REGIONAL CONSERVATION PLANNING APPROACH

GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**

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Forest red-tailed black cockatoos (*Calyptorhynchus banksia naso*). *Photo – Mark Davidson, DBCA*
Snappy gums (*Eucalyptus racemosa*) in Millstream National Park. *Photo – Scott Godley, DBCA*

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1 Purpose and scope

This document outlines the approach taken to develop regional conservation plans for the nine Parks and Wildlife Service regions of the Department of Biodiversity, Conservation and Attractions (the department).

The approach centres around the transparent and repeatable structured decision-support processes used to identify and prioritise conservation actions for:

- landscape-scale threat mitigation in priority reserves[1] and landscapes ('Landscape actions')
- addressing specific threats to threatened[2] and Priority[3] species and ecological communities[4] ('Targeted actions')
- addressing information requirements to support the management of threatened and Priority species and ecological communities ('Learn actions').

The approach also explains how the outputs from these prioritisation processes were considered when drafting the regional conservation plans.

The approach outlined in this document was common to the development of each regional conservation plan. Specific approaches taken by each region are detailed within the regional conservation plans. Each regional conservation plan should be read in conjunction with this document.

The identification of species, ecological communities, reserves, landscapes and actions were informed by their conservation status, information contained in recovery plans, interim recovery plans, conservation advice, and/or area management plans, as well as local and subject matter expertise. Information gathered during the regional conservation planning process and the implementation of priority actions may therefore inform reporting against these plans, but does not replace the purpose or content of those plans.

Regional conservation plans were developed using data and information that was available at a point in time. It is acknowledged that changes have since occurred, and will continue to occur, that were not considered in the prioritisation processes. This includes changes to

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[1] The reserve system managed by the department includes national parks, nature reserves, conservation parks, regional parks, State forest, timber reserves, marine nature reserves, marine parks and marine management areas and other lands and waters managed under the *Conservation and Land Management Act 1984* (CALM Act), predominantly for a conservation purpose. However marine reserve threat mitigation was not considered as part of the landscape-scale prioritisation process. Refer to section 4 for further details.

[2] Listed as threatened in the category of critically endangered, endangered or vulnerable under the *Biodiversity Conservation Act 2016* (BC Act).

[3] Priority is not a listing under the BC Act. Priority lists are maintained by the department, assessed and designated based on the Western Australian distribution of the species or ecological community. Listing of Priority species and ecological communities ensures a level of protection under *the Environmental Protection Act 1986*, supports the development of prioritisation efforts for assessment of eligibility for listing as threatened, and promotes conservation action to support their recovery. Listing also documents the status of biodiversity knowledge and enables reporting.,

[4] References throughout this document to threatened and Priority species also includes a subset of 'specially protected' species of fauna that are not listed as Least Concern under the IUCN Red List (IUCN 2012). Specially protected species are listed under the BC Act meeting one or more of the following categories: species of special conservation interest (conservation dependent), migratory species, cetaceans, species subject to international agreement, or species otherwise in need of special protection (other specially protected). See section 5 for further details about the screening process for specially protected species.

species taxonomy and conservation status, new reserve additions, emerging threats and new scientific findings, which will continuously inform management priorities and approaches. The dates that key information was sourced is outlined throughout this document.

Actions in the regional conservation plans are prioritised for implementation within existing resources to maximise conservation benefits. Within available resources, conservation actions outlined in the plans from all priority categories will be implemented through regional and district works programs. Each region will engage and collaborate with other regions, other business areas of the department, joint and cooperative management partners, and other stakeholders to deliver the conservation actions.

Regions will consider new information and emerging priorities using the principles of the regional conservation planning prioritisation processes to inform the ongoing prioritisation of additional conservation actions.

A suite of detailed outputs from the regional conservation planning process have informed the priorities outlined in the plans and include elicitation outputs, benefit-cost analyses, risk assessment and value of information analyses. These outputs and supporting documentation may be updated over time as new information becomes available to inform the priority of actions delivered through regional works programs.

Ultimately, there are more conservation actions than there are resources to deliver them, requiring this defendable prioritised approach. As well as prioritising existing resources, the plans provide a basis for future strategic business planning considerations and to align potential funding opportunities, including through collaboration and partnerships to extend the department's capacity to deliver more or complementary priority conservation actions outlined in regional conservation plans.

The plans will be used to inform project opportunities aligned to grant programs and possible restoration activities or projects associated with environmental offsets where actions are beyond the department's existing capacity.

2 Our approach

The department brings together the Parks and Wildlife Service; Science, Strategy and Governance; Botanic Gardens and Parks Authority (BGPA); Rottnest Island Authority (RIA); and Zoological Parks Authority (Perth Zoo)[5]. All areas contribute to the planning and delivery of biodiversity conservation, with conservation activities undertaken across multiple business areas within the department in an integrative manner. The department works to conserve Western Australia's biodiversity, cultural and natural values, and provides world-recognised nature-based tourism and recreation experiences for the community. This work is underpinned by scientific excellence to ensure the delivery of effective conservation of the State's biodiversity. Further information about the overarching strategies that guide the biodiversity conservation activities implemented by the department is outlined in the department's Biodiversity Conservation Framework.

[5] Regional conservation plans do not apply to the department's three statutory authorities.

The Parks and Wildlife Service's nine regions have responsibility for on-ground delivery of biodiversity conservation with a focus on department-managed land[6]. The department also liaises, provides advice and undertakes some management activities on other lands, particularly where these relate to Ramsar wetlands[7], and threatened and Priority species and ecological communities.

A key function of the department is to establish and manage a comprehensive, adequate and representative conservation reserve system as a major contribution to biodiversity conservation. A well-managed reserve system and landscape-scale management of threatening processes, such as weeds, disease and pest animals, are effective strategies to build the resilience of biodiversity in a changing environment. Landscape-scale management of threatening processes allows the department to achieve outcomes that benefit multiple species and ecosystems.

In addition to reserve and landscape-scale management, site or species-specific action may also be needed where threatening processes are directly impacting species or ecological communities. The department focuses conservation efforts on threatened and Priority species and ecological communities within lands for which it has management responsibility. However, off reserve and *ex situ* management actions are required for some threatened and Priority species. Management may involve single actions, or a series of actions implemented in combination to achieve conservation outcomes.

To implement effective and adaptive management, information is required about threatened and Priority species and threatening processes to inform appropriate management actions. The department undertakes monitoring, survey and research programs within regions, and in partnership with specialists within the department and external organisations, to guide management actions.

The department works collaboratively with Traditional Owners, government and non-government organisations, research institutions, industry, volunteers and the community to deliver conservation outcomes both on and off department-managed land. Conservation activities are funded from the department's recurrent budget, as well as through specific government appropriations and external funding arrangements. Partnership opportunities are considered on a case-by-case basis to ensure that resources are being targeted towards achieving high value conservation outcomes.

The regional conservation planning approach has supported regions to identify priority conservation actions.

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[6] **Department-managed land** include lands and waters managed under the CALM Act and *Swan and Canning Rivers Management Act 2006*. It also applies to 1) those lands for which the department under a Memorandum of Understanding (MOU) with the Department of Planning, Lands and Heritage, manages pest animals, weeds and fire on unallocated Crown land (UCL) and unmanaged reserves (UMR) outside the metropolitan area, regional centres and townsites (2004), where resources are available and subject to native title considerations; and 2) Crown lands where the department has a management interest (for example UCL lands that were purchased or identified with the aim of adding them to the formal conservation estate but remain under the management of the *Land Administration Act 1997*).

