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IMPACT OF NILGAI (BOSELAPHUS TRAGOCAMELUS) ON FLORA AND FAUNA IN KAUSHAMBI, UTTAR PRADESH

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Abstract:

The Nilgai (Boselaphus tragocamelus), also known as the Indian antelope, is herbivorous mammal native to the Indian subcontinent. Its population has significant growth in recent years, leading to concerns about its impact on the local ecosystem in various regions of India. The population of Nilgai has increased significantly in the Kaushambi district of Uttar Pradesh, raising concerns about its impact on the local flora and fauna. Nilgai were found to be capable of causing extensive damage to most agricultural crops. Damage to wheat (Triticum aestivum), gram (Cicer arietinum) and mustard (Brassica campestris) crops was caused not only by foraging but also through trampling, resting in field and daily movement of the animals.

The effect of Nilgai on flora and fauna in Kaushambi U.P. is a complex issue. This research paper aims to investigate the impact of Nilgai on the flora and fauna and agricultural crop-raiding with the possible management strategies that can limit or reduce crop damage of Kaushambi a district in the northern Indian state of Uttar Pradesh. So it is important to manage Nilgai populations in order to protect the environment and ensure the coexistence of Nilgai with other animals. The study utilizes a combination of field surveys, data analysis, and ecological modelling to understand the Nilgai's role in shaping the local ecosystem and its implications for conservation and management.

Keywords: Nilgai, flora, fauna, impact, crop damage, conservation, biodiversity.

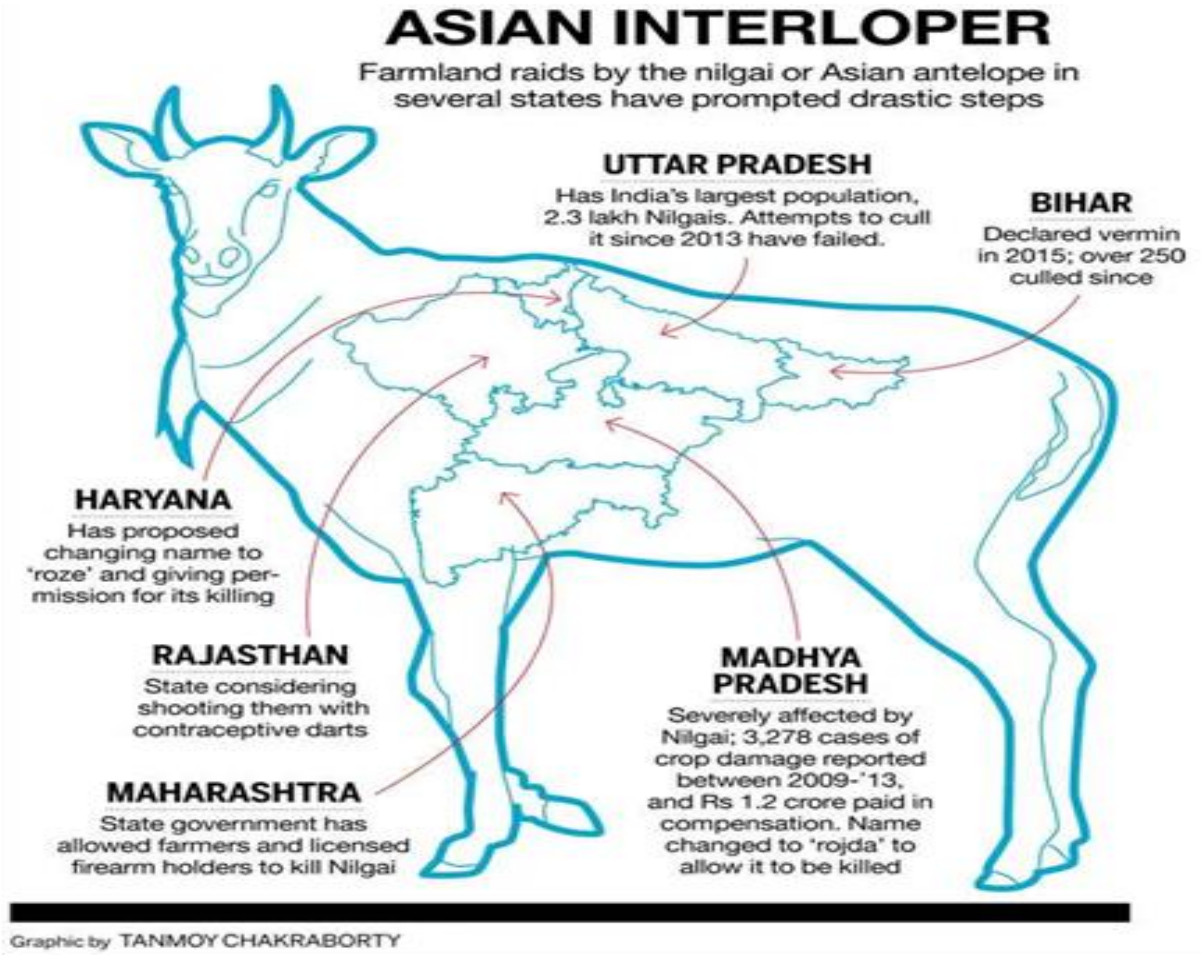
Introduction:

