



Climate Change and Migratory Species: a review of impacts, conservation actions, indicators and ecosystem services

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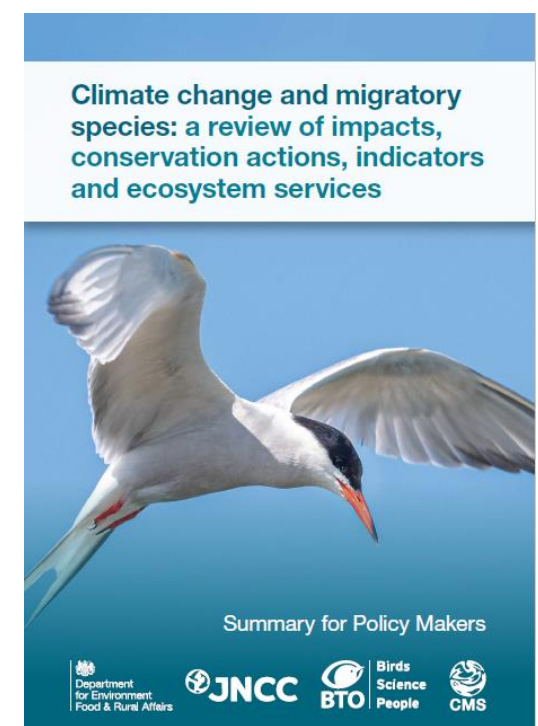
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Climate change and migratory species

A three-part report and summary for policy makers:



Part 1 – Impacts of climate change on migratory species

Increases in temperature

- Impacts on survival, breeding success, population size
- Poleward range shifts and changes in the timing of migration



Changes in water availability

- Loss of wetlands and reduced river flow
- Negative impacts for species in drier climates, particularly waterbirds and fish



Extreme climate events

- Increased frequency and intensity of storms, land slips, wildfires
- Localised habitat destruction, colony wipeout



Changing oceanic conditions

- Rising sea levels destroying low-lying coastal habitats
- Changes in salinity and pH impacting marine habitats



Part 1 – Impacts of climate change on migratory species



Seabirds

- Reduction in habitat and vulnerable to extreme events
- Changes in distribution and the timing of breeding
- Impacts on survival, breeding success, population size



Waterbirds

- Broadly positive impacts on breeding success
- Extreme temperatures limit habitat and food availability
- Large scale distributional shifts



Terrestrial mammals

- Declines in rainfall impact food for herbivores and carnivores
- Population declines and loss of habitat
- Ability to shift ranges limited by human infrastructure



Sharks and rays

- Reduction in food availability and changes in metabolic rates
- Reduction in coastal and inshore nursery habitats
- Polewards range shifts occurring, though information limited

