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Predation of Ocellated Skink, *Chalcides ocellatus* (Forskål, 1775), by the Common Kestrel, *Falco tinnunculus*, in a Sardinian dunal ecosystem, Italy

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The Ocellated Skink, *Chalcides ocellatus*, is a robust viviparous lizard widely distributed across the southern Mediterranean, Asia Minor, the Levant, and the Arabian Peninsula. Across its range, several evolutionary lineages have been identified (Kornilios et al., 2010), including a long history of human-mediated colonisations to the islands of Sardinia, Sicily, Malta, Crete, Rhodes, Karpathos, Chios (Kornilios et al., 2010), and more recently to the Iberian Peninsula (Bisbal-Chiniesta et al., 2020). In Sardinia, the species is now widespread, occupying shrublands, sandy areas, rocky terrain, but also orchards such as olive tree groves, almond groves, and citrus groves (Corti et al., 2010, 2022; Di Nicola and Mezzadri, 2018; Kapsalas et al., 2018). Due to its shy behaviour, semi-fossorial habits, and partially crepuscular activity, these lizards may be difficult to observe, but they frequently bask on dry stone walls and dry vegetation in the early morning and late afternoon.

With the support of photographic evidence, we here report a direct observation of predation of *C. ocellatus* by a female Common Kestrel, *Falco tinnunculus*, that took place on 5 May 2023 in coastal Mediterranean shrub along a sandy beach with low dunes called Is Arutas on the Sinis Peninsula, western Sardinia, Italy (approximate coordinates 39.9528°N, 8.4028°E). We noticed the kestrel's hunting behaviour (i.e., hovering and flying low) as soon as we approached the beach. Shortly after our arrival, we observed that the falcon caught a skink, which we were able to identify as *C. ocellatus*, which is easily differentiated from *C. chalcides* (Linnaeus, 1758) by its thicker and shorter cylindrical body and longer limbs. The kestrel then proceeded to use a public shower as a perch, giving us the opportunity to take photographs (Fig. 1A, B). It remained still for just a couple of minutes, not consuming the meal, before taking flight again and returning to where it originally came from (Fig. 1C, D), suggesting the presence of a nesting site. The predation event was observed in the late afternoon, at 17:30 h, during sunny weather. To our knowledge, this type of predation has never been directly reported and documented with photographic evidence, although it has been mentioned for Sardinia (Di Nicola and Mezzadri, 2018), Sicily (based on direct examination of kestrel pellets; Corti et al., 2010), and North Africa (Schleich et al., 1996) without supporting information.

The diet of birds of prey, including the Common Kestrel, can vary greatly in composition based on prey availability, season, and other environmental variation within a bird's home range (Żmihorski and Rejt, 2007; Romanowski and Żmihorski, 2008; Tulis et al., 2017; Hobart et al., 2019; Montoya et al., 2021). The diet of the Common Kestrel, a ground predator that detects prey in flight but captures it on the ground (Casagrande et al., 2008; Garrat et al., 2011), is mainly composed of small mammals, especially the Common Vole, *Microtus arvalis* (e.g., Aschwanden et al., 2007; Casagrande et al., 2008; Tulis et al., 2017; Montoya et al., 2021; Kovinka et al., 2023), but it can also include insects, birds, and reptiles (Martin and Lopez, 1990). Quantitative data on kestrel diet from previous studies (Guarino et al., 2013; Kovinka et al., 2023) indicate that reptiles constitute

