Migratory Species and Climate Change Expert Workshop

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ANNEX B: REVIEW OF THE ZSL METHODOLOGY AND RESULTS (MCNAMARA, 2010)

(Based on a document prepared by the UK Government)

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Annex B: Review of the ZSL methodology and results (McNamara, 2010)

The ZSL approach is based on providing a scoring between 1 and 5 under Low, Medium and High vulnerability rating. The cumulative threat of the different facets of the assessment determined the overall score, assuming that Sensitivity (Ecological Flexibility), Habitat vulnerability, Species Interactions and Synergistic threat processes hold equal ranking across the taxonomic groups assessed.

There were 44 Appendix I listed species (78 bird, 38 mammal, 8 reptiles and 4 fish species) and one example species from Appendix II, the Narwhal, assessed by McNamara *et al*. (2010) which were graded against ranges of high, medium or low vulnerability. All species studied exhibited either high (scoring between 11 to 18) or medium (scoring between 9-12) vulnerabilities to climate change. No species studied were found to have a low vulnerability to climate change. The important results to note from these preliminary assessments were:

- all marine turtle species listed within CMS Appendix I are highly vulnerable to climate change due to the combined impacts of sea level rise, increased temperatures and extreme weather events alongside synergistic impacts of current anthropogenic threats.
- All plankton and krill feeding whales are highly vulnerable to climate change due to combined impacts of ocean acidification, changes in ocean circulations and polar ice melt.
- *Monodon monceros* has been identified as one of the most highly vulnerable species, of those included in this study, to climate change. However, this species is currently only listed on CMS Appendix II.
- All species studied listed by IUCN Red List as Critically Endangered are highly vulnerable to climate change. However not only threatened species are affected.

All species of reptiles included in this study have been identified as having a high vulnerability to climate change. The results show variability in vulnerability ratings between species such as turtles (Fig 1) and whales. These species already identified as highly vulnerable to climate change should be considered as a priority for further in-depth review.

	Habitat Vulnerability	Ecological Flexibility	Species Interactions	Interactions with other Processes	Total
Reptiles					
Gharial, Indian Gavial	Medium	Medium / High	Medium	High	High (15)
Green Turtle	High	High	Medium	High	High (18)
Hawksbill Turtle	High	Medium / High	Medium / High	High	High (18)
Kemp's Ridley Turtle, Atlantic Ridley Turtle	Medium / High	Medium / High	Medium	High	High (16)
Leatherback Turtle	Medium / High	Medium	Low / Medium	High	High (14)
Loggerhead Turtle	Medium / High	Medium	Medium	High	High (15)
Olive Ridley	Medium / High	Medium / High	Low / Medium	Medium / High	High (14)

Fig. 1 ZSL Pilot study results of reptile assessments and rankings(Böhm, M. 2011).

There are 1,205 species currently listed on CMS. In line with Decision 14.214(b) *identify those migratory species that, on balance, are likely to be negatively impacted by climate change;* a rapid approach can be applied using the CCVAs list to identify species to prioritise for further assessment/in depth review, i.e. those which were assessed as having a high vulnerability to climate change impacts, or those selected by the Scientific Council, as a priority.

Whilst using the vulnerability scores proves useful for identifying species most at risk, the continued use of the scoring criteria should be considered in terms of ensuring consistency and reliability of vulnerability ratings applied across species. There is inevitably going to be variability between the scores applied dependent on the persons carrying out the assessment, their qualifications and judgement of risks and impacts within and across taxonomic groups. It can prove challenging to apply a score from 1 to 5. Should this scoring method be continued there is a requirement to provide detailed criteria and guidance on allocating scores and how to address uncertainties or unknowns due to lack of data and limited published research on particular species, even though the precautionary approach is applied. Attempting to quantify relative risk between species could introduce uncertainty, which could undermine value of results or even lead to prioritisation of the wrong species.

Prioritisation can be applied to species for expert scoping reviews or in-depth reviews. A major limitation to this level of detailed review is time. A much more detailed review and analysis of each species traits, characteristics and vulnerabilities through literature reviews is required and should be made available for review by taxon experts.