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Dryophytes japonicus (Japanese Treefrog). Predation

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Serpent's Tale/Edition Chimaira, Frankfurt am Main, Germany. 668 pp.). Our observation occurred during the dry season one month beyond the previously reported timeframe for aestivation. There was evidence of recent forest fires in the area. The use of such communal refugia can provide protection from these fires as well.

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DRYOPHYTES JAPONICUS (Japanese Treefrog). PREDATION. *Dryophytes japonicus* is a hylid widespread in northeast Asia (Borzée et al. 2018. Amphibia-Reptilia 39:163–175). *Dryophytes japonicus* is abundant in agricultural and forest landscapes where they forage and reproduce. Due to its small size and abundance across various landscapes, the species is preyed upon by a variety of predators including birds, snakes, other amphibians, and mammals (Kang et al. 2016. Sci. Rep. 6:1–12). More specifically, previous studies reported predation on *D. japonicus* by *Fejervarya kawamurai* (Marsh Frog; Doi 2014. Curr. Herpetol. 33:129–134) and the snake *Gloydus ussuriensis* (Ussuri

mamushi; Kim 2010. Ph. D. Thesis, Jeju National University, Jeju, Republic of Korea. 98 pp.). However, detailed accounts of avian predation on *D. japonicus* are rarely reported.

Falco amurensis (Amur Falcon) is rarely observed as a seasonal migrant in Korea, where they forage along grasslands and agricultural landscapes (Lee et al. 2020. A Field Guide to the Birds of Korea. LG Evergreen Foundation, Seoul, Korea. 404 pp.). Previous studies have identified the diet of *F. amurensis* to be composed primarily of invertebrates, including odonates, orthopterans, coleopterans, myriapods, isopterans, dermapterans, blattodeans, solifuges, and hymenopterans (Pietersen and Symes 2010. Ostrich 81:39–44).

Here, we report a case of predation on *D. japonicus* by a *F. amurensis*, observed on 5 October 2021, at 1450 h, in Galhyeon-ri, Paju-si, Republic of Korea (37.76326°N, 126.72412°E; WGS 84; 6 m elev.). The weather was slightly overcast, with an air temperature of 24.2°C and relative humidity of 90%. The observation took place in an agricultural landscape primarily composed of rice paddies. Immediately prior to the observation, we observed two male and one female *F. amurensis* foraging near rice paddies. We observed these individuals feeding on various prey items, including grasshoppers (tentatively identified as *Oxya chinensis*)

