Quick review of NWFSC responses to other issues

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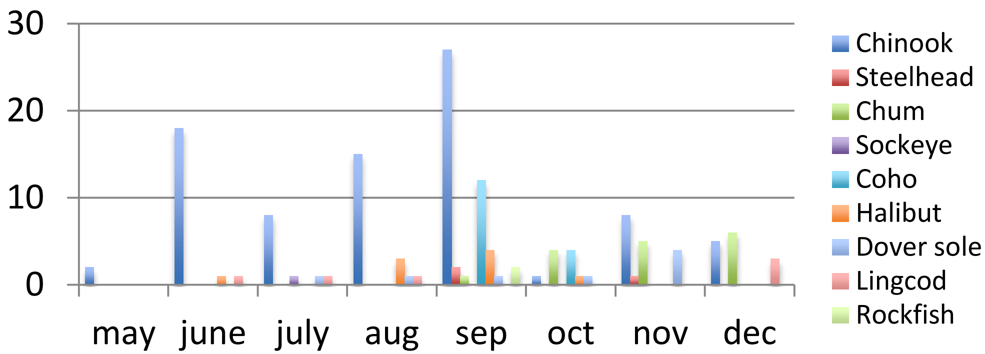
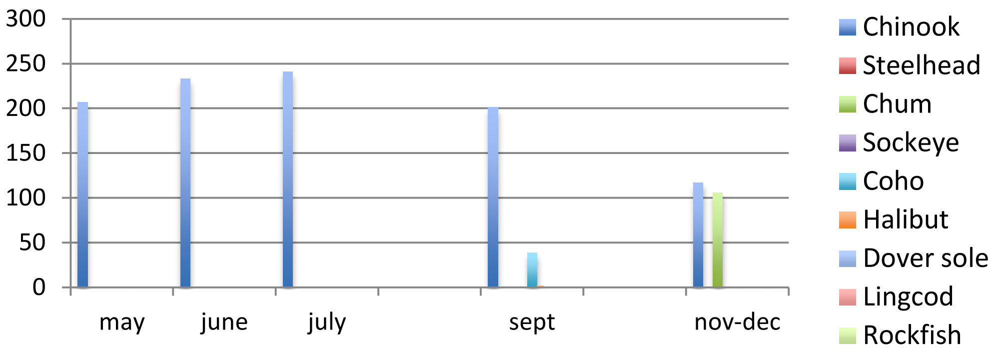
Comparison of diets determined from fecal samples and prey remains (scales and tissue).

- Prey remains discrete = composition sums to 1.
- Fecal samples analyzed several ways:
  - Species occurrence (does not sum to 1 because a sample can have more than 1 species in it)
  - Estimate DNA content per species (sums to 1)
    - Cloning and sequencing PCR products (16s rDNA)
    - 454 tagged sequencing

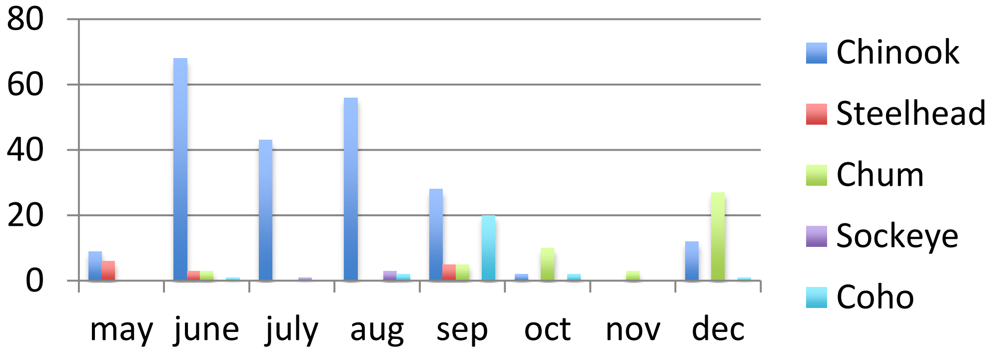
Comparison of diets determined from fecal samples and prey remains (scales and tissue).



Fecal samples – species occurrence



Fecal samples – DNA quantity (cloning method)



Tissue/scale samples

What is known about K and L pods (diet) during the winter?

- Not much
- 2 samples from L pod in March (both Columbia River Chinook)
- 18 samples from K pod in December (Puget Sound; Chinook, chum, lingcod)

Please clarify how diet composition (% occurrence) was then translated into predator demand on various prey types that accounts for body size and energy density differences among prey.

- Only prey remains samples (scales/tissue) were used for diet composition estimate
  - Fecal analysis used as support
- Demand was assumed to be proportional to diet composition. EG – 90% Chinook diet = 90% of energy from Chinook.
  - Within Chinook component of diet, average size at age for different stocks taken into account
- Assumes equal size of prey; will slightly underestimate Chinook energy contribution to spring/summer/fall diet.

