**DEVELOPING A DECISION FRAMEWORK FOR SELECTING MANAGEMENT SITES FOR THREATENED SPECIES**

**WHY ARE WE INTERESTED IN DEVELOPING THIS DECISION FRAMEWORK?**

In order to maximise our chances of securing populations of threatened species in the wild for 100 years (aim of the Saving our Species program), we need to try and manage those populations which are likely to be most resilient/least vulnerable to extinction, particularly in the face of climate change.

We already have a good idea of the factors that increase a species’ vulnerability to climate change, and increase the risk of extinction (e.g. low population size, low genetic diversity, restricted distribution and isolation). On the other hand, there are also many ways to increase species’ adaptive capacity and resilience to climate change (e.g. through increasing habitat connectivity, conserving the full range of environmental variation and protecting habitat that is likely to remain climatically suitable into the future).

Therefore, we should be able to use this knowledge to design a practical decision framework for selecting the most robust management sites for threatened species.

**WHAT EXISTING DECISION FRAMEWORKS/GUIDELINES CAN ASSIST US WITH THIS?**

There are a number of existing decision frameworks which might assist us in developing a framework for selecting more robust management sites:

* *Frameworks for assessing species’ vulnerability to climate change* - Williams *et al.* 2008, Cabrelli *et al.* 2014)
* *Frameworks for guiding management of threatened species/communities under climate change* – Oliver *et al*. 2012, Shoo *et al*. 2013, Prober *et al.* 2012
* *Seed provenance guidelines for revegetation* – Byrne *et al.* 2011, Vitt *et al.* 2010
* *Frameworks for guiding species translocation* – Hoegh-Guldberg *et al.* 2008, Weeks *et al*. 2011, Vitt *et al.* 2010, Gallagher *et al*. 2014
* *Framework for identifying refugia* – Keppel *et al*. 2011  
    
    
    
    
    
    
    
    
    
    
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**WHAT SHOULD BE CONSIDERED WHEN SELECTING WHICH POPULATIONS OF THREATENED SPECIES TO MANAGE?**

Based on our review of the literature, these are the factors we think are important to incorporate into our decision framework. We feel these might best be divided into **landscape-level** considerations (looking at the populations/potential management sites in relation to each other and the surrounding environment) and **site-level** considerations (looking at the characteristics of the individual populations/sites). Are there any other important factors you can think of?

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| LANDSCAPE-LEVEL | SITE-LEVEL |
| Number of extant populations – how many should be managed? | Population size – larger populations more resilient (genetic effects) |
| Spatial arrangement of populations, including connectivity between populations/sites and condition of the matrix. How close are the populations to protected areas? What is the potential for dispersal? | Size of potential management site – large sites likely have greater microclimate diversity and can support larger populations |
| Climate suitability modelling – which populations/sites are likely to remain in climatically suitable habitat into the future and which are likely to become climatically unsuitable? Which sites currently outside of the species’ historical range are likely to become climatically suitable habitat in the future? How close are populations/sites to projected future suitable climate space? | Environmental heterogeneity/microclimate diversity within the site (potential climate refugia) |
| What is the range of environmental variation occupied by the species – want to conserve as much environmental variation as possible. Use histograms to assist here? Temp, precip, soil, topography | Land tenure – is the potential site on public or private land? |
|  | Habitat quality – how degraded is the habitat? What are the existing threats? |
|  | Are there any co-benefits to other threatened species if site managed? |
|  | Distinctiveness of population – is population of particular conservation significance? |