Safeguarding Wildlife, Securing Harmony

This editorial is based on "Living with animals – the challenges and the solution" which was published in The Indian Express on 05/03/2025. The article brings into picture the PM's announcement of a center for managing human-wildlife conflict.

For Prelims: National Board for Wildlife, Keystone species, Kaziranga National Park, Ranthambore Tiger Reserve, Nipah virus outbreak, United Nations Convention on Biological Diversity,Soligas of Karnataka, Mrugavani National Park , Gir lions , Van Dhan Vikas Kendras.

For Mains: Environmental Impact Assessment, Significance of Wildlife Conservation in India's Ecological and Economic Sustainability, Key Issues Associated with India's Current Wildlife Protection Measures.

At a recent **National Board for Wildlife meeting,** the Indian Prime Minister announced the establishment of **a center dedicated to managing human-wildlife conflict**. While population growth has traditionally been seen as a key indicator of conservation progress, it now presents new challenges as wildlife increasingly competes with humans for space and resources. India must proactively address these evolving challenges to ensure a **harmonious coexistence between humans and wildlife.**

Why Wildlife Conservation is Crucial for India's Ecological and Economic Sustainability?

- **Ensuring Ecological Balance and Climate Resilience:** Wildlife plays a critical role in maintaining **ecosystem stability, ensuring biodiversity, and regulating climate patterns.**
    - The **loss of keystone species like tigers and elephants** disrupts food chains, leading to overpopulation of herbivores and habitat degradation.
    - **Forests and wetlands,** sustained by wildlife activity, act as carbon sinks and buffers against climate change.
    - Protecting species ensures **natural pollination, seed dispersal, and disease control,** which are essential for ecosystem health.
    - For instance, the **Kaziranga National Park's rhinos** help maintain grassland health, supporting herbivore populations and preventing soil erosion.
- **Securing Water Resources and Preventing Desertification:** Forests, wetlands, and grasslands, supported by diverse wildlife, **regulate hydrological cycles and groundwater recharge.**
    - Conservation of forests helps maintain river flows, prevent siltation, and reduce the severity of floods and landslides.
        - Wildlife also plays a role in maintaining soil fertility and preventing desert spread in regions like Rajasthan.
    - For instance, **Blackbucks** play a role in seed dispersal, especially for **Khejri trees (Prosopis cineraria),** which are crucial for preventing desertification in the Thar Desert.

- **Boosting Sustainable Livelihoods and Eco-Tourism:** Wildlife-based tourism provides employment to millions and **generates revenue for conservation efforts,** benefiting local economies.
    - **National parks, tiger reserves, and bird sanctuaries** attract international and domestic tourists, creating opportunities for sustainable livelihoods.
    - Well-managed eco-tourism ensures that local communities benefit financially, reducing dependency on poaching and illegal logging.
    - For instance, **Ranthambore Tiger Reserve** revenue increases from 45 crore to 60 crore as visitor influx grows.
        - As per recent reports, wildlife tourism is a major driver for the broader tourism sector, which contributes roughly **5-6.5% to India's GDP.**
- **Preventing Zoonotic Diseases and Ensuring One Health Approach:** Conservation reduces the chance of viral spillovers by maintaining natural buffers between humans and wild species.
    - **Illegal wildlife trade and deforestation** expose populations to unknown pathogens, making strong wildlife laws essential for health security.
    - For instance, the **Nipah virus outbreak in Kerala (2021)** was linked to habitat destruction affecting bat populations.
        - Strengthening conservation ensures biodiversity remains intact and reduces the emergence of deadly diseases.
- **Supporting Agricultural Productivity and Food Security:** Wildlife conservation ensures the survival of pollinators like bees, butterflies, and birds, which are essential for agricultural yield.
    - **Natural predators like owls, snakes, and big cats** control pest populations, reducing the need for chemical pesticides.
    - Forest biodiversity enhances soil fertility and water retention, contributing to sustainable farming practices.
        - The **decline in vulture populations** led to an increase in stray dog populations, spreading diseases like rabies.
- **Fulfilling Constitutional and Global Environmental Commitments:** It fulfills the **constitutional duty** under **Article 48A and Article 51A(g)** to protect and improve the environment and wildlife.
    - As a signatory to international agreements like **CITES, United Nations Convention on Biological Diversity (CBD) and the Paris Agreement**, India is bound to conserve its biodiversity.
    - Strengthening wildlife conservation aligns with the **United Nations Sustainable Development Goals (SDGs), particularly SDG 13 (Climate Action) and SDG 15 (Life on Land)**.
- **Safeguarding Indigenous and Cultural Heritage:** Wildlife conservation is deeply linked to India's indigenous communities, whose livelihoods and traditions depend on nature.
    - Many tribes, such as the **Soligas of Karnataka** and the **Bishnois of Rajasthan**, have historically played a crucial role in protecting biodiversity.
    - Conservation also preserves **sacred groves,** religious sites, and traditional knowledge systems related to sustainable resource management.

