STATUS OF ELEPHANTS IN INDIA: AN OVERVIEW BASED ON THE 2022-23 CENSUS – PAPER - III

Elephants escort a calf across a road in Orissa's Dhenkanal district. The 2022-23 estimate shows a 41% slide in elephant numbers in the east-central Indian landscape since 2017. (Photo: Soumitra Ghosh)

India, home to nearly 60% of the world's Asian elephants, holds the species in high regard due to its ecological, cultural, and religious significance. Elephants are known as "keystone species," playing a crucial role in maintaining the biodiversity of ecosystems they inhabit. However, the recent 2022-23 elephant census report — currently withheld by the government due to delays in census data from the Northeast — paints a troubling picture of the elephant population in India.

Key Findings of the 2022-23 Census Report

The elephant census is conducted every five years by the Wildlife Institute of India (WII), an autonomous body under the Ministry of Environment. The 2022-23 report is considered the first "scientific" estimate of India’s elephant population, utilizing advanced methodologies such as statistical modeling.

According to data reviewed from the unreleased report, India has witnessed a 20% decline in the elephant population over the past five years. The most alarming finding is a 41% drop in the population in Central India and the Eastern Ghats regions compared to 2017. Notable areas such as Southern West Bengal, Jharkhand, and Odisha saw drastic reductions of 84%, 68%, and 54%, respectively. The Western Ghats region, another critical elephant habitat, also experienced a decline, with Kerala's population decreasing by nearly 51%. In contrast, the northern elephant population in the Shivalik hills and Gangetic plains has remained relatively stable, with only a marginal 2% decline.

The report attributes much of this population drop to human-induced factors, specifically citing "mushrooming developmental projects" such as unregulated mining, linear infrastructure (roads and railways), and habitat fragmentation. These activities have forced elephants into unoccupied historical ranges, intensifying human-elephant conflicts in areas where elephants were not previously present.

Reasons for the Decline in Elephant Population

The decline in India's elephant population can be attributed to several interrelated factors, most of which stem from human activities that disrupt elephant habitats:

1. **Habitat Fragmentation and Loss**: Rapid urbanization, deforestation, and land-use changes for agriculture, infrastructure development, and commercial plantations have severely fragmented elephant habitats. The report emphasizes that regions like the Western Ghats and Central India are particularly affected by these developmental activities. Elephants require large, contiguous tracts of forest to migrate, feed, and reproduce. Fragmentation limits their movements and isolates populations, making it difficult for them to find food, water, and mates.
2. **Unmitigated Mining and Infrastructure Development**: The construction of roads, railways, and mining projects has not only destroyed habitats but also created barriers that disrupt elephant migration routes. Elephants are long-ranging animals that follow historical migratory paths. When these paths are blocked by human settlements or infrastructure, elephants are forced into new areas, increasing the chances of human-elephant conflicts.
3. **Human-Elephant Conflicts**: As elephants venture into new territories due to habitat loss, they often come into conflict with human communities. Crop raiding, property damage, and

even loss of human life are common outcomes of these conflicts. In retaliation, elephants are sometimes killed, electrocuted, or poisoned by farmers and villagers. Such conflicts have been on the rise in states like Odisha, West Bengal, and Jharkhand.

4. **Poaching and Illegal Wildlife Trade**: Poaching, particularly for ivory, continues to be a significant threat to elephants, especially in the Northeast region. While India banned ivory trade in 1972, illegal poaching still exists, driven by the demand for ivory in international markets.
5. **Climate Change**: Climate change has also impacted elephant habitats by altering the availability of water and food resources. Prolonged droughts or irregular rainfall patterns can force elephants to travel longer distances in search of resources, putting additional stress on the population.

Significance of Elephants in Wildlife and Biodiversity

Elephants are often referred to as "ecosystem engineers" because of the critical role they play in shaping and maintaining the environments they inhabit. Their presence benefits other species and ensures the health of the ecosystem in several ways:

- **Forest Regeneration**: Elephants play a key role in forest regeneration by dispersing seeds over vast distances through their dung. Many plant species rely on elephants for seed dispersal.
- **Water Hole Creation**: Elephants dig for water in dry riverbeds, creating water holes that benefit other wildlife species during dry seasons.
- **Habitat Modification**: By uprooting trees and shrubs, elephants help maintain grasslands, which support herbivores such as deer, antelope, and other smaller mammals.
- **Biodiversity Enhancement**: Their movements create pathways and clearings that allow smaller animals and plants to thrive, thereby enhancing overall biodiversity.

Given their importance, the decline in elephant populations not only affects the species but also poses a broader threat to India’s biodiversity and ecological balance.

