Introduction

- The Gulf of Alaska Integrated Ecosystem Research Project is an ecosystem study examining physical and biological mechanisms determining survival of 5 focal juvenile groundfish in the Gulf of Alaska (GOA).
- This study focuses on juvenile rockfish, which comprise ecologically and commercially important groundfish species in the GOA.
- Relative lack of information on juvenile growth, consumption, and energy allocation parameters.
- These data are required inputs in ecosystem modelling.

Objectives/Methods

- Estimate maximum consumption rates (C_max) of juvenile (ages 0+ and 1+) rockfish across temperature treatments (4°C, 8°C, 12°C) in separate studies in the laboratory.
- Estimate and compare growth of both age-classes at unlimited (C_max), medium, and low rations.
- Compare energy allocation strategies between age-classes as a function of temperature/ration using physiological growth indices (RNA/DNA ratios, total-body lipid and protein).
- Fish in both studies cultured on identical diet for periods ranging from 21-36 days in 50 L tanks.

Conclusions

- Linear growth response to temperature; slowing of growth rates as fish age.
- Temperature influences growth; energy allocation strategy is age-dependent.
- C_max is temperature dependent.
- Higher growth potential for age 0+ fish at warmer temperatures; higher growth potential for age 1+ fish at colder temperatures.
- Higher lipid content (higher condition) suggests warmer temps better for age 0+; colder temperatures optimum for older fish.

Different energy allocation strategies reflect adaptations to differing habitats occupied by each age-class.

Acknowledgements: Funding provided by North Pacific Research Board. We thank NOAA Ted Stevens Marine Research Institute, Roger Vallion, Andrew Eller, Bonita Nelson, Robert Bradshaw, Lawrence Schaufler, Fletcher Sewall, Taylor Jarvis, Eric Pihl, Eamon Conheady.