

An unexpected case of heterospecific altruistic behaviour in a non-breeding migrant tern (Charadriiformes, Sternidae)

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Giacomo Bruni, Mattia Menchetti, Giulia Ricciardi, Andrea Vannini & Emiliano Mori 2014. An unexpected case of heterospecific altruistic behaviour in a non-breeding migrant tern (Charadriiformes, Sternidae). – *Ornis Hungarica* 22(1): 76–80.

Abstract Observations of birds feeding chicks or fledglings of a different species have already been reported in many publications. However, the benefits of the altruistic behaviour are not easy to understand, as benefits and costs of this behaviour have been poorly identified. In May 2013, in a wetland in Central Italy (Piana Fiorentina, Tuscany), some cases of interspecific feeding of an Eurasian Coot *Fulica atra* chick by an adult non breeding Whiskered Tern *Chlidonias hybrida* were witnessed. We suggest that the behaviour of the Tern was triggered by the begging of the chick or by its own hormonal status.

Keywords: interspecific feeding, *Fulica atra*, *Chlidonias hybrida*, chicks

Összefoglalás A más fajok fiókáit etető madarakról számos beszámolót publikáltak az ornitológiai szakirodalomban. Azonban evolúciós szempontból az ilyen altruisztikus viselkedés értelmezése nehéz feladat, ugyanis az önzetlen egyed számára a viselkedés előnye még kevésbé ismert. Egy közép-olaszországi (Piana Fiorentina, Toszkána) vizes élőhelyen 2013 májusában több alkalommal megfigyeltük, hogy szárcsa (*Fulica atra*) fiókát etetett egy kifejlett, de nem költő fattyúszerkő (*Chlidonias hybrida*). Véleményünk szerint a szerkő viselkedését a szárcsa fióka kéregetése, vagy a saját hormonális állapota válthatta ki.

Kulcsszavak: interspecifikus etetés, *Fulica atra*, *Chlidonias hybrida*, fiókák

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Introduction

Feeding of the chicks or fledglings of other species has frequently been observed in birds (Shy 1982, Koenig 1988), and is not easily explained by evolutionary theory. In her review, Shy (1982) tried to define the possible ethological mechanisms underlying these behaviours. In most cases, both species involved in these displays are breeding in the same

area (McNair & Duyck 1991, Drózdź *et al.* 2004) and interspecific altruistic behaviour might decrease competition for nesting sites ('mixed clutches' if idoneous/suitable net sites represent limiting resources) or be due to loss of the clutch by one of the two species and/or proximity between nests of the two species (Shy 1982).

Whiskered Tern *Chlidonias hybrida* is a polytypic sub-cosmopolitan species (Cramp

& Simmons 1980, IUCN 2012) with migratory habits (Cramp & Simmons 1980, Svensson 2009). Distribution range is highly fragmented (Spina & Volponi 2008). European populations winter mainly in tropical West Africa (Cramp & Simmons 1980, Spina & Volponi 2008), although there are known cases of wintering in Mediterranean areas (Spain, Algeria, Tunisia) (Cramp & Simmons 1980). Nesting takes place in colonies of various size (Cramp & Simmons 1980), and exclusively in flooded areas (e.g. marshes), characterised by the presence of aquatic plants appearing on the surface (Spina & Volponi 2008, IUCN 2012). The diet is carnivorous (e.g. fishes, frogs and macroinvertebrates) (Cramp & Simmons 1980, IUCN 2012). As for Italy, the species is classified as regular migratory, wintering and irregular breeding (Tinarelli 2006, Spina & Volponi 2008). *C. hybrida* is declining all over the Europe (SPEC3: Tucker & Heath 1994); as for Italy, it is classified as 'vulnerable' by the Red List of breeding birds (Peronace *et al.* 2012), as nesting sites are located only within Emilia-Romagna Region (Frugis *et al.* 1978, Tinarelli 2006). Whiskered Terns are known to nest near other species' nests (Cramp & Simmons 1980), and cases of conspecific nest parasitism were also reported (Yom Tov 2001, Paillison *et al.* 2008). However, heterospecific altruistic behaviour had never been recorded for this species. In this note, we describe observations of an adult non-breeding Whiskered Tern feeding a Eurasian Coot chick and speculate on possible causes of this enigmatic behaviour.

Materials and Methods

Observations, done by photographers and birdwatchers, who regularly frequent the

area, took place from a bird-watching hut, in the Natural Area of Local Interest (ANPIL) 'Podere La Querciola', located in Piana Fiorentina (Tuscany, Central Italy). The study-wetland (43.824558° N, 11.172574° E; c. 50 ha large) has been described in details by Bruni *et al.* (2013). Fish species present in these ponds include *Gambusia holbrooki* and *Pseudorasbora parva*. *F. atra* is a known breeding species in this site (Bruni *et al.* 2013), whereas this work report for the first time the presence of the Whiskered Tern (a single individual) in Piana Fiorentina. This tern species is listed as regular migrant in Tuscany (Tellini Florenzano *et al.* 1997): observations of *C. hybrida* in this region belong to migrant individuals during the route from the African wintering site to the breeding sites (e.g. Northern Italy: Frugis *et al.* 1978, Tinarelli 2006, Spina & Volponi 2008). The individual of *C. hybrida* stayed in the study site from 18th to 23rd May 2013, doing its feeding activity in one of the four lakes (named Lago della Querciola). Two nests (with two and four nestlings respectively) of Eurasian Coot are present in the part visited by the Tern.

