

Western Ecological Research Center

Publication Brief for Resource Managers

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Life History Predicts Risk-taking Behavior of Ducks

Life-history theory predicts that longer-lived, less fecund species should take fewer risks when exposed to predation than shorter-lived, more fecund species because they will have many more opportunities in the future to acquire limiting resources and ultimately reproduce. If this theory holds true for ducks, as it does in many other taxa, then it could provide an explanation for the differential vulnerability of ducks to harvest. USGS scientist Dr. Josh Ackerman and University of California-Davis collaborators Dr. John Eadie and Tom Moore investigated the risk-taking behavior and life-history characteristics of dabbling ducks by measuring their approach behavior during the waterfowl hunting season, and they reported their results in a recent issue of the *Condor*.

The authors studied seven species of dabbling ducks of the genus *Anas* that are common winter residents of the Central Valley of California: northern pintail, mallard, American wigeon, gadwall, northern shoveler, American green-winged teal, and cinnamon teal. They measured the approach behavior – behavior of ducks when approaching potential landing sites – of 1099 duck flocks during 37 hunting trials and 491 flocks during 13 trials conducted immediately after the 1999–2000 waterfowl hunting season. The authors found that approach behavior of ducks was strongly correlated with their life-history characteristics. Both the minimum approach distance by ducks and the proportion of flocks taking risk were correlated with each life-history parameter measured, including reproductive output, body mass, and annual survival rate.

Thus, species characterized by a “slow” life-history strategy (e.g., northern pintails and mallards, which are less fecund but longer-lived) were more risk-averse than species with a “fast” life-history strategy (e.g., cinnamon teal and green-winged teal, which are more fecund but shorter-lived). Furthermore, the authors ex-

Management Implications:

- Our results suggest that life history may predispose duck species to differential harvest, such that species with faster life-history strategies may be more susceptible to harvest than species with slower life histories.
- The effectiveness of novel decoying techniques, such as spinning-wing decoys and electronic calls, may differ depending on the life-history strategy of a species.
- Currently, biologists setting regulations using the Adaptive Harvest Management process are exploring ways to incorporate the life-history traits of different species into harvest regulations (i.e., Multiple-Stock Adaptive Harvest Management). Our results suggest that life history may be an important component influencing the susceptibility of waterfowl to harvest and that managers should take this into account when developing modified harvest models.

perimentally manipulated the attractiveness of the study site by using two decoy treatments: traditional stationary decoys only, and traditional decoys in conjunction with a mechanical spinning-wing decoy. Although the authors were able to reduce a species risk-averseness using the strong attractant (i.e., spinning-wing decoy), they were unable to override the influence of a species’ inherent life history on their risk-taking behavior. Alternative explanations did not account for the observed correlation between approach behavior and life-history parameters. These results indicate that life history influences the risk-taking behavior of dabbling ducks and provides an explanation for the differential vulnerability of waterfowl to harvest.

Ackerman, J. T., J. M. Eadie, and T. G. Moore. 2006. Does life history predict risk-taking behavior of wintering dabbling ducks? Condor 108:530–546.