



NATIONAL RESERVE SYSTEM

## Priorities for expansion of the National Reserve System

The National Reserve System (NRS) is Australia's system of terrestrial protected areas. The overriding priority for expanding the National Reserve System (NRS) is to increase the protection of bioregions with less than 10 per cent represented in the NRS. Within these bioregions the priority is to include unrepresented regional ecosystems, under-represented regional ecosystems and habitat for nationally threatened ecological communities and species.

A table setting out various biodiversity indicators has been developed to help guide the identification of possible sites for inclusion in the NRS. For example, an ecosystem approach is considered to be more efficient than a species based approach, while larger and more diverse sites are considered more viable than small sites. Further explanation of the importance of these indicators is provided in the second table.

<b>BIODIVERSITY VALUE</b>	<b>HIGHER PRIORITY</b>			<b>LOWER PRIORITY</b>
<b>Ecosystem representation</b>	IBRA Region	IBRA Subregion	Regional Ecosystem	Local ecosystem
<b>Current level of protection</b>	0%			>10%
<b>Ecosystem diversity</b>	More than one bioregion	More than one subregion	More than one regional ecosystem	One regional ecosystem
<b>Representation of regional ecosystems</b>	Un-represented in IBRA Region	Un-represented in IBRA Subregion	Un-represented regionally (catchment)	Un-represented locally (sub-catchment)
<b>Regional ecosystems</b>	Restricted			Widespread
<b>Species phylogenetic distinctiveness</b>	Order	Family	Genus	Species
<b>Endemism</b>	IBRA Subregion	IBRA region	Eco-region	Continental
<b>Species diversity</b>	High			Low
<b>Threatened ecological communities scale</b>	National	State	Regional	Local
<b>Threatened ecological communities status</b>	Critically Endangered	Endangered	Vulnerable	Of Concern/ near threatened
<b>Threatened species scale</b>	National	State	Regional	Local
<b>Threatened species status</b>	Critically Endangered	Endangered	Vulnerable	Of Concern/ near threatened
<b>Size</b>	Large			Small
<b>Ecological connectivity</b>	Surrounded by relatively intact ecosystems	Well connected remnants	Poorly connected remnants	Surrounded by cleared and developed land
<b>Significant site</b>	International	National	Regional	Local
<b>Environmental gradient</b>	Steep			Low
<b>Condition</b>	Proportion largely intact			Remnant / ecologically dysfunctional
<b>Threat</b>	High			Low
<b>Manageability of threats</b>	Easily managed			Un-manageable
<b>Environmental benefit</b>	Many / large benefits			Few / small benefits

BIODIVERSITY VALUE	EXPLANATION
<b>Ecosystem representation</b>	It is a higher priority to increase representation of large scale ecosystems over increasing the representation of local ecosystems as they potentially secure more different elements of the Australian landscape.
<b>Current level of protection</b>	The less there is currently protected the higher the priority to protect the biodiversity values. The level of protection can be measured at a national scale, IBRA region scale and IBRA subregion scale. This information is presented in CAPAD. Within the States and Territories there may be information available on the level of protection of regional ecosystems.
<b>Ecosystem diversity</b>	The greater the ecosystems diversity (number of ecosystems) at the larger scale (IBRA) then the better chance there is of protecting the range of Australia's biodiversity values. Recent work suggests that the greater the diversity of environments in a protected area the better the chance species and ecosystems have to adapt to climate change.
<b>Representation of regional ecosystems</b>	To maximise the range of regional ecosystems protected in the NRS, those unprotected in an IBRA region are a higher priority than those already protected in a subregion.
<b>Regional ecosystems</b>	Restricted regional ecosystems that have a small range and/ or small total area are a higher priority for inclusion in the NRS because they are at greater risk of loss and may contain unique combinations of environmental values.
<b>Species phylogenetic distinctiveness</b>	Phylogenetic distinctiveness refers to the number and closeness of nearest relatives and the likelihood of shared genetic material. It reflects how far down the evolutionary tree the species branched off. For example a platypus is much more genetically distinctive to other mammals than eastern and western grey kangaroos because the evolutionary paths of monotremes and marsupials branched earlier than the branch between eastern and western grey kangaroos.
<b>Endemism</b>	Endemism is a higher priority the more restricted the range of the species. A fish species restricted to one spring is a higher priority than a fish species that occurs throughout the Murray Darling Basin.
<b>Species diversity</b>	Places with high species diversity (number of species) are a higher priority because they present an opportunity to conserve more genetic material (species).
<b>Threatened ecological communities scale</b>	The broader the scale at which an ecosystem is threatened the higher its priority for protection because threat at a national scale implies there are few if any areas where the ecological community is not threatened. A regional threat rating may mean the ecological community is only threatened in the region and that there are other regions where it is not threatened. This may not be the case for ecosystems with restricted distribution as their regional and national threat status may be the same.
<b>Threatened ecological communities status</b>	Threat status indicates the risk of loss for the ecological community therefore the higher the risk of loss the more imperative there is for the protection of the ecological community.
<b>Threatened species scale</b>	The broader the scale at which a species is threatened the higher its priority for protection because threat at a national scale implies there are few if any areas where the species is not threatened. A regional threat rating may mean the species is only threatened in the region and that there are other regions where it is not threatened. This may not be the case for species with restricted distribution as their regional and national threat status may be the same.
<b>Threatened species status</b>	Threat status indicates the risk of loss for the species therefore the higher the risk of loss the more imperative there is for the protection of the species.

