Noise Pollution – Threat to Wildlife

Mains: *GSIII – Environment*

Why in News?

A Science study analysing 200+ experiments across 177 species on six continents found that anthropogenic noise altered traits in 80% of wildlife studied, increasing mortality by 138% and reducing overall fitness by 27%.

What is Anthropogenic Noise Pollution?

- **Meaning** – Excessive or disruptive sounds generated by human activities that interfere with the natural acoustic environment.
- **Major Sources** – Road traffic, industrial activities, offshore construction, petroleum exploration, shipping and military sonar operations.
- **Anthropocene** – The human-dominated phase of planetary change, characterised by increasing environmental disturbances, including noise pollution.

What is the Impact of Noise Pollution on Wildlife?

- **Behavioural Changes** – Animals exhibit increased antipredator behaviour, altering their feeding, sheltering and movement patterns.
    - Predators experienced a 25% decline in hunting success, despite increasing hunting effort by over 150%.
    - Marine predators, including killer whales, face difficulties detecting prey due to underwater noise.
- **Physiological and Developmental Impacts** – Activates stress hormones and causes cellular damage.
    - Impairs immune functions, internal homeostasis, reflexes and cognitive abilities.
    - Disrupts reproductive processes and sexual selection.
- **Impact on Reproduction and Parental Care –** ome bird species increase parental care to compensate for noisy environments, improving offspring weight.
    - Other species reduce parental care, resulting in lower offspring survival rates.
- **Declining Survival and Fitness –** Noise increases mortality and reduces overall animal fitness.
    - The study reported a 27% reduction in overall fitness through direct mortality and sublethal effects.

Why Are Marine Ecosystems Particularly Vulnerable?

Sound *travels faster and farther in water than in air.*

- **Marine life Dependence on sound** – Marine organisms, including invertebrates and whales, depend on sound for navigation, communication, prey detection and environmental awareness.
- **Anthrophony** – Shipping, underwater construction, resource exploration and sonar operations increase human-generated underwater sounds, known as anthrophony.
    - Excessive noise disrupts essential biological interactions and threatens marine survival.

Winners and Losers in the Acoustic Environment
• Noise creates unequal ecological impacts, producing winners and losers among species. • Certain predators exploit acoustic traps, where enclosed shelters amplify sound and force prey into exposed areas, increasing predation risks. • Such changes can disturb predator–prey relationships and reshape ecosystem dynamics.

What are the Challenges in Controlling Noise Pollution?

- **Invisible Pollution** – Unlike air and water pollution, noise impacts are often difficult to observe and measure.
- **Regulatory Gaps** – Wildlife soundscapes receive inadequate attention in conservation and environmental regulations.
- **Increasing Human Activities** – Expansion of shipping, infrastructure and industrial operations intensifies acoustic disturbances.
- **Ecological Complexity** – Different species respond differently to noise, making standardised mitigation difficult.

What is the Way Forward?

- **Acoustic Conservation** – Explicitly recognise natural soundscapes in biodiversity conservation and environmental regulatory frameworks.
- **Low-Noise Zones** – Establish acoustic refugia where wildlife can communicate, reproduce and forage without disturbance.
- **Sustainable Infrastructure** – Adopt quieter technologies in shipping, offshore construction and industrial operations.
- **Impact Assessment** – Include underwater and terrestrial noise assessments in Environmental Impact Assessments (EIA).
- **Scientific Monitoring** – Strengthen research on species-specific responses and long-term ecological consequences.

What lies ahead?

- Anthropogenic noise is an increasingly significant but neglected environmental stressor.
- Biodiversity conservation must move beyond protecting physical habitats towards safeguarding natural soundscapes, ensuring the long-term ecological balance and

survival of wildlife.

Reference

The Hindu| Anthropocene Noise Impact on Marine Life

