Short Communication

The Occurrence of the Reticulated Python *Malayopython reticulatus* (Schneider, 1801) (Serpentes: Pythonidae) as evidence of Alien Species' introduction into Iraq

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Abstract

Wildlife researchers should be cautious about the risks associated with the spread of non-native alien species. Ancestral stories on the occurrence of a giant mythical serpent were circulated among local communities in Iraq; however, their validity was rarely tested by researchers. In fact, most of these allegations were often regarded as unsubstantiated superstitions and remained unverified. In a rare case, the researchers report the occurrence of the Reticulated Python *Malayopython reticulatus* (Schneider, 1801) as an emergent alien species in the Iraqi environment possibly introduced from wildlife trade; its possible introduction pathways, movement, and fate are also discussed.

Key words: Exotic species; herpetofauna of Iraq; human-wildlife interaction; Invasive species; wildlife trafficking.

Introduction

The Reticulated Python *Malayopython reticulatus* (Schneider, 1801) is one of the world's largest snakes inhabiting river ecosystems as well as rainforests, woodlands and the adjacent grassland areas (Stuart *et al*. 2018). Its zoogeographical range is restricted to Southeast Asia, and it is widely spread throughout Nicobar Islands Bangladesh (Chittagong), Myanmar, Thailand, Laos, Cambodia, Vietnam, Malaysia and Singapore, eastern Indonesia and the Indo-Australian Archipelago and the Philippines (Auliya *et al*. 2002; Reptile Database 2023). However, the Reticulated Python is one of the most economically important reptile species for wildlife trade (Groombridge and Luxmoore 1991; Kasterine *et al*. 2012; Natusch *et al*. 2016; Murray-Dickson *et al*. 2017). It is also part of the trade in non-native reptile pets worldwide (Luiselli *et al*. 2012) and in the Middle East in particular (El-Sayed 2018; Farashi and Alizadeh-Noughani 2021). The species is listed in Appendix II of the Convention on International Trade in Endangered Species of Fauna and Flora (CITES) (CSW 2015). However, due to its wide distribution, adaptability, and abundance even in some areas where it faces heavy exploitation, the Reticulated Python is listed as Least Concern by the International Union for Conservation of Nature (IUCN) Red List (Stuart *et al*. 2018).

Observations and records

In Iraq, unverified stories of the "giant snake" have appeared since the early 1980s, where scattered locals' testimonies described a gigantic snake locally named "*Afa'ah*" coiling on the branches of big trees in the northern mountains and were much feared

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by locals. Similar observations were also claimed by villagers in eastern and southern Iraq. However, all of these testimonies were regarded as "mythical superstition" by researchers, for they were not supported by credible perceptible evidence, and were, therefore, overlooked. For decades, the story of this terrifying snake remained shrouded in mystery.

In recent years (≥ 2003), new observations on the Reticulated Python were frequently reported by locals in central and southern Iraq (Figure 1); however, the researchers only report confirmed incidents that were verified by their investigations (Table 1).

The first sighting was made by local villagers in a water canal branched from the Diyala River (one of Tigris River tributaries) in Khirnabat Village, ca. 5 km to the north of Baqubah, Diyala Province over the period from the 26th of July to the 1st of August 2018. The locals have repeatedly contacted the Iraqi Green Climate Organization (IGCO) reporting a fierce looking "giant snake" inhabiting the densely vegetated canal and aroused fear among the people. A joint team

