On-site habitat management to reduce atmospheric nitrogen impacts on terrestrial habitats

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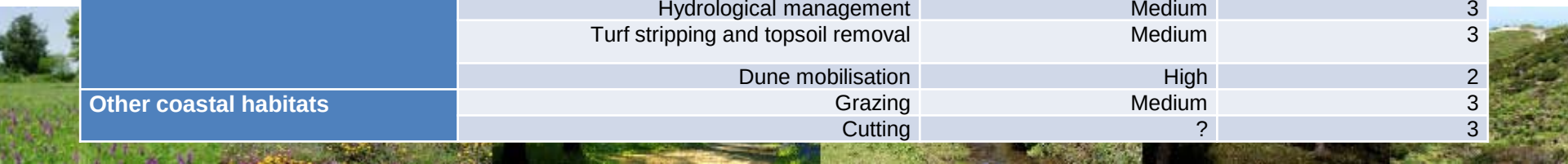
Aims

- To review the effectiveness of ‘on-site’ land management methods to reduce nitrogen deposition impacts;
- To assess what effect current management practice, has on habitat response to nitrogen deposition;
- To consider how measures may be affected by climate change or management in response to climate change, in the near-term;
- To recommend realistic and practical management measures for different habitat types which could be used to reduce nitrogen impacts or speed recovery.

Broad habitat	Management method	Potential to reduce N deposition impact or aid recovery	Strength of evidence
Broadleaved, mixed and yew woodland & (natural) coniferous woodland	Grazing and Browing	Medium	2
	Litter removal	High	1
	Thinning or harvesting	Low	2
	Burning	Low	3
Neutral grassland	Grazing	Medium	3
	Cutting	Medium	2
	Liming	Medium	3
	Introduction of hemi-parasitic species	High	2
	Hydrological management	Low	3
	Carbon addition	Medium	3
	Turf stripping	Low	3
Calcareous grassland	Grazing	Medium	3
	Cutting	Medium	2
	Sheep folding	?	3
	Glycophosphate control of *B. pinnatum*	Low	2
Acid grasslands	Grazing	High	1
	Burning	Low	3
	Liming	Medium	3
	Cutting	Medium	2
Dwarf shrub heath	Turf stripping	High	2
	Rotavating	Low	2
	Grazing	Medium	2
	Cutting	High	1
	Burning	High	2
Fen, marsh and swamp	Grazing	Low	3
	Cutting	High	2
	Burning	Medium	3
	Hydrological management	Medium	3
	Topsoil removal	Medium	3
Bogs	Hydrological management	Medium	3
	Burning	?	3
Coastal dunes and slacks	Grazing	Medium	2
	Cutting	Medium	2
	Burning	?	3
	Hydrological management	Medium	3
	Turf stripping and topsoil removal	Medium	3
	Dune mobilisation	High	2
Other coastal habitats	Grazing	Medium	3
	Cutting	?	3



Habitats







Current management - Grasslands

- Grazing
  - Little change in N
  - Opens the canopy increasing light levels
- Cutting
  - Net removal of N
  - Opens the canopy increasing light levels
- Scrub removal
  - Potentially large off take of N

Current management - Heathlands

- Grazing
- Cutting
- Burning
  - Net removal of N
  - Opens the canopy increasing light levels
- Scrub removal

Current management - Bogs

- Scrub removal
- Hydrological management
  - Could increase denitrification

Current management - Dunes

- Grazing
- Scrub removal

Current management - Woodland

- Grazing
- Coppicing
  - Large offtake of N
  - Increases light at ground level
- Felling
  - Increased decomposition, mineralisation, denitrification and nitrification
  - Increased leaching
- Deadwood management

Innovative management options

- Sheep folding
  - Potential to remove N
  - Labour intensive but traditional practice
- Litter removal
  - Traditionally used for animal bedding
  - Probably only lowland English woodlands
  - Potential to remove N
  - Negative impacts on soils unknown

Recommendations

- General
  - Manage habitats well
  - Do not add fertilisers
  - Do not supplementary feed
- Woodland
  - Do not create deadwood by felling
  - Explore litter removal as a management option
- Grasslands
  - Winter and mixed grazing
  - Investigate potential use of stock management
  - Explore the potential for low levels of liming

Recommendations

- Dwarf shrub heath
  - Burning to remove N
  - Remove clippings when cutting
  - Turf stripping in areas of extreme damage
- Bogs
- Coastal dunes
  - Remobilisation
  - Increased use of grazing and cutting

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