

The Research Group Animal Ecology, Centre for Ecological and Evolutionary Studies (CEES), Faculty of Mathematics and Natural Sciences of the University of Groningen, has a vacancy for a full-time PhD position:

PhD position: fitness under competition

This is a PhD position for a person who loves to do intensive fieldwork on birds in a clear theoretical context. The project aims to understand the role of ecological factors in determining the survival cost of parents of raising a family. Although this survival cost is central to life history theory, paradoxically, it has been difficult to demonstrate it in the field. One aspect that has been largely overlooked is that this cost not only depends on individual work load, but also on the competitive environment an individual is living in. The basic idea for this project is that if individuals have to work harder to raise a brood, they lose competitive ability by which they may have reduced survival in highly competitive environments.

Background: This PhD project is part of a large research program on fitness consequences of individual trait variation in the great tit in The Netherlands. In our 16-year population study in a spatially fragmented population of great tits the focus has been on density dependence and quantifying selection pressures on reproductive traits. Using an experimental approach we studied how offspring dispersal and fitness was related to brood size, brood sex ratio and to local sex ratio and density in the fragments.

This project: takes up the challenge to quantify how ecological settings interact with the cost of reproduction and addresses the question: *“Is parental competitive ability affected by reproductive rate?”* We learned that the social environment did affect both offspring and parental fitness. An intriguing result was that the cost of reproduction was affected by the social environment, with parents raising experimentally enlarged broods showing higher mortality in more competitive situations. This important effect could be the motor behind selection for reduced reproductive rates under high competition (density dependent reproduction), which may have large repercussions for future fitness. The differential mortality took place in the second half of the winter leading to the hypothesis that raising large families did not have direct survival effects but affected the competitive ability of the parents leading to lower survival later at times of higher competition.

To test this idea we will 1) manipulate the local social environment in terms of competition in our sub-populations and measure how fitness costs and benefits of reproductive rate are affected, 2) quantify resources, their use by the tits, sex specific dispersal and survival of both offspring and parents in relation to the local social environment and the reproductive rate in the field. 3) test the competitive ability of the parents in a semi-lab situation, and, 4) manipulate important resources for the birds (nest boxes) in the second half of the non-breeding season to study if and how competitive ability of parents raising large families are affected. With this approach we will study a new mechanism that may lead to adaptive density dependent reproductive rates, as well as the costs of reproduction more in general.

Research group: The PhD will work in the animal ecology research group which is part of the research institute Center for Ecological and Evolutionary Studies (CEES) of Groningen University, The Netherlands. Prof. Dr. Joost M. Tinbergen, Dr. Christiaan Both and Prof Dr. Ir Jan Komdeur will supervise the work, and in the field Richard Ubels, Joost Tinbergen and a second PhD student will take part in the experimental work in the Lauwersmeer.

Information about the position can be obtained from: Joost Tinbergen (++(31)-50-3632065, j.m.tinbergen@rug.nl), Christiaan Both (++(31)-50-3632235, c.both@rug.nl) or Jan Komdeur (++(31)-50-3632056, j.komdeur@rug.nl),

Candidates must have a degree in biology, with specialisation in ecology, and a driver's license. We are looking for an enthusiast researcher with ample experience in field research on birds (colour ring reading!). Theoretical interest in evolutionary ecological research is a prerequisite and it is an advantage if candidates have proven writing skills (viz. research papers).

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<http://www.rug.nl/biologie/onderzoek/onderzoekgroepen/dieroecologie/index>
<http://www.rug.nl/biologie/onderzoek/onderzoekinstituten/cees/index>

CONDITIONS OF EMPLOYMENT

The University of Groningen offers a PhD-fellowship (ca. €1600 per month) for a period of four years that should be completed with the defense of a PhD-dissertation. After one year, the performance of the candidate will be evaluated to decide whether there is sufficient progress to expect a successful completion of the PhD-thesis within the remaining three years. A training program is part of the PhD-trajectory. You and your supervisors will design a plan for additional education and supervision tailored to your specific needs.

APPLICATION

Applicants should send a 1-page statement of research interests, motivation for this project and academic/professional goals; a complete CV; copies of publications; and names and contact information of two referees who can supply letters of recommendation upon our request.

Please send applications by email before 20 October 2009 to Joost Tinbergen (++(31)-50-3632065, j.m.tinbergen@rug.nl) please mention "Fitness under competition" in the subject.