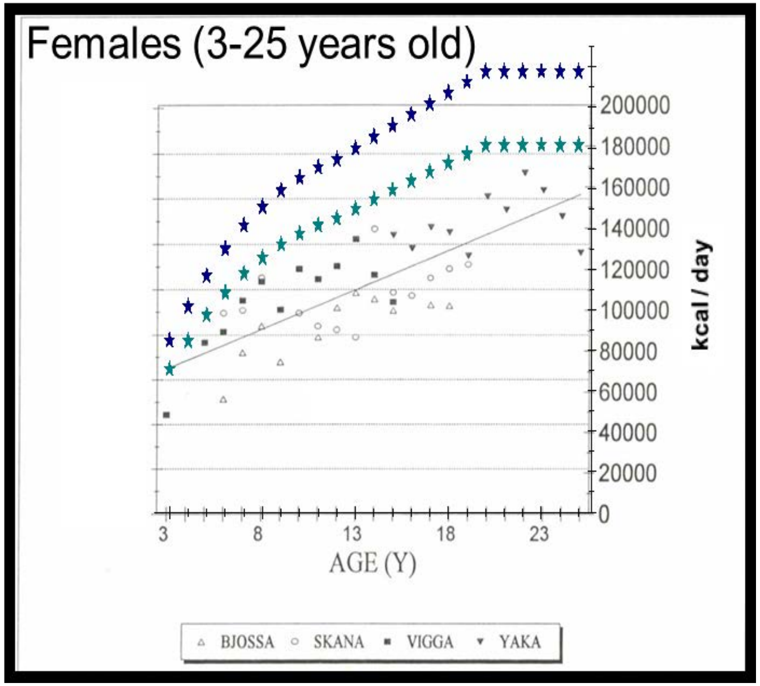
Can feeding records from Aquariums be analyzed to assess whether the energy needs of killer whales change seasonally?

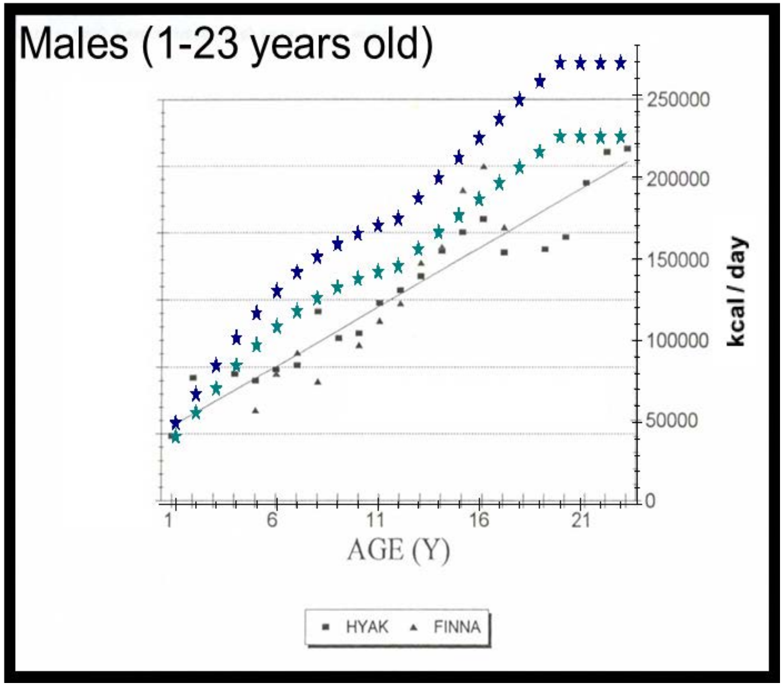
- See response paper by Dawn Noren
- Conceptually yes, if data are made available. But may not be very useful:
  - Captive conditions very different from the wild
    - Water temperature
    - Activity levels
    - Method of food acquisition

Include information on pregnant and lactating females in energetic requirement calculations.

- Pregnancy: available data suggests little increase in energy demand
- Lactation: available data (dolphins, killer whales) suggests large (~50%) increase in demand, for several months following birth. Duration to apply this increase not clear for wild population.

Compare modeled bioenergetics requirements to actual captive feeding rates





- Only direct comparison is with Kreite (1995)
- Captive energy consumption somewhat lower than estimated for wild. But…
  - Captive animals less active
  - Results are very sensitive to assumptions of size at age, and recent measurements (Fearnbach et al. 2011) indicate the sizes used by Noren (2011) were quite close to actual sizes.

Other topics

- Legacy effects of captures
- Errors in variables
- Selectivity