

**NUMERICAL AND FUNCTIONAL RESPONSES OF A GENERALIST PREDATOR:  
FIELD EXAMINATION OF A SIMPLE PREDATOR-PREY SYSTEM <sup>TWS</sup>**

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Many predators exhibit numerical and functional responses to fluctuating prey densities. Although it is often practical to measure the numerical response in field settings, functional responses are usually determined in laboratory experiments

because quantifying the components of predator consumption rates (handling time, search rate) in the field is difficult when predation events are rarely observed. However, more field testing is needed because some species show variable functional responses as ecological conditions (resource distribution, age composition of foraging groups) change. Understanding predator behavior is also prerequisite to interpreting the consequences of predator-prey interactions on community dynamics. We determined the numerical and functional responses of bald eagles (*Haliaeetus leucocephalus*) feeding on spawning kokanee salmon (*Oncorhynchus nerka*) at an autumn migratory concentration in west-central Montana. Bald eagles tracked the fluctuating number of salmon during four of five years. This ability was manifest in immigration and emigration rates, which were similar across years, and appeared facilitated by behavioral (group foraging, communal roosting) and physical attributes (keen eyesight) of bald eagles. Eagles exhibited a Type II functional response. Handling time remained constant across the range of prey densities, whereas attack rate increased with increasing salmon numbers. Functional responses differed between eagle age classes and among foraging modes, which reflected age-specific foraging behavior and suggested that eagles view live and dead salmon as alternative prey types. Overall, bald eagle predation on kokanee salmon is inversely density-dependent over most prey densities.