The nilgai (Boselaphus tragocamelus) is the largest of the Asian antelopes, looking with a slim, antelopine face, and a large, sleek body more like a zebu cow than an antelope (Kyle 1987). They are only found in the Indian peninsula from the base of the Himalayas to Mysore (Prater 1971). They are found in a variety of habitats from level ground to hillsides, in thin brush with scattered trees to cultivated plains, but not in thick forests. Nilgai have also been reported in Pakistan, mainly along the border with India (Mirza and Khan 1975, Roberts 1977).

Nilgai is a sexually dimorphic ungulate of large stature and unique coloration. It is the only species in the genus Boselaphus. Rough estimates say there are over five lakh Nilgais in six northern Indian states-Rajasthan, Madhya Pradesh, Uttar Pradesh, Haryana, Himachal Pradesh and Bihar. UP alone has 2.3 lakh Nilgais. Their numbers are swelling because of a shortage of natural predators and their ability to breed rapidly-female Nilgais deliver two calves every year. Nilgai is a protected animal under the wildlife protection act of 1972. In 2013, the nilgai was removed from the list of protected species. And in 2015, the central government shifted the nilgai from Schedule 3 of the wildlife protection act to Schedule 5. The nilgai now fell

into the category of animals that were detrimental to agricultural crops. Nilgai are herbivores and feed on a variety of plants, including grasses, leaves, and fruits. They are also known to browse on trees and shrubs.

Historically, it inhabited the Indian subcontinent, favouring open grasslands and woodlands. The nilgai has a rich cultural history in India. It is mentioned in ancient Hindu texts and is considered a sacred animal. The nilgai is often associated with fertility and abundance. Its horns are used in religious ceremonies. Hindus revere the nilgai as sacred and associate it with the cow, the mother animal in Hinduism. The nilgai is rarely consumed by Hindus due to its religious significance. Crop damage by deer, nilgai, blackbuck, wild boar, and porcupine has been widely reported from almost all corners of India (Prater 1980, Majupuria 1982, Schultz 1986, and Rajpurohit 1988). However, in some northern states, the nilgai is considered a nuisance animal due to crop damage. Some states like Bihar have even classified them as vermin. The nilgai is also hunted for its meat. Overhunting may negatively impact populations of nilgai antelope. In recent decades, the population of Nilgai has increased substantially due to factors such as habitat alteration, reduced predation, and changing agricultural practices. This population surge has raised concerns regarding its impact on local flora and fauna, as well as agriculture. Over the years, complaints of crop depredation have piled up in these states. In UP a number of farmers complain of crop losses to the animals each year.



Methods:

2.1 Study Area:

Kausambi is situated south-west of the holy city of Prayagraj, (Allahabad) on the left bank of the river Yamuna. Kaushambi, a district in the state of Uttar Pradesh, has experienced an upsurge in the Nilgai population, prompting the need for a comprehensive study to evaluate its ecological effects.

This research paper investigates the impact of Nilgai on Kaushambi's flora and fauna, with a focus on crop damage and potential implications for conservation and management strategies. The study is conducted in Manjhanpur, Sirathu and Chail tehsils of Kaushambi district, Uttar Pradesh, which spans a diverse range of ecosystems, including agricultural fields, grasslands, and forested areas.

2.2 Field Surveys:

Field surveys are conducted to collect data on Nilgai behaviour, habitat usage, and population dynamics. Observations are made on foraging patterns, group sizes, and interactions with other wildlife. Not just crop damage, encounters with the nilgai have also caused road accidents, especially in rural areas.

Nilgai (Boselaphus tragocamelus)

2.3 Data Analysis:

Data collected from field surveys are analyzed to assess the Nilgai's impact on the local flora and fauna. This includes quantifying their dietary preferences, assessing damage to agricultural crops, and evaluating changes in vegetation composition.

2.4 Ecological Modelling:

Ecological modelling techniques are employed to predict the Nilgai's potential future impact on the ecosystem. These models consider factors such as population growth, habitat availability, and resource competition.

Results:

3.1 Foraging Behaviour:

The study reveals that Nilgai predominantly feed on a variety of grasses, shrubs, and agricultural crops. Nilgai were reported to feed on all the major crops grown in this area. Rice was reported to be eaten at all stages. Maize, wheat, mustard and lentils were also recorded to be eaten at all stages. Apart from agricultural crops, vegetables were also considerably damaged by nilgai. Their browsing behaviour has led to significant crop damage in certain areas, affecting the livelihoods of local farmers.

Similar studies of crop damage by nilgai have been carried out in Nahar Tehsil, Haryana, India (Chauhan and Sawarkar 1989). In their study damage varied from 10% to 75 % and crops preferred were grams, wheat seedlings and mung.

