

The use of nest protectors for the saffron-cowled blackbird *Xanthopsar flavus* in Argentina

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SUMMARY: A simple predator enclosure applied to saffron-cowled blackbird nests resulted in 69% fledging success compared to 36% for the controls.

BACKGROUND: The saffron-cowled blackbird *Xanthopsar flavus* is an icterid endemic to southern South America's grasslands (Azpiroz *et al.* 2012). Loss and transformation of their habitat, brood parasitism by shiny cowbirds *Molothrus bonariensis* and poaching for illegal trade has placed the species as globally Vulnerable by IUCN (Birdlife International 2017). Currently a small and fragmented population is restricted to four small, disjunct areas in northeast Argentina, Uruguay, southeast Brazil and southeast Paraguay (Birdlife International 2017). Most subpopulations are unprotected and no regular breeding sites are known for the entire region. In Argentina the species is considered Critically Endangered (López-Lanús *et al.* 2008) due to a rapidly declining population from 1,500 to 600 individuals over the past decade (Fraga *et al.* 1998, Di Giacomo 2016). In 2015 we launched a conservation project aimed at identifying breeding colonies in Argentina and to increase their breeding success. Colonies were found in two Important Bird and Biodiversity Areas (IBAs): Perdices (AR177 IBA, Entre Ríos province, 33°26'S, 58°32'W) and Aguapey River Basin (AR143 IBA, Corrientes province, 28°36'S, 56°56'W). In this study, we describe a simple device aimed at increasing the nesting success of saffron-cowled blackbird colonies prone to high predation risk.

ACTION: We identified 15 saffron-cowled blackbird reproductive colonies and monitored them throughout the 2015 and 2016 breeding seasons (October to December). Due to low nest survival observed in the colonies, we designed a simple nest protector aimed at protecting them from predators such as foxes, raccoons and raptors. The protection was a galvanized wire lattice (10 x 10 mm) spliced as a cylinder of 1 m diameter and 1 m high that surrounded the nest-supporting plant. A wire web (20 x 20 cm) at the top allowed the access and exit of adult birds and the fledglings. Protectors were secured to the ground with stakes or fixed with mud to seal the lower edge. We installed protectors to 30 nests, evaluating the fate of 29 nests during chick stage and one nest during the incubation stage. We placed protectors according to the availability of colonies that we could monitor daily while unprotected colonies were monitored every two or three days. We installed a camera trap (Reconyx HC500) ~2 m from each protected nest to record nest attendance and activity of potential predators.

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CONSEQUENCES & DISCUSSION: Out of 30 protectors installed we recorded abandonment of only the nest protected during incubation stage. Nest disturbance during the incubation stage typically results in higher rates of abandonment than during the chick stage, thus we only installed protectors during the chick stage. Of the 28 unprotected nests that reached the chick stage, we obtained an overall nesting success of 36% (percentage of nests which fledged), while the overall nesting success of protected nests was 69% ($X^2=6.32$, $p = 0.01$). The total number of nests included in the analysis was 57. We recommend installing protectors during the morning, monitoring nest attendance during daylight hours by direct observation from a suitable distance, complemented with camera trap use at the nest site. In situations where parents do not enter the nest protector in the six hours following installation, the protection must be removed to avoid nest abandonment. Placement of barriers to prevent nest predation of endangered passerines has been tested in other species. Williams *et al.* (2017) reviewed five studies in which barriers were used for songbirds. In each there was an increase in survival or a reduction in predation. We consider the use of this simple nest protector could increase reproductive success of saffron-cowled blackbirds and other threatened grassland birds whose nests are attached to plants on the ground or at water level.

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