

## MONITORING AND CIRCAANNUAL CYCLE IN BIRDS' LIFE

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A simple model of round year changes of number and variation in a bird population was presented at the Vith International Conference on Birds Census Work. This model has stressed that in monitoring study there is important not only knowledge on number of birds in population, but also on dimension of number variation throughout a year. The model assumes one period of a growth of the birds number yearly /fledging/ and then continuous falling of the number of individuals and continuous reduction of absolute variation. The last statement does not mean the same trend of relative variation in population: relative variation was assumed as growing all around a year and then drastically reduced by territorial behaviour mechanisms acting at the beginning of the next breeding season. This model must be corrected as it was oversimplified or even false in some assumptions. Corrected should be the curve representing year round changes of bird number. For many species growth of the number goes through two or more stages /broods/. Then, death rate in subsequent parts of yearly cycle is differentiated very much, but for many species not enough studied, while knowledge about terms and size of reduction of the number of population numbers is essential for finding of populations bottle necks. Specially important is localisation in the time of main winter losses because of direct influence on management activities. After taking under consideration of results of spring migration counts, the model must be changed as to presentation of variability of population size. It was found that variability of number of individuals in population in spring is much lower than in autumn, what means that important stabilising mechanism is active during winter. So, there are known

now two periods of stabilising processes - in winter and pre-breeding period. One can find also that in yearly cycle of birds life there are some periods where number and variation grow or fall down parallelly or oppositively and that the changes can be differentiated. These relations are a key to construction of functional model of population dynamics as they will show bottle neck periods. Clearing of mechanisms being responsible for number and variation patterns must base on very different studies and methods depending on the period of bird's life and supplying the model with various elements. Comparison of the results obtained in different periods of a yearly cycle can supply important facts being a basis for conclusions which may be helpful in bird protection.

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Note

\* The original text /with figures and references/ is a part of the paper published in Proceedings of Xth International Conference on Bird Census Work and Atlas Studies /Acta Zool. Fennica/: "Elements needed for a construction of a population dynamics model for monitoring purposes".