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Cover Photo by Tshulthrim Drukpa of a *Nymphalis antiopa* Butterfly

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**CHELONIOPHAGY BY CHECKERED KEELBACK,
XENOCHROPHIS PISCATOR (SCHNEIDER, 1799) ON INDIAN
PEACOCK SOFTSHELL TURTLE, *NILSSONIA HURUM*
(GRAY, 1830)**

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Introduction

Checkered Keelback *Xenochrophis piscator* is non-venomous snake found in or near freshwater lakes or rivers. Similarly, Indian peacock softshell turtle, *Nilssonina hurum* (Trionychidae), is a relatively abundant large riverine species that is found in rivers and reservoirs. *X. piscator* is a commonly encountered species, found in India, Afghanistan, China, throughout South and Southeast Asia (Barooah & Sarma, 2016). Likewise, *N. hurum* is a vulnerable (IUCN, 2000) species distributed over eastern Pakistan, northern and central India, Bangladesh, and Nepal. *X. piscator* normally consume mainly invertebrates (Pough *et al.*, 2001) and are economically important as major predators of insects (Wadeker, 1963). Juveniles feed primarily on tadpoles, frogs, and aquatic insects, whereas adults feed primarily on fishes and frogs but occasionally take rodents and birds (Schleich & Kastle, 2002; Whitaker & Captain, 2008). On the other hand, foxes, hawks, herons, bitterns, owls, bullfrogs and large fish are known to be common predators of juvenile turtles and their eggs. *X. piscator* is a non-venomous snake active throughout the day and night, whereas, *N. hurum* is primarily nocturnal and omnivorous (Das *et al.*, 2010).

If grasped, *X. piscator* strikes rapidly with great determination; Daniel (1983) noted that it is among the most vicious of Indian snakes. Turtle's defense mechanism of retracting their heads and limbs under their shells can be dynamic at times depending on its adaptation to regular predators. Juveniles of *N. hurum* are observed feeding on mosquito larvae and fish, while adults consume snails, earthworms, prawns, fish, frogs, carrion, and vegetation (Das *et al.*, 2010) which is abundant in the study area. Along with this species, 16 other turtle species are extant in Nepal belonging to Geomydidae, Trionychidae and Bataguridae (Shah & Tiwari, 2004).

Observations

The chelonian survey took place in Jagadishpur reservoir of Kapilvastu, Nepal, from January to June, 2019. Rapid sweep survey was carried out in the wetland considering the peak activities of chelonians in day and evening. The behavioral activity of *X. piscator* predated on juvenile *N. hurum* was observed and photographed on the northern side of Jagadishpur Lake (27°37'19.41"N & 83° 5'41.54"E). It was photographed at 15.00 hr on January 17, 2019. The species was identified by consulting available literature, (Aryal *et al.*, 2010) field guides and books and

also from online resources (<http://www.iucn-tftsg.org>) and then confirmed by experts.

Result and discussion

In the present study, *X. piscator* was found to be predated on *N. hurum* inhabiting Jagadishpur reservoir. *X. piscator* is mainly aquatic, inhabiting mostly freshwater wetlands but uncommon in forested areas and coastal regions (Fugler, 1982). *X. piscator* can be active during both day and night (Parmar, 2018). They feed on fish, frogs, occasionally rodents, birds, tadpoles and aquatic insects (Ahsan, 1983) which suggests that they have equal preference for diurnal and nocturnal prey. The present finding shows that *X. piscator* feeds also on chelonian species which is not a regular prey. *X. piscator* or any species of snakes are not known to be common predators of chelonians. During the survey, live and dead shells of *N. hurum* encountered frequently suggests that the area is suitable habitat for this turtle in terms of food and space but is under anthropogenic and predation pressure.

Despite their speed, Daniel (1983) noted that *X. piscatoris* among the most vicious snakes which strikes rapidly with determination towards its prey. Also, this specific situation may have occurred because of the thriving population of Indian peacock softshell turtles in their juvenile phase. Chelonians are long-lived species with longer generation times and high juvenile mortality (Congdon, Dunham, & van Lobel Sels, 1993; Gerlach, 2008). Given that their shell is a soft shell, they are unable to stay in the sun for extended periods of time (Albers, 2012) which could have made it easier for *X. piscator* to attack while in the aquatic habitat as shown in Fig.1. The softshell turtles, here represented by *N. hurum*, are more vulnerable to predators due to their lack of a shell (Kruzer, accessed on ix.20.2019). The snake at the study site may have

chosen them to feed on due to their hunting pattern; an aquatic habitat supporting an abundance of turtles. However, the present finding resembles the findings by Schleich (1982) reporting the predation of young *Testudo marginata* by *Malpolonmon pesselanus insignitus* in Lakonia, Southern Greece. This record is a contribution to the field of ecological study of *Xenochrophis piscator* and *Nilsonnia hurum* in Nepal. This information would contribute to further understanding the importance of turtles within the dynamics of food webs.

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Fig. 1: *Xenochrophis piscator* predating on *Nilssonina hurum*



Fig. 2: Northern side of Jagadishpur Reservoir