Geography · GS - I

What are the consequences of spreading of ‘Dead Zones’ on marine ecosystem?

EXAM YEAR	PAPER	SUBJECT
2018	GS - I	Geography

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Oxygen depletion; eutrophication; nutrient pollution; marine biodiversity; fish mortality; food-web disruption; fisheries losses; coastal livelihoods

Model Answer

Introduction

Marine dead zones are areas with severely depleted dissolved oxygen, often caused by excessive nutrient inputs from agriculture, sewage and industrial discharge. Their expansion threatens marine ecosystems.

Consequences for Marine Ecosystems

1. **Mass mortality:** Fish and other oxygen-dependent organisms may die or move away from affected areas.
2. **Biodiversity loss:** Sensitive species decline, reducing species diversity and altering community composition.
3. **Food-web disruption:** Changes in plankton, benthic organisms and fish populations disturb ecological relationships.
4. **Habitat degradation:** Seafloor habitats become unsuitable for many organisms, particularly bottom-dwelling species.
5. **Economic losses:** Fisheries and coastal tourism suffer, affecting the livelihoods of coastal communities.

6. **Biogeochemical changes:** Oxygen-depleted sediments can release nutrients and promote processes that worsen water quality.
7. **Ecosystem imbalance:** Opportunistic species may dominate, while commercially and ecologically important species decline.

Measures

Nutrient runoff should be reduced through improved fertiliser management, sewage treatment, wetland conservation and monitoring of coastal oxygen levels.

Conclusion

The spread of dead zones is a major ecological consequence of nutrient pollution. Integrated watershed and coastal management is essential to restore marine oxygen levels and protect biodiversity.

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