

Hunter sparrows: a predation record of a House Sparrow on Kentish Plover nestlings

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Many bird species with behavioural plasticity innovate when searching for alternative trophic resources, mainly during periods of energetic constraints, when colonizing new habitats, or during the breeding season when the demand for protein is higher. For example, the consumption of meat by non-carnivorous bird species has been anecdotally documented, so that non-carnivorous passerine species may prey on other bird species in periods of high demand for protein. In this case, we report the predation of a Kentish Plover *Charadrius alexandrinus* nestling by a House Sparrow *Passer domesticus*. We observed this event during the 2021 breeding season at a Kentish Plover breeding site in Altafulla (Catalonia, Spain). We observed an attack by at least one male House Sparrow on two Kentish Plover nestlings from the same nest, of which only one attack was successful. The predation on the second nestling was repelled by its parents. The House Sparrow has a wide dietary range and is known to be capable of killing other birds and ingesting meat. The witnessed attack seemed to be performed by a single male House Sparrow, although another male could have been involved. This observation highlights the flexibility of the House Sparrow when acquiring dietary resources and underlines the broad food spectrum of this generalist species.

Key words: House Sparrow, *Passer domesticus*, Kentish Plover, *Charadrius alexandrinus*, phenotypic plasticity, predation trophic niche.

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Dietary range is a key component of the behavioural flexibility that many bird species employ to cope with the process of securing feeding resources (Lefebvre *et al.* 1997, Overington *et al.* 2011, MacGregor-Fors *et al.* 2022). Diets change when habitual food sources are scarce or when individuals need to find novel food resources during periods of energetic constraints (Renton 2001, Salinas-Melgoza *et al.* 2013), when populations are colonizing new habitats

or expanding their ranges (Sol *et al.* 2011, González-Lagos & Quesada 2017), or during the breeding season when the demand for protein is high (Newton 1967, Yoshikawa & Osada 2015). For instance, the Great Tit *Parus major*, a non-carnivorous species, has been recorded feeding on dead animals on roads (Cramp *et al.* 1993), as well as actively killing other birds (Common Redpoll *Acanthis flammea*) (Kujala pers. obs., in Maninnen 2013), Bank Voles (Majoinen pers.

obs., in Salminen 2016) and bats (Estók *et al.* 2010) during extreme cold weather. Rock Doves *Columba livia* were observed to consume raw mince-meat left out for cats in Venice in 2006 (J.Quesada, pers. obs.).

Another passerine species that has been seen to use atypical food resources is the House Sparrow *Passer domesticus* (Brockmann 1980, Shelley 2005, Benttinen & Preisser 2009). This species is widely distributed across several regions of the world and its success is partially due to its ability to adjust to local conditions through behavioural innovation including diet (Anderson 2006). Although mainly a granivore, this opportunistic species has been recorded feeding on human litter, poultry feed and meat, among other food sources (Anderson 2006, Karthick *et al.* 2017, MacGregor-Fors *et al.* 2020). Typically, during the breeding period it has a protein-based diet consisting mainly of invertebrates (Cramp *et al.* 1993, Anderson 2006), although some studies note that it sometimes also preys on small vertebrates (reptiles and mammals, Anderson 2006). However, to our knowledge, no records exist

in the scientific literature of active predation by House Sparrows on other bird species. Here we described an atypical record of predation by House Sparrows of a Kentish Plover *Charadrius alexandrinus* nestling in Catalonia, NE Spain.

Case study

On May 29, 2021, during the course of a birdwatching session at the mouth of the river Gaià, Altafulla, Catalonia, NE Spain, two experienced ornithologists (EP, CF) recorded from a distance of 15–20 m early in the morning (08:35) the predation of a Kentish Plover nestling by a male House Sparrow. The Kentish Plover nest was built at the river mouth (41° 07' 58.40"N 1° 22' 20.69"E) (Fig. 1) on a small beach consisting mainly of sand, with herbaceous halophile vegetation and a few scattered shrubs and trees near a path where House Sparrow flocks were feeding. The observers located a Kentish Plover female on a nest containing an unhatched egg and a one-day-old nestling. Meanwhile, a se-



Figure 1. Male House Sparrow capturing a Kentish Plover nestling as the adult female Kentish Plover tries unsuccessfully to defend it. Photo E.Pàmies / Birding Catalunya.

