

# Persistence of a feeding innovation in Eurasian Collared Doves *Streptopelia decaocto* despite its disappearance from its original site

Louis Lefebvre<sup>1</sup>

Eurasian Collared Doves *Streptopelia decaocto* were observed in 2017 feeding on commercial dry pellets left out for feral cats at an urban cat shelter in Sitges, Catalonia. The conditions at that site have since changed, and now preclude its use by these doves. In 2020, Collared Doves were seen feeding on pellets at a second site in Sitges, 550 m from the first. This is one of the few descriptions of a feeding innovation persisting despite its disappearance from the original site of observation, as well as detailed evidence of the exploitation of an urban anthropogenic food source by a species known for its spectacular expansion throughout Europe and its invasive ability in the New World.

Key words: Eurasian Collared Dove, *Streptopelia decaocto*, feeding innovation, urban adapters, population expansion, Catalonia.

<sup>1</sup>Department of Biology, McGill University, Montréal H3A 1B1 (Québec, Canada) and CREA, Universitat Autònoma de Barcelona, 08193 Cerdanyola del Vallès (Catalonia, Spain). E-mail: louis.lefebvre@mcgill.ca

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When a novel feeding behaviour emerges in a population, it can remain isolated in the individuals and sites where it first appeared (e.g. flower piercing in Blue Tits *Cyanistes caeruleus*, Thompson *et al.* 1996; sugar packet opening in Barbados Bullfinches *Loxigilla barbadensis*, Reader *et al.* 2002, Ducatez *et al.* 2013) or it can spread socially to areas far beyond its site of origin (opening of milk bottles by tits in the British Isles from 1921 onwards: Fisher & Hinde 1949, Lefebvre 1995, Aplin *et al.* 2013). In both cases, the innovation may disappear over time when the environmental conditions that favoured its emergence are modified, as has happened to milk bottle opening since dairy practices (home delivery, milk homogenization and fat content, container material) have changed.

In the Catalan town of Sitges, Eurasian Collared Doves were observed feeding on dry commercial pellets left out for feral cats in an urban cat shelter on Carrer de Fonollar (Lefebvre 2018). Since the observation of that behaviour in 2017, however, vegetation growth in and around this shelter now prevents doves from landing near the food bowls containing the pellets. This begs the question as to what happens to a feeding innovation in an opportunistic and invasive species like the Collared Dove when the initial site in which the behaviour was observed changes in a way that precludes the continuation of the behaviour.

In 2020, Eurasian Collared Doves were seen on four occasions (Figure 1) feeding on commercial pellets in bowls at another feral cat shelter in Aiguadolç, off Carrer de les Meravelles, approximate-

ly 550 m in a straight line from Carrer de Fonollar (Figure 2). This site had been monitored several times a week on a non-systematic basis every year in February and March since 2015, but doves had never previously been noticed feeding there. This cat shelter is much larger than the one on Carrer de Fonollar and more open, with less vegetation, as well as good perching sites for doves on walls separating the Aiguadolç area from Carrer de les Meravelles. There is also less potential interference from humans and cars than in Carrer de Fonollar, where the cat shelter is in a busy area.

Given the lack of individual identification of the doves, it is impossible to know whether the individuals in Aiguadolç are the same as those noticed previously in Carrer de Fonollar. The important point is that the innovation of feeding on dry pellets left out for cats at urban shelters has, for the moment, persisted in the Sitges Collared Dove population, either through independent discovery at a second site or through switching by users to a new site after the initial one had become unavailable.

Eurasian Collared Doves are well known for their spectacular expansion across western and northern Europe since the nineteenth century and have been found in the Sitges area since 1989–1991 (Pocino *et al.* 2005). Although much of the expansion has occurred in European cities, the extent to which populations of doves have used novel feeding opportunities in exploiting urban conditions is poorly documented. Recent work on corvids and parrots moving into cities in Australia has revealed contradictory trends in the use of innovative feeding: Little Ravens *Corvus mellori* have shown several feeding innovations after moving into Melbourne (Lill & Hales 2015), while Corellas *Cacatua sanguinea* and *C. tenuirostris*, as well as Galahs *Eolophus roseicapilla*, have apparently not innovated (Lill & Polley 2020, Polley & Lill 2020).

