WAZA/CBSG Climate Change Task Force review April 2012

*www.**waza**.org/.../**climate_change**/**Climate**%20**Change**%20Activities.pdf*

The zoo community is responding to the climate change threat through a diverse range of engagement activities. These range from single member institution initiatives through to national, regional and global collaborative programmes. The following thematically grouped summaries iillustrate the engagement spectrum of our work that either directly pertains to climate change issues or is highly relevant to them.

Examples include:

• An Iterative Reference List of Climate Change Science, Policy and Related Information http://www.waza.org/files/webcontent/1.public_site/5.conservation/climate_change/Climate%20Change%20Referenc20List_14%20Feb2012.pdf

• Biodiversity and climate change information database Bioclimate www.bioclimate.org
• Climate Interpreter http://climateinterpreter.org
• AZA Green Guide
http://www.aza.org/sustainable-practices
• AZA Green Practices Toolbox
http://www.aza.org/green-practices
• AZA Green Award
http://www.aza.org/Membership/detail.aspx?id=17624
• AZA Green Affinity Purchasing programmes
http://www.aza.org/affinity-programs.aspx
• South Asia Climate Change Network
http://www.zooreach.org/Networks/ZOO_CCnetwork.html
• Zoological Management Information System
http://www.isis.org/pages/default.aspx

Communicating with public, students and policy makers on climate change science, threat and response issues:
With particular emphasis on the impacts on biodiversity and the importance of biodiversity in mitigation and adaptation efforts, we are committed to realising our tremendous potential for raising awareness and effective engagement with our 700 million annual visitors and wider audiences, collaborators and partners. In addition to the educational expertise of the International Zoo Educators' Association (IZE), we work closely with many government agencies (i ncluding UNEP and IUCN) and NGOs to ensure that our ability to communicate these often complex climate cha nge issues is as effective as possible. The unique engagement asset of our living collections and outreach programmes are especially valuable for realising this key objective. **Examples include:**

• The Climate Literacy Zoo Education Network (CliZEN)
http://www.clizen.org
• The Ocean Project http://theoceanproject.org
• Birch Aquarium Feeling the Heat exhibition
http://aquarium.ucsd.edu/Exhibits/Feeling_the_Heat
• IZE climate change and biodiversity site
http://www.izea.net/education/climate%20change.htm
• New England Aquarium National Network for Ocean and Climate Change Interpretation (NNOCCI)
http://www.neaq.org/conservation_and_research/projects/project_pages/global_climate_change_and_ocean_education.php
• AZA Arctic Ambassador Centers
http://www.aza.org/arctic-ambassador-centers
• AZA Climate and Wildlife Initiative
http://www.aza.org/climate-disruption
• Polar Bears International
http://www.polarbearsinternational.org/programs

Researching the biodiversity impacts of climate change:
In addition to contributing to terrestrial and aquatic species threat evaluations, the WAZA community has a strong record of investigating emerging infectious diseases, such as chytrid fungus infections in amphibians and West Nile virus and avian malaria in birds. How climate change is exacerbating wildlife health issues, such as the increasing spread of disease vectors due to shifting climate zones, are important research areas that we are engaged with in collaboration with a wide range of partners. The bio-surveillance potential of our sites is also being realised to identify changes in native and non-native species' range distributions, seasonal abundances and behaviours.