[7] The department is responsible for reporting on Western Australian Ramsar wetlands and the management of wetlands on department-managed lands. The department also provides advice about wetlands to decision-makers and is involved in wetlands research and monitoring.

2.1 Joint and cooperative management

Joint management is a partnership between the State Government and other parties to manage lands or waters in Western Australia. This involves Aboriginal people who have a cultural connection with a reserve and wish to be involved in reserve management. Under the South West Native Title Settlement[8], the department and the six Noongar Regional Corporations have established six Cooperative Management Committees (CMCs). The CMCs play a strategic, high-level role in managing the south-west conservation estate[9], aiming to build a strong and resilient foundation for the Noongar community and the department to work together.

The Parks and Wildlife Service and its predecessors have a long history of working together with Aboriginal people. These formal and informal management partnerships recognise the intrinsic connection that Aboriginal people have with the land and sea and the shared objective to 'care for Country'. In addition to the scientifically informed basis for regional conservation planning, the Parks and Wildlife Service works with Aboriginal people to manage the reserves and biodiversity values. This offers the potential to incorporate traditional knowledge to strengthen land management practices, improve protection of cultural and heritage values, and support Aboriginal people to access and connect with Country.

3 Regional conservation plans

Regional conservation plans were prepared by the department's Regional and Fire Management Services (RFMS) division, in consultation with Biodiversity and Conservation Science (BCS) and Conservation and Ecosystem Management (CEM) division.

The objective of regional conservation plans is to identify and prioritise conservation actions to guide their implementation within available resources to maximise conservation benefit.

3.1 Management action categories

The regional conservation plans comprise actions identified and prioritised through three processes:

3.1.1 Landscape actions

Landscape-scale threat mitigation actions in priority reserves and landscapes.

Landscape actions focus on the reserve system managed by the department and landscape-scale threat mitigation programs to benefit multiple conservation values. The process used to identify and prioritise Landscape actions is outlined in section 4.

3.1.2 Targeted actions

Conservation actions addressing specific threats to threatened and Priority species and ecological communities.

Targeted actions consider threatened and Priority species and ecological communities that require targeted management intervention because they are under identifiable threat and where management programs and conservation actions applied at the reserve or landscape

[8] The South West Native Title Settlement, in the form of six Indigenous Land Use Agreements (ILUAs), was negotiated between the Noongar people and the State Government. The Settlement commenced on 25 February 2021.

[9] Includes national park, nature reserve, conservation park and section 5(1)(h) or 5(1)(g) reserves under the CALM Act.

scale are not adequately addressing threats. The process used to identify and prioritise Targeted actions is outlined in section 5.

3.1.3 Learn actions

Information requirements to support the management of threatened and Priority species and ecological communities.

Learn actions consider the threatened and Priority species and ecological communities that require monitoring, survey, threat assessment, research or other science engagement to address information requirements. Addressing these information requirements will enable management through the development of Landscape or Targeted actions. The process used to identify and prioritise Learn actions is outlined in section 6.

3.1.4 Interaction between management action categories

Actions from a particular management category can inform, complement or evolve into actions from another category (Figure 1). For example:

- Addressing an information requirement (Learn action) may inform the development of Targeted or Landscape actions.
- Undertaking a Targeted action for a threatened species or ecological community may enable its ongoing management to be addressed by a Landscape action that benefits multiple species and ecological communities. Alternatively, it may highlight additional information needed to support effective management (Learn action).
- Through undertaking a Landscape action, it may become evident that a Targeted action or Learn action is required for a threatened species or ecological community within the landscape.

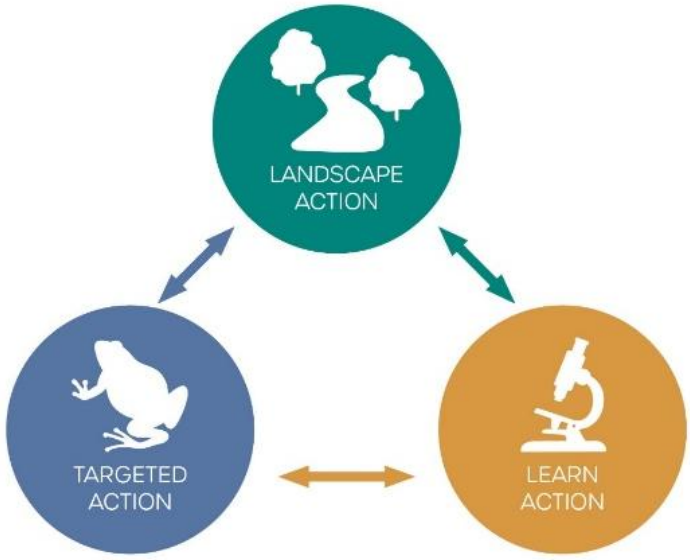

Figure 1 Interaction of regional conservation planning Landscape actions, Targeted actions and Learn actions.

3.2 Aligning regional actions with overarching biodiversity conservation strategies

Regional conservation plans are formatted to demonstrate how each region's conservation actions contribute to achieving the overarching strategies outlined in the department's

Biodiversity Conservation Framework[10]. Multiple other business areas of the department contribute to achieving these overarching strategies. Therefore regions may not deliver actions aligned to all of the overarching strategies, and regional conservation plans do not reflect all of the conservation activities implemented by other business areas of the department.

3.3 Other priority actions not assessed through prioritisation

Regional conservation work programs include implementing actions that are not included in the regional conservation plans, as not all actions are suitable for assessment through the prioritisation processes. They may be legislative obligations, existing commitments or actions of a responsive nature. These include, but are not limited to:

- supporting the process to incorporate new areas into the reserve system
- implementing actions to meet the requirements of the department's *Good Neighbour Policy*
- undertaking reserve inspections and general maintenance
- contributing to the Bushfire Risk Management Framework by assisting with the development and implementation of Regional Fuel Management Plans and Burn Options Programs
- implementing introduced predator management and monitoring in accordance with the Western Shield Program and WA Feral Cat Strategy
- implementing actions to meet land manager obligations under the *Biosecurity and Agriculture Management Act 2007*, including through engagement of Recognised Biosecurity Groups and community groups undertaking invasive animal control
- developing and maintaining relationships and partnerships with Aboriginal people to support involvement in conservation programs, on-Country employment, and the incorporation of traditional land management practices
- implementing compliance and enforcement strategies and actions, including education and patrols, in relation to the *Biodiversity Conservation Act 2016* (BC Act) and *Conservation and Land Management Act 1984* (CALM Act) and subsidiary legislation
- implementing statutory management plans and biodiversity management programmes
- supporting the assessment and issuing of wildlife licences and land access authorisations for department-managed lands, including assessing applications for scientific research activities, and authorisations to take or disturb threatened species and communities
- responding to wildlife incidents
- coordinating and contributing to the development and implementation of threatened species recovery plans and recovery teams

[10] The department supports government goals with more specific desired outcomes, achieved via delivery across 10 services. The overarching strategies outlined in service 6 - *Conserving habitats, species and ecological communities* reflect the overarching biodiversity conservation strategies being delivered across the department and are reflected in the Biodiversity Conservation Framework, noting that other services also contribute to conservation objectives and outcomes.