As Eurasian Collared Doves have reached the New World and now are spreading throughout North America and the Caribbean (Fujisaki *et al.* 2010, Scheidt & Hurlbert 2014), and even replacing local columbids such as *Zenaida aurita* at some sites in Barbados (pers. obs.), it is important to document any behaviour that might facilitate their implantation. It is one thing for expanding populations of Collared Dove to feed on large, easily accessible anthropogenic food sources that are similar to their natural ones,



**Figure 1.** Eurasian Collared Doves at the Aiguadolç feral cat shelter. The food bowl with dry pellets is to the left of the wooden tray on which doves are perching, under the artificial grass roof of the box. Photo: Louis Lefebvre.

*Tórtoras turques al refugi de gats d'Aiguadolç. El recipient amb el pinso sec està a l'esquerra de la safata de fusta on estan posades les tórtoras, sota el sostre de la gespa artificial de la teulada. Foto: Louis Lefebvre.*

e.g. grain stores in Britain (Coombs *et al.* 1981) and the Baltic region (Svazas 2001); likewise, in urban Campinas, Brazil, Eared Doves *Zenaida auriculata* and Ruddy Ground Doves *Columbina talpacoti* follow lawnmowers and feed in drying grass (Sazima 2008), a practice that is comparable to how they forage in non-urban settings.

However, it is quite different to risk predation by feral cats to access semi-hidden bowls (see figure in Lefebvre 2018) in order to feed on a high protein manufactured food that can only be found at a few, patchily distributed sites. Documenting the various ways – some more innovative than others – in which birds exploit resources in cities is important at a time when urban sprawl and the destruction of natural habitats is affecting differences between avian clades in terms of their vulnerability to extinction (Ducatez *et al.* 2020).



**Figure 2.** Map of Sitges showing (A) the site of the initial observation in Carrer de Fonollar and (B) the site of the observation reported here near Carrer de les Meravelles.  
 Mapa de Sitges on es mostra (A) el punt inicial d'observació al carrer de Fonollar, i (B) el lloc d'observació que es detalla aquí prop del carrer de les Meravelles.

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algunes tórtora alimentant-se de pinso en un segon lloc de Sitges, a 550 m de l'inicial. Això proporciona una de les poques descripcions d'una innovació alimentària que persisteix malgrat la seva desaparició del lloc d'observació inicial, així com una evidència detallada sobre l'explotació d'una font d'aliment antropogènic urbà per part d'una espècie coneguda per la seva espectacular expansió a Europa i la seva capacitat d'invasió al Nou Món.

**Resum**

**Persistència d'una innovació alimentària en la tórtora turca *Streptopelia decaocto* malgrat la seva desaparició en un lloc anterior**

El 2017 es van observar alguns exemplars de tórtora turca que s'alimentaven de pinso sec comercial destinat a alimentar gats ferals en un refugi de gats urbans de Sitges, Catalunya. Des de llavors, les condicions en aquest lloc han canviat, evitant que les tórtora accedeixin al menjar. El 2020 es van veure de nou

**Resumen**

**Persistencia de una innovación alimentaria en la tórtola turca *Streptopelia decaocto* a pesar de su desaparición en un lugar anterior**

En 2017 se observaron algunos ejemplares de tórtola turca que se alimentaban de pienso seco comercial destinado a alimentar gatos callejeros, en un refugio de gatos urbanos de Sitges, Cataluña. Desde entonces, las condiciones en este lugar han cambiado, evitando que las tórtolas accedan a la comida. En 2020 se vieron

de nuevo algunas tórtolas alimentándose de pienso en un segundo lugar de Sitges, a 550 metros del inicial. Esto proporciona una de las pocas descripciones de una innovación alimentaria que persiste a pesar de su desaparición del puesto de observación inicial, así como una evidencia detallada sobre la explotación de una fuente de alimento antropogénico urbano por parte de una especie conocida por su espectacular expansión en Europa y su capacidad de invasión en el Nuevo Mundo.

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