

Reptile behaviour in natural refuges - 3. Between commensalism and custodianship: The behaviour of ocellated lizards *Timon lepidus* towards the eggs and hatchlings of cohabiting Montpellier snakes *Malpolon monspessulanus*, with a link to video evidence

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This note, based on a long-term study (2018–2025) of a communal refuge, describes the behaviour of ocellated lizards *Timon lepidus* towards the egg clutches and hatchlings of the Montpellier snake *Malpolon monspessulanus*, which is known as a saurophagous predator. The communal use of this refuge was first documented by Serrano-Fochs (2019). Subsequently, a series of studies has built on this initial description, using a combination of direct monitoring and camera trapping (Serrano-Fochs, 2026a; 2026b), to focus on unique reptile behaviours within this refuge.

Since 2018, a consistent pattern of behaviour has been observed annually between Montpellier snakes and ocellated lizards. After the female snakes had deposited their clutches and departed, individual lizards (different across years) returned to and frequently inhabited the refuge. Their behaviour towards the clutches was notably cautious and distinct from their usual demeanour. They were observed carefully moving around and even resting on top of intact clutches without displacing or damaging them (Fig. 1A; [BHS video, 2026a](#)), in sharp contrast to the same individuals' behaviour towards inanimate objects such as the camera, which they often bumped into or displaced.

A particularly illustrative case occurred in 2018, when an adult ocellated lizard was recorded resting directly on an unhatched clutch without altering its arrangement or integrity. This gentle, non-predatory behaviour has been observed consistently during subsequent laying periods over several years. As embryos developed, lizards were seen moving through the same chambers, tongue-flicking the clutches while avoiding direct contact with the now-hatching or recently hatched neonates.

Following hatching, a behavioural shift towards active maintenance became evident. Lizards were frequently observed removing or rearranging empty eggshells, gradually reconditioning the chamber. For instance, adult lizards were recorded actively expelling egg shell remnants in both 2024 and 2025 ([BHS video, 2026b](#)). This conditioning behaviour was repeated over the following days. It did not occur on a fixed schedule but typically took place within days after hatching and was also observed at other times of the year, such as at the start of the spring activity period. Although more commonly carried out by females, males have also been recorded engaging in such maintenance, primarily in spring. Shell remnants were expelled from the refuge, while others were moved to the periphery of the chamber.

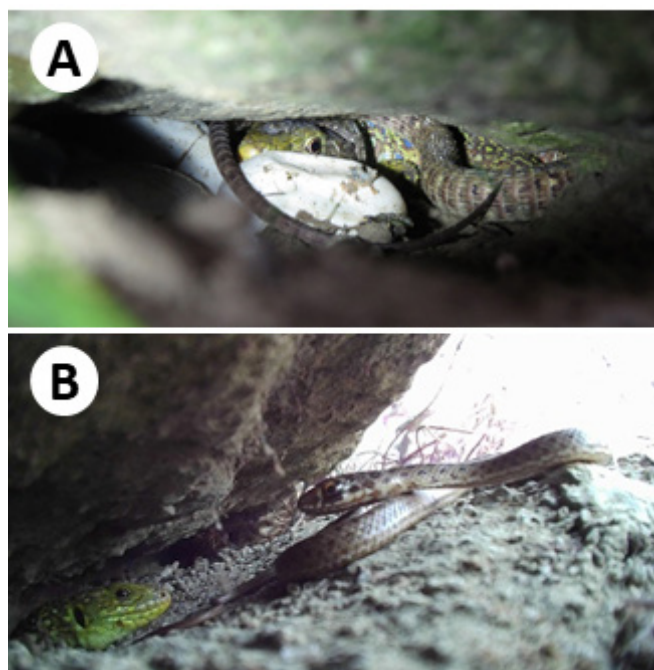


Figure 1. Reptile activity in the natural refuge - **A.** *Timon lepidus* resting next to the eggs of *Malpolon monspessulanus* without disturbing them, **B.** Close encounter between *Malpolon monspessulanus* and *Timon lepidus*, both individuals were startled but not aggressive

