

Tail movements as an anti-predatory behaviour in *Hynobius okiensis* Sato, 1940

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Anti-predatory behaviour in *Hynobius* salamanders is principally related to hiding under the substrate to avoid detection (Borzée, 2024). Once detected by a potential predator, adult salamanders can rely on behavioural displays, such as tail raising and body arching (Lee and Park 2016), in opposition to a similar-looking behaviour with tail and body waving (sensu Usuda 1995) used for reproduction. This anti-predatory behaviour has been documented in a few species, including *H. leechii* Boulenger, 1887 (Lee and Park, 2016) and *H. notialis* Min and Borzée, 2021 (Heo et al., 2022) in the Republic of Korea, and *H. bambusicolus* Wang et al., 2023 (Wang et al., 2023) in China. The exact function of the behaviour is so far not understood, and the tail raising behaviour could be to stand to predators by looking larger and more threatening, potentially looking like a colubrid snake raising its head, or to distract the attacks from the head as sections of the tails can regenerate (Payette and Sullivan, 2019).

The Oki Salamander, *H. okiensis* Sato, 1940, is endemic to Dogo Island, part of the Oki Islands. The town of Okinoshima, on Dogo Island, is located about 70 km from Tottori and Shimane prefectures on the main Japanese island of Honshu. The species has not been extensively studied, but several clades based on allozymes have been identified (Matsui et al., 2007) and the detectability of the species changes throughout seasons and life stages (Takahara et al., 2019).

We encountered an adult *H. okiensis* while doing general animal surveys on Oki Islands, Shimane

Prefecture, Japan (36.245694°N, 133.324688°E) on 4 April 2024 at 12:54 h. The individual was sheltered under a rock and upon lifting the shelter the salamander started arching its tail while raising it, and moving laterally from right to left, and left to right alternatively (Fig. 1). A video of the behaviour is available at <https://www.youtube.com/shorts/aexDwmzO1ms>.

Tail-raising and arching are similar to the one encountered in other *Hynobius* species, but the repeated lateral movement has not been reported before in the scientific literature, although it has been reported in other genera, such as *Ambystoma* (Connelly et al., 2017) and *Plethodon* (Ovaska, 1987). While we associate this movement to anti-predatory behaviour, here the putative predators being us, the observers, it is unclear how effective it will be with different types of predators, especially that no predators are known for the species on Oki Islands.

This species is protected as the natural monument of Okinoshima Town and needs handling permits for manipulation. No individual was touched, handled, or disturbed for this observation.

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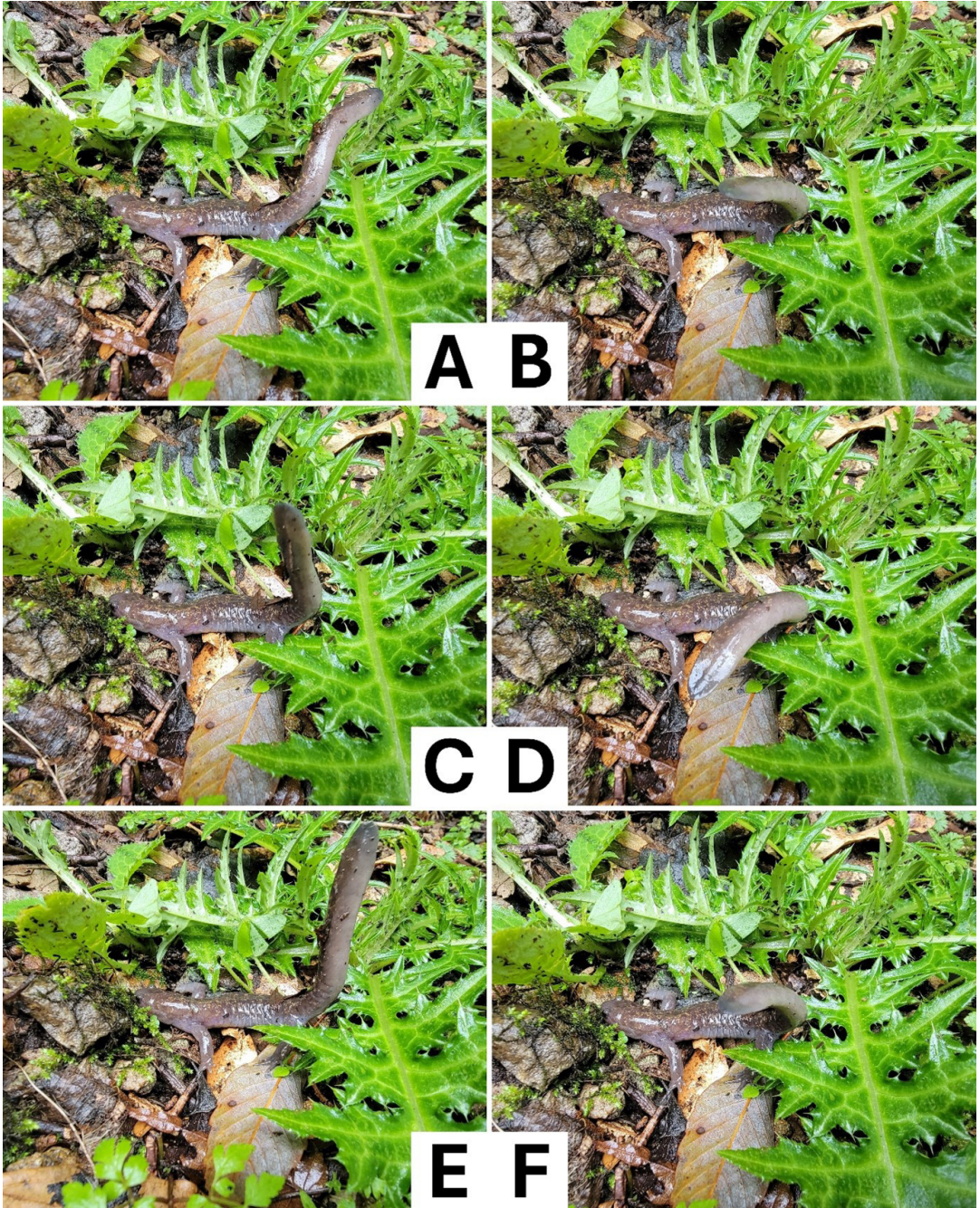


Figure 1. Sequential photography of the tail movements observed in *Hynobius okiensis*, chronologically ordered from A to F. Photos by Amaël Borzée.

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