- implementing approved translocation plans and germplasm collection actions
- collaborating with other sections of the department and external stakeholders to undertake research, surveys, monitoring and other conservation actions
- communicating science and conservation outcomes to stakeholders and the broader community to promote community awareness about wildlife and conservation matters
- providing input into the nomination and reporting processes for threatened species and ecological communities and Ramsar wetlands
- providing land use planning and environmental impact assessment advice to regulators, decision-making authorities and proponents in accordance with government and departmental policies
- providing technical advice in relation to biodiversity conservation and land management to other government agencies
- working cooperatively with, and providing support and advice to, non-government organisations, natural resource management (NRM), landcare and community-based special interest groups to develop funding applications and deliver conservation initiatives
- delivering third-party offsets, existing funding agreements, memoranda of understanding and other partnerships with commitments, including the Australian Government's Threatened Species Action Plan
- management of priority weeds, pest animals and bushfire risk on unallocated Crown land in accordance with a Memorandum of Understanding with the Department of Planning, Lands and Heritage.

While these existing commitments and new initiatives may not be subject to the regional conservation planning prioritisation processes, the principles upon which these processes are based will inform prioritisation of new actions, where possible.

4 Landscape actions

Conservation purposes for the department's management of reserves includes to maintain or enhance biodiversity and ecological processes, including habitat and ecological conditions for threatened and Priority species and ecological communities, and to protect significant Aboriginal cultural heritage values[11]. In implementing conservation actions, the department aims to prioritise those that protect the greatest diversity of species, habitats, key ecological processes, and threatened and Priority species and ecological communities.

Landscape actions include revegetation, rehabilitation, and management of weeds, pest animals, plant disease, fire, altered hydrology and uncontrolled access, and consideration of the impacts of climate change.

Marine reserve[12] management and threat mitigation activities were not considered as part of the Landscape action prioritisation process. Marine reserve management actions are

[11] Regional conservation plans focus on conservation of biodiversity values, however protecting Aboriginal culture and heritage values is recognised as a high priority for the department. Regions will work with Aboriginal people, including joint and cooperative management partners, to incorporate Aboriginal culture and heritage priorities in conservation works programs.

[12] Marine reserves include marine parks, marine nature reserves and marine management areas managed under the CALM Act.

prioritised in accordance with relevant marine reserve management plans and works plans. These are prepared in accordance with the framework outlined in Lloyd et al. (2005) and associated management effectiveness guidelines (DBCA 2024). Marine research and monitoring are prioritised in accordance with a prioritisation process outlined by Simpson et al. (2015). These frameworks provide a consistent approach to prioritising and reporting on management actions within marine reserves, which are complementary to the priorities outlined in regional conservation plans. However, Targeted actions and Learn actions for marine and estuarine threatened, Priority and specially protected species and ecological communities were included in the regional conservation planning process (as outlined in sections 5 and 6).

The regional conservation planning objective for the management of priority reserves and landscapes was to:

- Minimise the impact of threatening processes on priority reserves and landscapes, or the conservation elements they support, at a landscape-scale to maximise biodiversity benefit and cost-effectiveness.

The Landscape action process included consideration of species and ecological communities considered in the Targeted action process that were screened to the Landscape management category (see section 5.1).

Each region implemented the Landscape action process independently, using local expertise, existing conservation planning and other resources (where available) and tailored elements of the process as appropriate to reflect the region's landscapes and operational context. The details of each region's specific approach to developing and prioritising Landscape actions is outlined in each regional conservation plan.

4.1 Identifying priority reserves, landscapes and threat mitigation actions

To focus threat mitigation on areas of highest conservation value, regions considered the broad regional landscape including bioregions, overlaid tenure arrangements to identify management units, then identified priority reserves and landscapes through an analysis of biodiversity value. Threatening processes within priority reserves and landscapes, or those impacting specific conservation elements within them, were considered with reference to the broader threats operating across the regional landscape. The refinement from broad regional landscapes to priority reserves and landscapes is illustrated in Figure 2.

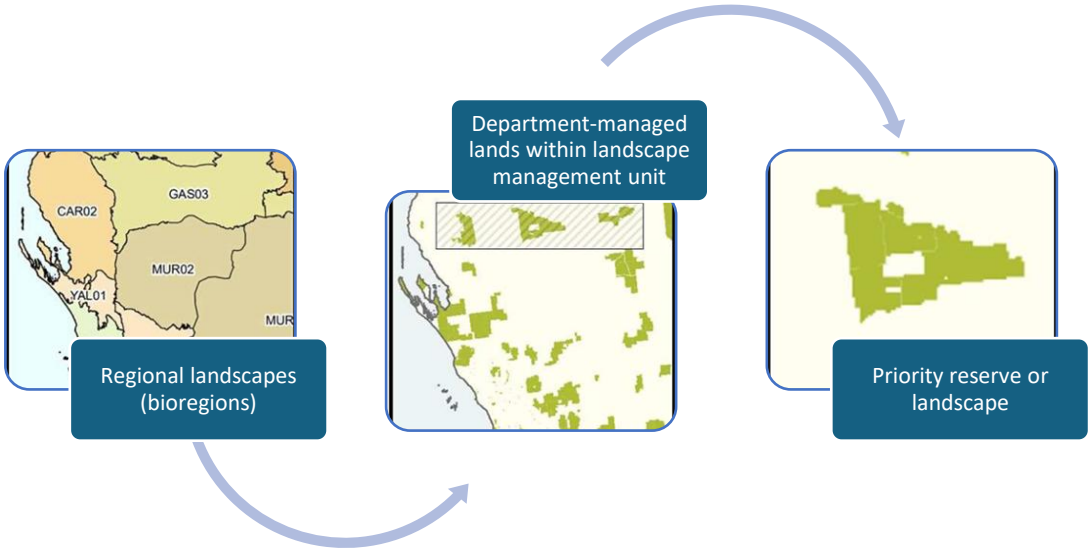

Figure 2 Refinement process from broad regional landscapes to specific priority reserves and landscapes to support the development of Landscape actions.

4.1.1 Identifying regional landscapes

The bioregions and sub-regions identified in the Interim Biogeographic Regionalisation of Australia (IBRA), which classifies landscapes into large geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information, were used as the basis for identifying regional landscapes (Department of Climate Change, Energy, the Environment and Water 2023). Some regions refined the IBRA bioregional classification and determined regional landscape boundaries based on other data sets, including from other conservation planning processes.

4.1.2 Identifying threats operating at the regional landscape scale

Key threatening processes operating within regional landscapes were identified consistent with a comprehensive taxon-threat-impact dataset (Ward et al. 2021). The dataset identifies eight broad-level threat categories and 51 subcategory threats for 1795 Australian threatened terrestrial and aquatic taxa based on the IUCN Threat Classification Scheme and Threat Impact Scoring System. The classification modifies the IUCN threat classification model to the Australian context and is closely aligned with the major threatening processes affecting department-managed land.

Regions used the eight broad-level threat categories to identify threats affecting regional landscapes, noting that particular threats were more relevant to some regions than others. The eight broad-level threat categories were:

- adverse fire regimes
- changed surface and groundwater regimes
- climate change and severe weather
- disrupted ecosystem and population processes
- habitat loss, fragmentation and degradation
- invasive species and diseases
- overexploitation and other direct harm from human activities
- pollution.

The resulting landscape threat profiles documented the threatening processes for each regional landscape (based on the broad threat categories and relevant sub-categories). Additional information regarding threats was also documented to provide regional context to threatening process descriptions.

4.1.3 Categorising land into management units

To assist in planning and prioritising management actions across reserves managed by the department, areas were categorised into management units or management groupings. Management units are discrete reserves or areas managed and resourced as one entity. Management units are combined into management groupings where threats, management response and conservation elements are similar and reflect how threat mitigation actions may be operationalised.

