SAVING OUR SPECIES

Eligibility criteria: keep watch management stream

The keep watch (KW) management stream is for threatened species that have shown population stability or improvement and no longer need targeted management activities aside from monitoring to:

1. ensure populations are recovering
2. identify potential threats to the security of the species.

EC1, 2 and 3 are based on International Union for Conservation of Nature (IUCN) Red List criteria and require the species to meet thresholds for 'Vulnerable or better', allowing for time lags between effective management and positive population responses. EC4 is based on protection and critical threat abatement*, and the security of those arrangements. For definition of terms (marked with *), see the Glossary overleaf.

To qualify for the KW management stream, a species must meet all four of the following criteria.

EC1. Population is stable or increasing

(including all the following)

a. Population trajectory data* adhering to the SoS Monitoring, Evaluation and Reporting (MER) Guidelines are available and show evidence of stable or increasing populations across an adequate proportion* of the range, **and**

b. in the case of past population reduction which was observed, estimated, inferred or suspected, where the causes of the reduction:

- are clearly reversible, **and**
- are clearly understood, **and**
- have ceased,

the population has not reduced by 70% or more over a timeframe appropriate for the taxon.

A reduction in population may be measured based on: i. direct observation; ii. an index of abundance appropriate to the taxon; iii. a decline in area of occupancy (AOO)*, extent of occurrence (EOO)* and/or habitat quality; iv. actual or potential levels of exploitation; or v. effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.

Rationale for criterion

Part a of this criterion requires SoS MER-compliant population monitoring data as evidence that the species has responded positively to management within its current SoS management stream and that its population is now stable or increasing. Part b of this criterion includes IUCN Criterion A, which ensures the species has not rapidly declined in the recent past. To meet EC1b, the causes of decline **must** be understood, be reversible, and have stopped. IUCN recommends three generations or ten years (whichever is the longer) as an appropriate timeframe to assess historical population declines.

EC2. Population is not too small

(including all the following)

a. The species is present at three or more locations*, **and**
b. AOO is 20km^2 or greater, **and**
c. the species has greater than 1000 individuals in the total population.

Rationale for criterion

This criterion has the same function as IUCN Criterion D, which sets a minimal number of locations, AOO and population sizes for very small or restricted populations to reduce the risk of extinction via unpredicted or random threat events and ensure population viability. The IUCN thresholds have been amended based on expert knowledge of NSW threatened species. A population of more than1000 individuals is considered essential for retaining evolutionary potential*. The SoS Species Technical Group should identify where a higher (or lower) population threshold is more appropriate.

EC3. Distribution is not significantly restricted, fragmented or unstable

If the species geographic range is less than 5000km^2 (EOO) or 500km^2 (AOO), **the species must not have both of the following**:

a. a severely fragmented* distribution, **and**
b. extreme fluctuations* in any of EOO, AOO, number of locations* or subpopulations* or number of individuals.

Rationale for criterion

This criterion is based on IUCN Criterion B, which aims to ensure that species with restricted ranges are not also showing (or likely to show) continuing population decline, severe fragmentation and extreme and unsustainable population changes. As stable or increasing populations are required for KW, population decline as defined by IUCN has been removed from this criterion.

EC4. An adequate and representative proportion of the species range is within secure conservation land tenure within which the species critical threats are abated or being adequately managed

(including all the following)

An adequate and representative proportion* of the species range is made up of secure conservation land tenure* (including protected areas, Office of Environment and Heritage (OEH) management sites and land covenanted in perpetuity) **and** **that either:**

a. the species critical threats are abated* by being situated in secure conservation land tenure, **and/or**
b. evidence shows that critical threats are being, and will continue to be, adequately managed* within these sites.

Rationale for criterion

This criterion aims to ensure a high likelihood of the species' ongoing security by requiring that an adequate proportion of the species range is within secure conservation land tenure and not exposed to critical threats. Extensive tracts of intact habitat enhance the species' adaptive capacity and resilience to threatening processes. Also, conservation infrastructure and established management frameworks associated with SoS management sites and protected areas, enable the appropriate monitoring of populations and the identification of impending threats to the security of the species, which may prompt reassessment. For a. critical threats including habitat loss and fragmentation, land clearing and livestock grazing are (in most cases) effectively abated* by being in secure conservation land tenure. For b., in the case of landscape-wide pervasive threats such as altered fire regimes, weed invasion and pest animals, evidence of ongoing management across the adequate proportion of the range is required.

Glossary of key terms and concepts

The KW criteria broadly align with IUCN Red List criteria (IUCN 2012, 2017) under the rationale that the evidence used to assess the status of threatened species in New South Wales should align with evidence required by the NSW Threatened Species Scientific Committee to upgrade a threatened species listing or delist the species altogether. Users should refer to these IUCN guidelines for additional assistance in assessing species against the IUCN-aligned KW criteria.

The KW criteria also align with the central principles of the SoS program (OEH 2013a, 2013b), SoS MER guidelines (OEH 2016), and existing strategies for SoS management streams (OEH 2013b, 2015). As such, most of the evidence required to assess species against the criteria, should be produced as an output of routine SoS operations.