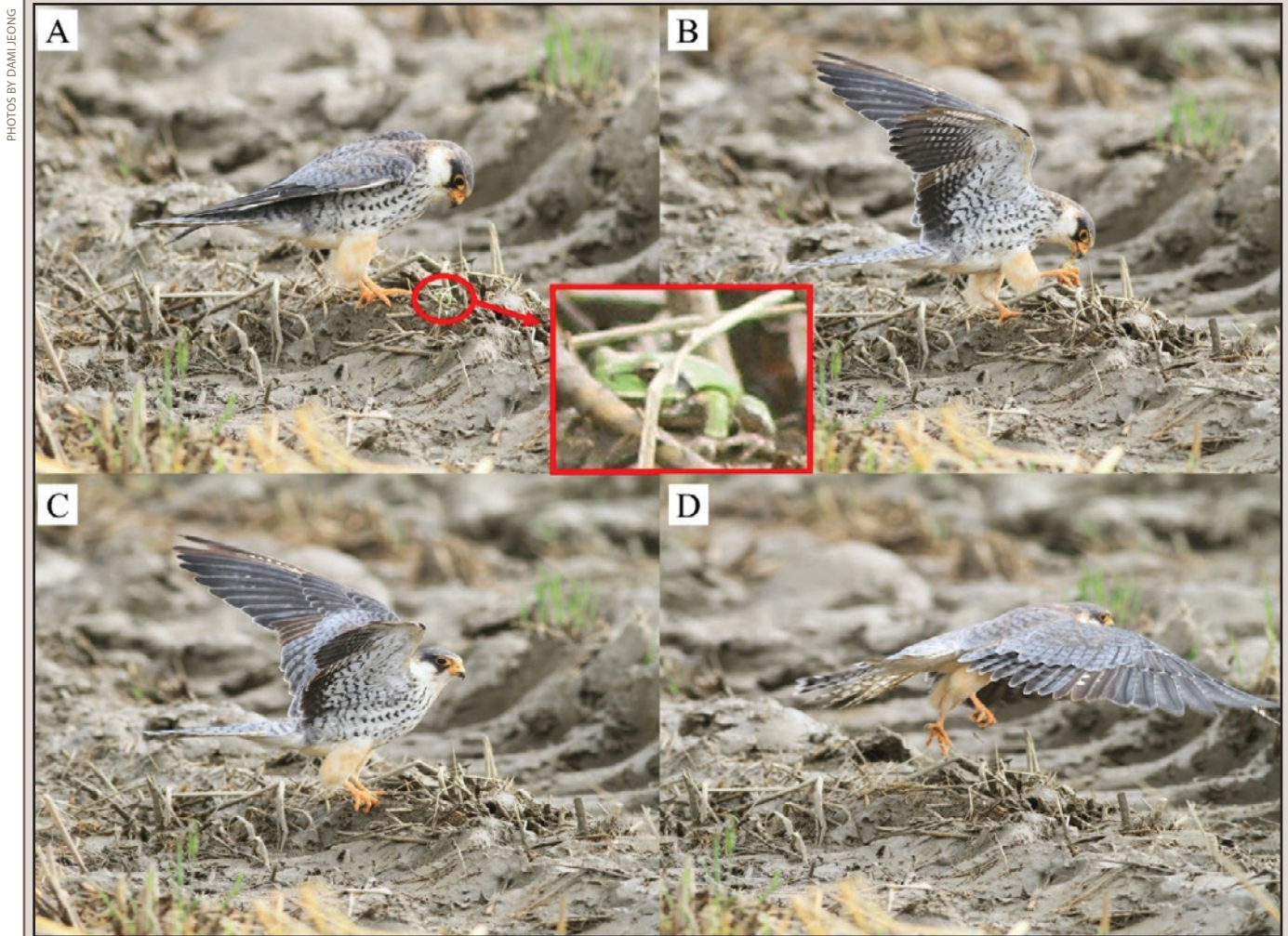


FIG. 1. Predation on *Dryophytes japonicus* by a female *Falco amurensis* observed in Galhyeon-ri, Paju-si, Republic of Korea: A) *F. amurensis* inspecting *D. japonicus* (circled; enlarged in square); B) *F. amurensis* biting the frog's leg while holding it with its right foot; C) *F. amurensis* preparing for takeoff. Note the frog still held in its right foot; D) *F. amurensis* taking off with its prey item.

PHOTOS BY DAMI JEONG

and fish (tentatively identified as *Misgurnus mizolepis*). The female then landed on one of the rice paddies and started foraging for what we first perceived as a grasshopper, a known prey item for *F. amurensis* (Pietersen and Symes 2010, *op. cit.*). Later, the prey item was photographically reidentified as *D. japonicus*. The whole sequence from initial prey detection (Fig. 1A) to prey capture (Fig. 1B, C) and the *F. amurensis* flying off with the *D. japonicus* (Fig. 1D) took >1 min.

While *F. amurensis* is also known to occasionally consume small vertebrate prey items, such as birds and rodents (Alexander and Symes 2016, J. Raptor Res. 50:276–288), anurans have not been reported in the diet of this species. Therefore, our observation is the first account of *D. japonicus* as a prey item of *F. amurensis*.

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INCILIUS MARMOREUS (Marbled Toad). SEXUAL DICHROMATISM and REPRODUCTIVE BEHAVIOR. *Incilius marmoreus* is endemic to Mexico. It mainly occurs along the Pacific coast,

from northern Sinaloa (near Los Mochis) southward to eastern Chiapas, in tropical deciduous to semi-deciduous forest at elevations between 0–800 m. The species is listed as Least Concern given its relatively wide distribution, tolerance of some habitat modification, and presumed large population (IUCN SSC Amphibian Specialist Group. 2020. The IUCN Red List of Threatened Species 2020:e.T54702A53950253; 21 Nov 2021; www.naturalista.mx/taxa/65846-*Incilius-marmoreus*; 21 Nov 2021). It is not included in the Mexican Official Environmental Standard List of species at risk, NOM-059 (SEMARNAT 2019, D.O.F.; 14 Nov 2019).

On 19 June 2016 at 1020 h, we observed a mating frenzy of small toads gathering in the shallow parts of a sand and rock pool in the arroyo San Pablo at the Community of La Guásima, situated in the Priority Area for Conservation “Monte Mojino”, Municipality of Concordia, southern Sinaloa (Paso de Lisa: 23.32333°N, 105.94833°W; WGS 84; 194 m elev.; maximum depth ca. 1.3 m; Fig. 1A). Bright, yellow-colored males came hopping out of the nearby vegetation (sparse low tropical deciduous forest) and over the rocky edge of the pool to jump upon the cryptically colored brown females (Fig. 1A–D). From photographs, I identified the species as *I. marmoreus* (Wiegmann 1833, Isis von Oken 26:651–662) and became interested in the evident sexual dichromatism of these toads.