4.1.4 Identifying priority reserves and landscapes

Priority reserves and landscapes are those management units or groupings with the highest conservation value. Regions assessed conservation value using corporate and regional datasets and local knowledge inputs, based on consideration of condition, diversity, rarity, ecological function and vegetation representativeness. Existing conservation planning approaches, spatial conservation prioritisations and threat assessments also informed the identification of priority reserves and landscapes.

4.1.5 Identifying threatening processes within priority reserves and landscapes

Key threatening processes impacting priority reserves, landscapes and the conservation elements they support were identified by each region, focusing on threatening processes operating at the regional landscape scale. This refinement allowed regions to assess the threat impact of the most significant threatening processes impacting on conservation elements.

4.1.6 Identifying threat mitigation actions

Existing, improved and new actions to mitigate the impacts of key threatening processes were identified and developed, informed by corporate policies and guidelines; strategies, plans and procedures; previous and current regional approaches; best practice methodologies; and area management plans. The scale of action implementation varied from an entire priority reserve or landscape, to a portion addressing specific threats to one or more conservation elements.

Environmental impact assessment

The department provides advice on a range of developments, including industry, infrastructure and urban development. This advice primarily relates to proposals that directly or indirectly impact on department-managed land and/or threatened species and ecological communities. Advice may be provided to development proponents, regulatory agencies and the Minister for the Environment.

Fire management

The department aims to maintain a mosaic of low fuel areas to reduce the incidence, spread and severity of bushfires, and support bushfire suppression. The ecological requirements of flora and fauna are a key consideration when developing fuel management programs and prescribed fire plans and prescriptions. Biodiversity is best supported by varying the scale, seasonality, interval and severity of fire occurrence, creating a mosaic of vegetation floristic and structural states.

The development of fire management actions considered the fire regime requirements of ecological communities and individual species using the best available scientific evidence from multiple sources, such as the department's Fire Management Information Notes, and species and ecological community recovery plans. Fire management actions were also developed in accordance with the department's Fire Management Strategy, Bushfire Risk Management Framework (DBCA 2019) and each region's Fuel Management Plan. The prioritisation and implementation of these actions will be through development of each region's Burn Options Program and individual burn prescriptions.

Pest animal management

Pest animal management was considered in the context of those actions that contribute to protecting and maintaining ecosystem processes and biodiversity values, noting that the department may also manage pest animals as a good neighbour, to comply with legislation and codes, and to reduce their impact on public use and enjoyment of land. Pest animals also pose a threat to many species and ecological communities through predation (notably foxes and feral cats), overgrazing, trampling and digging (notably kangaroos, large feral herbivores, pigs and rabbits), poisoning through ingestion (such as cane toads), and direct competition for habitat and food. A range of actions were identified to address these impacts, including exclusion fencing and humane pest animal management techniques.

Regional conservation plans recognise the commitment to deliver Western Shield as the department's key strategic program for the broadscale management of introduced predators, particularly foxes and feral cats. The program aims to recover and sustain wild populations of Western Australian native fauna. Where regions identified actions that were additional to the *Western Shield Program Plan* (DBCA 2023) and *Western Shield Monitoring Plan* (DBCA

2021), such as increasing the area or frequency of fox and feral cat baiting and/or trapping, these were included as Landscape actions in the regional conservation planning process.

Weed management

Weed management was considered in the context of those actions that contribute to protecting and maintaining ecosystem processes and biodiversity values, noting that the department may also manage weeds as a good neighbour, to comply with legislation and codes, to reduce their economic impact, and to reduce their effect on public use and enjoyment of lands. Weeds also pose a threat to many species and ecological communities through direct competition and the disruption of ecosystem processes, such as fire.

Regions were able to use the results from the department's Weed Prioritisation Process (Department of Parks and Wildlife 2013) to help identify and develop weed management actions.

Disease management

Plant disease management focused on Phytophthora dieback, the most significant plant disease threat to biodiversity in the south-west of Western Australia. Actions were informed by the Phytophthora Dieback Management Manual (DBCA 2020) and the State Phytophthora Dieback Management and Investment Framework (Gaia Resources 2014).

Regions also identified actions to manage other disease risks known at the time, such as myrtle rust (*Puccinia psidii* sensu lato).

Climate change

Western Australia has experienced climate change during the past century, particularly the south-west region which has experienced higher average temperatures and a steady decline in rainfall. Across Western Australia, climate change is predicted to drive increased average and maximum temperatures, increased time spent in drought, changes in sea levels and more extreme weather events. Climate change is predicted to impact biodiversity, including potential extinctions of species due to habitat loss and inability to cope with the rate of change, and altered seasonal lifecycles (Department of Water and Environmental Regulation 2019). Measures to improve climate change resilience include ecosystem restoration and addressing existing pressures to species and ecosystems, such as invasive species, disease, and altered fire and hydrological regimes.

4.2 Benefit-cost analysis

To prioritise Landscape actions, a benefit-cost analysis was applied using threat impact as the metric. Regions applied the IUCN Threat Impact Scoring System (IUCN 2012) to determine the threat impact of threatening processes defined for each priority reserve, priority landscape or conservation element, based on the timing of the threat (past, ongoing, future), the scope of the threat (defined as the proportion affected) and severity of the threat (overall declines caused by the threat). The three scores were multiplied to produce the overall threat impact score.

The benefit of threat mitigation was estimated as the difference between the impact of the threat with and without mitigation action over 10 years. The benefit was also weighted by the feasibility of implementing the mitigation action. In considering feasibility, regions determined whether there was knowledge and expertise to implement the action, and seasonal, logistical or socio-political constraints. Feasibility did not consider resources and costs associated with action implementation, as these were considered separately in the cost component of the analysis.

Costs of action implementation were estimated within broad cost categories, and each category was given a score for the benefit-cost calculations. Regions classified the total cost

to implement an action over 10 years into an equal-interval cost category. For each category, an ordinal score was then applied to the benefit-cost calculations.

The benefit-cost score was derived from the expected benefit score divided by the cost score. These scores were then adjusted using weightings to reflect the influence of other variables on the final benefit-cost score. Scores were weighted by the priority reserve or landscape size score, the proportion represented by the conservation element, and the value score for either the priority reserve, priority landscape or conservation element.

An overview of the Landscape action process it outlined in Figure 3.

