ESTIMATING WILDLIFE MORTALITY USING SAMPLING ROUTE COUNTS: FACTORS BEHIND THE OCCURRENCE OF REMAINS

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Mortality is a parameter inherent in assessments of the status of wildlife populations and determination of optimal hunting quotas. It is determined through calculations which are usually based on the comparison of abundance estimates gained at different times. Although this approach is traditional, it has an obvious drawback: wildlife movements may corrupt the mortality estimates. A potential solution is to make more frequent surveys.

Some authors have attempted to estimate the scope of wildlife mortality by counting their remains in sampling routes. The procedure for the estimations has not been elaborated however. The adequacy (effectiveness) of this approach to mortality studies is not unquestionable either, since the number of animal remains one is likely to find along the transects would apparently vary depending on a number of factors.

The paper presents: 1. Technique for gathering material about dead animals while moving along the sampling routes (> 9 000 km) established for other purposes, mainly for bird counts. 2. Preliminary results of the counts of remains (~ 500 specimens) of most varied mammals (from small rodents to large ungulates) and birds (from small passerines to capercaillie) in forest and forest-mire landscapes of Moscow Region, Darwin and Lapland reserves in 1989-2009. 3. Description and estimation of the impact (isolated or combined) of various factors behind the sighting of remains. Two groups of the factors are distinguished: independent of the investigator (animal abundance, weight, duration of stay and activity in the area) and

depending on the investigator's sensorial capacities (size and colour of the remains, type of substratum, sighting distance).

Integrating the materials one can evaluate how applicable this approach is in the study of the scope, seasonality and causes of mortality among animals of different taxonomic groups and with different abundance levels. For some animal species (hedgehog, mole, shrews, possibly squirrel), this approach may be a promising method for express monitoring of long-term and, perhaps, seasonal dynamics of the abundance.

CHANGES AT THE TUNDRA-TAIGA INTERFACE

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One of the first distribution studies to take note of the effects of climatic warming in northern habitats was reported in 1956 from Finland where changes in distribution of both plants and animals in relation to climatic warming were already noticeable in the first half of the twentieth century (Erkamo, 1956). An outstanding finding of this Finnish study was the tendency of many species to migrate east rather than north, illustrating that one of the major effects of climatic warming was the extension of oceanic climates eastwards as warmer winters opened up suitable habitats in previously continental climatic regimes Increasing oceanicity, as measured in the difference between summer and winter temperatures continues to be a feature of climate change (Crawford, 2008). Consequently, there are extensive areas in Labrador, Quebec and the West Siberian Lowlands where tree regeneration is being prevented by bog growth. Winter warming, increasing rainfall, containing higher nitrogen levels, favours moss growth. Paludification is therefore becoming a serious threat to forest survival in many cold-