

Communication

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Communication

Distributional Surges of Russell's Vipers (*Daboia russelii*) in Bangladesh

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Abstract: The once near-extinct Russell's viper has recently come back to the area beyond its historical range. A couple of decades ago, its distribution was confined to 11 districts of Bangladesh. Hence, the study aims to update the distributional map of Russell's Viper (*Daboia russelii*) across the country and find out the surges' causal factors. Both primary and secondary data were utilized in this study. It revealed that the distributional range of this snake was expanded from 22 to 33 districts in 2024. The respondents noted that climatic stressors like high humidity accompanied by hot weather, increased salinity, and increased frequency of flooding facilitated the spreading of the viper across the country. The cropping pattern and crop diversification were another major contributing factor. The shifting of the single-cropped area to a multi-cropped area in the *Barind* tract increased its main prey rats. Contrarily, the killing of natural predators such as foxes, monitor lizards and mongoose led to the rise in the snake population. The destruction of vegetation coverage in the upper part of the Padma Basin facilitated the movement of Russell's vipers downstream.

Keywords: Russell's viper; surges; rats; *Barind* tract; cropping pattern; climate change

Introduction

Russell's Viper (*Daboia russelii*) is occasionally found in Pakistan, India, Nepal, Bhutan, Bangladesh, and Sri Lanka (Uetz et al. 2019). A couple of decades ago, it was listed as a Critically Endangered species in Bangladesh (IUCN Bangladesh 2000). The previous distribution was confined to the areas along the Padma River and its tributaries. Russell's viper reappeared prominently in Bangladesh after a long absence. Beginning in 2012, the appearance of Russell's viper has been reported in the *Barind* tract. It came to the limelight in 2013 when one Indigenous (*Shawtal*) female died due to Russell's viper bite in the *Shibrampur* village under *Tanore Upazila* of *Rajshahi* district (Ahsan and Saeed 2018). The recent rise in snakebite from Russell's viper in different districts of the country is a matter of considerable public concern. Incidents and deaths involving bites from Russell's vipers have recently surged in many districts, leading to widespread panic among the citizens of the country. Hence, the study aims to update the distributional map of Russell's Viper (*Daboia russelii*) across the country and to find out the causal factors of the surges.

Methodology

Both primary and secondary data were collected in this study. The secondary data was collected from national and local newspapers, online news portals, and social media outlets. A total number of 10 key informants were interviewed to identify the causal factors of increasing the abundance of this snake. Content analysis was done to interpret the data.

Results and Discussions

Increased distributional areas

The result showed that the viper spread to 12 new districts: *Jhalakathi*, *Jaipurhat*, *Dhaka*, *Munshiganj*, *Barishal*, *Barguna*, *Bhola*, *Meherpur*, *Jhenaidah*, *Shariatpur*, *Laxmipur* and *Noakhali* (Fig. 1).

It revealed that the distributional range of this snake was expanded drastically in 2024. Out of 64 districts of the country, the snake was found in 33 districts. Ahsan & Saeed (2018) revealed that its distribution was increased from 11 to 17 districts. Khandakar & Jeny (2020) added another new 05 districts to the distributional map of Russell’s Vipers in Bangladesh.

