

INTERFERENCE COMPETITION BETWEEN JAMAICAN WOODPECKERS AND EUROPEAN STARLINGS FOR NEST CAVITIES IN JAMAICA

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ALTHOUGH STUDIES HAVE SHOWN THAT European Starlings (*Sturnus vulgaris*) take over nest cavities of woodpeckers in Europe (e.g., Van Balen *et al.* 1982, Glue and Boswell 1994) and in North America (e.g., Kerpez and Smith 1990, Ingold 1989, Ingold and Densmore 1992), little published information is available on starling-woodpecker interactions in the West Indies. In the Greater West Indian region, starlings are now established on the Florida Keys, Grand Bahama, Abaco, New Providence, Eleuthera, Cuba, Jamaica, and Puerto Rico (Raffaële 1983; Downer and Sutton 1990; Willimont 1990; Stevenson and Anderson 1994; Allen 1996; Wiley, pers. comm.; Cruz, pers. obs.). On Jamaica, starlings were first introduced in 1903 near Annotto Bay (Saint Mary's Parish) (Taylor 1953). Its spread was slow at first but in recent years rapid, and the starling is now widespread in pastures with scattered trees, parks, and gardens in lowlands and midlevel regions, but rarely occurs in natural habitats (Taylor 1953, Lack 1976, Fletcher 1984, Downer and Sutton 1990; Cruz, pers. obs.). As part of a study on the breeding biology of the endemic Jamaican Woodpecker (*Melanerpes radiolatus*) in Jamaica (e.g., Cruz 1977, 1978), I was able to observe nesting cavity competition between this woodpecker, a species capable of excavating its own nest cavities (i.e., a primary cavity nester) and the starling, a species that is not capable of constructing its own nesting cavity (i.e., a secondary cavity nester). The results are reported herein.

On 17 June 1969, I located a pair of Jamaican Woodpeckers in the final stages of nest hole construction in a dead branch of a guango tree (*Pithecellobium saman*). By 22 June 1969 the pair had apparently completed the hole. That same day two starlings arrived and perched on the branch containing the hole. The starling visitors sang and often approached the hole. The woodpeckers acted in a disturbed manner (e.g., alarm calls), but showed no aggressive behavior toward the starlings. The starlings used an aggressive display involving various shrill calls and wing-flapping. The same day, when both woodpeckers were away from the tree, the starlings went into the nest hole. When the male woodpecker arrived, he made no attempt to take over the nesting hole, but remained on a nearby branch. The next day the starlings were taking nesting material into the woodpecker hole, and the woodpeckers were excavating a new cavity in the same branch. This later nesting was ignored by starlings. Similar observations about later nestings have been made by Ingold (1990) for starlings and the North American Red-headed (*M. erythrocephalus*) and Red-bellied (*M. carolinus*) Woodpeckers. The simultaneous use of the same snag by starlings and woodpeckers suggests that sites for suitable nesting (dead limbs on live trees) may be limited in the study site.

On 26 June 1969, I noted starlings with young in a woodpecker hole in a dead branch of a guango tree. On another dead branch on the same tree a pair of woodpeckers was excavating a nest hole. The starlings fledged their young before the woodpeckers finished their hole. The woodpeckers immediately stopped work on their hole, modified the starlings' hole, and nested in it. Possibly the woodpeckers originally built this hole, and the starlings took it over.

On 18 June 1970, I located a pair of Jamaican Woodpeckers in an advanced stage of nest hole construction in a guango tree. On 24 of June, the woodpeckers were no longer present

in the area, and the hole was being used by a pair of starlings.

On 27 June 1970, I observed a male woodpecker in the late stages of nest hole excavation within a bitterwood tree (*Picrasma excelsa*). On 1 July, the starlings began to enter the hole with nesting material. The woodpeckers removed the nesting material, but it was replaced by new nesting materials that the starlings brought. The addition and removal of nesting materials continued for a period of three days. On 5 July, the woodpeckers were no longer using the nesting hole.