Pardal comú mascle capturant un poll de corriol camanegre mentre la femella adulta de corriol intenta protegir-lo sense èxit. Foto E.Pàmies / Birding Catalunya.

cond larger (possibly two-day-old) nestling was exploring the area, approximately one metre away from the nest. A male House Sparrow flew in and landed ~15 cm from this latter nestling, approached it and pecked at it, causing it to lose balance. Afterwards, the male House Sparrow took refuge under a nearby shrub. A few seconds later (~30 sec.), the House Sparrow returned to where the nestling was and aggressively pecked at it, causing it to roll over on the sand. The adult female Kentish Plover, then, attempted to defend the nestling but the House Sparrow was too quick, picked up the nestling by its left wing (Fig. 1) and flew off into a nearby bush. After approximately one minute, presumably the same male House Sparrow – we cannot be completely certain because the sparrows were not individually marked – returned to the nest but with no sign of blood on its beak. This time, it tried to abduct the second smaller nestling and, although it was able to peck at it a couple of times, the adult female Kentish Plover successfully defended its chick (Fig. 2). Finally, the male House Sparrow returned to the shrubs

and trees whence it had come, the other House Sparrows in its flock showing no interest in the predation event.

Discussion

We provide evidence here of the predation of a Kentish Plover nestling by at least one male House Sparrow. The use of alternative prey sources by species with a wide dietary range has been widely reported in the literature (Schmidt & Ostfeld 2003) due to its importance as adaptive behaviour (Wu 2021). This kind of behaviour has been shown to occur more frequently during times of stress, a clear example of which is when non-carnivorous birds kill during periods of high thermal stress (Kujala pers. obs., in Maninnen 2013). However, this was not the case in the reported predation event as it occurred during spring. However, it took place during the breeding season, which suggests that it was most probably prompted by a high demand for protein (habitually satisfied by



Figure 2. Female Kentish Plover manages to repel a male House Sparrow from the nesting area during the second predation attempt. Foto E.Pàmies / Birding Catalunya.

Femella de corriol camanegre intent repel·lir el mascle de pardal comú del niu durant el segon intent de depredació. Foto E.Pàmies / Birding Catalunya.

insects) put on House Sparrows with nestlings (Karthick *et al.* 2017). Meat has a high protein content (Williams 2007) and previous studies have suggested that in the case of the House Sparrow it is an alternative protein source (see review in MacGregor-Fors *et al.* 2020). There is also evidence of the consumption of fresh meat in cases of sibling cannibalism in this species (Ben Dov *et al.* 2006). Hence, another option for obtaining this high-protein resource could be predation on small vertebrates such as nestlings, given that this sparrow has the ability to kill other similar-sized birds. For example, House Sparrows have been recorded killing troglodyte bird species such as bluebirds *Sialia* spp. (Gowati 1984, Frye & Rogers 2004) and Purple Martins *Progne subis* (Allen & Nice 1952) when competing for nest boxes.

Behavioural plasticity and the capacity to innovate in the House Sparrow is thought to be one of the factors behind the worldwide distribution of this ubiquitous species. Its diet in urban areas is very broad-ranging and differs from conspecifics in non-urban areas (Gavett & Wakeley 1986, MacGregor-Fors *et al.* 2020). There are a plethora of references that highlight the ability of this species to exploit novel resources (i.e. Brockmann 1980, Shelley 2005, Benttinen & Preisser 2009, Karthick *et al.* 2017, David 2019, MacGregor-Fors *et al.* 2021), which may be enhanced by its social and gregarious nature (Liker & Bokony 2009).

