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ADAPTIVE MANAGEMENT FACILITATES INCREASE IN NORTHERN BOBWHITE POPULATIONS

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ABSTRACT

Adaptive resource management (ARM) is an approach to managing that allows decision makers to learn about a system and subsequently change management actions based on new information about system processes (i.e., adapt) to better meet fundamental objectives. This is not to be confused with changing management actions when the state of the system changes. For example, changing a harvest regulation when populations decline is not ARM. This dynamic decision making may be fortuitously optimal, but if the effect of harvest is uncertain then changing regulations may be suboptimal—for example, weather may have caused the decline. Adaptive resource management can be implemented along a spectrum of passive to active to reduce system uncertainty. Active ARM is when explicit hypotheses are posited then implemented to test them, and monitoring occurs to elucidate whether the effect of the management action achieved a given result. Passive ARM uses current management practices, natural variation in the system, and monitoring to reduce uncertainty. Even though northern bobwhite (*Colinus virginianus*) have been studied for a century, uncertainty regarding optimal management strategies still exists. The Albany Quail Project (AQP) has used both modes of ARM to learn about northern bobwhite populations to better meet the hunting objectives of stakeholders. Between 1992 and 2019 the AQP radio-tagged 5,182 unique individuals and banded an additional 5,008 birds on the primary study area near Albany, Georgia, USA. Additionally, 1,724 nests have been monitored and population surveys conducted in the spring and autumn. Active ARM occurred with tests of supplemental feeding, hardwood cleanup, and predator control whereas passive ARM was used to learn about prescribed fire regimes, brood habitat preferences, small mammal cycles, and raptor migrations. We built an integrated population model (IPM) that combined known-fate survival data, nesting records, dead recoveries from harvest, and population surveys to model the system. The preliminary results of the IPM demonstrated that populations have increased during the project. The 5 most abundant autumn populations have occurred in the most recent 10 years of the project when bobwhite populations throughout their range have continued to decline. Unlike typical ARM applications, the AQP has not had an explicit model to predict consequences of future management actions; nonetheless, the essence of ARM has been followed. Since its inception uncertainty has been reduced, management actions have been changed, and bobwhite populations have responded. Improvements to AQP and similar projects could include explicit hypotheses and predictive models about the system to facilitate the transfer of knowledge to future bobwhite managers.

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