Results

On 20th May (h. 17:45), the Whiskered Tern caught a fish, and then stopped on a perch without swallowing the prey. After a few seconds, it flew towards a little islet where two Coot chicks were present, hidden by bulrushes (*Juncus* sp., Cyperaceae). The Tern approached the bulrushes twice, then dropped the fish. Adult Coots were not observed in the surroundings. The day after (21st May, h. 8:00–11:00), the Whiskered Tern tried to approach two Coot chicks many times, hovering above them while

holding fishes in its beak. Some preys were dropped towards the chicks, others eaten by the Tern itself on a perch. In the meanwhile, parents stood near the chicks, showing no concern about the behaviour of the Whiskered Tern. Then, on 22th May (14:00), two Coot chicks were swimming around the smallest islet of the lake and one adult individual was about two meters from them. The Whiskered Tern was fishing, resting sometimes on two perches. Once it caught a *P. parva*, the Whiskered Tern approached one of the chicks, extending the beak with the prey towards it (Figure 1a, 1b). The chick responded with a defence posture, raising its legs towards the Whiskered Tern (Figure 1c), which dropped the prey. Then, the chick ate the fish (Figure 1d).

Discussion

Altruistic behaviours displayed by another tern species (i.e. *Sterna hirundo*) are recorded in literature only for a breeding population, whose nests were localised in the proximity of a breeding colony of European Herring Gull *Larus argentatus* (Kuhlemann 1939). Although Whiskered Terns do not reproduce in Tuscany, this observation fall into the breeding period of the species in Europe (Paillison *et al.* 2006, Paillison *et al.* 2007), and the individual observed in Piana Fiorentina was considered to be an adult, according to the colours of the plumage (Cramp & Simmons 1980). Moreover, it is likely that this individual observed in Piana Fiorentina was on route to reach the only Italian bree-

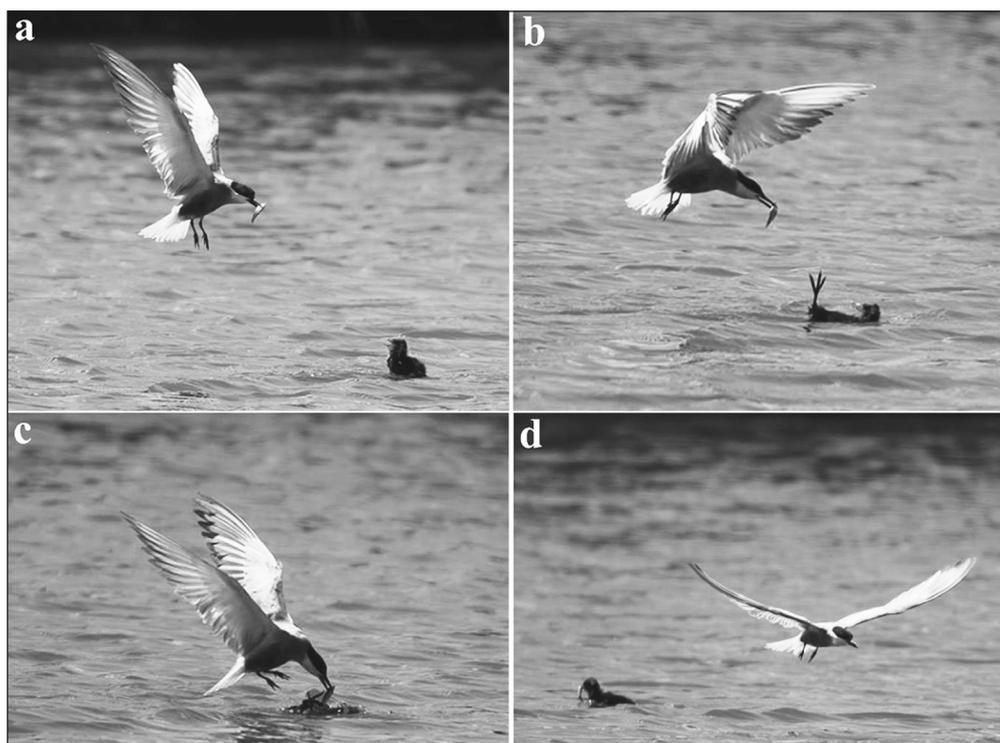


Figure 1. Whiskered Tern feeding the chick of Eurasian Coot with a *Pseudorasbora parva* (photo Alessandro Piazzini). Chronology reflect the alphabetical sequence of letters
1. ábra Fattyúszerkő szárcsa fiókát etet kínai razbórával (*Pseudorasbora parva*)

ding area; this means that its hormonal status was close to that experienced during breeding, and may have elicited the altruistic behaviour described here (e.g. Buntin 1996). Moreover, the colonial status of the tern species would favour social intra – but also inter – specific interactions. It is noteworthy that the behaviour of the Coot chick mimics that of Whiskered Tern chicks that often go away from the nest (Cramp & Simmons 1980). Coots are omnivorous, eating mainly plant material, but also consume small fishes (Cramp & Simmons 1980), thus, the behaviour of Coot chicks could mimic that of Whiskered Tern chicks. Hence these observations would be considered as a kind of interspecific begging trials. Although chicks of *C. hybrida* and *F. atra* are markedly different both in physical aspects and in voices (Cramp & Simmons 1980), this interspecific feeding could also be explained as a response

to the begging of the chick of *F. atra*, which represents a known feeding stimulus in birds (Shy 1982, Drózdź *et al.* 2004).

Shy (1982) and Trombino (1999) claimed also that mateless/non-breeding heterospecific adults may gain experience by feeding chicks of other species, increasing the probability of pairing in the next breeding season.

Acknowledgements

The authors would like to thank S. Guidotti and F. Guiggiani, for their valuable help in data collection, and A. Piazzini, who provided us with the photo of the Whiskered Tern. O. Melaiu kindly revised and improved the English of the manuscript. Two anonymous referees and the Editor kindly provided significant comments on the initial draft.

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