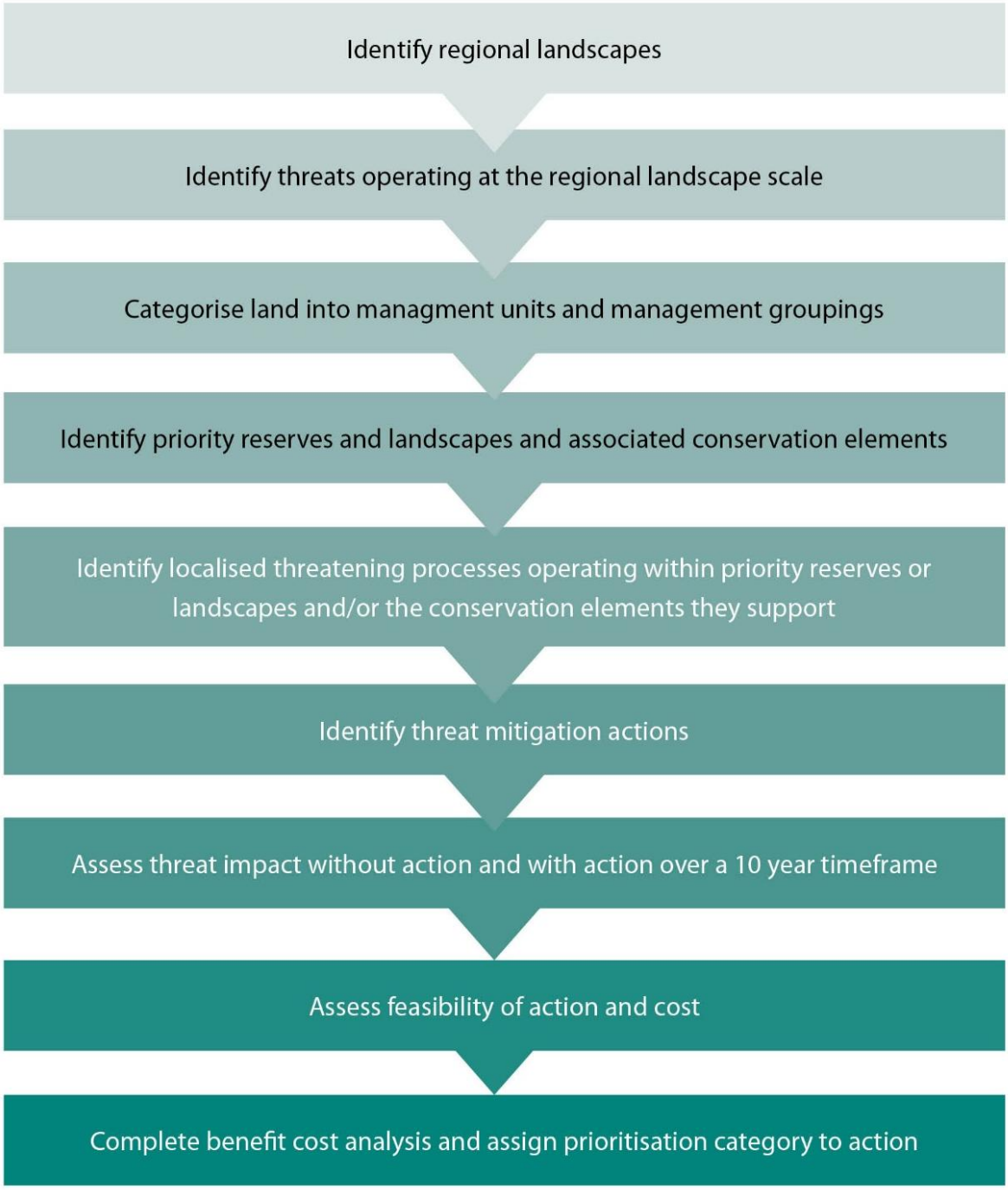

Figure 3 Overview of the Landscape action process.

5 Targeted actions

Targeted actions apply to populations or occurrences of threatened and Priority species and ecological communities[13] where management intervention is required. This may be to address declines, maintain viable populations and occurrences, and mitigate threatening processes.

The process for identifying and prioritising Targeted actions focused on developing management actions at the scale of populations and occurrences (rather than at the species or ecological community level) that are at risk of extinction or collapse. This may be from a known and identifiable threat, or where management programs and conservation actions applied at the reserve or landscape-scale do not adequately address a specific or localised threat.

The impact of some threatening processes may be negated or limited through direct conservation actions, such as weed control, fire management, Phytophthora dieback hygiene and treatment or introduced predator control. Other threatening processes, such as climate change and altered hydrological regimes, are less amenable to direct mitigation by management intervention. In some instances, conservation approaches such as genetic storage and translocation may be the most appropriate conservation actions. Regional conservation plans focus on targeted actions to address threats to threatened and Priority species and ecological communities that can be managed effectively by regions.

The Targeted action process was undertaken at a statewide level for threatened and Priority fauna species and flora species not endemic to a single region, and at a regional level for threatened and Priority ecological communities and flora endemic to a single region. Estimations of benefit to inform the prioritisation of Targeted actions were made by regional staff and experts from BCS, CEM and external participants as was relevant to the functional groupings or region-specific species and ecological communities.

5.1 Identifying and 'screening' species and ecological communities

Populations and occurrences of threatened and Priority species and ecological communities for each region were identified using information from corporate datasets and other data sources, as well as regional and district datasets and local knowledge, where available. Data were collated across multiple attributes including conservation status, distribution, population trends and threats to support the screening process.

Each population or occurrence was then 'screened' into an appropriate management category. This included identifying threatened and Priority species and ecological communities that require targeted action to mitigate threats (Targeted action), further information about population or condition trends and threats to inform management actions (Learn action), or 'maintenance' actions that can be managed through landscape-scale threat mitigation actions (Landscape action). The criteria used to allocate populations and occurrences to management action categories is outlined in Figure 4.

[13] While the regional conservation planning process focuses on listed threatened and Priority species and ecological communities, it is acknowledged that non-listed species and communities may also require conservation actions to address threats and declines, including information to inform whether they should be considered for conservation listing.

	FLORA	FAUNA	ECOLOGICAL COMMUNITIES
Species and ecological communities considered	All WA listed threatened and Priority species	All WA listed threatened, Priority and specially protected species	All WA listed threatened and Priority ecological communities
 TARGETED ACTION	• Populations with declining trends • Species with less than three populations with ≥ 250 reproductively mature plants • Knowledge of threatening processes to local populations	• Species not listed as Least Concern in the IUCN Red List • Knowledge of threatening processes to local populations • Records in the corporate datasets since 2000	• Ecological community occurrences with declining condition trends • Knowledge of threatening processes to local occurrences
 LEARN ACTION	• Species with populations that did not have a minimum of two counts to identify population size trend • Species or populations that have not been monitored for 11 years or more • No knowledge of threats to local populations	• No records within the corporate datasets since 2000 • No documented knowledge of threats to populations	• Insufficient information to determine trend in condition • No documented knowledge of threatening processes to local occurrences
 LANDSCAPE ACTION	• Species with stable or increasing population trends (taxon level) • Species with three or more populations with ≥250 reproductively mature plants	• Species listed as Least Concern in the IUCN Red List	• Ecological communities with stable or improving trends in condition • Knowledge of threatening processes to local occurrences

Figure 4 Management action categories and associated screening criteria for threatened and Priority species and ecological communities.

5.1.1 Flora screening process

Data from corporate datasets including the Threatened and Priority Flora Database[14] (TPFL) and specimen records of the Western Australian Herbarium were analysed to determine the occurrence, population size, trend and viability[15] for all Western Australian listed threatened and Priority flora species[16].

[14] TPFL is a department-managed database that contains records of threatened and Priority flora. These records are submitted by departmental staff as well as external parties, including as a condition of some flora licences and threatened flora authorisations provided under the BC Act.

[15] Defined as a minimum viable population size of 250 reproductively mature individuals.

[16] Threatened and Priority flora lists used were those current at 1 January 2019. TPFL and Western Australia Herbarium records were extracted from corporate datasets in August 2020 for the Wheatbelt Region and June 2021 for all other regions.

Within the TPFL, flora species are divided into populations, and sub-populations where a population occurs across multiple tenures. The use of the term ‘population’ in this section refers to the management units used in TPFL and not to the collective total of individuals known for a species. Surveys are usually done at the sub-population level due to timing or tenure constraints. All analyses were undertaken using information at the population level.

The regional conservation planning objective in relation to threatened and Priority flora conservation was to:

- Maintain or increase the number of populations with 250 or more mature plants to three or more.