BIODIVERSITY VALUE	EXPLANATION
<b>Size</b>	Generally, the larger the protected area is the better the chance it's biodiversity values can survive and adapt to changes and recover from the impact of threats like fire, extreme weather, etc. Larger sites are predicted to be more resilient to threats and changes and consequently, are a higher priority than smaller sites.
<b>Ecological connectivity</b>	Better ecological connectivity allows ecosystems, species and communities to function more naturally. It should improve their capacity to adapt to change and recover from the impact of threats. More naturally functioning systems with greater capacity to deal with threats and change are a higher priority for inclusion in the NRS.
<b>Significant site</b>	Significant sites are places in the landscape important for the survival and evolution of Australia's biodiversity. These are places that act as refugia during droughts, fire or climate change, places of species evolution, important feeding and breeding sites especially for migratory or nomadic species or places of natural heritage significance. There are internationally significant sites listed through World Heritage or Ramsar through to locally significant sites listed in regional heritage registers. The more broadly significant sites are a higher priority than locally significant sites.
<b>Environmental gradient</b>	Changes in environmental values like rainfall, altitude, aspect and temperature present an opportunity for a wider range of species and ecosystems to survive. If these changes occur over short distances then there is a better chance for biodiversity to adapt to climate change. Steep environmental gradients are a high priority for the NRS because they are diverse with potential to adapt to climate change better than places with low environmental gradients.
<b>Condition</b>	Intact ecosystems are a higher priority than ecosystems in poor condition because they cost less to manage, function more naturally and are better able to cope with threats and changing climate. Ecosystems in poor condition cost more to manage are more costly to restore and protect less biodiversity than an intact (good condition) ecosystem.
<b>Threat</b>	To a certain degree, a site with a high level of threat is a higher priority because it is assumed the active management can reduce the threats and prevent further loss of biodiversity values and there is a greater chance of the loss of an opportunity to protect biodiversity values. Places with a low level of threats will continue to retain most of their biodiversity values and will be available for inclusion in the NRS at a later date with minimal loss of value.
<b>Manageability of threats</b>	The easier threats are able to be managed and minimised the higher the priority for inclusion in the NRS as the cost of management will be lower and the impact of management actions will be greater. Some sites may have threats that are unmanageable such as regional ground water rise or open cut mining which can destroy biodiversity values and their impact is largely unavoidable. These places are a low priority for inclusion in the NRS.
<b>Environmental benefit</b>	Places that deliver a high environmental benefit are a higher priority than places with a low environmental benefit. This is an indication of value to the community of environmental services like water, carbon sequestration, nutrient cycling, nature based recreation and tourism.