What are the Key Issues Associated with India's Current Wildlife Protection Measures?

- **Escalating Human-Wildlife Conflict (HWC):** Rapid urbanization, infrastructure expansion, and farmland encroachment have fragmented habitats, pushing wildlife into human settlements.
    - This increases **crop damage, livestock predation, and human casualties,** leading to **retaliatory killings.**
    - For instance, over **300 lions in Gujarat now live outside Gir's Protected Area** (PA), increasing human-lion conflicts (Lion Census 2020).
        - In the past **5 years,** India has recorded **52 human casualties** from elephant attacks and unnatural deaths of **552 elephants** due to electrocution, train accidents, poaching, and poisoning.
- **Poor Habitat Management and Carrying Capacity Issues:** Wildlife policies focus on **increasing population numbers** and to an extent miss in ensuring **sufficient habitat, food, and water availability.**

    - Many species, such as elephants and tigers, require large territories, but shrinking forests restrict their natural dispersal.
    - The **Sundarbans tiger population** has grown, but **habitat loss due to climate change has forced tigers into villages.**
    - For instance, **Mrugavani National Park** extent was reduced by 22% to 280.29 hectares.
        - And a vital wetland, **Pallikaranai** has shrunk dramatically due to urbanisation, threatening biodiversity and vulnerable communities in **Chennai**
- **Lack of Scientific Approach in Wildlife Relocation and Conservation:** Political and regional interests often override scientific recommendations in translocation efforts.
    - **Gujarat's refusal to relocate Gir lions to Madhya Pradesh**, despite Supreme Court orders, highlights this issue.
    - Unplanned relocations can also fail if ecological factors like prey base and disease control are not considered.
        - **Cheetahs were reintroduced to India from Namibia**, but multiple deaths in **Kuno National Park** raise concerns over habitat suitability.
- **Climate Change Impact on Wildlife and Ecosystems: Rising temperatures, erratic rainfall, and extreme weather events** are altering animal migration patterns and degrading habitats.
    - **Wetland shrinkage and glacial retreat** threaten species dependent on specific ecosystems.
    - Marine and coastal biodiversity, including mangroves and coral reefs, are also at risk from rising sea levels.
    - For instance, more than 150 animals, nine of them rare one-horned rhinoceros, have drowned in floods at the **Kaziranga National Park in Assam.**
        - Extreme heat in India impacts all aspects of life and is increasingly causing **birds to collapse mid-flight due to sunstroke-related conditions.**
        - Also, **33.6% of India's coastline faces erosion**, threatening coastal biodiversity.
- **Inadequate Wildlife Corridors and Fragmented Connectivity:** Many Protected Areas **exist as isolated patches**, disrupting natural movement patterns and genetic exchange among animal populations.
    - Infrastructure projects such as **highways, railways, and power lines** further fragment habitats, increasing animal mortality.
        - Despite efforts to create **green corridors**, land-use conflicts hinder seamless connectivity..
    - According to railway data, over **32,000 animal**s, including cattle, lions, and leopards, were killed on railway tracks in the three years leading up to 2019.
- **Underfunding and Ineffective Utilization of Resources:** Despite ambitious projects like **Project Tiger and Project Lion**, funding remains insufficient to meet conservation needs.
    - Many state forest departments struggle with staff shortages and outdated equipment, limiting anti-poaching and habitat management efforts.
        - Private sector and community-led funding models remain underutilized.
    - The **Compensatory Afforestation Fund Management and Planning Authority (CAMPA)** funds remain underutilized, delaying afforestation projects and ecosystem rejuvenation for wildlife.
- **Increasing Poaching and Illegal Wildlife Trade:** Despite stricter laws, organized poaching networks and illicit wildlife trade continue to thrive due to high demand for animal parts.
    - Smuggling routes between **India, Nepal, Myanmar, and China** remain active, facilitating black-market sales of **tiger skins, rhino horns, and pangolin scales.**
        - Digital platforms have also become new marketplaces for illegal wildlife trade.
    - In 2024, a **rhino horn smuggling racket** was busted in **Kaziranga National Park in Assam**, exposing links to international crime syndicates.
        - Also, as many as **1,203 pangolins**, the most trafficked wild mammal in the world, were poached for illegal wildlife trade in India from 2018-2022.
- **Conflicts Between Development and Conservation Goals:** Balancing economic growth with environmental protection remains a key challenge, as several projects receive clearances despite ecological concerns.
    - **Mining, dam construction, and industrial expansion** often take precedence over wildlife protection.
    - Weak enforcement of Environmental Impact Assessments **(EIA)** allows many projects to