In addition to these observations, others have also reported interactions between woodpeckers and starlings in Jamaica. May Jeffrey-Smith (1972) noted that in Huntley, St. Ann's Parish, the "pair appeared and nested in a woodpecker's hole in a coconut palm, from which they ousted the original owners." Robert Sutton (*in* Fletcher 1985) notes that he has seen starlings eject young Jamaican Woodpeckers from a nesting hole.

These observations suggest that European Starlings compete with Jamaican Woodpeckers for nest cavities and that this competition may decrease the probability of successful nesting by woodpeckers. Ingold (1989, 1996) found that delayed nesting decreased reproductive success in Red-bellied Woodpeckers and Northern Flickers (*Colaptes auratus*) in Mississippi and Ohio, respectively. He found that such delays resulted in the inability to raise a second brood after a successful first one due to delays resulting from interactions with starlings, and many pairs were forced to delay their initial nest effort until later in the season to avoid starlings. These delays were associated with significant reducing in woodpecker clutch sizes, nestling numbers, and fledging numbers.

The use of Jamaican Woodpecker cavities by European Starlings can also have a profound effect on the entire cavity-nesting community. In North America and Europe, the starling is known to compete with a variety of secondary cavity nesting species (Zeleny 1969, Weitzel 1988). Other than the starling, there are 11 species of cavity-nesting birds in Jamaica that use natural cavities or cavities excavated by woodpeckers: American Kestrel *Falco sparverius*, Yellow-billed Parrot *Amazona collaria*, Black-billed Parrot *A. agilis*, Olive-throated Parakeet *Aratinga nana*, Green-rumped Parrotlet *Forpus passerinus* (introduced), Jamaican Owl *Pseudoscops grammicus*, Stolid Flycatcher *Myiarchus stolidus*, Dusky-capped Flycatcher *M. barbirostris*, Golden Swallow *Kalochelidon euchrysea*, Caribbean Martin *Progne dominicensis*, and Saffron Finch *Sicalis flavelola* (introduced). These secondary cavity nesters do not excavate cavities but depend on cavities, such as those excavated by the Jamaican Woodpecker. An increase in starling numbers means that there are fewer cavities available for these species.

The Jamaican Woodpecker also nests in natural forested areas, where starlings have not been recorded. Human activities, however, have further fragmented these forests, creating a mosaic of forested areas interspersed with more opened areas (Thompson *et al.* 1986). This fragmentation has led to greater woodpecker-starling interactions, and has also decreased the availability of suitable nesting trees (snags and the dying branches of living trees) for cavity nesters. Since the availability of suitable nest sites limits the reproductive success and therefore the fecundity of hole-nesting birds

(Von Haartman 1957, Cline *et al.* 1980, Raphael and White 1984, Li and Martin 1991), these changes can have profound effects on the cavity nesting community of Jamaica.

In other West Indian Islands, starlings have also expanded their range and may also pose a problem for primary and secondary cavity nesters. On Abaco, Willimont (1990) observed a starling displace a West Indian Woodpecker (*M. superciliaris*) from a cavity within the eaves of a house. In Cuba, during 1995 and 1996, Wiley (per. comm.) saw aggressive interactions involving nesting sites among starlings and West Indian Woodpeckers, Cuban Green Woodpeckers (*Xiphidiopicus percussus*), Cuban Parakeets (*Aratinga euops*), and Cuban Parrots (*Amazona leucocephala*).

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POSIBLE IMPACTO DE LAS ESPECIES EXOTICAS EN PUERTO RICO Y MEDIDAS ADOPTADAS POR EL DEPARTAMENTO DE RECURSOS NATURALES Y AMBIENTALES PARA MINIMIZAR EL MISMO

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PUERTO RICO POSEE UNA VARIEDAD de plantas y animales únicos en el mundo. Un gran número de personas solicitan permiso para importar especies exóticas a la Isla. Esta situación es cada día más preocupante debido al potencial efecto dañino que estas especies pueden ejercer sobre nuestra agricultura, fauna y flora endémica, particularmente nuestras especies en peligro de extinción.

La introducción de exóticos puede representar un problema mayor a la ecología de la Isla si no se toman medidas más estrictas para evitar esta situación. El Departamento de Recursos Naturales y Ambientales ha adoptado medidas para controlar la introducción, el trasiego y establecimiento de estas especies en Puerto Rico.