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*Photo: Jean P. González-Crespo*

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# Observation of intraspecific nest usurpation of the Yellow-shouldered Blackbird (*Agelaius xanthomus*) in southwestern Puerto Rico

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**Abstract** Identifying behaviors that can be detrimental to the reproduction of an endangered species should be of high priority for any conservation effort. This could lead to the development and implementation of new conservation strategies that may significantly increase the breeding success of these species. We document the first report of intraspecific nest usurpation for the Yellow-shouldered Blackbird (*Agelaius xanthomus*) in southwestern Puerto Rico. On 16 September 2020, an adult violently removed a 14–16-day-old nestling from an Artificial Nesting Structure in the Pitahaya mangrove forest.

**Keywords** *Agelaius xanthomus*, infanticide, intraspecific competition, nest usurpation, nesting behavior, Puerto Rico

**Resumen** Observación de un evento de usurpación intraespecífica de nido de *Agelaius xanthomus* en el suroeste de Puerto Rico • La identificación de conductas que pueden ser perjudiciales para la reproducción de especies en peligro de extinción debe ser una prioridad absoluta en cualquier esfuerzo de conservación. Esto podría resultar en el desarrollo e implementación de nuevas estrategias que podrían aumentar significativamente el éxito reproductivo de estas especies. Documentamos el primer registro de usurpación intraespecífica de nido para *Agelaius xanthomus* en la región suroeste de Puerto Rico. El 16 de septiembre de 2020, un adulto expulsó violentamente un pichón de 14 a 16 días de nacido de una estructura de nidificación artificial en el manglar de Pitahaya.

**Palabras clave** *Agelaius xanthomus*, competencia intraespecífica, comportamiento de nidificación, infanticidio, Puerto Rico, usurpación de nido

**Résumé** Observation de l'usurpation intraspécifique d'un nid par le Carouge de Porto Rico (*Agelaius xanthomus*) dans le sud-ouest de Porto Rico • L'identification des comportements pouvant nuire à la reproduction d'une espèce menacée doit être une priorité absolue pour tout effort de conservation. Cela pourrait conduire à l'élaboration et à la mise en œuvre de nouvelles stratégies de conservation susceptibles d'accroître considérablement le succès de reproduction de ces espèces. Nous documentons la première observation d'usurpation intraspécifique d'un nid par le Carouge de Porto Rico (*Agelaius xanthomus*) dans le sud-ouest de Porto Rico. Le 16 septembre 2020, un adulte a violemment expulsé un oisillon âgé de 14 à 16 jours d'une structure de nidification artificielle dans la mangrove de Pitahaya.

**Mots clés** *Agelaius xanthomus*, compétition intraspécifique, comportement de nidification, infanticide, Porto Rico, usurpation de nid

The Yellow-shouldered Blackbird (*Agelaius xanthomus*), commonly known as "Mariquita de Puerto Rico," is an Endangered species endemic to the archipelago of Puerto Rico. This relatively large bird (~20 cm in length), whose breeding season coincides with the wet season from April to November, was once commonly found throughout the lowlands of the main island of Puerto Rico, Vieques, and Mona Island (Wetmore 1927, Post 1981, Raffaele 1989, Raffaele *et al.* 1998). However, loss of habitat due to agriculture and urban development, and a significant drop in reproductive success caused by brood parasitism from the Shiny Cowbird (*Molothrus bonariensis*; Post and Wiley 1976, Post 1981, 2020, Cruz *et al.* 1985, 2005), have restricted this species to four main areas scattered throughout the archipelago: Mona Island, the Municipality of Ceiba, the Municipality of Salinas, and the Southwest region of Puerto Rico (i.e., the Municipalities of Cabo Rojo and Lajas). The latter area has the largest population of Yellow-shouldered Blackbirds in the entire archipelago, with approximately 500 individuals (Post and Wiley 1976, Post 1981, López-Ortiz 2019). This is mostly attributed to the implementation of conservation strategies, such as the use by the Puerto Rico Department of Natural and Environmental Resources (PRDNER) of Artificial Nesting Structures (ANS) which signifi-

