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Q7

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

UPSC Civil Services Mains 2018 · GS I · 10 marks · World's Physical Geography

Salient features of world's physical geography.

Core demand of the question

- What are the consequences of spreading of 'Dead Zones' on marine ecosystem?
- Cover oxygen loss, food webs, fisheries, and coasts
- Keep the explanation within a 10-mark length

Revision summary

Dead zones are hypoxic waters, often seasonal, driven by nutrient pollution and warming.

Bottom animals die; mobile fish flee into crowded oxygenated belts.

Food webs shift toward microbes and jellyfish and away from commercial stocks.

Seagrass, coral, and mangrove nurseries suffer on eutrophic coasts.

The Gulf of Mexico, Baltic, and parts of the Arabian Sea show the global spread.

Flow diagram

Nutrient runoff -> Algal bloom

Algal bloom -> Oxygen used up

Oxygen used up -> Dead zone

Dead zone -> Fish flee benthos die

Dead zone -> Catch and nursery loss

Conclusion

- Cut fertiliser runoff, treat sewage, and restore wetlands that trap nutrients before they reach the shelf.
- Treat warming seas as a partner of nutrient pollution, because a warmer ocean holds less oxygen and keeps the dead zone in place.

Spreading dead zones empty the seafloor of animals, push fish away, and shrink coastal nurseries. The marine ecosystem pays in diversity and in catch until nutrients and warming are both reduced.

Facts & figures

Hypoxia

Dissolved oxygen so low that most marine animals cannot live; the working definition of a dead zone.

Eutrophication

Nutrient enrichment, mainly nitrogen and phosphorus, that fuels algal blooms.

Gulf of Mexico dead zone

A large seasonal hypoxic area linked to Mississippi River farm and urban nutrients.

Arabian Sea oxygen

Natural oxygen-minimum waters that can worsen with coastal nutrient load and warming.

Benthos collapse

Death or flight of seafloor fauna that cannot escape the low-oxygen layer.

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