



## **CBSG Climate Change Impacts and Conservation Response Working Group**

### **2008 CBSG Annual Meeting, Adelaide, Australia**

#### **Participants**

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#### **Rationale for This Working Group**

This working group was convened as part of ongoing CBSG efforts to respond to the uniquely pervasive threat that global climate change presents. The effects of rapid climate change are cumulative, and directly or in concert with other threats are affecting most if not all species and habitats on earth and impact all current conservation endeavours. Addressing this challenge has become even more of an imperative with the acknowledgement that change effects on the ground are presenting far sooner than the models are predicting. The conservation community's response to this reality needs to be all the more urgent and effective.

#### **Brainstorming Session**

- What's unavoidable vs. avoidable in terms of climate change impacts are a key knowledge requirement (strongly linked to action avoidance opportunity windows).
- Because it's already likely that we're in the realm of dangerous climate change it's difficult to make simple "how much time do we have to act" clarifications. We do however need a simple message replicated throughout the world which needs to convey the greatest threat as can confidently be predicted.
- There is enough evidence now to know that systems are changing (inc increasing drought and cyclones etc to communicate with confidence).
- How should we respond, in terms of pronouncements, if major systems (such as the Great Barrier Reef) become committed to being lost? This issue is linked to confidence levels of such pronouncements and the conflict between wishing to avoid being negative and the real risk of not realizing essential mitigation action.
- Timescales of CC impact consequences and essential preventative actions are a key issue that justify use blunt pronouncements and associated public engagement approaches. For example the Arctic Sea ice was probably committed to being lost 30 years ago.
- Need to prioritize ecosystems most vulnerable for future restoration planning/action.
- Should the conservation community focus action/resources on the most compromised taxa (in terms of climate change threats) or, triage style, on taxa considered to most viable in terms of conservation response? The same applies to associated research foci.
- Above issue is strongly linked to issue of knowing what we are committed to in terms of climate change impacts and what's avoidable. In turn linked to confidence of currently available reference information. Point made that biologists views can often differ depending on how comprehensive their scenarios are. Therefore it's important to present scenarios including all key factors (e.g. sea level raise). To date there has been too much reliance on individuals being expected to have a handle on the whole climate change dynamic but this situation is fast changing with associated increased clarity.
- Issue of climate change models not sufficiently incorporating biotic feedback factors. These are now increasingly being included in some climate models.
- Need to redesign the IUCN reintroduction guidelines and other conservation manuals to ensure adequate relevance to the climate change threat dynamics (species having to move outside of natural range areas etc).
- In the case of climate change impact dynamics we can only realistically work on a 20 year time frame of conservation response planning as the effects are so variable (due to the increasing feedback factors) beyond this planning timeframe.
- Current legislation will need to adapt in the face of increasingly changing non-native and invasive realities.
- We currently do not do an effective job of integrating bioclimatic envelope models, which describe the environmental conditions that collectively define a species' distribution, with demographic models of species viability. Therefore, we are unable to realistically simulate the long-term shifts in a species' range due to predicted changes in local climate. This is largely due to our PVA models lacking a spatially explicit component.
- There are a range of conflicting solutions which need to be prioritized for each target group.

- We are going to see the most dynamic variation and rapid change at the range margins. Models need to respond to this (birth rate either higher or lower than the death rate or situation consistent with complexity of island hopping dynamics etc). We need more attention to these areas.
- Zoos and aquaria need increasing engagement with *in situ* as well as *ex situ* climate change related work and need to ensure that their substantial field conservation support is adequately incorporating climate change threat dynamics. Focusing on habitat level systems and communities is a key need.
- Analysis of *ex situ* populations (predominantly in zoos, aquaria and botanic gardens) has significant potential to inform environmental tolerances etc (see last years focus on this issue in the working group report).
- Distribution of species in zoos data could be very valuable – helping to inform how much a species distribution is determined by its physiology rather than competitive factors etc.
- Added to PVA tools this *ex situ* derived data could be very valuable for filling in current gaps. Same could apply to disease and novel species assemblages etc.
- Natural barriers of re-establishment (e.g. resulting from Europe's last ice age) means simple presence/absence can't be taken on its own. Data (including derived from *ex situ* records) on survival rates, body mass, longevity etc could be very informing.
- The psychological considerations associated with peoples' response to the climate change threat presents a dilemma of how best to communicate the urgency of the situation without causing states of denial or hopelessness. This issue is compounded by the way people respond to predictive threats.
- How to reconcile with the stark nature of the threats beyond anything the conservation community has had to contend with before with the desire to provide a solutions' based public engagement approach.
- May necessitate greater engagement with marketing/psychology specialists.
- How do we convey to the public that their own lives are affected (e.g. ecosystem services and associated economic and welfare impacts).
- We need to bring issues back to what communities (at all levels) can do.
- Can the zoo and wider conservation community rally round a clear campaign of awareness raising and action?
- Need to focus on best science based advice for action at all levels (individual through to political leaders).
- Improved communication ability requires maximum cross over between climate specialists and biologist, ecologists conservation scientists etc.