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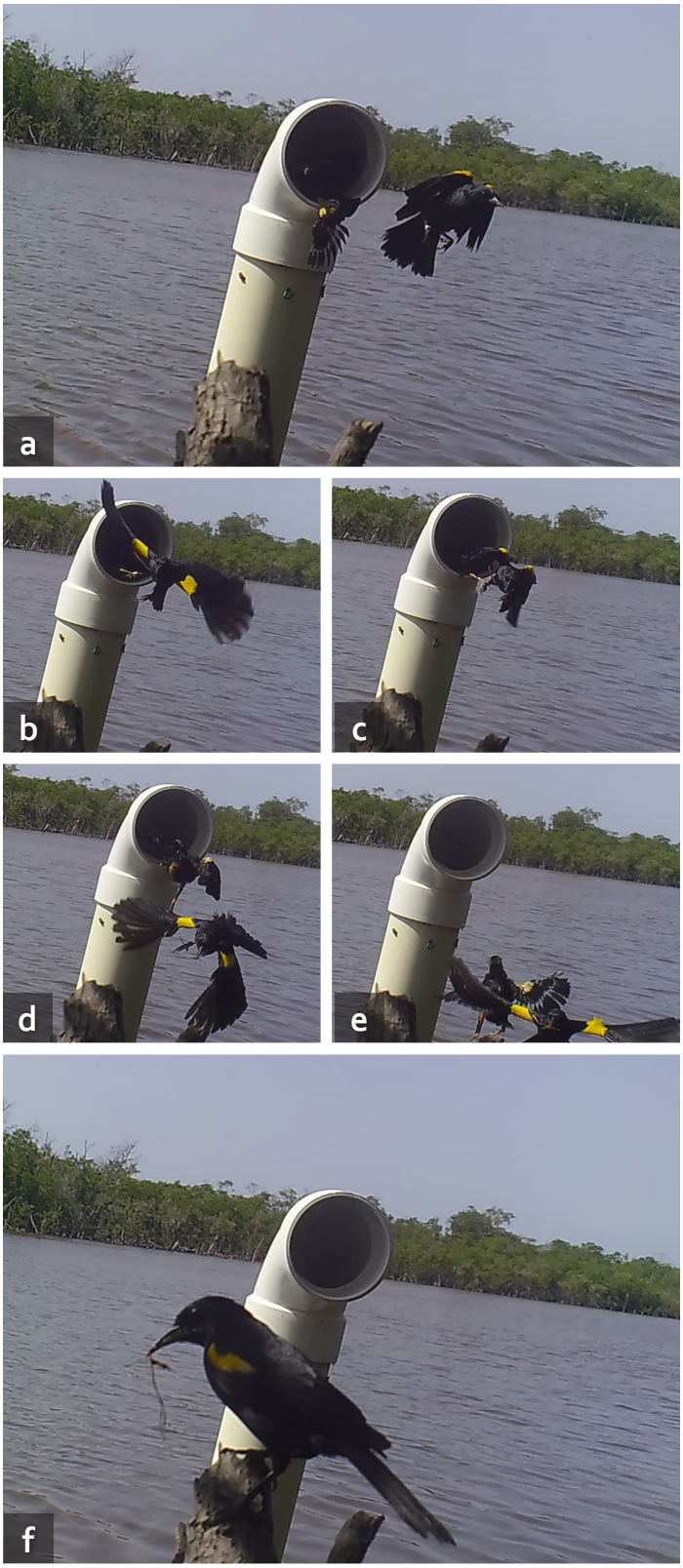


**Fig. 1.** Video screenshots at nest site in the Pitahaya mangrove forest, Puerto Rico. (a) A banded adult Yellow-shouldered Blackbird trying to remove a 14–16-day-old nestling from its nest during an apparent nest usurpation attempt. (b–e) Successful removal of the nestling. (f) Seconds after violently removing the nestling, the adult bird is holding what appears to be nesting material.

cantly increased this species' reproductive success (Wiley *et al.* 1991, Cruz *et al.* 2005). Nevertheless, even with the inclusion of ANS, the number of suitable nesting sites may be limited in this region, and considering the sudden loss of mangroves caused by hurricanes Irma and Maria in 2017 (Cartier 2019), could result in an increase in intraspecific competition for this resource. Nest usurpation, or nest piracy, is a behavior that involves the complete appropriation of one individual's nest by another individual that intends to use it for its own breeding purposes (Hrdy 1979, Gowaty 1984, Lindell 1996, Margalida and García 2011). This type of behavior may involve the attainment of an abandoned nest or the violent takeover of one being actively used. The latter, which may result in the death of the host or its brood (i.e., infanticide), may be relatively common in dense breeding colonies due to limited resources such as nesting sites or nesting material (Gowaty 1984, Mock 1984). In both scenarios, the usurper avoids the energy costs associated with building a nest and could significantly improve its nesting success (Hrdy 1979, Lindell 1996). For a threatened species that already suffers from low reproductive success, such as the Yellow-shouldered Blackbird (hatching success ranged from 0.47 to 0.53, and fledging success ranged from 0.36 to 0.47, according to nest surveys performed by PRDNER from 2018 to 2020), this kind of behavior can be detrimental to its survival (Newton 1998). In this note, we report the first observation of intraspecific nest usurpation that could have resulted in infanticide for the Yellow-shouldered Blackbird in southwestern Puerto Rico.