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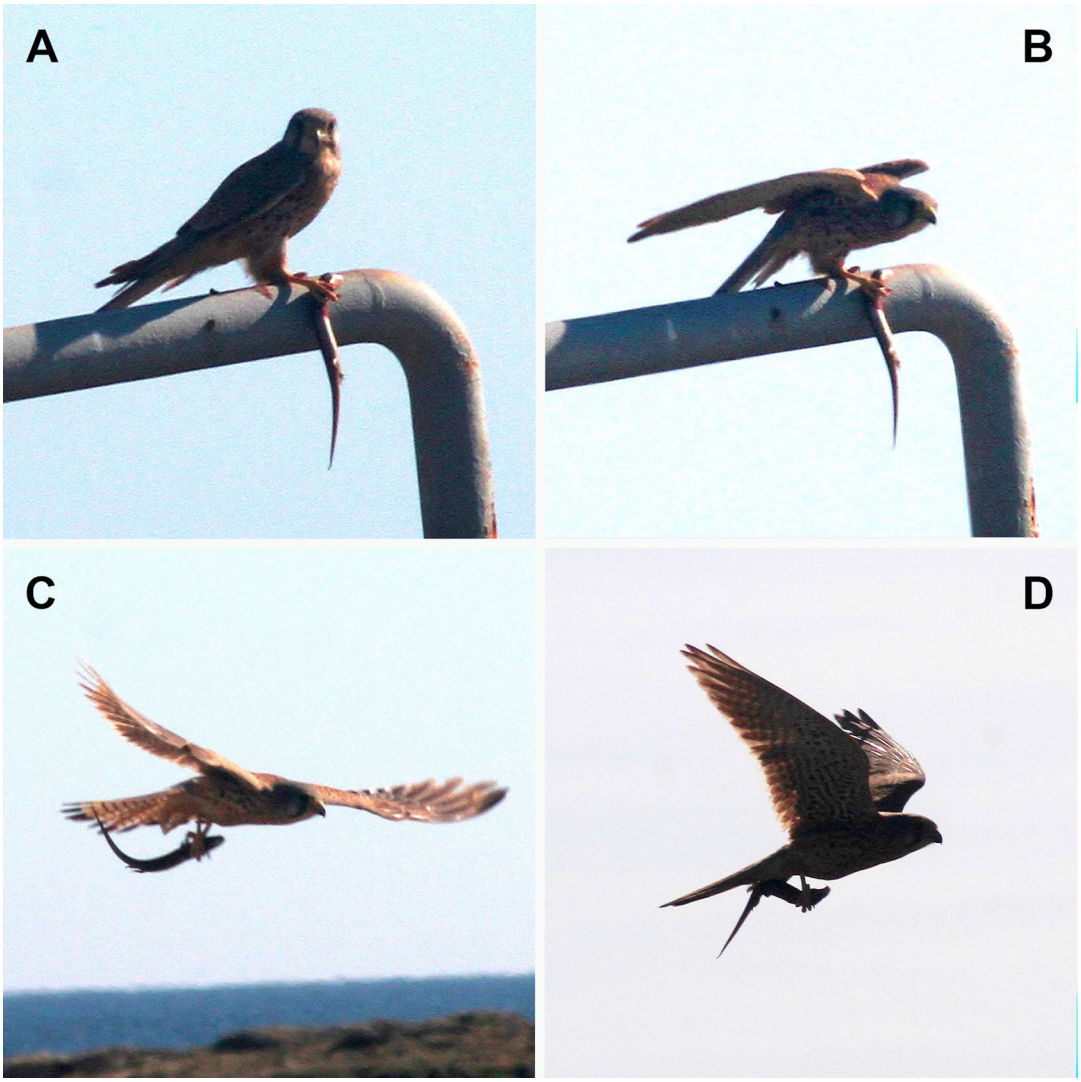

Figure 1. Photographic record of a common kestrel (*Falco tinnunculus*) predating on an ocellated skink (Chalcides ocellatus). The photos are presented in chronological order from A to D. Photos by Elena Chiesa.

a minor part of its prey, with the major part being small mammals and invertebrates, followed by birds. However, where reptiles (e.g., lizards) are abundant, such as in insular environments, they may constitute the main prey item of kestrels (Carrillo et al., 2017). Furthermore, during the warmer months in southern Europe, reptiles are more frequent prey than in the colder months in more northern latitudes (Andrews, 1990; Grano and Cattaneo, 2017), when they may be less available or not available at all.

To underline the variability of kestrel diet, it is worth mentioning that two cases of cannibalism have been reported in Israel (Haddad and Yosef, 2022), showcasing this raptor's very opportunistic hunting behaviour. Therefore, predation of a skink should not be surprising. However, in the sandy area where the event occurred, the most common lizard species was more likely the Italian wall lizard, *Podarcis siculus* (Rafinesque-Schmaltz, 1810), a less elusive and more abundant species that would make an easier prey for kestrels and therefore likely present a more regular meal. We actively searched for other *C. ocellatus* in the area for 1 h and observed five more individuals, three under rocks and two moving through the shrubs.

In addition, we found two *C. chalcides*. We also observed an adult male western whipsnake, *Hierophis viridiflavus* (Lacépède, 1789), which may also prey on lizards and skinks on the beach. We believe it is unlikely that kestrel predation constitutes a threat for local skink populations due to the bird's generalist diet, which makes it a non-selective predation of skinks that will include other, more common lizard species in its diet.

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