



## Prey-specific encounter rates and handling efficiencies as causes of prey selectivity in ambush-feeding hydromedusae

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**ABSTRACT:** We examined the foraging process in the jellyfish *Sarsia tubulosa* feeding on three types of prey: cirripede nauplii, cypris larvae, and *Acartia tonsa* copepodites. Clearance rate was used as measure of prey selectivity. To estimate maximal clearance rate ( $F_{max}$ ), we used a predictive encounter model with input parameters quantified from video observations. Both encounter rate and handling efficiency were important in determining  $F_{max}$ . Encounter volume rate was three times higher for cirripede nauplii than for copepodites, but sequential handling was 10 times more efficient for copepodites than for cirripede larvae. Two critical steps in the postcapture feeding process [capture of encountered prey with the tentacle, and mouth attachment to the captured prey] created a clear selectivity for copepods over barnacle larvae. Predicted values were close to laboratory measurements of  $F_{max}$ , and for cirripede nauplii also to field-estimated  $F_{max}$ . We suggest that species-specific handling efficiency is the main factor creating trophic niche separation in the large functional group of ambush-feeding hydromedusae.

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