Given that the male House Sparrow in the second event had no signs of blood on its beak, we cannot be sure whether or not it was the same bird or a different one. Thus, the question whether or not this behaviour was an innovation made by a single bird or, instead, behaviour adopted by more individuals in the local population remains unanswered. The fact that one or more House Sparrows preyed upon the Kentish Plover nestling opens a new avenue regarding the potential impact that this species may have on local avian fauna (Allen & Nice 1952, Gowaty 1984, Frye & Rogers 2004), although more empirical evidence is still needed.

To summarize, this observation illustrates the wide dietary spectrum of the House Sparrow and stresses the importance of dietary flexibility for explaining the successful distribution of this species. It also highlights the threat posed by this sparrow to other potentially endangered species.

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Resum

Pardals caçadors: un cas de depredació de pardal comú sobre un poll de corriol camanegre

Moltes espècies d'ocells amb un ampli historial de plasticitat conductual innoven en la recerca de recursos tròfics alternatius, principalment durant períodes de restriccions energètiques, quan colonitzen nous hàbitats, o durant la temporada de reproducció, quan la demanda de proteïnes és més gran. Per exemple, el consum de carn per espècies d'ocells no carnívors s'ha documentat anecdòticament fins al punt que espècies passeriformes no carnívors també poden depredar altres espècies d'ocells en períodes d'alta demanda de proteïnes. En aquest cas d'estudi, reportem la depredació d'un poll de corriol camanegre *Charadrius alexandrinus* per un individu de pardal comú *Passer domesticus*. Aquest esdeveniment l'observem durant l'època reproductora del 2021, dins l'àrea de reproducció del corriol camanegre a Altafulla (Catalunya, Espanya). Observem l'atac d'almenys un pardal comú mascle a dos polls de corriol camanegre del mateix niu, encara que només el primer poll va ser depredat amb èxit. Els pares van impedir la depredació del segon poll. El pardal comú té una dieta molt àmplia i s'ha demostrat que és capaç de matar altres espècies d'ocells o d'ingerir carn. La nostra observació suggereix que l'esdeveniment va ser liderat per almenys un pardal comú mascle, encara que un altre mascle podria haver estat involucrat. Aquesta troballa destaca la flexibilitat del pardal comú per adquirir recursos tròfics i evidencia l'ampli espectre d'aquesta espècie generalista.

Resumen

Gorriones cazadores: un caso de depredación de gorrión común sobre un pollo de chorlitejo patinegro

Muchas especies de aves con un amplio historial de plasticidad conductual innovan en la búsqueda de recursos tróficos alternativos, principalmente durante períodos de restricciones energéticas, cuando colonizan nuevos hábitats, o durante la temporada de reproducción, cuando la demanda de proteínas

es mayor. Por ejemplo, el consumo de carne por especies de aves no carnívoras se ha documentado anecdóticamente hasta el punto de que especies passeriformes no carnívoras también pueden depredar a otras especies de aves en períodos de alta demanda de proteínas. En este caso de estudio, reportamos la depredación de un pollo de chorlito patinegro *Charadrius alexandrinus* por un individuo de gorrión común *Passer domesticus*. Este evento lo observamos durante la época reproductiva de 2021, dentro del área de reproducción del chorlito patinegro en Altafulla (Cataluña, España). Observamos el ataque de al menos un gorrión común macho a dos pollos de chorlito patinegro del mismo nido, aunque solo el primer pollo fue depredado con éxito. Los padres impidieron la depredación del segundo pollo. El gorrión común tiene dieta muy amplia y se ha demostrado que es capaz de matar otras especies de aves o de ingerir carne. Nuestra observación sugiere que el evento fue liderado por al menos un gorrión común macho, aunque otro macho podría haber estado involucrado. Este hallazgo destaca la flexibilidad del gorrión común para adquirir recursos tróficos y evidencia el amplio espectro de esta especie generalista.

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