proceed with inadequate safeguards.
    - For instance, the **Great Nicobar Development Project** has raised concerns over habitat destruction for indigenous species like the **Nicobar megapode.**
- **Weak Community Involvement and Benefit-Sharing Mechanisms:** While local communities play a crucial role in conservation, many policies fail to include them as stakeholders.
    - **Lack of economic incentives for communities living near PAs** leads to resentment and occasional involvement in poaching or deforestation.
    - Successful models, like eco-tourism-driven conservation, remain underutilized in many states.
        - The **Maldhari pastoralists in Gir** have historically coexisted with lions, but growing human-wildlife conflict threatens this relationship.
    - **North-East Indian states** such as **Meghalaya, Arunachal Pradesh, Nagaland, and Assam** have become the frontrunners for community led conservation projects, but other states significantly lag behind.
- **Lack of Technology Adoption in Wildlife Protection:** India has been slow to integrate modern technologies like **Artificial Intelligence (AI), drones, and satellite tracking into conservation efforts.**
    - Advanced surveillance can help curb poaching, monitor habitat changes, and **track animal movements**, but implementation remains limited due to funding and training gaps.
    - Technology-driven solutions, such as early warning systems for HWC, need wider adoption.
    - **TrailGuard** is an **advanced camera trap** designed to detect specific species, such as tigers, and instantly transmit their images.
        - However**, its implementation and adoption remain minimal.**

What Measures can India Adopt for Enhancing Wildlife Conservation Efforts?

- **Strengthening Human-Wildlife Conflict (HWC) Mitigation Strategies:** India must adopt proactive measures such as **early warning systems, better compensation for affected communities, and habitat restoration** to reduce HWC.
    - Relocation of vulnerable communities from **high-conflict zones should be done with their consent and proper rehabilitation**.
    - **Safe wildlife corridors, eco-bridges, and buffer zones around protected areas (PAs)** can facilitate animal movement without disturbing human settlements.
    - Community-led initiatives, like controlled grazing programs, can minimize livestock predation.
        - **Suraksha Mitr** developed by C-DAC should be effectively utilised.
- **Expanding and Strengthening Protected Areas:** Many of India's national parks and sanctuaries are too **small to support growing wildlife populations,** requiring their expansion and better connectivity.
    - State governments should identify and designate more **eco-sensitive zones** and **community reserves while enforcing strict protection in core areas.**
    - **Buffer zones around PAs** should be developed with sustainable livelihoods to prevent illegal encroachment.
        - For instance, the **Terai Arc Landscape (TAL)** project in Uttarakhand and UP successfully links fragmented tiger habitats **across India and Nepal.**
- **Implementing Scientific and Transparent Wildlife Relocation Policies:** Translocation of species must be based on **ecological viability with a science-backed approach ensuring prey base**, disease control, and genetic diversity.
    - A dedicated **National Wildlife Translocation Board** should oversee such efforts to avoid failures like Kuno's cheetah deaths.
    - The **successful translocation of rhinos** from **Kaziranga to Manas National Park** has revived rhino populations in Manas.
- **Strengthening Anti-Poaching Mechanisms and Wildlife Crime Control:** Despite stronger laws, poaching and illegal wildlife trade remain rampant, requiring increased surveillance using technology like **drones, thermal cameras, and AI-powered tracking**.
    - Strengthening the **Wildlife Crime Control Bureau (WCCB)** with more personnel and inter-agency coordination can improve enforcement.