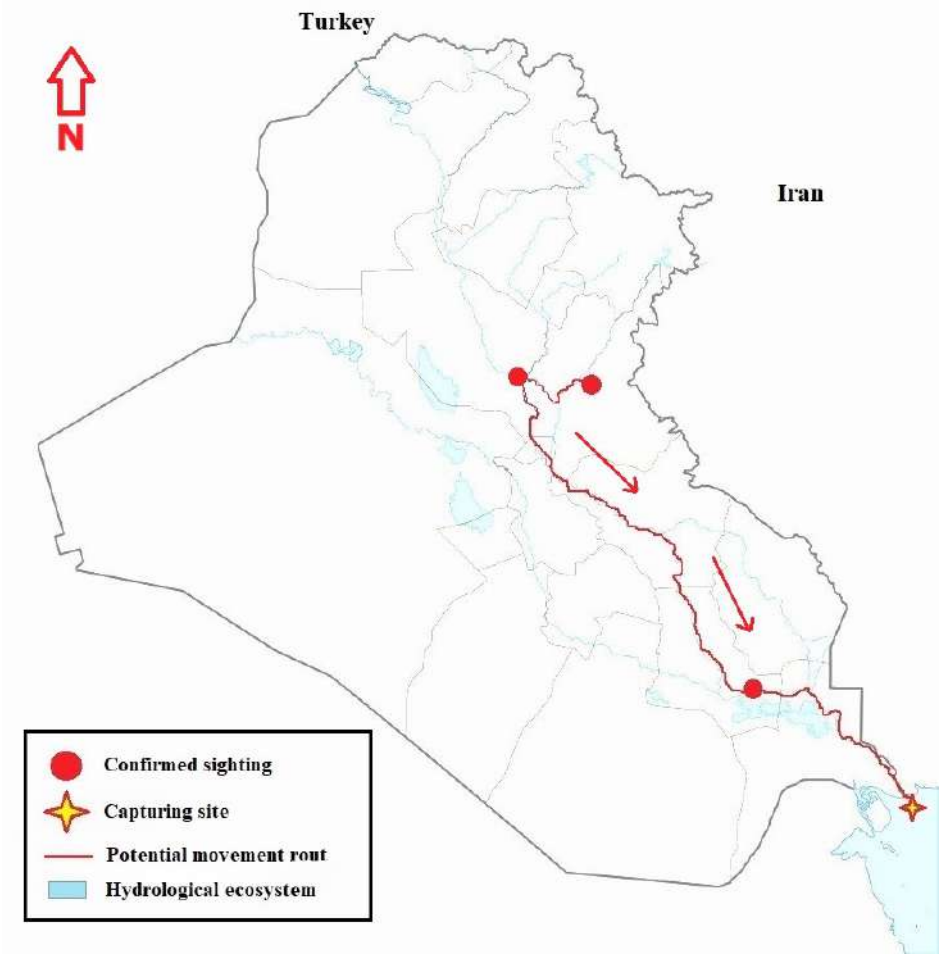

Figure 1: Reticulated Python *Malayopython reticulatus* confirmed records with possible pathway in Iraq.

Table 1: Reticulated Python *Malayopython reticulatus* observations and records in Iraq.

No.	Site Name	Coordinates	Date	
			1st observation	2nd observation
1	Khirnabat Village	33°45'N 44°36'E	26-7-2018	1/2-8-2018
2	Ad'jeel area	33°49'N 44°17'E	5-9-2018	Repeated observations on 21-7-2021
3	Central Marshes	31°2'N 47°5'E	20-9-2018	23-9-2018
4	Basra Oil Harbor	29°40'54.11"N 48°48'57.96"E	10-2018	

from the Iraqi Ministry of Environment (IMoEn) and IGCO (see acknowledgments) was formed to investigate the locals' claims. The researchers' interviews with local communities show that the snake was seen multiple times within an area estimated by ca.2 km^2 over a period of one week by three villagers (requested to be anonymous). The villagers' testimonies indicated that they have confidently eye-witnessed an "anaconda-like giant snake", referring to the massive body size of the animal, with a big head, and an olive-grey skin color with yellow spots alongside. The first testimony came from a driver who took a short rest on the western bank of the canal where he thought he had seen a big truck tire then realized it was a coiling hissing "big snake" among the riparian thickets. The other two testimonies revealed that a 3–5m long "giant snake" was seen moving from the canal banks towards the nearby wheat fields at mid-day. Electronic photographs of both Anaconda *Eunectes* and Python spp. were shown to the villagers to be able to recognize which snake species they had encountered. According to the morphological features described by the villagers; they were clearly referring to the photos of a Python. Despite the wide use of mobile phone devices supported by digital cameras among local communities, however, none of these observations was documented, which raised suspicions. Observations unsubstantiated by visual evidence (e.g., photos/videos) could be attributed to the fact that the eyewitnesses were terrified from the snake which they had never encountered in the Iraqi environment and were forced to run away. The researchers' investigation lasted two days (1st –2nd of August 2018) and no tangible evidence (tracks, fecal samples, shed skin, etc.) confirming the presence of this "giant snake" was obtained and mission was aborded.

The second sighting was in the Ad'jeel (Dejail) area, ca. 30 km to the northwest of the Khirnabat village in Salahadin Province, central Iraq. A "giant snake" moving on the eastern bank of a shallow pool branched from the Ishaqi River was seen by a local fisherman on the 5th of September 2018; this incident was ignored by local authorities as no persuasible evidence was provided. In July 2021, the appearance of a "giant snake" in Ad'jeel was reported again and several local testimonies were widely spread on local social media. The locals' claims were reliably considered by the Iraqi authorities who launched campaigns to find and kill the snake (Anonymous 2021). Two years later, the illusional psychological impact of a "giant snake" swimming in the river was still expressed and feared by the Ad'jeel's locals. However, no credible results were obtained and the fate of that "giant snake" in this area remained enigmatic.