Government Measures for Elephant Conservation

Recognizing the importance of elephants to biodiversity, the Indian government has implemented several measures to conserve the species:

1. **Project Elephant (1992)**: Launched in 1992, this initiative aims to protect elephants and their habitats, mitigate human-elephant conflicts, and ensure the welfare of domesticated elephants. It also seeks to restore elephant corridors to facilitate their natural movements.
2. **Elephant Corridors**: The government has identified 101 elephant corridors across the country to ensure safe passage for elephants between fragmented habitats. Efforts are being made to secure these corridors by limiting development and human activities in these areas.
3. **Legal Framework**: Elephants are protected under Schedule I of the Wildlife Protection Act, 1972, which provides them the highest level of protection. The government has also banned the trade of elephant ivory and continues to combat poaching.
4. **Community Engagement**: Several government and NGO-led initiatives have involved local communities in conservation efforts. Programs that educate farmers about non-lethal methods to prevent crop-raiding, and initiatives that compensate them for damages caused by elephants, are helping to reduce human-elephant conflicts.

Recent Advancements in Census Techniques

The 2022-23 elephant census has introduced several advancements in data collection and analysis, marking a shift from traditional methods:

1. **Statistical Modeling**: The census now uses statistical modeling, including mark-recapture methods similar to those used in tiger and leopard estimations. This technique provides more reliable baseline data compared to previous methods that relied on direct (head) counts or indirect (dung) counts.
2. **DNA Profiling**: For the first time, DNA profiling is being used to estimate elephant populations, particularly in the Northeastern states. This method involves analyzing elephant dung samples to identify individual animals, providing more accurate population estimates.
3. **Camera Traps**: Camera trapping technology, previously used in tiger censuses, is now being employed to capture images of elephants in their natural habitats. This helps in identifying individual animals and tracking their movements across landscapes.

Conclusion and Suggestions

The findings of the 2022-23 elephant census indicate that India's elephant population is under significant threat, primarily due to habitat fragmentation and human-induced developmental activities. While the government has implemented several measures to conserve elephants, it is clear that more needs to be done to address the root causes of population decline.

To improve conservation efforts, the following suggestions are proposed:

- **Accelerate the Completion of the Northeast Census**: Given the importance of accurate data, it is essential to complete the census in the Northeast using advanced techniques like DNA profiling and camera traps. This will help in devising region-specific conservation strategies.
- **Enhance Habitat Connectivity**: Protecting and restoring elephant corridors should be a top priority. Legal measures to restrict development in these areas must be strengthened.
- **Promote Community-Based Conservation**: Engaging local communities in conservation efforts through education, compensation schemes, and eco-tourism initiatives can reduce human-elephant conflicts and foster greater support for elephant conservation.
- **Mitigate Developmental Impacts**: All developmental projects, especially in critical elephant habitats, should undergo thorough environmental impact assessments. Steps should be taken to minimize habitat fragmentation, such as creating underpasses and overpasses for elephants to cross highways and railways safely.

India's elephants are not just a national heritage but also vital to maintaining the country's rich biodiversity. Protecting these gentle giants is crucial for the health of our ecosystems and for future generations to appreciate.

PRELIMS PRACTICE QUESTIONS

1. Consider the following statements regarding the decline of elephant population in India:

1. The 2022-23 elephant census report indicates a 20% decline in the overall elephant population in India.
2. The highest population decline was observed in the Central Indian and Eastern Ghats regions.
3. The northern elephant population in the Shivalik hills showed a drastic decline compared to other regions.

Choose the correct answer using the codes below:

a) 1 and 2 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2, and 3

2.Consider the following statements about threats to elephants in India:

1. Habitat fragmentation is one of the major threats faced by elephants due to developmental activities like mining and linear infrastructure.
2. Poaching for ivory remains a significant threat in the Northeastern region of India.
3. Human-elephant conflict is on the decline due to effective government measures.

Choose the correct answer using the codes below:

a) 1 and 2 only

b) 1 and 3 only

c) 2 and 3 only

d) 1, 2, and 3

3.Consider the following statements about the recent advancements in elephant census methodology in India:

1. The 2022-23 census used DNA profiling for the first time to estimate elephant populations.
2. Mark-recapture statistical modeling is now being employed to provide more accurate population data.
3. The traditional headcount method remains the most reliable for population estimation in this census.

Choose the correct answer using the codes below:

a) 1 and 2 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2, and 3

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4. Consider the following statements about the role of elephants in biodiversity and ecosystem conservation:

1. Elephants are considered keystone species, as they help in maintaining forest ecosystems through seed dispersal.
2. The loss of elephant populations can significantly affect the biodiversity of an ecosystem.
3. Elephants are mainly responsible for causing damage to ecosystems by uprooting trees and clearing forests.

