# How do ecological factors shape intraspecific biodiversity in Arctic fishes

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## Parallel evolution ECO – EVO



#### Similar phenotypes found in similar surroundings

## **Northern freshwater fishes**



## Parallel evolution ECO – EVO



#### Similar phenotypes found in similar surroundings

### Natural selection - Eco - Evo







Beck – PhD study

## ECO – DEVO - EVO





Monica Garduno-Paz

3-spined sticklebacks – benthic and limnetic specialists

•Show plastic response to diet

•Used this to broaden phenotype of head morphology in a single population in captivity



# Females with a benthic-like morphology choose males with benthic like morphology



## Discussion

- Phenotypic diversity is the raw material for evolution
- Clear that ecological factors can shape phenotypic diversity within populations
  - Natural selection, plasticity and parental effects can influence this
- Diversity within species is seen within and among populations.
  - There are on average about 220 populations per species (Hughes et al. 1997)
- Population extinction taking place extremely fast
  - Loosing phenotypic and genetic diversity
  - Loosing ability of species to response to changes
- Intraspecific phenotypic diversity can influence ecosystem and communities