Abundance, biomass and production of *Oithona similis* in the Gulf of Alaska.

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**Introduction**

*Oithona similis* is the most abundant copepod in the Gulf of Alaska, and is a dominant in many ecosystems from the poles to the sub-tropics (Nielson et al. 2002). Although abundant, *O. similis* is one of the smallest copepod species, but remains important due to its year round presence and continual reproduction. Estimation of secondary production in copepods has focused mainly on the female of the species as it is often the largest, longest lived and easiest to stage (Hopcroft and Roff, 1996, 1998). Thus, female egg production in *O. similis* can be the largest component of copepod production, and is therefore a parameter routinely monitored in ecosystem studies. The number of eggs produced per female can be seen as a direct affect of the environment and has often been related to resources such as temperature and resource quality and concentration.

**Results**

The average population abundance and biomass were 2049 individuals m\(^{-3}\) and 4.16 mg m\(^{-3}\), respectively, across all months and stations. The peak of population abundance (Figure 1A) of *O. similis* for the Seward line was in July with 7800 *O. similis* m\(^{-3}\), and with a biomass (Figure 1B) of 17.7mg m\(^{-3}\) at GAK4. The peak at GAK4 was April with a population abundance of 6650 individuals m\(^{-3}\) and a biomass of 11.4mg m\(^{-3}\). GAK1 and PW2 had consistently low population abundance and population biomass throughout the year, followed by GAK13.

Clutch sizes (Figure 1C) and average female length were consistently highest in May and consistently low in March. GAK9 had the highest clutch size in May with 26 eggs per clutch. Egg Clutches ranged from 12 to 26 eggs per clutch with an average of 17 eggs per clutch.

Specific Egg Production was relatively consistent across all five stations with a mean of 2.52% daily (Figure 1D), though is highest at PW2 in August with 11.16%, with GAKs 4 and 9 having their highest in July with 6% and 7% respectively. GAK13 measured a low SEP in all months except April. There is little evidence of a seasonal pattern.

**Discussion**

Data suggests slightly higher biomass and abundance at GAK4 and GAK9 which could be attributed to the characteristics of the shelf habitats. GAK4 is located on an inner shelf with a semi-permanent eddy, and GAK9 is located on the shelf break where front often occur. The higher abundances could be due to a concentration of prey and *O. similis* on the shelf.

With the exception of August, GAK13 has the lowest biomass, which could be attributed to an oligotrophic oceanic habitat.

Specific egg production is affected by in-situ temperature and hatching rate. Nielson et al. (2002) note that temperature is the main factor in determining hatching rate. Specific egg production has a similar pattern to biomass.

In May clutch sizes were highest, consistent with that observed for all five stations. March’s lowest clutch sizes could be due to the lower temperatures and lower food concentrations in the water. The clutch sizes increased from March to May, where a maximum was reached. The temperatures also increase as do the prey concentrations through this time period. From July the clutches begin to reduce in size.

**Conclusion**

Based on the current findings, there does not appear to be any pronounced seasonal or site differences. In future when the data is correlated to environmental and biological data, a pattern may be revealed. Data for 2002 is still to come and in the future will include comparisons to other species.

**Literature cited**