

Courtship behavior as a war of attrition in a simultaneous hermaphrodite

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Abstract

In outcrossing hermaphrodites with unilateral mating, where for each mating interaction one individual assumes the female role and the other the male role, each individual must take a sexual role opposite to that of its partner. In the polychaete worm *Ophryotrocha diadema*, the decision on sexual role is likely at stake during the day-long courtship. Here we describe, for the first time, courtship and pseudocopulation in this species, quantify their pre-copulatory behavior, and search for behavioral traits predicting the prospective sexual role (i.e., behavioral sexual dimorphism), by analyzing the courtship behavior of pairs of worms during the day preceding a mating event. We did not find any behavioral cue predicting the sexual role worms were to play; partners' pre-copulatory behaviors were qualitatively and quantitatively symmetrical. We interpret this as the

outcome of a war of attrition where partners share the preference for the same sexual role, and both hide their ‘willingness’ to play the less preferred one, until one individual reaches its cost threshold and accepts the less preferred sexual role.

Keywords

Behavioral sexual dimorphism; communication; mating; sexual conflict; sexual roles

Supplementary material

Legend to the movie.

The clip shows the pseudocopulation between two *Ophryotrocha diadema* worms. Both partners have mature eggs visible in the coelom, which have a yellowish color in the female-role worm, and a whitish color in the male-role worm. A third worm is visible on the right of the screen; it does not take part in the mating interaction. The red circle at the beginning of the sequence highlights the Head–Tail contact between the partners. See text for details.