## Study Site

The Pitahaya mangrove forest (17°57'06.6"N, 67°06'27.4"W), which is designated as critical habitat for the Yellow-shouldered Blackbird (USFWS 1976, 2011), is the largest mangrove stand in southwestern Puerto Rico. It stretches approximately 6.5 km along the coast and is characterized by a fringe forest of red mangrove (*Rhizophora mangle*) and a basin forest composed of red, black (*Avicennia germinans*), and white mangrove (*Laguncularia racemosa*; García *et al.* 1998). Annual precipitation ranges from 40.94 cm to 123.57 cm, with most of the rain falling between April and November (Western Regional Climate Center 2016). Currently, over 250 ANS are positioned in the Pitahaya mangrove forest. These are spread throughout the area and are positioned approximately 5 m in front of black mangrove fringes.

## Observation

On the morning of 16 September 2020, at 1003, an active ANS was being recorded with a Browning Strike ForcePro XD trail camera from ~5 m away. This ANS contained a Yellow-shouldered Blackbird nest with one remaining chick, the youngest of a clutch of three (two of which had already fledged). During preceding surveys, only adults without bands were observed entering and exiting the ANS. On that morning, the ANS was invaded by a banded adult Yellow-shouldered Blackbird that was not one of the parents of this nest. Once inside the nest, the adult attempted to pull out the 14–16-day-old nestling, yet failed to do so (Fig. 1a) and left the frame of the camera. Less than 30 s later, a banded adult—likely the same individual given the short period since the first event—entered the ANS,

successfully removed the nestling, and dropped it into the water (Fig. 1b–e). The banded adult then perched in front of the now-empty ANS with what appeared to be nesting material in its bill (Fig. 1f). Three days after the usurpation event, a banded Yellow-shouldered Blackbird was observed actively defending the now-empty ANS from a female Shiny Cowbird who was trying to lay her eggs in it.

## Discussion

Considering how persistent the adult Yellow-shouldered Blackbird was at removing the nestling from its nest and how it grasped nesting material in its bill, it is possible that this individual was attempting to nest in this ANS. A banded adult was also observed entering and leaving the ANS up to 5 days after the event. However, we could not confirm if the adult was the usurper because neither band number could be read in any of the videos. We continued to monitor this nest, both with trail cameras and by personally visiting it at least once a week, but did not observe a single Yellow-shouldered Blackbird egg during the remainder of the breeding season (i.e., 4 weeks after the observation). Therefore, this seems to have been a final, unsuccessful effort to find a suitable nesting site before the end of the breeding season.

Furthermore, the fate of the removed nestling is unknown. This individual was still too small to properly fly and fledge on its own and would have most likely died by drowning. It is possible, given the proximity of this ANS to a patch of black mangroves (~5 m), that the nestling managed to swim to shore and avoid drowning, which has been previously observed in Yellow-shouldered Blackbirds (JPGC pers. obs.). However, even if it managed to do this, the chick most likely died from dehydration. Unable to fly to the mangrove branches and find suitable cover, it would have died either from accidentally drinking salt water or being exposed to the high temperatures of the Pitahaya mangrove forest (Monrós *et al.* 2002, Vitz and Rodewald 2011).

Although unnoticed at the time, these usurpation attempts occurred while personnel from the PRDNER were conducting their weekly inspection of ANS in the Pitahaya mangrove forest to determine ANS productivity. These surveys consist of observing the inside of each ANS with a mirror and removing any Shiny Cowbird eggs by hand. Chicks that are determined to be close to fledging are also removed to be banded and are later safely returned to their nest. However, the presence of personnel could trigger a defensive behavior where all nearby Yellow-shouldered Blackbird adults constantly follow and vocalize at the intruders (i.e., personnel carrying out ANS surveys), leaving their nests unattended (JPGC pers. obs.). Therefore, it is possible that this usurpation event was triggered by the panic caused during these surveys, which Mock (1984) suggests could happen due to human presence within a colony of breeding birds.

Although the stealing of nesting material, potentially due to a decrease of parental defense of the nest during the nestling stages, has been previously reported (Post 2020), this appears to be the first documented instance of intraspecific nest usurpation by a Yellow-shouldered Blackbird that likely resulted in infanticide. This behavior has been previously documented in other species of birds, including members of the New World Blackbirds (Icteridae; Lindell and Bosque 1999, Fraga 2011). We are uncertain how frequently this type of behavior occurs in this population. Considering the significant impact that this newly documented behavior could have on the reproductive success of this species, we suggest that further research should be conducted to determine the factors that triggered this behavior (e.g., pressure from brood parasitism, human presence, suitable nesting habitat availability), the frequency of nest usurpation events in this species, and the impacts at the individual, population, and species levels.

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## Title Page Illustration

Yellow-shouldered Blackbird (*Agelaius xanthomus*) in the Pitahaya mangrove forest in Cabo Rojo, Puerto Rico on 8 June 2020. Photograph by Jean P. González-Crespo.

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