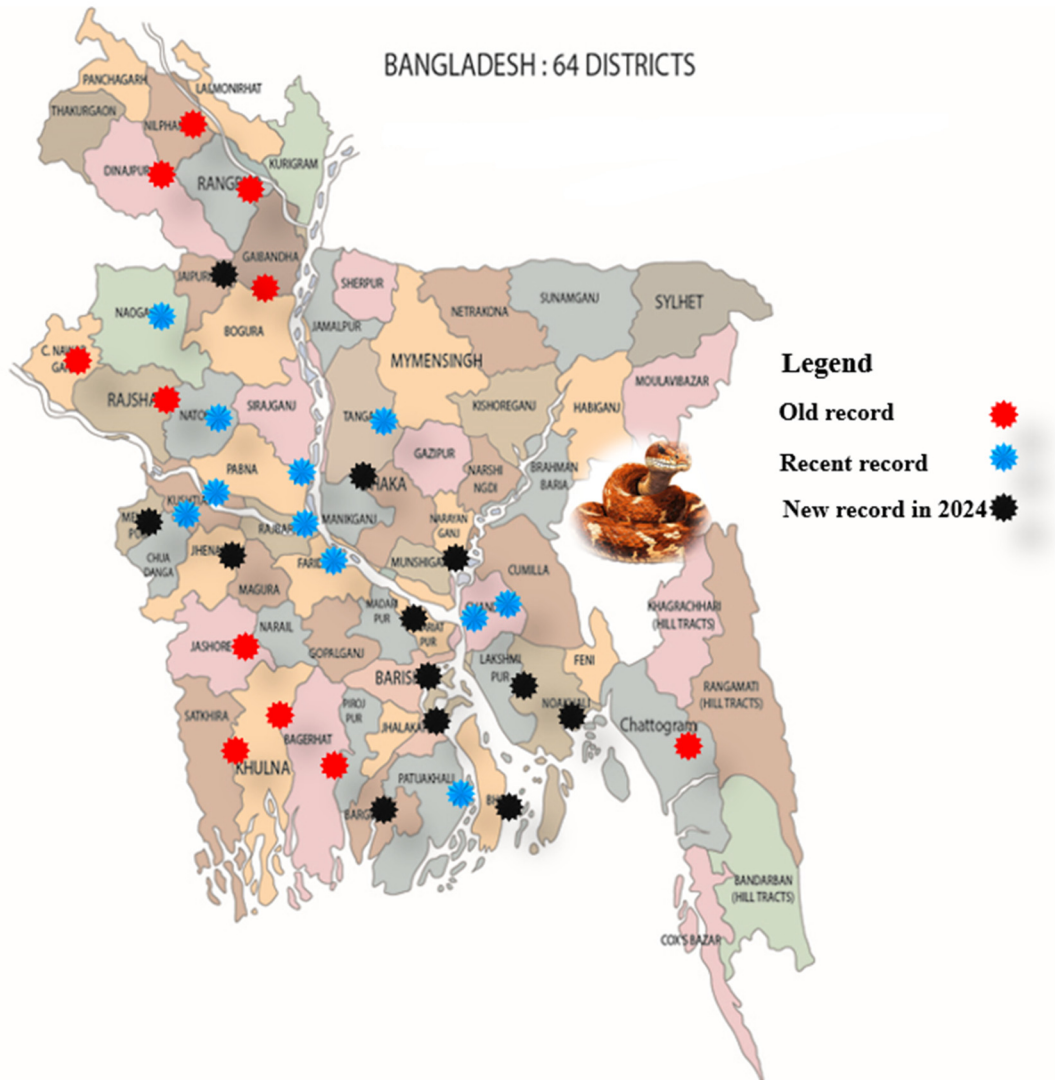


Figure 1. Distribution of Russell’s Viper (*Daboia russelii*) in Bangladesh.

Causes of the comeback

Climate change

The respondents noted that excessive humidity along with hot weather emerging from climate change is preferable for this viper. Consequently, the volume of water in the river in the monsoon was increasing. The salinity of the country was heightening due to climate change. Such environmental variables were congenial for its survival and reproduction. Rahman (2020) reported that increased salinity due to climate change facilitated the invasion of the alien species. The respondents also added that the frequency of flooding increased in Bangladesh. Consequently, it entered Bangladesh from India in a larger number by hitching rides on hyacinth mats carried downstream during the monsoon season. Venomous snake habitat in Bangladesh is highly modulated by environmental and climatic factors (Chowdhury et al. 2022).

Killing of the predators

The respondents opined that the killing of natural predators such as foxes, monitor lizards and mongoose led to the rise in the snake population. The abundance of prey is highly correlated with the predator's abundance and distribution (Rahman 2023 a, b).

Higher fertility and increased abundance of food

The respondents argued that one of the reasons for the increase in the number of Russell's vipers is that this snake gives birth directly, does not lay eggs and its survival rate is high. This snake was already present in the *Barind* tract. The cropping pattern and crop diversification have been increased. The single-cropped area has been turned into a multi-cropped area. Consequently, the abundance of rats, its main prey increased.

Alteration of the past habitat

The respondents added that the destruction of vegetation coverage in the upper part of the Padma Basin is also a contributing factor. This alteration in habitat has facilitated the movement of Russell's vipers downstream. The natural vegetation coverage of Bangladesh is decreasing at an alarming rate due to high population density, sharply skewed distribution of lands, and the overexploitation of forest resources. The natural forests have become critically fragmented to the point where they are considered unlikely to maintain a rich level of biodiversity, nor support viable populations of natural and native species (Rahman et al. 2009; Rahman 2021). The altered microclimate becomes unsuitable for many animals, which forces them to migrate (Rahman 2023c).

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