In September 2018, the third sighting was made in the Central Marshes in southern Iraq. The Central Marshes are a part of the Mesopotamian wetlands, Iraq's Protected Area, and are considered a site of international importance (Al-Sheikhly and Al-Azawi 2019). In addition to prey abundance, the landscape consists of open shallow ponds bordered by dense reed beds and marshland vegetations which are somewhat compatible to the Reticulated Python's ecological requirements (see Auliya *et al*. 2002, Stuart *et al*. 2018). The "giant snake" was frequently seen by local fishermen and villagers of the Marsh Arabs (native inhabitants of the marshes) within an area of ca. 4.5–5 km^2, extending from Al-Manthar (30°59'6.81"N 47° 2'55.97"E) and Abu-Subat Village (30°59'55.93"N 47° 1'17.20"E). The locals' observations confirmed that the snake was observed sneaking among reed beds and entering the densely vegetated watercourses. Moreover, the Marsh Arabs expressed worries and fears saying that the snake could prey on their livestock; therefore, they organized a retaliation campaign to kill it. Despite intensive in situ surveys conducted for three continuous days (20–23 September; see Laith 2018), no plausible evidence was obtained, and the presence of the "giant snake" in the Central Marshes remained a puzzling question.

In October 2018, the fate of the "giant snake" in Iraq was finally determined. As expected,

based on photographic documentation, an adult Reticulated Python (2.5–3 m long) was reported swimming in the marine waters in Basra Oil Harbor (Al-Baker Harbor) in the coastal line of the Arabian Gulf in extreme southern Iraq. The snake was captured and killed by the Iraqi marine troops and disposed in the marine waters, but no specimen was obtained (Figure 2A and B).

In addition to receiving visual evidence made by the marine troops (see acknowledgments), the interviews indicated that the snake was drifted by sea tide from Khawr Abdualla opening (29°51'32.91"N 48°27'43.22"E) through Khawr al'Amaya, along the western bank of the Iraqi Faw Peninsula (29°53'N 48°33'E) towards the harbor. Based on the spatial and temporal pattern of previous incidents mentioned above, this pathway supported the researchers' assumption that this snake was originated somewhere inside Iraq and introduced/escaped into inland waters. It is most probable that the python swam from central Iraq through the watercourse system crossing the Central Marshes to the Tigris-Euphrates confluence, through Shatt Al-Arab towards the Arbian Gulf in southern Iraq (Figure 1). Nevertheless, due to the cryptic behavior of the snake, this interpretation is hypothetical and requires further investigation.

Stuart *et al*. (2018) indicated that the Reticulated Python is an excellent swimmer and tolerant of highly modified habitat; it has been reported far out at sea and has consequently colonized many small islands within its range. Regardless, there was no concrete evidence which supports the idea that this snake has escaped/been introduced from pet trade to the environments of the

Figure 2: A & B-The Iraqi marines with the killed Reticulated Python *Malayopython reticulatus* in Basra Oil Harbor, Arabian Gulf coast, Basra Province. Photos © Yasir Wathiq

nearby countries (e.g., Kuwait; Iran) and/or leaked into the Iraqi marine waters from cruising ships.

The trade in non-native reptile species as pets is an increased business worldwide with a potential impact on the Middle East (Farashi and Alizadeh-Noughani 2021). These animals are caught and smuggled out of their natural habitats or raised in captivity (Reed 2005). However, non-native reptiles might escape or be introduced into natural ecosystems where they establish populations in the wild, which in turn could lead to becoming invasive (Stringham and Lockwood 2018; Bartoszek *et al*. 2021). Non-native reptiles produce adverse impacts on ecosystems through predation, herbivory, competition, and genetic hybridization (Kraus 2015). The impact of invasive alien species in Iraq is not fully known (Nature Iraq 2017). Moreover, types and numbers of non-native species imported for wild trade in Iraq is far to be determined (Al-Sheikhly *in press*). The occurrence of the Reticulated Python in Iraq is probably attributed to the pet trade where many non-native reptilian species are deliberately introduced or accidentally escaped/leaked from captivity into the environment as a result of irresponsible management (see Hulme 2015, Willson *et al*. 2011; Guzy *et al*. 2023). According to the biodiversity national target no.19 in Iraq's NBSAP (2015): "*Invasion pathways of the 30 most dangerous/problematic (known or assumed) alien species of the list*" should be achieved; therefore, monitoring the distribution pathways of these alien species, including this current case, is urgently required.

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