Project acronym: AmpAr-AGE

Project title: AMPHIBIANS IN THE ARCTIC– AGING AND GROWTH ON THE EDGE

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Discipline: Earth Sciences & Environment: Ecosystems & Biodiversity

Station(s): NIBIO Svanhovd (Norway), Kilpisjärvi Biological Station (Finland)

We plan to sample common frog populations at two research stations – Kilpisjarvi (Finland) and Svanhovd (Norway). We will use skeletochronology to estimate age based on bone crosscuts, to obtain data on age and growth related parameters (age at sexual maturity, mean lifespan, longevity, growth and survival rate). We will test two hypotheses: (i) large-scale patterns of variation in size in Common frogs are masked by small-scale trade-offs in age, size and growth at the northern distribution edge; and (ii) populations of Common frogs at the northern distribution edge are responding to climate change. The research project has three main objectives: (i) to compare age, size and growth-parameters in populations from the same latitude, but inhabiting contrasting environments (i.e. hill versus valley populations); (ii) to assess the dynamics of life history parameters over time (i.e. age-parameters, growth and size), and (iii) to identify the main climate-related stressors shaping size, aging and growth in the studied populations.

The data obtained during fieldwork will allow to: (i) conduct a comparative long-term study in Kilpisjarvi by estimating shifts in the studied parameters from the hill and valley populations. The hill population was previously sampled in 2003, 2009 and 2010 (Cogălniceanu et al., under review), while the valley population during 1999-2003 (Patrelle et al. 2012); (ii) compare the Kilpisjarvi populations with populations inhabiting contrasting environments in Svanhovd, located at the same latitude; and (iii) explore large-scale patterns of variation in aging and associated life-history traits. We will use previously published data (Miaud et al. 1999, Sinsch et al. 2015), data collected in the field during the present project and unpublished own data from three other populations in Finland (Kolari, Kevo, Oulanka), one in Hungary and four in Romania from alpine area.

During the TA field work, we managed to collect samples from 55 adults 15 km south of Kilpisjarvi (at Kasivarrentie) and 18 from Kilpisjarvi. In Norway, we collected samples from 15 individuals from around Kirkenes. We mapped the distribution of deposited egg clutches around Svanhovd and Kirkenes (over 220) in an attempt to estimate their distribution and population size for future studies.