

## Biodiversity Record: Predation of an ovipositing dragonfly by an American bullfrog

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**Subjects:** Emperor dragonfly, *Anax guttatus* (Insecta: Odonata: Aeshnidae);  
American bullfrog, *Lithobates catesbeianus* (Amphibia: Anura: Ranidae).

**Subjects identified by:** Marcus F. C. Ng.

**Location, date and time:** Singapore Island, Yishun Park; 11 May 2021; 1600–1610 hrs.

**Habitat:** Small artificial freshwater pond (maximum depth: 40–50 cm) with turbid water and water lilies (*Nymphaea* sp.) at the southwestern end of an urban park. This pond is known to dry up during prolonged dry spells.

**Observer:** Marcus F. C. Ng.

**Observation:** A lone female emperor dragonfly was seen flying around the pond, hovering at times, before landing on either an emergent water lily stalk or leaf blade. She would lower her abdomen into the water, performing endophytic oviposition into plant tissue with her ovipositor (Fig. 1). Five rounds of oviposition were observed at different corners of the pond, each lasting about 1–2 minutes. During the fifth round, however, when the dragonfly was half-submerged on a floating water lily leaf, an American bullfrog (Fig. 2) that was hidden amid vegetation nearby attacked and devoured her.



Fig. 1. Dorsal view of ovipositing female emperor dragonfly. (Photograph by: Marcus F. C. Ng).



Fig. 2. Frontal view of the American bullfrog (about 12 cm snout-vent length) that ate the dragonfly. (Photograph by: Marcus F. C. Ng).

Other Odonata observed at the pond include: three male sultans (*Camacinia gigantea*), three male scarlet grenadiers (*Lathrecista asiatica*), one male grenadier (*Agrionoptera insignis*), a female white-barred duskhawk (*Tholymis tillarga*) and one male blue sprite (*Pseudagrion microcephalum*). In the water were many tadpoles (apparently Microhylidae) and at least five American bullfrogs, some actively calling. Small livebearers (Poeciliidae) were the only fishes observed.

**Remarks:** The featured observation documents an example of the predatory impact of the introduced American bullfrog on native fauna. These frogs are commonly sold as human food, live pet food or live bait for fishing, and released individuals often show up at local waterbodies (Ng & Lim, 2010). It is one of very few local frogs that are big enough to eat dragonflies as large as an emperor. The emperor is a locally widespread but uncommon dragonfly that frequents waterbodies in open country, and reaches a body length of 8.6 cm (Tang et al., 2010).

### Literature cited:

Ng TH & Lim KKP (2010) Introduced aquatic herpetofauna of Singapore's reservoirs. *COSMOS*, 6: 117–127.

Tang HB, Wang LK & Hämäläinen M (2010) *A Photographic Guide to the Dragonflies of Singapore*. Raffles Museum of Biodiversity Research, National University of Singapore, Singapore, 222 pp.