Crop Damage by Nilgai

A study on wildlife damage in Padampur in Chitwan National Park (Milton and Binny 1980) showed a mean loss of 56% of all crops grown. Crop destruction by all wild animals ranged from 10 % to as high as 90 % in areas around the Chitwan National Park (Mishra and Jefferies 1991).

3.2 Habitat Preferences:

There is less natural habitat left for nilgai in Kaushambi and virtually none of it has a protected Area status. Tree cover is in small patches and consists mainly of Acacia plantations with scattered Zyzyphus sp etc. The plantations are either under the control of the forest department or have been raised on community lands. Nilgai usually avoids dense forest. They prefer semi-open forests and freely enter into cultivated lands. Nilgai exhibit a preference for agricultural fields, which provide an abundant food source. This behaviour has led to increased conflicts between farmers and Nilgai due to crop depredation.

3.3 Impact on Flora:

The Nilgai's browsing behaviour has led to alterations in the local vegetation composition, particularly in agricultural areas. Certain plant species have faced overgrazing pressure potentially affecting their long-term viability. Crop damage problem is of a high order in Manjhanpur, Sirathu and Chail tehsils of district Kaushambi. Major cereals which are damaged are wheat (Triticum aestivum), barley (Hordeum vulgare), jowar (Sorghum vulgare), bajra (Pennisetum typhoides), moong (Phaseolus mungo) and Mustard (Brasica compestris).

Crop damage pattern by Nilgai is a highly adaptive. Naturally diurnal, it goes for crop-raiding in the evenings and at night. It is found to damage most agricultural crops to a considerable extent. However, it shows preference for gram, wheat seedlings, and moong. In Manjhanpur tehsil severe damage to millet was observed. Extent of crop damage is variable, perhaps depending upon the animal numbers and crop protection strategy followed in the area. In Manjhanpur and Sirathu tehsil, acoording to villagers, the damage is up to 40 % of total yield and is rarely below 10%.

Despite alerting the authorities several times about the problem, no concrete steps have been taken to solve the problem. Farmers either sit out all night trying to scare the animals by beating drums or by lighting fires on the boundary of their lands. Farmers are being forced to alter their crop cycles, not because of climate change but because of the nilgai. Some farmers have taken to cultivating low-risk crops while others are investing a lot of money in fencing their land. But not everyone is able to do that.

3.4 Impact on Fauna:

The increased presence of Nilgai has led to competition with other herbivorous livestock. This competition may have consequences for the overall diversity of herbivores in the region. The rising number of nilgai is worrying farmers. Recently hundreds of acres of rabi crops were destroyed by them in Kaushambi district. The male nilgai is often aggressive and has a

tendency to attack. These animals stay away from humans and are generally found in thick vegetation. There are many road side accidents by Nilgai as they cross roads running fastly.

Conclusion:

The research underscores the importance of studying the impact of Nilgai on the local ecosystem in Kaushambi, Uttar Pradesh. It provides valuable insights into their foraging behavior, habitat preferences, and potential implications for flora and fauna. Nilgai are an important part of the ecosystem in Kaushambi, UP. They help to control the growth of vegetation and provide food and shelter for other animals. Nilgai also help to disperse seeds, which aids in the regeneration of plants. However, Nilgai can also have a negative impact on flora and fauna. They can overgraze vegetation, which can lead to land degradation. Nilgai can also compete with other animals for food and resources. In some cases, Nilgai have been known to prey on small animals, such as rabbits and birds.

Effective crop protection strategies are necessary. Any form of fencing is little used. Brushwood fence used in some places is effective against cattle only but it rarely restricts nilgai. The most common protection strategy for farmers is to guard their fields by remaining vigilant during the crop season. A major constraint on control is that the nilgai is an animal of considerable religious reverence. Most people in the affected area are Hindus. They all are strongly against any proposal for culling of nilgai or capturing them with physical force. However, in spite of all this, most farmers now seem to have reached their tolerance threshold. The study highlights the need for a balanced approach to Nilgai management in Kaushambi. Conservation strategies should consider the ecological role of Nilgai while addressing conflicts with agriculture and potential impacts on native flora and fauna. Some temporary solutions that they have tried are: tying a sari around their farmland repels Bund and spraying predator's excreta around the crops repels Nilgai. But they do not last long and the animals adapt after some time.

Effective conservation and management strategies should aim to mitigate conflicts with agriculture while preserving the ecological integrity of the region. It is important to manage Nilgai populations in order to protect the environment, prevent crop damage and ensure the coexistence of Nilgai with other animals. Some of the measures that can be taken to manage Nilgai populations include:

•Prevent the hunting of Nilgai for meat.

•Translocating Nilgai to other areas.

•Contraception of Nilgai.

•Educating people about the crop protection strategies and importance of managing Nilgai populations.

By taking these measures, it is possible to protect the environment, crop damages and ensure the coexistence of Nilgai with other animals.

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