

RED FOX PREDATION ON MALLARDS

Impact of Red Fox Predation on the Sex Ratio of Prairie Mallards. D. H. Johnson and A. B. Sargeant. 1977. U.S. Department of Interior, Wildlife Research Report No. 6. 56 pp.

Disparate sex ratios have been noted in many species of North American ducks since about the 1930's. The causes and possible functions of these ratios have long been the topic of lively discussion between waterfowl biologists and behaviorists. This report by two scientists at the Northern Prairie Wildlife Research Center, Jamestown, North Dakota, delves deeply into one of the possible causes.

The main body of the report is divided into four parts. Part one consists of a simulation model of fox impact on mallard sex ratios. In part two the model is used to predict sex ratios. Part three presents some historical and geographical aspects of mallard/predator interactions. The final part discusses possible implications of disparate sex ratios to mallard biology and management.

Data used in the model are derived from several sources (e.g. Sargeant's predator work, U.S. Fish and Wildlife Service unpublished data). I cannot evaluate the mathematical aspects of the model, but considering the sensitivity analyses the model was subjected to, I feel certain the model is as good as can be found anywhere. The biological data fed into the model are the best that can be obtained. Given that these assumptions are correct, the authors conclude in parts one and two that disparate sex ratios in mallards result from a combination of two factors: 1) red fox predation is significant and is oriented toward the female, and 2) hunting pressure is oriented toward the male. I was surprised to find that the results of their model were so close to actual observed values. After letting their model run through 11 simulated years the resulting sex ratio was 126 males:100 females. Observed values recorded for prairie nesting mallards range from 108 to 129 males:100 females.

Interesting information, equally useful to trained and untrained waterfowl biologists, is given in parts three and four. Speculations on sex ratios during pre-settlement were especially interesting. Comments on how factors relative to sex ratios in mallards relate to those in other ducks are also pertinent.

All in all, Johnson and Sargeant did an excellent job elucidating a very controversial topic. This report should be read by every professional biologist as well as by amateurs interested in waterfowl.

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