

## EGGSHELLS OF GEESSE'S EGGS AS AN INDICATOR OF WATER POLLUTION

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To wildlife irreplaceable damage is caused by such agricultural chemicals as pesticides, herbicides, fungicides, etc., and the most dangerous one DDT and its analogue DDE. They are particularly dangerous for birds which cause of their mobility and feeding from soil and water are victims of pollution. According to Fisinin *et al.* (1990) DDE available in foods (75 ppm) decreases thickness of laid eggs by 20 %. These data are confirmed by Kiff (1991) reviewed the investigations in different areas. Thus, nature and level of soil and water pollution can be estimated by measuring thickness and weight of eggshells of birds inhabiting this territory. When measuring eggs they should be intact.

Geese's eggs may be a good indicators of water pollution. To determine the characteristics of their shell the correlation in morphological parameters of geese's eggs was studied. According to previous research (Narushin, unpublished) the eggs of the wild geese and domestic ones were not different in their morphological structure. To find the correlation in morphology 170 eggs of domestic geese of different strains such as Italian White, Gorky, Kuban and Obroshinsky breeds were used. It was found that eggshell thickness  $T$  and weight  $W_s$  are in close correlation with the egg weight  $W$ , length  $L$  and maximum breadth  $B$ :

$$T = 0.5L + B - 0.25(L + 2B)^2 - 0.575W^{0.0038}L^{0.6809}B^{0.3618}0.5$$

$$W_s = 1.0767W^{3.08}L^{-2.268}B^{-4.536}$$

The formulae obtained allow to calculate the mean shell thickness and weight of goose egg, to compare their meanings with the average ones and to determine the level of water pollution effect on fauna of a given region.

## REFERENCES

- Kiff, L. (1991): The egg came first. *Terra*, 30. 2: 5-19.
- Fisinin, V. I., Zhuravlev, I. V. and Aidinyan, T. G. (1990): *Embrionalnoye Razvitiye Ptitsy*. Moskva, Agropromizdat (Russian)