## IMPACT OF HARVEST PRESSURE ON WOLF POPULATION STATUS IN LATVIA

## Agrita Žunna, Dainis Edgars Ruņģis, Guna Bagrade, Samantha Jane Howlett, Mārtiņš Lūkins, Aivars Ornicāns, Jurģis Šuba, Jānis Ozoliņš

Latvian State Forest Research Institute "Silava" Address: Rigas Str. 111, Salaspils, 2169, Latvia E-mail: <u>agrita.z@gmail.com</u>

The wolf in Latvia is a game animal and since 2004 hunting on wolves is restricted by closed season and annual quota. In order to ensure species conservation and favourable population status, the wolf population is constantly observed and scientific analyses of monitoring data are used to adjust population management. The hunting quota has increased from 150 wolves in the season of 2004/2005 to 300 wolves in the season of 2013/2014. To test if the current quota system is a sufficient conservation measure to ensure a sustainable wolf population in Latvia, harvest data from hunting seasons 2004/2005 to 2013/2014 were analysed. Records on 1,787 harvested wolves with information on date and location were available. 1,000 wolves were investigated for age and female fecundity. As there is no overall census of wolves in Latvia, the virtual population analysis method by Fry (1949, 1975) was used to back-calculate the cohort sizes. Tissue samples from 340 wolves killed from 2009 to 2014 were collected for DNA analyses.

The virtual population analysis and age structure of harvested wolves estimates that the wolf population has grown from 350 to 670 individuals since 2004 (estimates concern numbers before harvest). Sex structure showed a slightly female attributed sex ratio of 1:0.968. Harvested pup ratio in our sample ranged from 36% to 59%, the adult ratio stayed below 50% and yearlings did not exceed 9% of the sample. A decrease of average age and also of maximum age of harvested wolves was observed.

Differences in territorial distribution of three age groups of harvested wolves over various seasons were established. Pups and adults were evenly harvested across the whole country, while yearlings were hunted sporadically.

Prenatal fecundity in the years 2009 - 2014 was  $5.2 \pm 0.84$  pups per female. That is less than in previous study periods when it was  $6.5\pm0.25$  pups.

Kinship analysis revealed full-sib, half-sib and parent-offspring relationships between individuals. A persisting kinship network was observed in the population, however breeder loss was testified in more than half of the identified family groups. Dispersals from four family groups were revealed across the less populated central region. No strong evidence for loss of genetic diversity, isolation by distance or genetic bottlenecks was found.

At the moment it seems that the existing management system most likely has not had a significant effect on wolf numbers and there also does not seem to be extensive immigration from surrounding territories. However trends of decline in certain demographic parameters and disrupted pack structure are observed and should be monitored in further years.

## References

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