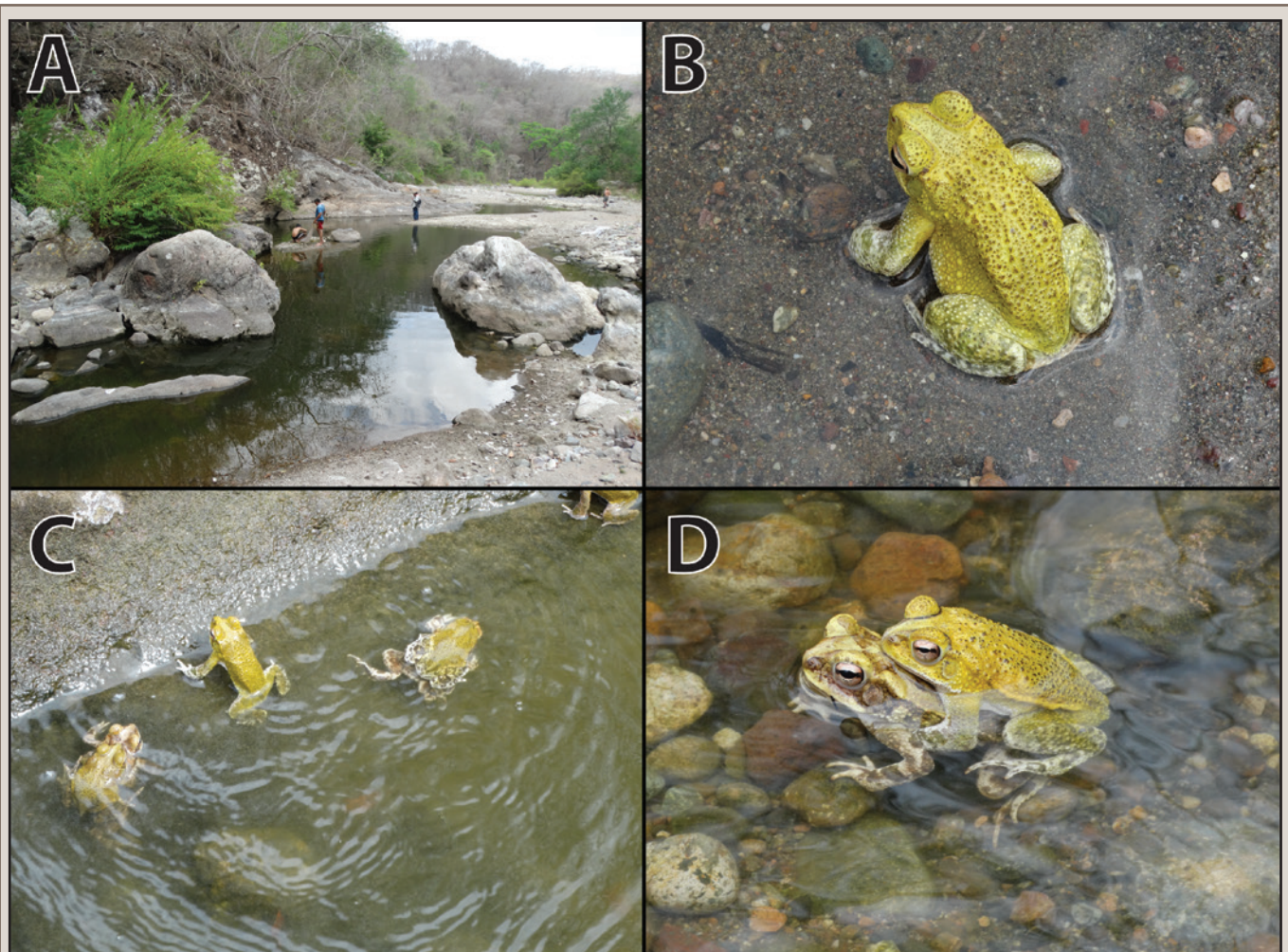


FIG. 1. A) Permanent pool at the start of the rainy season (maximum depth ca. 1.3 m) with tropical dry forest in the background in Arroyo San Pablo, Comunidad La Guásima, Municipality of Concordia, Sinaloa, Mexico; B) “golden” male *Incilius marmoreus*; C) scramble situation: two amplexant pairs and one “golden” male *I. marmoreus*; D) amplexant pair.

PHOTOS BY ALBERT M. VAN DER HEIDEN