Case Study: Loggerhead turtle

Status: Vulnerable, CMS Appendix I & II

Migration: Long distance between nesting and feeding grounds



Rising sea levels

Many nesting beaches will disappear as sea levels



Increased frequency of storms

Nests will be washed away or flooded



Increasing temperatures

Female biased sex ratio

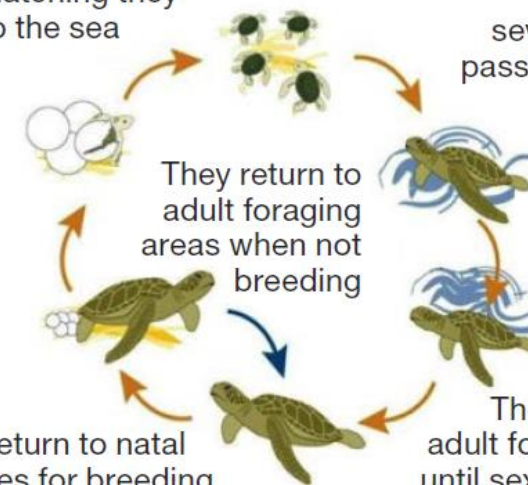


Shifting their range poleward, but coastal developments limit this



After hatching they race to the sea

They spend several years in passive migration



They return to natal beaches for breeding every 2–4 years

They migrate to adult foraging areas until sexually mature at 20–30 years

Part 2 - Conserving migratory species in the face of climate change

Conservation actions can help species adapt to climate change

> Protected areas, habitat management, interventions

Coordinated actions are needed across species' ranges

> Effective networks of protected areas and OECMs

We must monitor, evaluate and share the success of actions

> Indicators of impacts and effectiveness of actions

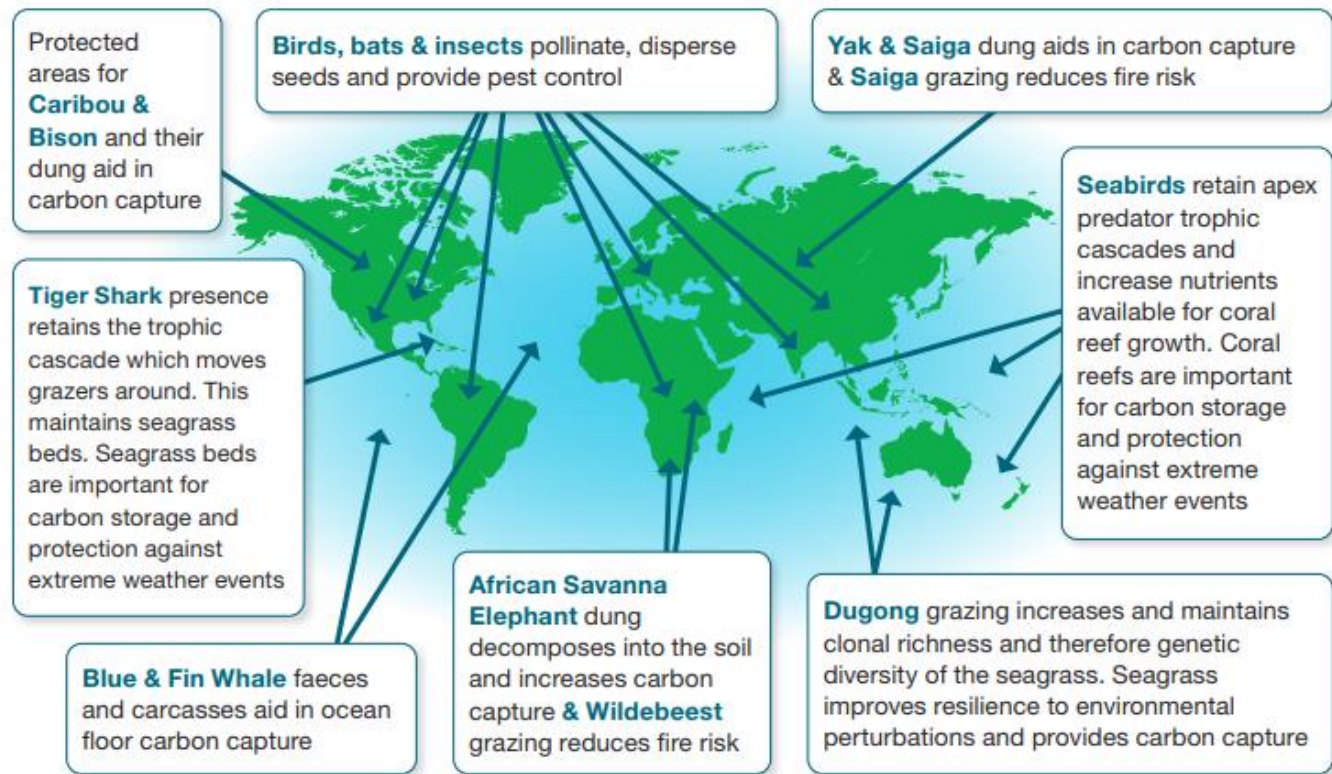


Part 3 - Migratory species and their role in ecosystems

Migratory species are important for ecosystem functioning

Large migratory megafauna support climate change mitigation

Migratory species support climate change adaptation through increasing ecosystem resilience



