UNUSUAL FEEDING BEHAVIORS IN FIVE SPECIES OF BARBADIAN BIRDS

SIMON M. READER[1], JULIE MORAND-FERRON[2], ISABELLE CÔTÉ[3], AND LOUIS LEFEBVRE[2]

[1]*Bellairs Institute of McGill University, Barbados, West Indies*; [2]*McGill University, Montréal, Canada*; [3]*School of Biological Sciences, University of East Anglia, Norwich, UK*

Abstract.—Field reports of new or unusual feeding behaviors may provide a valuable measure of behavioral flexibility in both birds and primates (Lefebvre *et al*. 1997, Reader and Laland 2002). In birds, many of these new behaviors are observed on islands and in urbanized habitats. We report here several unusual behavior patterns and food sources in five bird species of Barbados, a highly urbanized island of the West Indies.

Key words: *Barbados*, *foraging*, *innovation*, *novel foods*, *tool use*

Resumen.—CONDUCTAS RARAS DE ALIMENTACIÓN EN CINCO ESPECIES DE AVES EN BARBADOS. Reportes de campo de conductas de alimentación nuevas o inusitadas puden proveeer una medida valiosa de flexibilidad de conducta en ambos aves y primates (Lefebvre *et al*. 1997, Reader and Laland 2002). En aves, muchas de estas nuevas conductas son observadas en islas y en hábitats urbanizados. Nosotros reportamos aquí varios patrones de conducta y fuentes de alimento inusitadas en cinco especies de aves de Barbados, una isla altamente urbanizada en las Indias Occidentales.

Palabras clave: Barbados, *forrajeo*, *innovación*, *nuevos alimentos*, *uso de herramientas*

IN MARCH 2002, an unusual feeding interaction was observed between an adult and a juvenile Carib Grackle (*Quiscalus lugubris*). An adult wild grackle, captured that day using a baited trap, banded, and housed with five other grackles in a large aviary for a short learning experiment, was observed passing food (bread and cooked rice) through the mesh cage to a juvenile grackle. Similar observations had been made twice, on 21 April and 29 August 2000, with individually housed adult grackles passing food through the cage to juveniles. It was not possible in these two cases to identify the species of the juvenile with complete certainty because grackles are commonly victims of Shiny Cowbirds (*Molothrus bonariensis*), brood parasites thought to have first colonized Barbados in 1916 (ffrench 1986, Evans 1990, Davies 2000). It seems likely that the adults were the parents of the juveniles, and if this is the case it is impressive that the juveniles located a captured parent and begged for food. In all three cases the capture had been made at least 50 m from the aviaries, the aviaries were out of visual contact with the capture sites, and the captured birds had been transported in a manner so their transport to the aviaries could not be observed. We could only find one report of a similar behavior in our data base of over 2200 foraging innovations (Lefebvre 2000), a captive rehabilitant magpie (*Pica pica*) feeding a free-living conspecific outside its cage (Williams 1978), though cowbird host parents have been reported to follow cowbirds into a cage (Terpering 1999).

Carib Grackles are very diverse in their feeding habits and foraging strategies (Raffaele *et al*. 1998). In March 2002 we observed a single grackle pecking under a car's windshield wipers in Holetown, St. James, presumably feeding on trapped insects, a normal part of the grackles' diet (Evans 1990). This observation can be added to seven other cases in our data base of birds searching on cars for insects; the species include a congeneric of *Q. lugubris*, *Q. major* (Schardien and Jackson 1978); House Sparrows (*Passer domesticus*) in several parts of Europe (Creutz 1981, Goethe 1981, Bankier 1984, Simmons 1984), North America (Richards 1962), Australia (Wilson 1954), and New Zealand (Flux and Thompson 1986); as well as the Red-legged Partridge (*Alectoris rufa*, Brazier 1998) and the Greenfinch

[1]Current address, and address for correspondence: Dr. S. M. Reader, Department of Biology, McGill University, 1205 avenue Docteur Penfield, Montréal, Québec, Canada, H3A 1B1; e-mail: simon.reader@mcgill.ca; Tel.: (514) 3984116; Fax: (514) 3985069

(*Carduelis chloris*, Flux and Thompson 1988).