Abated – is when a critical threat has been removed entirely (e.g. in the case of reserves offering protection from land clearing, or a pest species being excluded from a defined area such as an island) or evidence shows the impact of the threat has been reduced to a level that no longer threatens the security of the threatened species in question. In relation to evidence of abatement see definition for **adequately managed**.

Adequate and representative proportion of the species range – is that considered necessary to be of secure conservation tenure and threat-free for the species to meet the SoS objective of <5% extinction risk over the next 100 years. Globally accepted conservation targets range from 30**–**100% of the species' original (i.e. pre-European) range depending on the species (Fahrig 2003, Groves 2003). The protected areas should encompass the full range of abiotic conditions, ecosystems and communities across the species range (Akçakaya et al 2018). The chosen target should be guided by expert knowledge, IUCN principles and acceptable thresholds, and SoS guidelines. For example, for site-managed species, the minimum number of management sites to secure the species has been identified by experts and the MER framework assumes that a stable/increasing population trend at all management sites equates to the species being on track to be secure for 100 years (OEH 2013b [section 2.2], 2016).

Adequately managed – critical threats that are being adequately managed have some evidence to show that the management actions employed are either: 1. reducing the severity or extent of the threat; and/or 2. having a positive impact on the threatened species in question. This evidence is generated as part of the project evaluation and reporting framework embedded within the SoS MER guidelines (OEH 2016).

Area of Occupancy (AOO) – is a measure of a species range defined as representing 'the area of suitable habitat occupied by the taxon'. In the calculation of AOO, known, inferred, or projected sites of present occurrence are scaled to 2 x 2 km grid cells and is thus a conservative measure of distribution. AOO is inversely related to extinction risk, with species with small AOO at higher risk of extinction via stochastic threat events. Refer to IUCN (2017, section 4.10) for further information and assistance calculating AOO.

Evolutionary potential – is the genetic capacity to evolve in response to, and in order to adapt to, environmental change. For example, populations >1000 are less susceptible to the effects of factors such as inbreeding and reductions in the fitness (Frankham et al 2014).

Extent of Occurrence (EOO) – is a measure of species range defined as 'the area contained with the shortest contiguous imaginary boundary which can be drawn to encompass all the known, inferred, or projected sites of present occurrence of a taxon, excluding cases of vagrancy' (IUCN 2017). EOO represents the extent or outer boundaries of the species known distribution and is most commonly employed when estimating the spatial extent of threatening factors across the known distribution. Refer to IUCN (2017 section 4.9) for further information and assistance calculating EOO.

Extreme fluctuations – occur in species 'where population size or distribution area varies widely, rapidly and frequently, typically with a variation greater than one order of magnitude (i.e. a tenfold increase or decrease).' Evidence must show that 'fluctuations in the number of mature individuals represent changes in the total population, rather than simply a flux of individuals between different life stages' (IUCN 2017). Refer to IUCN (2017, section 4.7) for further information.

Locations – define a 'geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon present' (IUCN 2017). Refer to IUCN (2017, section 4.11) for further information.

Population trajectory data – includes survey data (or where necessary, the use of surrogates or proxies for cryptic species) of the population or, where a population is abundant or highly dispersed, representative sites (e.g. landscape managed species). The data should demonstrate the trajectory of the population, requiring two or more surveys conducted within a timeframe appropriate to the species generation time and ecology to capture meaningful change (i.e. change across multiple generations and not random fluctuations). Ideally, population trajectory data is provided for all management sites considered necessary to secure the species (site-managed species), or all important and priority locations/populations (relevant to landscape-managed species and defined as sites/habitat which have been identified that capture a significant population or habitat, for which investment in landscape rehabilitation or threat abatement will be invested, OEH 2015). In cases where robust population data is not available for **all** required management sites/important locations, expert elicitation can be used to estimate population trajectories for sites/populations lacking data.

Secure conservation land tenure – includes all SoS management sites (i.e. a spatially defined area which encompasses one or more locations where a particular threatened species is known to occur and where any given threat to that species is managed in a consistent way, OEH 2013b), the NSW protected area network, and all private lands secured in perpetuity via a conservation covenant or similar binding agreement.

Severely fragmented – refers to 'the situation in which increased extinction risks to the taxon results from the fact that most of its individuals are found in small and relatively isolated subpopulations' (IUCN 2017). Consideration should include the distribution of AOO, the dispersal capacity of the species and subpopulation sizes. To be a severely fragmented species, >50% of its AOO is 1. too small to support a viable population, and 2. separated from other suitable habitat by a distance that exceeds the dispersal capacity. Refer to IUCN (2017, section 4.8) for further information and assistance in assessing severe fragmentation.

Subpopulations – according to the IUCN (2017) definition are "geographically or otherwise distinct groups in the population between which there is little demographic or genetic exchange (typically one successful migrant individual or gamete per year or less). Refer to IUCN (2017, section 4.2) for further information.

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