In accordance with this objective, flora species were screened based on an assessment of population size, population trends, knowledge of threats, currency of information and tenure.

The population data analysis for flora species set a threshold for a viable population at 250 reproductively mature individuals. Evidence suggests that reproductive output is compromised in smaller population sizes due to increased inbreeding (Yates et al. 2007, Llorens et al. 2013). In addition, IUCN listing criteria for Critically Endangered species refers to a population size estimate of fewer than 250 mature individuals (IUCN 2012).

Species with fewer populations are at higher risk of extinction due to stochastic events such as floods, bushfire, disease or predation. Three or more populations are desirable to provide serial redundancy, reduce the risk of extinction and improve the persistence of species in the face of increasing threats (Subroy et al. 2021).

The number of mature individuals, total number of plants (seedlings, juvenile, mature, dead) and number of populations with 250 or more mature plants were recorded for each survey year for each population to determine flora species with viable populations.

Mature plant count data was analysed for all populations in each region using TPFL data from 1981 onwards to identify any trends in population size; a minimum of two counts were required for this analysis. A decrease was recorded if the most recent plant count was less than 75 per cent of the highest historical count for each population, otherwise it was deemed the population was stable or increasing.

The screening process considered declines irrespective of cause (usually undocumented), general paucity of records and information documenting threats, and an incomplete knowledge of species' fire responses and population fire histories. Tenure was also considered in assessing population data given that it would influence the type of actions able to be implemented.

The decision-making process associated with the assignment of management categories to threatened and Priority flora species is presented in Figure 5 and summarised below.

Landscape actions

Flora species with three or more viable populations, with stable or increasing trends and documented threats were considered as requiring ‘maintenance’ actions and allocated to the Landscape management category. These species were considered during the identification and prioritisation of Landscape actions if they occurred in priority reserves or landscapes.

Targeted actions

Populations with evidence of decline needed to have been surveyed within the last 11 years and to have threat information available to be allocated to the Targeted action management category. This is because it was deemed that there was limited value in developing management actions for species that have not been monitored in the past decade as threatening processes are likely to have changed. Given this, the data currency threshold was

set at 11 calendar years. This allowed for a decade timeframe and included a buffer to account for any time lag between survey and analysis.

Species with less than three viable populations with documented threats were allocated to the Targeted action management category. Species with no viable populations are less resilient, have a higher risk of extinction and may require adaptive management programs in the absence of up-to-date data. For this reason, these species were allocated to the Targeted action management category regardless of tenure and time since last survey.

Learn actions

Species with populations that did not have a minimum of two counts to identify population size trend, that had not been surveyed in the last 11 years and/or that did not have any documented threats were screened into the Learn management category.

Populations without an assigned 'TPFL population number'[17] at the time of the screening process were screened into the Learn management category for consideration in regional survey and monitoring programs once formally assigned population numbers.

[17] The assigned 'TPFL population number' is the population or subpopulation number that the TPFL has attributed to the occurrence of the taxon at a location.

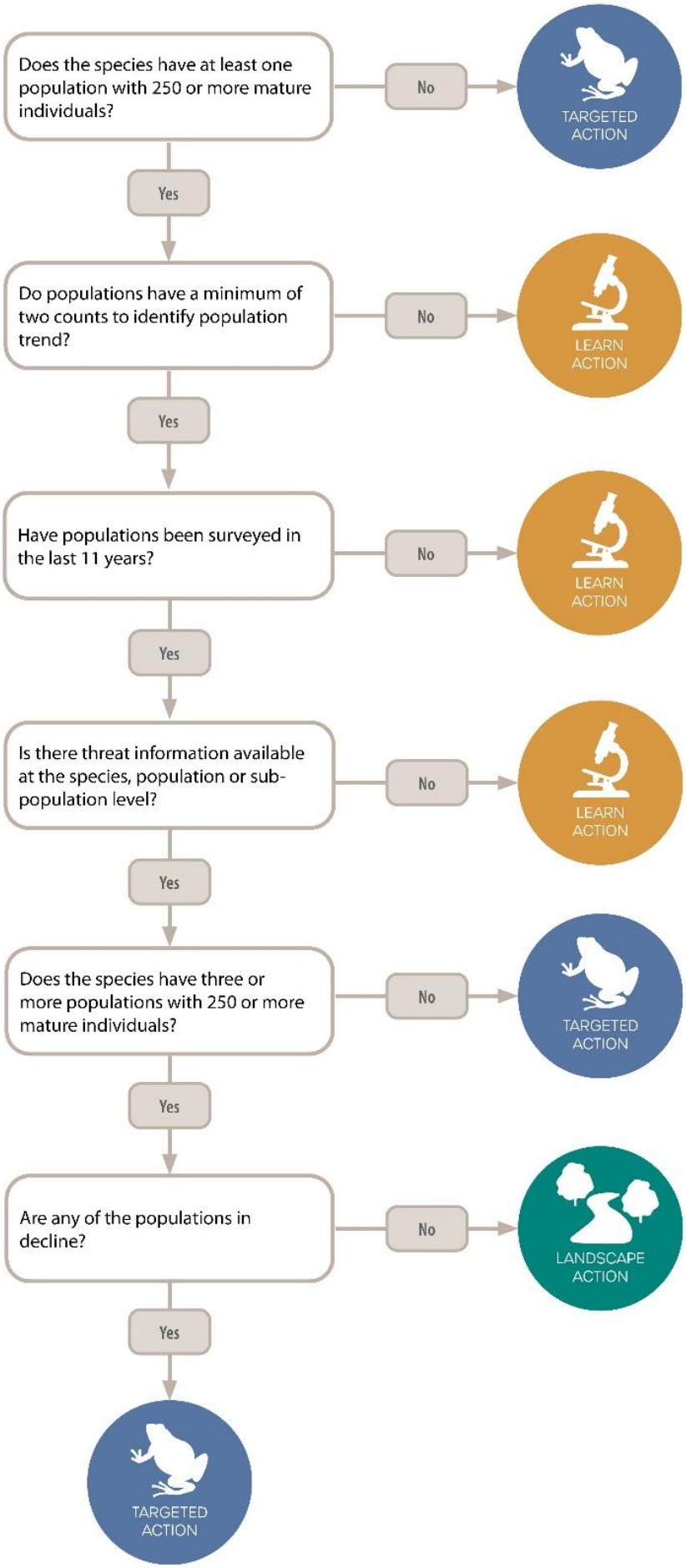

Figure 5 Threatened and Priority flora screening process.

5.1.2 Fauna screening process

The regional conservation planning process utilised occurrence data from corporate fauna datasets including Faunafile[18] and the Threatened Fauna Database[19] to determine the presence of Western Australian listed threatened, Priority and specially protected fauna species[20] within department-managed land since the year 2000. It was assumed that spatial records from 2000 onwards were more accurate given the improvement in GPS technology. The screening process was applied at the species level.

Knowledge of threats at the species level was determined through a review of relevant documentation (interim and draft recovery plans, conservation advice) and the Species Profile and Threats database (Department of Climate Change, Energy, Environment and Water 2023). This was supplemented with local knowledge from district and regional staff, and species experts from BCS, the Western Australian Museum, academia and consultancies.

Landscape actions

Species listed as Least Concern on the IUCN Red List[21] are of lesser concern in terms of extinction risk than species in other threat categories. The regional conservation planning process considered that threats to Least Concern species can be adequately managed through reserve management and landscape-scale threat mitigation programs. These species were considered as requiring 'maintenance' actions and allocated to the Landscape management category. They were then considered in the identification and prioritisation of Landscape actions if they occurred in priority reserves or landscapes.