Choose the correct answer using the codes below:

a) 1 and 2 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2, and 3

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5. Consider the following statements regarding government measures for elephant conservation:

1. Project Elephant was launched in 1992 to protect elephants and their habitats.
2. The government has identified 101 elephant corridors to facilitate safe movement of elephants between fragmented habitats.
3. The Wildlife Protection Act, 1972 provides only partial protection to elephants.

Choose the correct answer using the codes below:

a) 1 and 2 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2, and 3

ANSWERS AND EXPLANATION

Question 1 - Answer: a) 1 and 2 only

EXPLANATION:

- Statement 1 is correct: The 2022-23 elephant census report indicates a 20% decline in the elephant population compared to the previous census.
- Statement 2 is correct: The biggest population decline was observed in the Central Indian and Eastern Ghats regions, with specific states like Jharkhand, Odisha, and West Bengal showing a significant drop.
- Statement 3 is incorrect: The northern elephant population in the Shivalik hills and Gangetic plains remained relatively stable, with only a marginal 2% decline, not a drastic one.

Question 2 - Answer: a) 1 and 2 only

EXPLANATION:

- Statement 1 is correct: Habitat fragmentation caused by developmental projects like unregulated mining and infrastructure development is a major threat to elephants.
- Statement 2 is correct: Poaching for ivory remains a threat, especially in the Northeastern region of India, where illegal wildlife trade persists.
- Statement 3 is incorrect: Human-elephant conflict is not on the decline; in fact, it has been exacerbated by elephants moving into unoccupied territories due to habitat loss.

Question 3 - Answer: a) 1 and 2 only

EXPLANATION:

- Statement 1 is correct: For the first time, DNA profiling is being used in the 2022-23 elephant census to estimate populations, particularly in the Northeastern regions.
- Statement 2 is correct: The mark-recapture method, a statistical modeling technique, is being used to provide more accurate estimates compared to traditional methods.

- Statement 3 is incorrect: The traditional headcount method has been largely replaced by advanced statistical models for more reliable population estimation.

Question 4 - Answer: a) 1 and 2 only

EXPLANATION:

- Statement 1 is correct: Elephants are keystone species because their role in seed dispersal helps maintain forest ecosystems.
- Statement 2 is correct: The loss of elephant populations can severely impact biodiversity, as they are critical to maintaining the balance of ecosystems.
- Statement 3 is incorrect: While elephants do uproot trees, this behavior creates pathways and clearings that benefit the ecosystem by enhancing biodiversity rather than causing harm.

Question 5 - Answer: a) 1 and 2 only

EXPLANATION:

- Statement 1 is correct: Project Elephant was launched in 1992 with the goal of protecting elephants and their habitats.
- Statement 2 is correct: The government has identified 101 elephant corridors across India to ensure safe movement for elephants between fragmented habitats.
- Statement 3 is incorrect: The Wildlife Protection Act, 1972 provides the highest level of protection to elephants by listing them under Schedule I, not partial protection.

MAIN PRACTICE QUESTION.

Discuss the major factors contributing to the decline of the elephant population in India, as highlighted by the 2022-23 elephant census. What are the key threats identified, and what steps can be taken to mitigate these challenges to ensure elephant conservation?

(Answer in 250 words)

ANSWER GUIDELINES

1. **INTRODUCTION**:
   - Briefly mention the findings of the 2022-23 elephant census report, particularly the 20% decline in the elephant population.
2. **MAJOR FACTORS CONTRIBUTING TO THE DECLINE**:
   - **Habitat Fragmentation**: Explain how developmental projects such as unregulated mining and infrastructure construction (roads, railways) are fragmenting elephant habitats.
   - **Human-Elephant Conflicts**: Discuss how habitat loss is forcing elephants into human-dominated areas, leading to increased conflicts.
   - **Poaching**: Highlight the continuing threat of poaching, particularly in the Northeastern regions, for ivory.
   - **Climate Change**: Mention how changing climate patterns can affect water and food availability for elephants, further exacerbating the population decline.
3. **KEY THREATS IDENTIFIED**:
   - Loss of habitat connectivity and fragmented corridors.
   - Increasing human-wildlife conflicts.
   - Decline in traditional migratory routes.
   - Poaching and illegal wildlife trade.
4. **CONSERVATION MEASURES AND STEPS FORWARD**:
   - Importance of restoring and securing elephant corridors.
   - Strengthening anti-poaching laws and stricter enforcement of the Wildlife Protection Act.
   - Promoting community-based conservation initiatives and compensation schemes to reduce human-elephant conflicts.
   - Advanced techniques such as DNA profiling and statistical modeling for accurate population estimation.
5. **CONCLUSION**:
   - Emphasize the need for long-term strategies to protect elephants as keystone species essential for maintaining biodiversity.

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