Our third observation of unusual feeding was on Gray Kingbirds (*Tyrannus dominicensis*). Kingbirds usually forage in the daytime, but Raffaele *et al*. (1998) note that some Gray Kingbirds take advantage of street lights to feed at night on the attracted insects. Nocturnal feeding has been reported previously for Gray Kingbirds in the Bahamas, Cuba, and Guadeloupe (Brudenell-Bruce 1975; White 1991; Smith and Jackson, in press), and has also been reported for Western Kingbirds (*Tyrannus verticalis*) in Nebraska and Texas (Stevenson and Anderson 1994). To this literature we add two observations of nocturnal feeding in Barbados. The first observation was made on 6 April 2000 between 21:00 and 22:30 h, at a beach in Fitt's Village on Barbados' western coast. A kingbird fed near a restaurant floodlight, repeatedly perching in nearby trees before swooping in front of the light. The second observation was made on 3 October 2000, in Mullins Terrace, St. Peter, approximately 7 km north of the first observation site. At 21:35 h a kingbird was seen to swoop twice in front of a streetlight in a typical feeding flight before returning to perch on utility wires. Several species are known to use artificial lights to feed on insects attracted to them at night. These species include gulls (*Larus haurtlaubi*, Simon 1977), corvids (*Dicrurus adsimilis*, Underhill 1988), nightjars (*Caprimulgus asiaticus*, Bharos 1992), falcons (*Falco tinnunculus*, Tryjanowski and Lorek 1998), rollers (*Coracias benghalensis*, Bharos 1992), swifts (*Tachybarptis melba*, Freeman 1981; *Apus unicolor*, Rodriguez 1988), swallows (*Delichon urbica*, *Hirundo rustica*, Bulgarini and Visentin 1997; *H. neoxena*, Hobbs 1967), and songbirds (*Saxicoloides fulicata*, Bharos 1997; *Parus caeruleus*, Blackett 1970; *Setophaga ruticilla*, Bakken and Bakken 1977).

A fourth set of observations concern the consumption of unusual food sources. In the course of behavioral experiments on Carib Grackles, we provided bread, rice, dog food pellets, and water daily from 6 March to 9 June 2002 on paved terraces at the Bellairs Research Institute (St. James, Barbados) and on lawns in the adjacent Folkestone Park. During these experiments Black-faced Grassquits (*Tiaris bicolor*), Bananaquits (*Coereba flaveola*), and Scaly-naped Pigeons (*Columba squamosa*) were observed to consume bread. The details are as follows. A grassquit was observed eating bread on two occasions in the same location on 16 March. One Bananaquit was observed eating bread on eight occasions on three days from 2 March to 16 March, and two Bananaquits were observed eating bread together on three occasions on 15 and 16 March. A single Scaly-naped Pigeon was observed eating bread twice, on 22 and 23 April. Bread eating by Scaly-naped Pigeons was also observed at other locations. Three Scaly-naped Pigeons ate bread on the ground 10 m from an open-air canteen adjacent to the Deep Water Harbor, Bridgetown on 22 May 2002. The pigeons were with c. 10 Shiny Cowbirds and Carib Grackles. The Harbor site neighbors the Barbados Mills compound, where a Scaly-naped Pigeon has previously been observed feeding on maize (Lefebvre *et al*. 2001).

To our knowledge, bread eating has not been reported previously in these species, and our observations add three more cases to the large anecdotal literature on bread as a novel food type in birds (reviewed in Lefebvre *et al*. 2001). Grassquits are diet specialists and feed almost exclusively on the seeds of herbs and grasses, whereas Bananaquits are described as mainly nectarivores, but also feed on fruits, seeds, and sometimes on small insects (Voous 1983, Ridgely and Tudor 1989, Evans 1990, ffrench 1991, Raffaele *et al*. 1998). In fact, in describing opportunistic use of sugar sources in houses and hotels in Tobago, Gross (1958: p. 277) explicitly states that "Bananaquits were never tempted by bread crumbs." To eliminate the possibility that Bananaquits do not feed on the bread itself, but instead feed on insects attracted to the bread, we inspected the bread after one trial to confirm that no insects were present. Further, on one occasion a Bananaquit approached to within 60 cm of an observer, allowing confirmation that bread, and not insects on the bread, was ingested. As far as *C. squamosa* is concerned, Raffaele *et al*. (1998) stated that, aside from its dietary specialization on arboreal frugivory, this species sometimes feeds opportunistically on the ground, a view supported by our observations here.

Our final observation of an unusual food source was in Gray Kingbirds, seen feeding on hard, dry dog pellets provided for experiments at the Bellairs Institute. Like kingbirds eating bread (Lefebvre *et al*. 2001; also observed on several occasions in March and April 2002), the pellets were taken in flight. At least one individual beat the pellet one to four times on a metallic wire just before its consumption. The beating behavior, an example of 'proto-tool use' (Lefebvre *et al*. 2002), was first observed on 30 May 2002, at 15:30 h, and was subsequently seen several times in May and June 2002. Kingbirds appeared to have difficulties in swallowing the intact dry pellets, attempting to swallow many times before succeeding. After beating the pellets, consumption was more rapid. Raffaele *et al*. (1998) note that Gray Kingbirds often batter captured insects before con-

sumption, and thus it is the food involved, rather than the behavioral pattern, that should be regarded as unusual. Kingbirds normally specialize on catching insects in flight, as well as taking other invertebrates, seeds, lizards, berries and, more rarely, small fish (Lefebvre and Spahn 1987, ffrench 1991, Raffaele *et al*. 1998). They are not reported to eat other food scraps (Voous 1983, Evans 1990, Raffaele *et al*. 1998).

In all our cases of unusual food consumption, the novel food had been provided by humans on a regular basis. Repeated exposure to novel food sources may allow sufficient time for usually cautious species to utilize the novel foraging resources. In addition, birds on many islands, including Barbados, are relatively tame, allowing them to respond rapidly to new food sources.

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