



Welcome to the public defence of my doctoral thesis titled:

”Extended phenotypes: ecological and evolutionary implications of interspecific information use”

in auditorium IT116, Linnanmaa Campus on 15th March at 12.00

Reetta Hämäläinen, M.Sc.

Opponent: Associate Professor Rose Thorogood, University of Helsinki

Custos: Research Professor Jukka Forsman, Natural resources institute
Finland (LUKE)

**Sparkling wine will be served after the defence*





Summary: Animals are continuously faced with decisions where they need reliable information about their surroundings (e.g., breeding territory). Because individuals of other species need to make the same decisions, the decisions made by others and the consequences of those decisions can be used as interspecific social information in one's own decision-making.

Extended phenotypes are modifications that organisms induce to their surroundings, and they often are observable outcomes of individuals' decision making, and they can convey information about the surrounding environment and the performance of the decision maker. A good example of an extended phenotype is birds' nests and its eggs. However, little is known about the role of extended phenotypes in interspecific information use, the fitness consequences for the information source and user, and the consequences for coevolution among species.

My main goals are to examine the ecological importance of extended phenotypes i) as cues in interspecific information use, and ii) as mediators of transfer of relational concepts, and iii) the possible fitness effects and eco-evolutionary implications that interspecific social information use can have for both the source and the user of the information. I empirically examined extended phenotypes (bird nests) as a social cue and their ecological consequences for interspecific information use with passerine birds, the pied flycatcher (*Ficedula hypoleuca*) and the great tit (*Parus major*). In addition, I used existing literature and logical deduction to explore different ecological and coevolutionary outcomes of selective interspecific social information use.

My results suggest that: i) instead of the extended phenotype, the size of an interspecific competitor affects the reproductive decisions of another species, and there is a trade-off between the value of social information and the costs of competition. ii) Concept learning can occur through social information use between heterospecifics in nature. iii) Depending on the balance between the benefits of interspecific social information use and the costs of interspecific competition, selective interspecific information use may either lead to trait divergence, convergence, or a coevolutionary arms race between two species and have far-reaching consequences on community structures and coevolution.