New computational model being developed for estimating populations of large carnivores

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The Finnish Game and Fisheries Research Institute and the Aalto University School of Science and Technology are together developing a computational method for estimating populations of large carnivores. The new method will provide a quicker and more cost-effective way of keeping track of the number of large carnivores.

The computational method is based on the analysis of sighting material collected by the large carnivore contact persons. The method links each sighting with information on the landscape structure, the behavior of the animal (movements, territory) and the properties of the animal (sex, the size of the pack and the number of cubs). Sightings made at different times are also linked to certain individuals or groups. If an animal that has been sighted cannot certainly be linked to one particular individual or group, this uncertainty is presented using probabilities. The computation results in an estimate of the number of animals. The computational model will be suitable for estimating populations of lynxes, bears and wolves.

The method to be developed will supplement the current manual method of assessing the size of large carnivore populations. A software program will also be created during the project. The program will calculate the regional numbers of large carnivores using the information provided by the sighting database and the method being developed. The future software program will be a tool for researchers that will help in making

the final estimate of large carnivore populations. The sighting database used is the Tassu system introduced in 2009. The large carnivore contact persons enter the sightings they collect into the database.

The aim of the new computational method and of the software program is to increase the reliability and transparency of population estimates. In 2012, both the method and the software should be in use.

One of the Centres of Excellence of the Aalto University School of Science and Technology participating

The research project will utilize the computational methods developed by the Centre of Excellence in Computational Complex Systems Research that is funded by the Academy of Finland and the School of Science and Technology. Bayesian inferential statistics will be applied in the project.

The project will last two years and it is funded by the Ministry of Agriculture and Forestry.

Provided by Aalto University