• The Living Planet Index http://static.zsl.org/files/1-2-1-living-planet-index-1062.pdf
• WCS climate change and wildlife programme
http://www.wcs.org/conservation-challenges/climate-change/climate-change-and-wildlife.aspx
• ZSL and CMS climate change vulnerability of migratory species project http://www.cms.int/bodies/ScC/17th_scientific_council/Inf_09_Climate_Change Vulnerability_of_MSpecies_Eonly.pdf
• Zoo Outreach Organisation and IUCN: The Status and Distribution of Freshwater Biodiversity in the Eastern Himalaya http://cmsdata.iucn.org/downloads/iucn_eastern_himalaya_report_30dec__2_.pdf
• San Diego Zoo wildlife disease laboratories
http://www.sandiegozooglobal.org/icr/wildlife_disease_laboratories
• Normalised Difference Vegetation Index (NDVI)
http://www.zsl.org/conservation/tools/satellite-images,1631,AR.html
• Oceanographic Research Institute c
limate change impacts on coral reefs
http://www.ori.org.za/prog.html
• Project MOSI: international mosquito monitoring programme http://www.waza.org/files/webconten t/1.public_site/5.conservation/climate_change/Project%20MOSI%20Briefing%20Notes.pdf

Using our local, national and regional networks to host, encourage and support a range of climate change focused specialist groups and biological recording initiatives: In collaboration with a wide range of agency and NGO partners, WAZA member organisations provide a central record base for species recording initiatives. These include professional and 'citizen science' initiatives that are of increasing value to climate change research and education efforts. **Examples include:**

• FrogWatch USA: citizen science programme at AZA
http://www.aza.org/frogwatch
• RECORD Biodiversity Information System at Chester Zoo
http://www.cylex-uk.co.uk/company/record-biodiversity-information-system-ltd-14570580.html
• National biobank (for tissues and feathers) and post

-mortem database for African penguins at the National Zoological Gardens of South Africa in Pretoria http://www.nzg.ac.za
• CBSG Europe at Copenhagen Zoo (Denmark) and CBSG Mesoamerica at Simon Bolivar Zoo (Costa Rica) http://www.cbsg.org/cbsg/networks

Providing well informed views on climate change issues and lobbying for beneficial change: Our community has a strong record of imparting authoritative information and holds a position of public trust. Our climate change engagement in this area has included a petition to world leaders via the UN Secretary General on the dangers of climate change, a community-wide position statement and supporting resolution along with a wide range of regional association and individual member initiatives. **Examples include:**

• WAZA petition to world leaders in advance of CoP15 of the UN Climate Change Conference http://www.waza.org/en/site/conservation/climate-change/petition
• WAZA climate change position statement http://www.waza.org/en/site/conservation/climate-change/position-statement
• WAZA Resolution 65.1: Recognising the severity of the climate change threat and the response imperatives http://www.waza.org/files/webcontent/1.public_site/5.conservation/climate_change/RES%2065.1%20Climate%20Change.pdf
• Statement of the Coral Reef Crisis Working Group Meeting http://static.zsl.org/files/statement-of-the-coral-reef-crisis-working-group-890.pdf and public engagement initiative https://www.zsl.org/science/news/join-the-campaign-to-save-the-worlds-coral,1209,AR.html
• Monterey Bay Aquarium Climate Observer initiative http://climateobserver.org
• ZSL climate change position statement http://www.zsl.org/conservation/tools/climate-change
. GLOBE International http://www.globeinternational.info

Organising and delivering large scale: awareness raising initiatives and marketing campaigns related to climate change mitigation and adaptation: Building on our strong track record of developing campaigns for a wide range of conservation issues, including bush meat, the amphibian extinction crisis, the coral reef crisis, turtles and gorillas. These campaigns have included signature petitions and other initiatives to help inform debates and influence governmental and intergovernmental policy. **Examples include:**

• IZE Press the Button public engagement initiative http://www.izea.net/education/climate%20change.htm
• Zoos Victoria Don't Palm Us Off campaign http://www.zoo.org.au/palmoil
• Supporting the 2011–2020 Decade on Biodiversity initiative http://www.waza.org/en/site/conservation/un-decade-on-biodiversity
• EAZA 2011: Proposed mandatory labelling of palm oil adopted by European Parliament http://www.eaza.net/News/newsblog/Lists/Posts/Post.aspx D=86
• PAAZAB Climate Change Challenge http://www.paazab.com/dec09news letter/10-climatechallenge.html

