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Orientation: Ocean Observation and Global Change

Specialization Area: Ocean observation

Research Line: Biological Oceanography

PhD project: Causas del polimorfismo de color en poblaciones naturales de *Littorina fabalis*

Supervisors: Emilio Rolán-Alvarez y Juan Galindo

Summary: *Littorina fabalis* is a marine gastropod with striking colour polymorphism across all its distribution. In a particular population in the north-west of Spain colour polymorphisms have kept stable over more than 20 years, i.e. the frequencies of the different morphs vary on a regular basis with small deviations from the average. In the population of *L. fabalis* of Abelleira, in the North of Spain, there is evidence for negative assortative mating which often relates with sexual negative frequency dependent selection (SNFDS). Hence, we studied sexual selection in this species using data on mating pairs across the last seven years in the Abelleira population. To detect whether such mechanism is spread worldwide, we also analysed data collected in 2015 in two populations of the White Sea. We found evidence of SNFDS for colour in females but not in males in both Abelleira and the populations of the White Sea. We discarded genetic drift to explain maintenance in colour since, while significant genetic differentiation between populations was found using neutral markers, no such was found for colour. The fact that we found both negative assortative mating and sexual NFDS in so distant populations as the White Sea and the north-west of Spain suggest that colour is maintained by these mechanisms worldwide. Our findings cast light on a old controversial topic in evolution: why is there so much diversity when directional selection and drift are such strong forces? And show one of the few existing cases of negative mate choice in the wild.

