Conservation Biology Discussion – Minimum Viable Population Size and Conservation

An Emerging Role of Zoos to Conserve Biodiversity (Conde et al., 2013)

* For species whose range is so restricted that *ex situ* conservation is the only option, the problem of maintaining genetic diversity is clearly a concern. This seems like reason enough for it not to be an emergency treatment (which would result in high levels of inbreeding); at the same time, we do not know enough about many species that are likely critically endangered to consider them endangered. Have any approaches been taken to account for this? For example, we assume that a data deficient species is endangered, and take action? Of course, we haven’t even taken action for many endangered organisms…
* Something I feel could have been touched on is diet of captive populations. While it seems like just providing basic nutrients should be enough, many animals are highly specialized; this is typically considered in diets of zoo animals, but certain specialized diets also improve health and decrease aging rates. Maybe it is just that little research has been done so far on this topic, but is this often considered in *ex situ* conservation programs, or is it more of a long-term goal at least?
* I like the idea that zoos might be more beneficial in terms of conservation success by specializing in breeding select species. Is there any downside to this approach, though? For example, by “putting all our eggs into one basket” where certain species are focused on at certain zoos, do we put our efforts at risk? The main thing that comes to mind is disease, but so long as health is managed appropriately, that may not be an issue. Maybe genetic diversity would be less easily managed with this approach, although breeding success may increase.

Mammal and bird species held in zoos are less endemic and less threatened than their close relatives not held in zoos (Martin et al., 2013)

* For some reason, I don’t quite understand what they are getting at in the first paragraph of Statistical Analysis and Results, where they remove “statistically unrepresentative” in-zoos species – it seems like it must be straightforward, but is it unrepresentative in terms of how many zoos have those species, or their criteria measurements of the species? Both?
* This matched-pair approach is entirely new to me, but is an interesting method that is apparently quite useful. The authors found essentially the exact opposite of what they expected, which is clearly very helpful for informing conservation management in the future. On the other hand, their findings actually seem pretty intuitive – biodiversity is so rich that it seems obvious that most species in zoos have close-related species that are more endangered or vulnerable to extinction (except in cases of the most endangered species in a group, of course). Nonetheless, these are important ideas to implement in our biodiversity conservation approaches.
* This paper seems to hint at something I’ve thought of in the past (although looking at birds/mammals): there should be more amphibians/reptiles/birds in zoos. Due to their smaller body sizes, smaller home ranges (maybe not birds…), lower cost to keep, and *relatively* easier husbandry/reproduction, there seems to be a lot of potential to conserve higher proportions of biodiversity by keeping more of these organisms. Does this suggest that mammals should be targeted more specifically for *in situ* conservation, though? Does that seem feasible? Or is necessary to simply increase the proportion of all fauna kept for *ex situ* conservation?