Predation is the primary cause of nest failure in grassland birds and can limit population growth. Management practices traditionally focus on creating nesting habitat that minimizes predation risk, yet the relationship between habitat characteristics and the probability of nest loss is not well understood. Nest predators drive patterns of nest loss, but the habitat and landscape features related to predation patterns vary among predator species. As part of my Master's degree research, I investigated how managing grasslands with fire and grazing affected predator-specific patterns of nest loss in a grassland-obligate songbird, the Grasshopper Sparrow (*Ammodramus savannarum*).

I conducted my research in Ringgold County, Iowa in a region known as the Grand River Grasslands. I used Grasshopper Sparrows as my focal species because they are relatively abundant in my study area and are a Species of Greatest Conservation Need in Iowa. I searched for nests from 18 May to 30 July 2011 at eight research pastures. Four pastures were managed with "patch-burn-grazing" where a different third of each pasture is burned every spring. The other four pastures are burned completely every three years (graze-and-burn treatment), most recently in 2009. All pastures are lightly stocked and cattle have free access to the entire pasture. I placed compact video cameras and digital video recorders at a subset of nests to monitor parental behavior and record the identity of nest predators. I also deployed track tubes to quantify the activity of small mammals within pastures. Small mammals have been implicated as important nest predators in a number of studies and as an alternative food resource for meso-predators that indirectly influences nest predation rates.

I located 89 nests in the summer of 2011 and successfully used cameras to monitor the fate of 35. I recorded 18 predation events at 17 different nests. The most common nest predators were snakes (garter snakes and racers), followed by a mix of both grassland specialist and generalist predators (Table 1). Contrary to my expectations, small mammals were not recorded depredating nests. Preliminary results suggest that sparrows nesting in recently burned areas are unlikely to be depredated by snakes. Following additional data collection in the summer of 2012, I plan on examining how the surrounding landscape influences predator-specific predation patterns as well.

The results of this research have direct management implications. Failing to account for species-specific nest predation patterns may lead to the false conclusion that there are few landscape or habitat features affecting the probability of nest loss. Identifying nest predators can help clarify this relationship and is critical to devising effective management strategies aimed at reducing nest loss. The findings from my project can benefit SGCN in Iowa's grasslands and elsewhere in the eastern tallgrass region.

Table 1 Total nest losses by predator species

| Predator | Totals |
|---|---|
| Snakes | 6 |
| Badger | 2 |
| Cowbird | 2 |
| Skunk | 2 |
| Other Avian | 2 |
| Opposum | 1 |
| Raccoon | 1 |
| Deer | 1 |
| Coyote | 1 |
| Total Events | 18 |