

Extreme ectoparasitic behavior of Hood mockingbirds (*Mimus macdonaldi*) on marine iguanas (*Amblyrhynchus cristatus*) on the island of Española, Galapagos

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Abstract

Hood Mockingbirds, endemic to the island of Española in the Galapagos Archipelago, have been observed to be more aggressive than has been typically reported. Well beyond the typical “service” of removing ectoparasites from marine iguanas or bits of their shedding skin, and even the pecking at wounds to drink blood as reported for mockingbirds in highly restricted parts of these islands, some individuals on this particular island continue pecking at the relatively insensitive tail tips of these large lizards until they have removed several centimeters of tissue.

Keywords. Hood Mockingbird, *Mimus*, ectoparasitism, marine iguanas

Resumen

Los cucuve de Española pueden ser más agresivos de lo típicamente reportado. Más allá del “servicio” de extraer ectoparásitos y piel seca, o del beber sangre desde heridas como en otros sitios del archipiélago, algunos individuos siguen picoteando a las colas de las iguanas marinas hasta sacar unos centímetros de tejido.

Palabras Clave. Cucuve, *Mimus*, ectoparasitismo, iguanas marinas



Figure 1: Hood mockingbird (*Mimus macdonaldi*) pecking at the tail of a marine iguana.

All species of mockingbirds (Mimidae) are typically categorized as rather opportunistic in their feeding behavior [1]. Their opportunism is carried to an extreme in the Galapagos Islands of Ecuador where they are some-

times attracted to injured birds, especially nestling boobies (Sulidae), to consume blood. Mockingbirds and several species of Darwin’s finches have been observed to opportunistically remove bits of dead skin and ectoparasites such as ticks from iguanas (land and marine) as well as giant tortoises [2, 3, 4], typically in a rather non-invasive way that is considered to be mutually beneficial. In a comprehensive survey of blood-drinking behavior in these mockingbirds [2], no case of extensive removal of living tissue from these reptiles was reported.

To cite an example of behavioral convergence, on the islands of Wolf and Darwin (coincidentally at the opposite geographical extreme of the archipelago in northwestern Galapagos), Darwin’s finches have for some time been reported to peck at the bases of the tail feathers of certain large sea birds on their nests specifically to provoke bleeding for the purpose of consuming the blood that issues forth [5, 6]. The most common victims of these finches have also been boobies (*Sula* spp.)

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that appear to be quite oblivious to such attacks. This type of parasitism is considered to represent a case of extreme opportunism driven by the unusually challenging conditions of this oceanic island chain.

In the whole of the natural world, exceptionally few vertebrates feed on other vertebrates without killing them outright. The most well known examples of vertebrate-on-vertebrate ectoparasitism are certainly among the vampire bats (Phyllostomidae; *Desmodus*, *Diphylla*) endemic to the Neotropics which mostly feed on the blood of large mammals and birds respectively. Nonetheless, there are several other notable cases which represent advanced degrees of niche specialization and very likely in some cases, the impossibility of exploiting alternative food resources. The diminutive cookie-cutter sharks take much more than blood, using their highly derived dentition to remove chunks of skin and underlying tissue from much larger fishes, pinnipeds or cetaceans. The amount of flesh removed turns out to be proportionally small considering the relative enormity of their prey (i.e. "hosts"). In similar cases, there is a long list of freshwater fishes, headed by the piranhas (*Serrasalmus*) and their dozens of characoid relatives that regularly take fin fragments from other members of their communities, not as specialists, but rather as opportunists. One genus of highly specialized characins, *Roeboides*, has evolved short conical tusk-like teeth that protrude forward from the upper jaw, utilized specifically for the removal of scales from other fishes. The scales and the small amount of accompanying skin consumed represent the majority of the diet in most cases, but are occasionally supplemented with insects. Several species of small, elongate Amazonian catfishes, the candirus (Trichomycteridae), typically occupy the gill chambers of larger fishes, chewing on the highly vascularized and delicate tissue of the gill filaments so as to consume blood.

Here we report the first observation of extreme ectoparasitism by Hood mockingbirds, *Nesomimus macdonaldi*, on the island of Española. On each of three independent occasions, 8 October 2007, 17 October 2008 and 28 February 2009 at Punta Suárez, I observed a single Hood mockingbird repeatedly pecking at the tail of a marine iguana and thereby removing substantial amounts of flesh. On all three occasions, the amount of tissue removed from the tails of iguanas exceeded 2 cm²; on one of those occasions, the combined amount of removed and exposed tissue totaled at least 5 cm². Since these original observations, during six 3-hour visits in February and October of the years 2008-2010, cursory surveys of hundreds of resting marine iguanas revealed a minimum of 13 individuals with still bleeding or recently healed wounds consistent with this kind of attack; the percentage of affected iguanas was quite low (<1%). In contrast, Curry and Anderson [2] reported that 25% of 100 iguanas examined on Española had lesser wounds similar to those at which mockingbirds had been seen to drink blood. Previous observations suggest that *Nesomimus* frequently attack seabird nestlings

to the point of provoking death [2]; their parasitism on iguanas is not unusual but the impact of this extreme ectoparasitism on their population is likely diminished by the typical location of the attacks (tip of the tail), the proportion of the iguana directly affected and an efficient healing process.

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