Providing temporary refuge for animal and plant species negatively impacted by climate change: There are well documented examples of how the zoo and aquarium community has contributed to the conservation of species through intensively managed population (IMP) programmes. According to the latest evaluation of the conservation status of terrestrial vertebrates, at least 13 of the 68 species that improved in status benefited from captive breeding as a major conservation action (Hoffmann et al., 2010). The zoo and aquarium community was directly involved in the recovery of those species (Conde et al., 2011). However, there are other examples of species that, while they did not improve in conservation status, their extinction was prevented. As species-level climate change impact evaluations become more common, the number of species requiring conservation breeding and wider management assistance (incl. assisted colonisation) is likely to dramatically increase. **Examples include:**

• WAZA community conservation projects http://www.waza.org/en/site/conservation/waza-conservation-projects
• The Amphibian Ark http://www.amphibianark.org
• ZSL Fish Net http://www.zsl.org/conservation/regions/habitats/marine/fish-net
See appendix for fuller IMP review.

Manage and breed animals ex situ in the long term with a view to restocking in the wild:
As more climate change impact evaluations are conducted, the number of species requiring intensive conservation management, including long-term ex situ breeding programmes, is likely to dramatically increase. Our community's extensive conservation experience and programme initiatives are increasingly important for informing effective responses to the climate change threat. **Current programme examples include:**

• WAZA community conservation projects http://www.waza.org/en/site/conservation/waza-conservation-projects
• The Amphibian Ark http://www.amphibianark.org
• SECORE http://www.secore.org
• CORALZOO http://www.coralzoo.org/home
•Recovery Plan for the Mountain Pygmy-possum http://www.environment.nsw.gov.au/resources/nature/recoveryplanMountainPygmy-possum.pdf
• African Penguin Chick Bolstering Project http://penguins.adu.org.za/content.php?serial=13&mn=99
See appendix for fuller IMP review.

Engage in habitat management and restoration projects:
The zoo community annually contributes an estimated US$ 350 million to *in situ* conservation activities, including very significant habitat management and restoration initiatives. Working in close collaboration with a wide range of partner agencies, organisations and local communities, WAZA member organisations are actively engaged in *in situ* conservation initiatives around the world. **Examples include:**

• WSC climate change and landscapes programme http://www.wcs.org/conservation-challenges/climate-change/climate-change-and-landscapes.aspx

• ZSL community-based mangrove rehabilitation project in the Philippines http://www.zsl.org/conservation/regions/asia/mangrove-philippines/community-led-mangrove-rehabilitation-in-the-philippines,913,AR.html
• San Diego Zoo Wildlife Conservancy field station programme http://www.sandiegozooglobal.org/field_stations
•Zoos South Australia Kimberley programme http://zoossa.com.au/conservation-ark/conservation/conservation-programs?program=Kimberley
•Slapton Ley National Nature Reserve http://www.slnnr.org.uk/about-us.aspx
• Mauritian Wildlife Foundation http://www.mauritian-wildlife.org/application
• Saint Louis Zoo WildCare Institute programmes http://www.stlzoo.org/conservation/wildcare-institute
• Durrell Wildlife Conservation Trust Madagascar and Comoros programme http://www.durrell.org/in-the-field/regions/madagascar
• Chagos Marine Reserve http://www.zsl.org/conservation/news/chagos-marine-reserve-1st-anniversary,808,NS.html
• The BIAZA Reserve in Brazil: partnership between BIAZA and the World Land Trust http://www.biaza.org.uk/conservation/biaza-reserve & http://www.biaza.org.uk/uploads/Publications/LIFELINES%20No%20111.pdf

Striving to be exemplars of best sustainability practice and engaging our visitors and wider community with alternative (non-carbon) energy options and associated initiatives: At the member institution level this challenge is being addressed by gaining international environmental management standards ISO14001 and BREEAM environmental building standards and a wide range of initiatives. **Examples include:**