The interactions between the lizards and snake hatchlings have remained consistently non-predatory across the years. This pattern was exemplified by two types of non-aggressive interaction. First, a curious but non-threatening exploration: in 2024, an adult lizard was recorded tongue-flicking and inspecting a cluster of neonates before moving away without showing predatory interest ([BHS video, 2026a](#)), a behaviour also noted in 2018 during hatching (Serrano-Fochs, 2019). Second, a mutual avoidance response: in 2025, accidental physical contact consistently triggered a startle reaction in both the lizard and the hatchlings, causing them to rapidly flee from each other (Fig. 1B; [BHS video, 2026a](#)). A particularly illustrative case occurred in 2025, when a snake hatchling crawled onto a resting adult lizard, prompting a simultaneous and dramatic startle response in both animals, which then fled. This consistent mutual inspection and avoidance, where both potential predator and prey react to each other as an unexpected disturbance, highlights the neutral nature of these interactions ([BHS video, 2026a](#)).

The behaviour of the ocellated lizards indicates that they have an ability to discriminate between the egg shell remnants of *M. monspessulanus* and intact eggs. The lizards rest cautiously on clutches without displacing them. Since female lizards also oviposit in this refuge, this behaviour may be partly driven by an innate instinct to respect intact eggs, indirectly benefiting their own reproductive investment by safeguarding the shared nesting site. Furthermore, this discernment may be facilitated by the detection of subtle embryo cues, such as vibrations or thermal signals similar to those involved in parental care in other reptiles (Mateo & Cuadrado, 2012). In contrast, removing remnant eggshells likely serves a hygiene function, potentially reducing substrates for pathogens, parasites, fungal growth or olfactory cues that could degrade the refuge's quality or attract unwanted attention, a behaviour with documented advantages in other squamate reptiles (Greene et al., 2006). While some shell remnants were not ejected, the priority appears to be clearing and reconditioning the space, including springtime enlargement and maintenance of the refuge, which in turn facilitates subsequent snake oviposition. Such activity appears to be microhabitat engineering that benefits the primary architect of the refuge (*T. lepidus*) as well as the snake occupants.

The consistent non-predatory response towards hatchlings and snake clutches across different individual lizards suggests this is an established behavioural trait in this population, which likely reflects a combination of dietary preferences and ecological trade-offs. Apparently less than 1% of the diet of ocellated lizards consists of vertebrate prey (Castilla et al., 1991) and there are only isolated reports of the consumption of snakes. Furthermore, oophagy is also extremely rare in this species, with only isolated reports of intraspecific cases in the wild (Galán, 2022), and occasional consumption of bird eggs (Duarte & Farfán, 2023). This lack of predatory response may reflect general optimal foraging principles (Stephens & Krebs, 1986). In this context, hatchlings, while small, may still represent a difficult or risky prey, and the abundance of other preferred prey resources may render them unnecessary as food, leading to their acceptance as neutral occupants of the shared refuge. The mutual avoidance suggests that lizards and hatchlings do not perceive each other as prey or threat at this stage. The custodian-like behaviour, tolerating developing eggs and hatchlings while removing waste, highlights the sophisticated and nuanced interactions that can evolve in stable, communal refuges. This positions the ocellated lizard as both builder and microhabitat manager, a role that expands our understanding of communal nesting dynamics, echoing the ecological complexity described for Mediterranean reptile communities (Valverde, 1967).

Viewed in a broader context, the shared oviposition refuge functions as a multi-species communal nesting system, analogous to intraspecific communal nests where aggregation enhances hatching success (Doody et al., 2009; Mateo & Cuadrado, 2012). The custodial behaviour of the ocellated lizard appears to be a form of indirect interspecific care, maintaining a stable and hygienic microhabitat that inadvertently safeguards both snake and lizard clutches. This commensal nest facilitation mirrors the benefits of traditional communal nesting through a novel, interspecific mechanism.

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