Targeted actions

Species with occurrence records from the year 2000 onwards that were not listed as Least Concern on the IUCN Red List and had documented threats were allocated to the Targeted action management category.

Learn actions

Fauna species were allocated to the Learn management category where there was an absence of occurrence records within a region since the year 2000 and/or no documented threat information.

Species that require no action

The fauna screening process also identified fauna species that require no action. These species are largely migratory or pelagic marine species (for example albatross and cetaceans) that may be vagrants or only spend a portion of their life cycle in Western Australia. Regions do not have an ongoing role in their management, other than from an animal welfare (for example marine species such as whales may require a wildlife management response) or scientific research perspective. These species were not formally allocated to a management category. Actions for these species may have been considered through the Landscape action process where they intersect with priority reserves or landscapes, and/or are acknowledged as responsive actions in the regional conservation plans.

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[18] Faunafile is a department-managed database that captures fauna monitoring data primarily from Western Shield monitoring projects, but also some other departmental conservation projects.

[19] The Threatened Fauna Database is a department-managed database that contains records of threatened, specially protected and Priority fauna. These records are submitted by departmental staff as well as external parties, including as a condition of some fauna licences and threatened fauna authorisations provided under the BC Act.

[20] Threatened, Priority and specially protected fauna lists used were those current at 1 January 2019.

[21] IUCN Red List listing used was version 2020-3 published 10 December 2020.

5.1.3 Ecological communities

All Western Australian listed threatened and Priority ecological communities[22] were screened at the occurrence level for change in condition over time to identify occurrences with declining condition that require active management to address the impacts of threatening processes.

Knowledge of threats to each occurrence was determined through review of relevant documentation (such as recovery plans, conservation advice and Threatened Ecological Community assessments) as well as the Threatened Ecological Community Database[23]. The screening process also considered the department's assessment of ecological communities in accordance with the IUCN Red List of Ecosystems process. The screening process was supplemented by local knowledge from district and regional staff and liaison with ecologists from the department's Species and Communities Program.

Landscape actions

Threatened and Priority ecological community occurrences with stable or improving condition trends and documented threats were identified as requiring 'maintenance' actions and allocated to the Landscape management category. These occurrences were then considered in the identification and prioritisation of Landscape actions if they occurred in priority reserves or landscapes.

Targeted actions

Threatened and Priority ecological community occurrences with a declining condition trend and documented threats were screened to the Targeted action management category.

Learn actions

Threatened and Priority ecological community occurrences were allocated to the Learn management category where there was insufficient information to determine the condition trend and/or no documented threat information.

5.2 Developing Targeted actions

Departmental staff and external subject matter experts participated in a series of facilitated and structured workshops to consider the best possible action or suite of actions for threatened and Priority species and ecological communities screened to the Targeted action management category. Species actions were considered at the population and species level, while occurrences of ecological communities were considered specifically. Participants were encouraged to consider alternative or novel management actions to those currently being implemented or previously considered. The objective of these sessions was to ensure that the best possible suite of actions was considered through formal benefit-cost analysis.

This process primarily focused on the identification of actions on department-managed land that aimed to reduce or mitigate a threat, improve the condition or quality of habitat, or maintain or increase population size. However, actions relating to encouraging action on non-department-managed land were also considered, including liaison with stakeholders, private

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[22] Threatened and Priority ecological community lists used were those current at 1 January 2019. Note that at this time there were no threatened ecological species listed under the BC Act; these listings were endorsed by the Western Australian Threatened Ecological Community Scientific Committee.

[23] The Threatened Ecological Community Database is a department-managed database that contains records of threatened and Priority ecological communities. These records are submitted by departmental staff as well as external parties, including as a condition of some licences and authorisations provided under the BC Act.

landholders, land use planning and environmental impact assessment processes, and community education and engagement.

Previously documented actions for the species or ecological community undergoing action development (from recovery and interim recovery plans, conservation advice and species-specific management plans) were made available to participants to provide context and were considered in combination with the formulation of new actions. Where no actions could be developed due to limited information, the species or ecological community was re-allocated to the Learn management category and an appropriate action was developed for the relevant population or occurrence. Actions with a research component were also included and allocated to the Learn management category.

Some threatened and Priority species and ecological communities were rescreened into the Landscape management category following the workshops. This occurred when new data or local knowledge inputs were contributed and it was determined that threats could be managed at the reserve or landscape scale rather than requiring Targeted or Learn actions.

The action development stage of the process allowed for the integration of corporate data outputs with local knowledge from regional, district and BCS staff and subject matter experts to ensure that the most complete set of actions was developed, reflective of collective knowledge.

Actions for regionally endemic flora species were considered in region-specific workshops. All other flora species, and fauna species, were considered through facilitated cross-regional action development workshops to determine the most appropriate species-level conservation actions.

5.3 Structured elicitation

The prioritisation of conservation actions often involves decisions for which data or documented information is absent or limited. Structured elicitation processes can improve the quality and accuracy of expert judgements by overcoming challenges such as groupthink, anchoring, expert bias and over-confidence, and are especially important for informing critical decisions. Structured elicitation processes, utilising experts with relevant knowledge, has been shown to routinely out-perform the judgements of the individual subject matter experts (M Barnes, pers comm 2021).

A structured elicitation process following the IDEA protocol (‘Investigate’, ‘Discuss’, ‘Estimate’ and ‘Aggregate’) was undertaken to estimate the benefit and likelihood of success of Targeted actions (Hemming et al. 2018). The IDEA protocol combines a four-step elicitation process with an iterative Delphi process (Figure 6). The four-step elicitation structure involves estimating the lowest and highest plausible bounds, the best estimate and a confidence interval. The Deplhi process involves a structured group communication and decision process.

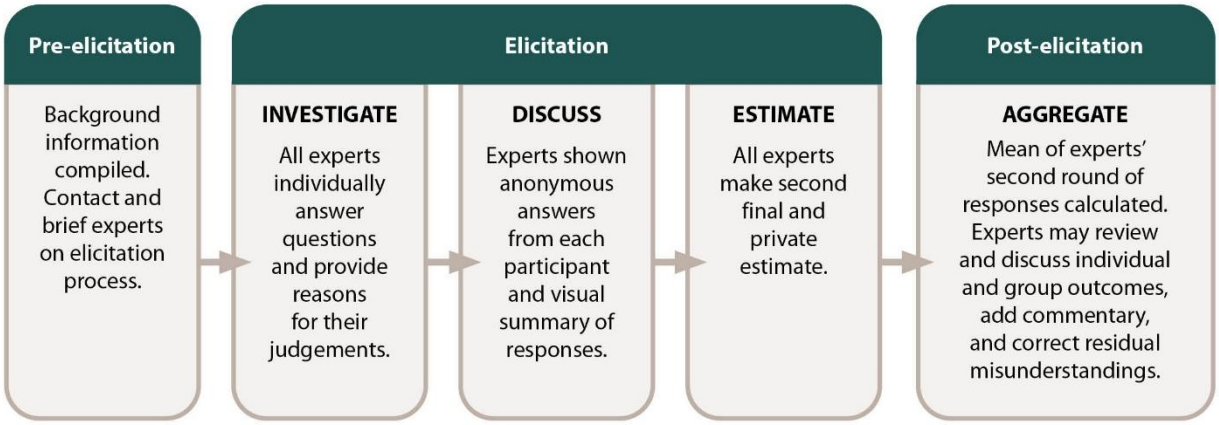

Figure 6 The IDEA protocol (from Hemming et al. 2018).

