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Review of Sex Ratios and Age Ratios in North American Ducks

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Sex Ratios and Age Ratios in North American Ducks.—F. C. Bellrose, T. C. Scott, A. S. Hawkins, and J. B. Low. Illinois Natural History Survey Bulletin, Vol. 26, Article 6, pp. 391–474. Urbana, Illinois. $1.00 (checks payable to University of Illinois).—This bulletin is by far the most elaborate and comprehensive of any of the publications dealing with waterfowl age and sex ratios that have appeared to date, and represents the presentation and analysis of sex and age ratio data accumulated by the Illinois Natural History Survey over the last 24 years. The several people concerned are to be congratulated for bringing this material into publishable form, and it is commendable that the National Science Foundation undertook the printing costs of this extensively tabulated and illustrated bulletin.

The amount of numerical data included in this report is almost overwhelming; a rough tally indicates that, for example, sex ratio data are summarized for about the following numbers of birds from the various data sources: direct observation, 230,000; hunters' bags, 130,000; banding, 120,000; and disease mortality (lead poisoning, fowl cholera, botulism), 40,000. These data are examined from nearly all possible angles, and statistical tests are indicated wherever necessary. Important findings include the confirmation that banding traps do produce biased sex ratio data (which vary with the type of trap used), that hunters' kill records are only slightly biased in favor of drakes, and that sex ratio counts by direct observation are difficult to achieve for large populations except during spring, when habitat preferences of mated vs. nonmated segments of the population make random counts almost impossible. Data on diseased victims were considered inadequate to evaluate relative susceptibility of the sexes to disease. The authors suggest, as have previous writers, that the probable reason for unbalanced sex ratios in the adult populations is the result of increased vulnerability of females during the breeding season. In line with this, they found a correlation between relative productivity and degree of imbalance of sex ratios; species with high productivity have a large juvenile segment and thus a nearly balanced sex ratio. They found that juveniles are more vulnerable to hunting than adults, but that this vulnerability varied with time and between species. Redheads, Canvasbacks, and Baldpates appear to have especially high juvenile vulnerability. In the Mallard and Pintail a remarkably close correlation between estimated summer productivity and percentage juveniles in hunters' bags occurred, indicating that age ratio studies should be intensified as a technique for judging population trends. It seems clear from this fine paper that if we are to preserve such species as the Redhead and Canvasback, which have high juvenile vulnerability and require optimum breeding conditions, we must not only manage our breeding areas more effectively but also look to ways of
modifying hunting regulations in order to protect the potential breeders represented by juvenile females.—PAUL A. JOHNSGARD.