



GÖTEBORGS UNIVERSITET

MATE CHOICE AND ITS EVOLUTIONARY  
CONSEQUENCES IN INTERTIDAL SNAILS  
(*LITTORINA* SPP.)

Sara Hintz Saltin

Institutionen för biologi och miljövetenskap  
Naturvetenskapliga fakulteten

Akademisk avhandling för filosofie doktorsexamen i Marin ekologi, som med tillstånd från Naturvetenskapliga fakulteten kommer att offentligt försvaras fredagen den 26 april kl. 9.00 i Hörsalen, Lovéncentret –Tjärnö, Strömstad, Institutionen för biologi och miljövetenskap, Hättebacksvägen 7, 452 96 Strömstad.

ISBN: 91-89677-56-0

## ABSTRACT

The ability to recognise potential mates and choose the best possible partner for reproduction is of fundamental importance for most animal species. This thesis presents studies of mate choice in marine snails of the genus *Littorina*, where male precopulatory mate choice seems to be more predominant than female precopulatory choice. Male mate choice starts already when the male choose (or not) to follow another individual's mucus trail, which is deposited during locomotion. Trail-following is a central part of this thesis and gastropod trail-following in general has been thoroughly reviewed in one of the chapters. Both trail-following and copulations have been studied in several experiments to depict male mate choice and the consequences of mate choice on reproductive barriers between ecotypes (of *L. fabalis*) and sister-species (*L. fabalis* and *L. obtusata*).

Mate choice does not always stop with a completed copulation. In species where females mate with multiple males there is a chance for cryptic mechanisms to act after copulation through cryptic female mate choice and/or sperm competition. In one of the chapters paternity distribution among offspring of females of *L. saxatilis* was studied, using genetic tools, and laboratory-raised families with known parents. Paternity was not randomly distributed among the fathers contributing to offspring production, indicating postcopulatory sexual selection either by cryptic female choice and/or sperm competition.

Convenience polyandry has been suggested as an explanation for the apparent lack of female precopulatory mate choice and the extreme promiscuity in *L. saxatilis*. In this species we found that females try to reduce the number of costly matings by removing cues from their mucus trails, to avoid advertising their sex as females of closely related species do. Thus males are forced to search blindly for mates following male- and female mucus trails indiscriminately, consequently reducing male-female encounters and costs of superfluous matings for the female.

This thesis contributes to new insights on mate choice and its effects on reproductive barriers in *Littorina*, and adds to our understanding of the evolution of new species.