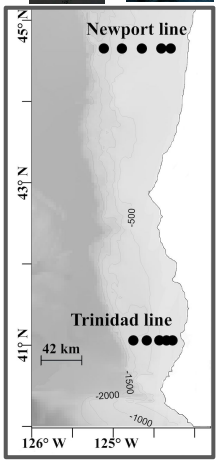
Background

- Jellyfish are ubiquitous predators of pelagic communities, who prey on and compete with other commercially important marine organisms
- Seasonal changes in wind patterns that bring nutrients rich water to surface which increase primary productivity during spring/summer
- Starved jellyfish tend to decrease somatic growth and allocate more resources to gonad development [1]
- Allows us to infer the nutritional state of the medusae through morphological analysis

Methods

- Jellyfish and plankton were collected along the North California Current System
- ImageJ used to analyze photos of preserved specimens

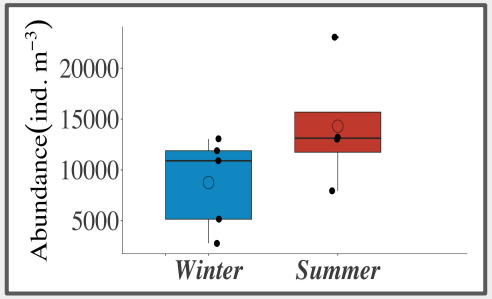




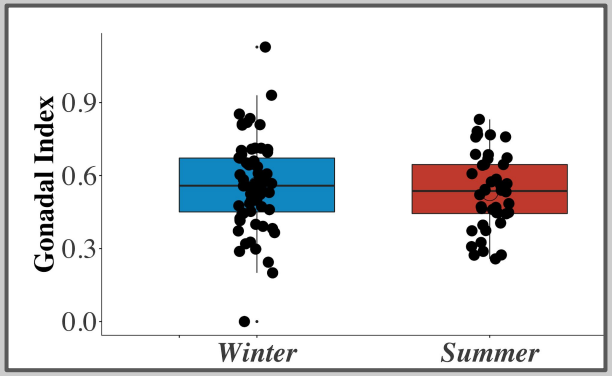
We hypothesize that when food is scarce, *C. gregaria* will have larger gonads relative to their body size.

Results

Higher abundance of plankton prey items during summer compared to winter



Higher gonad area to bell area ratio in the winter *c. gregaria* than those from summer



Conclusions

- Low prey abundances during winter might imply that hydromedusan jellyfish are not fed well during winter season [4]
- A poor nutritional state can be visualized by the use of gonadal index: starved individuals have larger gonads with respect to bell diameter [3]

Future Research

- preservation method causes a loss in biomass of preserved specimens, making it difficult to relate morphology to live organisms
- a correction factor to convert between the measurements of live and preserved organisms [2]

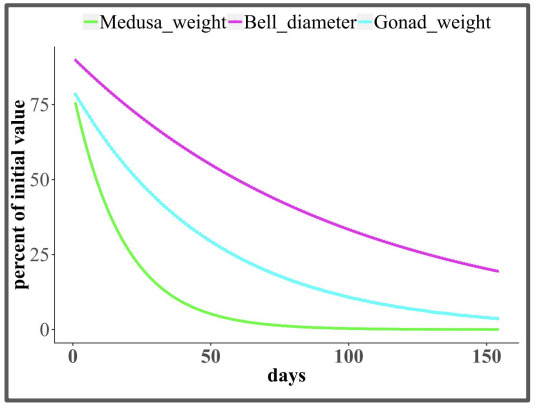


Fig. 1: Predicted trend in loss of weight, diameter, and gonad over time from live organism to preserved

Sources

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3. Lucas, C H. n.d. "Population Dynamics OlAurelia Aurita (Scyphozoa) from an Isolated Brackish Lake, with Particular Reference to Sexual Reproduction," 21.
4. Lucas, Cathy H. 2001. "Reproduction and Life History Strategies of the Common Jellyfish, Aurelia Aurita, in Relation to Its Ambient Environment." In *Jellyfish Blooms: Ecological and Societal Importance*, edited by J. E. Purcell, W. M. Graham, and H. J. Dumont, 229–46. Dordrecht: Springer Netherlands. https://doi.org/10.1007/978-94-010-0722-1_19.