Bosque Watch

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Who Ate the Corn?
Using Monitoring to Feed Management Decisions

Bosque del Apache National Wildlife Refuge cultivates corn to redistribute sandhill crane *(Grus canadensis)* and waterfowl populations off of private agricultural fields throughout the Middle Rio Grande Valley in New Mexico. Corn production on the Refuge also helps the birds maintain their body condition as they migrate and overwinter on and around the Refuge. The current goal of the Refuge is to produce 1.5 million pounds of corn. Unfortunately, corn production on the Refuge was low during the summer of 2011, raising concerns about meeting the energetic needs of sandhill cranes and about increased crop depredation by cranes on neighboring farms. These concerns have prompted Refuge biologists to investigate causes of crop failure.

Many reasons for poor corn production have been proposed. It could be crop depredation and damage by elk *(Cervus elaphus)*, mule deer *(Odocoileus hemionus)*, and trespass cattle, as well as ineffective farming practices. Further, the current drought has put additional stress on the farming program.

Reggie Perkins measures corn in one of the monitoring plots. Perkins participates in the Student Career Experience Program (SCEP).

With Region 2 Inventory & Monitoring staff, Refuge biologists are leading with a monitoring strategy to quantify the amount of crop depredation and damage from ungulates, to identify the species responsible for crop damage, and to determine the stages of plant development in which corn is most vulnerable to depredation and damage. This strategy requires the repeated monitoring of corn depredation and damage throughout the summer in enclosures and treatment plots located across a sample of the Refuge's corn fields.

Continued crop monitoring allows Refuge staff to follow plant development and assess any damage to the crop throughout the growing season. Although, over time, the Refuge can tolerate some ungulate depredation and damage to the corn crop, aversion techniques which are designed to prevent and control depredation and damage of crops by wildlife, might need to be deployed if depredation and damage is determined to be excessive. If predetermined thresholds of depredation and damage are exceeded, Refuge personnel will implement aversion techniques on affected farm fields.

Knowledge gained this summer will inform the Refuge about the amount of depredation and damage that is occurring, which species are responsible, and at which stage of development the corn is most vulnerable. In the near term, these kernels of knowledge will inform the development of an adaptive management strategy. As the Refuge builds a better understanding of the scale of the depredation and crop damage, continued crop monitoring over subsequent years will allow the further refinement of management strategies.

--Matthew Butler, Region 2 Biometrician, FWS