• Paignton Zoo environmental programme http://www.paigntonzoo.org.uk/conservation/our-environment.php
• New England Aquarium greening initiative http://www.neaq.org/conservation_and_research/climate_change/green_team.php
• uShaka Sea World Eco House initiative www.seaworld.org.za/eco-house

Acting as a supporting community to address climate change impact issues:Irrespective of geographical and political boundaries the WAZA community works to assist with restoration of institutional capacity of other members' facilities. **Similar examples include:**

• Prague Zoo flood http://www.zoopraha.cz/en/about-zoo/flood-2002
• JAZA support following tsunami http://www.waza.org/en/site/pressnews-events/press-releases/zoos-and-aquariums-affected-by-earthquake-and-tsunami-in-japan

Engagement with collaborators: Our community works closely with a wide range of environmental agencies and organisations including UNEP, IUCN and its Species Survival Commission's specialist groups and, through its respective members, a wide range of climate change agencies and organisations. **Examples include:**

• Botanic Gardens Conservation International http://www.bgci.org
• Convention on Migratory Species http://www.cms.int
• IUCN Species Survival Commission http://www.iucn.org/about/work/programmes/species/who_we_are/about_the_species_survival_commission_
• Ramsar Convention http://www.ramsar.org/cda/en/ramsar-home/main/ramsar/1_4000_0__
• Royal Society http://royalsociety.org/events/2009/barrier-reef
• Scripps Institution of Oceanography http://sio.ucsd.edu
• UK Met Office Hadley Centre http://www.metoffice.gov.uk/climate-change/resources/hadley
• UK Energy Research Centre http://www.ukerc.ac.uk/support/tiki-index.php
. Convention on Biological Diversity http://www.cbd.int

Examples of WAZA-linked climate change publications

Conde, D. A. et al. (2011) An emerging role of zoos to conserve biodiversity. Science 331:1390–1391. http://www.sciencemag.org/content/331/6023/1390
Conde, D. A. et al. (2011) Zoos and captive breeding – response. Science 332: 1150–1151. http://www.sciencemag.org/content/332/6034/1150
Gusset, M. & Dick G. (2010) 'Building a Future for Wildlife'? Evaluating the contribution of the world zoo and aquarium community to in situ conservation. International Zoo Yearbook 44: 183–191. http://onlinelibrary.wiley.com/doi/10.1111/j.1748-1090.2009.00101.x/abstract
Junhold, J. & Oberwemmer, F. (2011) How are the animal keeping and conservation philosophy of zoos affected by climate change? International Zoo Yearbook 45: 99–107. http://onlinelibrary.wiley.com/doi/10.1111/j.1748-1090.2010.00130.x/abstract
Khela, S. & Pearce-Kelly, P. (2011) An Iterative Reference List of Climate Change Science, Policy and Related Information. ZSL and WAZA/CBSG Climate Change Task Force. http://www.waza.org/files/webcontent/1.public_site/5.conservation/climate_change/Climate%20Change%20Reference%20List_14%20Feb2012.pdfMendelson, J. R. et al. (2006)
Confronting amphibian declines and extinctions. Science 313: 48. http://www.sciencemag.org/content/313/5783/48.summary
Veron, J. E. N. et al. (2009) The coral reef crisis: the critical importance of <350 ppm CO2
. Marine Pollution Bulletin 58: 1428–1436. http://static.zsl.org/files/1c-the-coral-reef-crisis-the-critical-importance-of-350-ppm-co2-967.pdf
Zippel, K. (2010) Climate change and amphibians. Animal Keepers' Forum 37: 537–540. http://amphibianark.org/pipermail/newspublications_amphibianark.org/attachments/20110104/0331421a/attachment-0001.pdf?csi_scan_F3293F689D82B9C2=0&bcsi_scan_filename=attachment-0001.pd