## Key Issues

1. Many (older) models have not included biotic components in system.
2. Not sure of current system state.
3. Zoos and aquaria lack a single simple message of urgency
4. Reintroduction, restoration guidelines are no longer adequate given our understanding of global climate change picture – Time frames out of whack.
5. How do we deal with preemptively managing a problem that may already exist?
6. Inadequate communication between scientists, general public and political community.
7. Import export regulations no longer adequate in context of global climate change.
8. How do we integrate models of population viability with climate change driven range shift models?
9. Much communication of the climate change problem is not solutions-based.
10. Difficult to link global climate change impacts to personal future – e.g. health of ecosystem services.
11. Discrepancy between short term focus and long term effects.
12. Zoos and aquaria not sufficiently focusing climate change related activities to real field-based conservation.
13. How does global climate change problem affect zoo breeding programmes (genetics, plasticity, adaptability, collection planning)?
14. How does global climate change problem affect scientific research on wildlife processes?
15. Not enough communication across scientific disciplines to successfully integrate information.
16. Not sufficient sense of urgency of the problem in the public/[political community].
17. The subject is too [very] complicated to communicate to the public.
18. Scientific community is not communicating urgency to realistic degree – and is therefore communicating uncertainty.
19. Media and politicians often reluctant to accept scientific conclusions.
20. No simple solutions to global problem.
21. Difficult to sell simple solutions [how does this relate to above statement?].

22. Difficult for zoos to communicate negativity and solutions simultaneously.
23. How do we utilise existing PVA tools like Vortex and RAMAS to project climate change dynamics.
24. How do we deal with modelling impact of globalization of global climate change processes at species range margins? Can zoos provide information on physiological tolerances of a variety of species.
25. What effects are avoidable and what effects are unavoidable is a key clarification need.

### **Issue Themes and Associated Linkages**

**A) Communication to effect human behavioral changes to avert catastrophic climate change impacts is currently ineffective. This is letting all concerned off the hook (especially at the political level).**  
3, 6, 9, 10, 15, 16, 17, 18, 19, 20, 21, 22

**B) Conservation and research priorities are not well defined in the context of global climate change.**  
4, 7, 8, 12, 13, 14, 15, 23, 24, 25

**C) We are not capitalizing on existing knowledge \* to inform conservation action or to facilitate effective communication**  
1, 2, 5, 8, 11, 23, 24

- Linked to mass collaboration needs

\* Not using existing or not developing new interactive tools

### **Logical Progression Approach:**

Knowledge B

Understanding

Translation A

- modelling cross discipline

- Communication

Effective action

### **Suggestions to Address Issue Themes**

- CBSG (Phil/Bob) work with Barry to explore metamodelling approach to integrate climate change data, and to compare with existing RAMAS tools.
- Explore revision of Vortex to be spatially explicit
- CBSG can serve as link between research and zoo communities to facilitate research progress (physiological tolerances etc) – consider workshop to organise project (along the lines of the Imperial College) and design (database).
- Climate change relevant zoo and aquaria data needs to be utilized.
- Climate change impact considerations need to be sufficiently incorporated into the zoo and aquaria collection planning process. The same applies to their research and conservation programme areas. How to respond to the need to rescue species from “Doomed Ecosystems” needs special consideration.
- Zoos and aquaria should develop/support in-situ programmes with strong climate resilience parameters build into reintroduction, habitat management etc.
  - resilient to climate, disease, parasites, invasives, etc
  - Field Project Prioritization Group needs to address this issue.
- Continue to expand and disseminate the climate change and biodiversity information network tool (the web-enabled iteration of which has been renamed BioClimate).
- Follow up video conference and workshop in next six months.
- We need to move beyond the current of situation of filtering our advice (i.e. we can't pretend that the situation isn't as bad as it really is).



## Statements and Recommendations

### Working Group Statement

For the big climate change impact threats we have enough knowledge as a community to clearly demonstrate the case. This means that the more refined species-level evaluation work can proceed in parallel with urgent and concerted awareness raising and engagement efforts.

### Working Group Recommendation to CBSG

Recognizing the possibly fatal climate change impacts on the Great Barrier Reef, the working group urges that CBSG provides all assistance possible to facilitate an urgent review of the reef's viability in the face of climate change and to explore best response options. The recent review initiative detailed in the Royal Society's report Climate change and the fate of the Amazon is a guide for how such a review might be realized.

### Working Group Recommendation to WAZA

Zoos and aquaria can make an invaluable contribution through their *ex situ* and *in situ* programme work, research and support focus and above all their unique ability to directly engage with the public. On this last key area we urge that WAZA put in place as matter of urgency a climate change response strategy as detailed in the proposal for WAZA Council consideration.

### WAZA Global Climate Change Response Strategy

***In any but the early and rapid emissions reduction scenario there are no realistic conservation response options capable of contending with the profoundly altered environmental states our planet will have entered.***

***--2008 CBSG Climate Change Working Group***

### Responding to the Urgent Climate Change Challenge

Following up on WAZA's 2006 climate change resolution, the dramatically increased severity of the global warming threat (as clarified at the 2008 CBSG and WAZA briefing and review sessions) requires the international zoo community to realize its tremendous engagement potential. To this end, all necessary assistance should be provided to the Conservation Committee and IZE colleagues to produce the most appropriate engagement response for the zoo community.

### A Key Message

The international zoo community needs to convey the message that the climate change threat highlights that sustainable living and the conservation of the natural world are key to ensuring human survival.

Through close collaboration with the regional zoo associations this task can most effectively meet local issues and associated responses. The opportunity now exists for greatly improved collaborations with subject matter specialists and access to associated information, via the WAZA tool kit and other reference tools.

To help realize this task it is proposed that a climate change task group be established of a composition reflecting the relevant skills and drawing from the WAZA membership. Additional specialists are to be co-opted as necessary.

**This unparalleled global environmental threat demands an unprecedented response in the short time we have left to make a difference.**