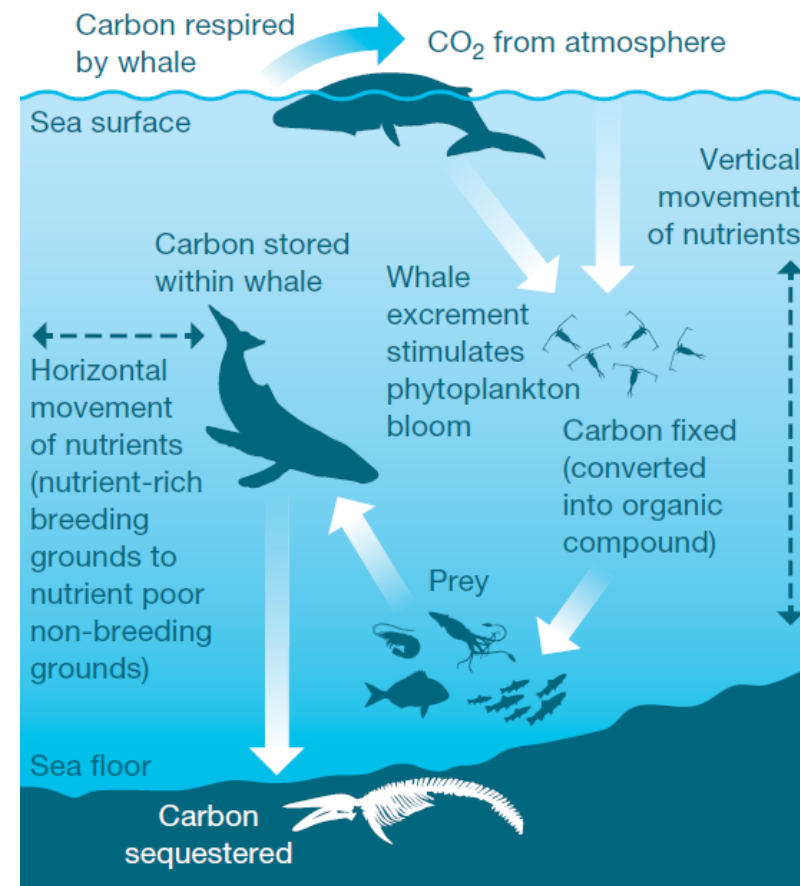
Case Study: Whales aid carbon capture

Baleen whales are among the largest and longest lived inhabitants of the deep sea

They store vast amounts of carbon in their bodies, which is locked into the ocean floor when they die

Whales undertake long seasonal migrations between tropical calving grounds and high latitude feeding grounds

They transfer nutrients across oceans and vertically through the water column



Case Study: Saiga reduce wildfire risk

Saiga antelope are ecosystem engineers



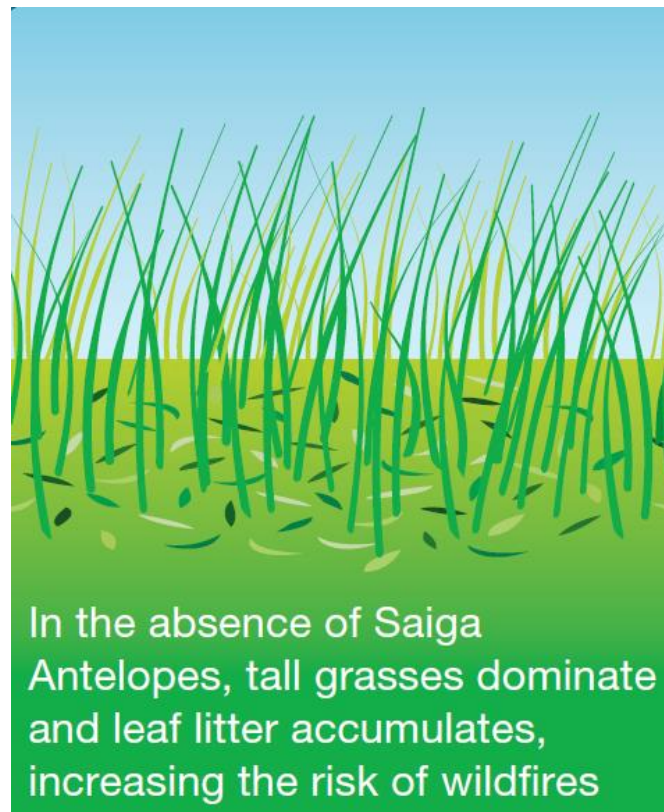
Habitats support a variety of plants and animals



Less leaf litter reduces wildfire risk



Healthy grasslands store carbon, reduce soil erosion and increase water retention



Key messages

Migratory species provide essential ecosystem services to society



Climate change is already having catastrophic impacts on many migratory species and their ability to provide ecosystem services



Interventions to address the impacts of climate change on vulnerable migratory species are needed now



International co-operation to recover migratory species provides nature-based solutions to climate change



The CMS facilitates co-ordinated conservation action and can support UNFCCC and CBD delivery



Access the full review at:

<https://jncc.gov.uk/climate-migratory-species-report/>



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What are the next steps?

- Resolution 12.21 Annex 1 contains four pages of priority actions
 - Do these need refining?
 - How can we help Parties and other stakeholders implement these?
- Workshop will start to address Decision 14.214
 - What actions or proposals would we like to take to the Scientific Council meeting?
- Are there still any gaps?
 - What kind of activities should we focus on for the next triennium?
 - E.g. What are the knock-on environmental/policy impacts of range shifts?