    - Strict penalties under the **Wildlife Protection (Amendment) Act 2022** should be enforced to deter poaching syndicates.
    - India can learn from Bhutan in this regard that has embarked on the national roll out of **SMART (Spatial Monitoring and Reporting Tool)** patrolling.
- **Encouraging Community-Led Conservation Initiatives:** Local communities must be made stakeholders in conservation through incentives like eco-tourism, sustainable forest produce collection, and conservation-linked livelihood programs.
    - **Joint Forest Management Committees (JFMCs)** should be empowered to take a leading role in protecting forests and preventing poaching.
    - Initiatives like **Van Dhan Vikas Kendras** can provide alternative income sources to communities near protected areas, reducing their dependence on forests.
- **Adopting Technology for Better Wildlife Monitoring:** Leveraging AI, GIS mapping, and satellite imagery can help track animal populations, detect poaching attempts, and monitor habitat changes in real time.
    - **Radio collars and GPS tracking** should be **expanded beyond flagship species** like tigers and elephants to other vulnerable animals.
    - AI-powered models can predict climate impacts on species and suggest adaptive conservation strategies.
        - **Zoological Survey of India (ZSI)** has set up a pilot project to use eDNA **(environmental DNA),** to study and monitor wildlife, that is a significant step in the right direction.
- **Addressing Climate Change and Habitat Degradation:** Wildlife conservation must be integrated with climate resilience strategies to safeguard habitats from extreme weather events.
    - **Afforestation drives using native species, wetland restoration, and reducing human-induced wildfires** can improve ecosystem stability.
    - Coastal ecosystems like **mangroves and coral reefs** should be prioritized in conservation plans to protect marine biodiversity.
        - For instance, the **Miyawaki afforestation method in Chennai** is being used to rapidly restore degraded urban green spaces.
- **Reforming Land Use and Infrastructure Policies for Wildlife Protection:** Linear infrastructure projects like highways and railways should incorporate **eco-sensitive planning**, such as underpasses and overpasses for wildlife movement.
    - The **Environmental Impact Assessment (EIA) process** should be strengthened to ensure that conservation concerns are not ignored for economic growth.
        - For instance, The **Nagpur-Mumbai Expressway** has included **wildlife overpasses** to reduce roadkill incidents.
    - Land conversion regulations need stricter enforcement to prevent deforestation in ecologically fragile areas.

Conclusion:

India's wildlife conservation efforts are at a **crossroads**, where **proactive strategies are essential to balance ecological integrity with development needs.** Strengthening habitat connectivity, leveraging technology, and fostering community participation can ensure long-term sustainability. A holistic approach will not only safeguard India's rich wildlife but also secure its ecological and economic future.

Drishti Mains Question:

Human-wildlife conflict is a growing challenge in India, exacerbated by habitat fragmentation and climate change. Discuss the key factors driving this conflict and suggest effective strategies for sustainable coexistence.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Q. If a particular plant species is placed under Schedule VI of the Wildlife Protection Act, 1972,

what is the implication? (2020)

(a) A licence is required to cultivate that plant.

(b) Such a plant cannot be cultivated under any circumstances.

(c) It is a Genetically Modified crop plant.

(d) Such a plant is invasive and harmful to the ecosystem.

Ans: (a)

Q. Which of the following can be threats to the biodiversity of a geographical area? (2012)

1. Global warming
2. Fragmentation of habitat
3. Invasion of alien species
4. Promotion of vegetarianism

Select the correct answer using the codes given below:

(a) 1, 2 and 3 only

(b) 2 and 3 only

(c) 1 and 4 only

(d) 1, 2, 3 and 4

Ans: (a)

Mains

Q. How does biodiversity vary in India? How is the Biological Diversity Act,2002 helpful in the conservation of flora and fauna? (2018)
