

MSc subject in evolutionary ecology in birds

Habitat selection and breeding success in passerine birds in relation to fitness and altitude in sub-arctic birch forest

Background and general research issue

Climate variation affects spring arrival times and egg-laying dates of many bird species in northern areas. Similarly, climate is also important for the distribution and seasonal abundance of insect prey. As temperature decreases with altitude, the onset of spring at the tree line is delayed by approximately one week compared to habitat at lower altitude close to the sea shore in northern Norway. This affects habitat selection and competition among migrating birds.

It has been shown, that breeding success in pied flycatchers (*Ficedula hypoleuca*) sometimes decreases with increasing altitude. The reason for this pattern might be coupled to prey availability, environmental or climatic features or the physical condition (fitness) of returning birds during spring (i.e. superior individuals occupy early spring habitat while birds of lower fitness have to breed in habitat of lower value).

Study area

The candidate will work at three altitudinal gradients. One at the island of Reinøya (approx. 70 km from Tromsø), one at Skogsfjord (also about 70 km from Tromsø) and one at Storelva (just outside Tromsø). All transects have each 10 stations for observations and data collection at 30, 100, 170 and 240 meters above sea level, each supplied with two nest boxes for birds. Detailed studies of pied flycatcher phenology (egg-laying date, breeding success) are already running in all three altitudinal gradients. Detailed monitoring of the abundance of geometrid larvae as a potentially food source is also in place. The candidate will therefore have a unique background material to work with in addition to field data collected during the present study.

Main research issue

What determines breeding success of pied flycatchers in altitudinal gradients?

Methods

The candidate will record several variables coupled with body condition of female birds, such as body weight, wing length, age and pectoral muscle size. Additionally, blood samples will be taken and the load of blood parasites counted. Bird phenology such as arrival date, clutch size and breeding success will be recorded. The candidate will also conduct density measurements of available insect prey.

Start and field period

Preferred starting date is April/May 2010. Preference will be given to students willing to complete two field seasons (2010 and 2011). The students will receive field assistant salary during one of the seasons.

Supervisors

The supervising team consists of researchers from the University of Tromsø and the Norwegian Institute for Nature Research (NINA): Rolf A. Ims (UiT professor), Jane U. Jepsen (NINA researcher), Tino Schott (PhD student) and Lauri Kapari (UiT research assistant). For international candidates an additional supervisor can be appointed from the student's home university.