Departmental staff and subject matter experts from the Western Australian Museum, Department of Water and Environmental Regulation, universities, consultancies and special interest groups participated in the elicitation process. Participants were provided with an information package and online presentation describing the elicitation process and common cognitive biases.

Participants were asked to elicit the benefit and likelihood of success for the Targeted actions relevant to groupings of species and/or ecological communities that occurred within their region or for which they had subject matter expertise.

5.3.1 Elicitation components

Population size

The first stage of the structured elicitation process for fauna was the estimation of the statewide abundance of each species for which Targeted actions had been developed. An elicitation process was used as there was insufficient reliable data or information on the population size for nearly all species. The process determined an estimate of the number of mature individuals for each species to guide the subsequent estimation of benefit.

To estimate population size, participants made estimates of area of occupancy[24], extent of occurrence[25], density or current abundance of species based on contextual information collated from various sources including recovery plans, IUCN listings and other relevant data sources.

The group mean population estimate was then used as the baseline metric for the elicitation of benefit.

Benefit of action

For each action for threatened and Priority species (fauna and flora) and ecological communities, participants made individual estimates of the outcome and likely success for two scenarios: 1) the status quo (continuation of the current situation, 'without action') and 2) with implementation of the Targeted action ('with action'). For both scenarios, participants estimated the 'lowest', 'highest' and 'best' plausible estimates of abundance (for species) or condition (for occurrences of ecological communities) as well as their confidence that the true

[24] Area of occupancy is the area occupied by a species within its 'extent of occurrence', excluding cases of vagrancy.

[25] Extent of occurrence is defined as the area contained within the shortest continuous boundary which can be drawn to encompass all the known, inferred or projected sites of present occurrence of a species, excluding cases of vagrancy.

value fell between the highest and lowest bounds. When estimating the 'with action' scenario, participants assumed the action was fully and successfully implemented. The change in abundance was adjusted to reflect the proportional increase in abundance relative to the population size without action for threatened and Priority species.

Conservation actions for threatened and Priority species calculated the change in abundance of mature individuals as the difference between the number of mature individuals with an action, and the number of mature individuals in the absence of management over a period of 10 years. For clonal plant species, or where plants could not be counted individually, a change in area was used instead. Turtles were also treated slightly differently, using a 20-year timeframe because their juvenile period is generally greater than 10 years.

For threatened and Priority ecological communities, the change in condition was used, using the Keighery scale (Keighery 1994) of vegetation condition over a 10-year timeframe for each occurrence. Given that condition varied within a single target occurrence, participants estimated one condition ranking for the entire target occurrence. The condition ranking selected was the highest of those being considered or that which applied to the greatest proportion of the occurrence.

Likelihood of success

To calculate the final benefit, the change in abundance or condition was modified to reflect the likelihood that the action would successfully achieve the desired outcome.

For threatened and Priority fauna species and ecological communities, the likelihood of success was calculated using estimates across three attributes:

1) *Feasibility of implementation* – the likelihood that regions can successfully proceed with implementing the action given physical, legal or socio-political constraints.
2) *Threat reduction success* – the likelihood that the action would successfully achieve the expected threat reduction to the species or occurrence being acted upon.
3) *Management response success* – the likelihood that the action would lead to the expected benefit (would the action achieve the best estimate?).

Each attribute was estimated between 0 and 1. A value of 0 indicated the action would certainly fail 100 per cent of the time, while a value of 1 indicated the action would entirely achieve the best estimate every time.

To simplify the estimation of likelihood of success for threatened and Priority flora species, the likelihood of success was estimated as a single variable between 0 and 1. This combined consideration of physical, legal or socio-political constraints, whether the action would reduce or remove the threat, how the species would respond to the removal of that threat, and any other system complexities that may influence the response [26].

Cost or financial limitations were not considered in determining likelihood of success but are considered in the costing component of the benefit-cost analysis (see section 5.4).

5.3.2 IDEA process

Each participant submitted an individual assessment of the elicitation components and documented any assumptions underpinning their estimates. This information was collated and presented as visual summaries of anonymised results. Participants then gathered in groups based around the species and/or ecological community groupings to view and discuss the

[26] The Wheatbelt Region commenced the Targeted action process ahead of other regions and used the method outlined above for fauna and ecological communities for flora.

anonymised visual summaries. These group discussions were facilitated by experienced or mentored staff to maintain the integrity of the IDEA protocol. Participants discussed the processes and assumptions underlying their estimates (without revealing their estimates to the group), as well as why estimates were similar or divergent, low or high and other attributes. Participants also contributed data and information sources (for example research papers) as well as their knowledge and experience to support the discussions.

Following the group discussions, participants had the opportunity to re-elicit their estimates based on new information or opinion changes from the group discussions. A quality assurance process was undertaken with participants to ensure integrity of their final estimates. Group means were then derived from each individual best estimate of benefit.

5.4 Benefit-cost analysis

The group mean benefit for each Targeted action was weighted to reflect the relative extinction risk of a species or ecological community, reflecting a policy to prevent extinctions. Consistent with the IUCN Red List Guidelines (IUCN 2012), threatened species can be assigned an extinction probability using the threshold probability of extinction (criterion E). Critically Endangered species have a predicted probability of extinction (*pe*) > 0.5 in 10 years, Endangered species have a *pe* > 0.2 in 20 years and Vulnerable species a *pe* > 0.1 in 100 years. To facilitate the inclusion of extinction risk in the assessment of benefit, the respective extinction probabilities were converted to a 10-year time scale and applied to both threatened species and ecological communities (Vulnerable = 0.01, Endangered = 0.1, Critically Endangered = 0.5). All Priority species and ecological communities were assigned a nominal *pe* = 0.001 irrespective of category based on the IUCN 'Least Concern' category (Mooers et al. 2008, Redding and Mooers 2006).

The conservation status[27] of each species and ecological community used in the benefit-cost analysis was as per the listings under the BC Act at 6 October 2023 for fauna and flora and 26 May 2023 for ecological communities (Minister for Environment 2023A-C).

The final adjusted benefit score was divided by the cost of the Targeted action to determine the benefit-cost score of the action. The cost to implement each action over 10 years (or 20 years for turtles) was estimated by regions using budget data and staff estimates of the time required to implement actions, including the cost of travel, equipment and materials. Known costs for similar actions were used where data was current and available.

6 Learn actions

Through the processes for screening and developing Targeted actions for threatened and Priority species and ecological communities[28], information requirements were identified to inform appropriate management actions. This includes information requirements about the abundance and distribution of species, condition of ecological communities, and threatening processes impacting species and ecological communities. Addressing these information

[27] Species and ecological community lists used in the screening and Targeted action process were those current at 1 January 2019 for Western Australian listed threatened and Priority species and ecological communities and version 2020-3 published 10 December 2020 for the IUCN Red list fauna species. However the conservation status of these species was updated to the 2023 statuses. There may have been additional species listed since the 2019 lists that were not considered in the Targeted action and Learn action processes. Taxon names were also updated in the regional conservation plans to those current at the date of publication (this did not affect the prioritisation processes).

[28] For the Goldfields Region, ecological communities were not formally assessed through the prioritisation process due to an insufficient understanding of the communities and their associated threats at the time of plan development. Actions aimed at building baseline knowledge were developed separately in collaboration with the department's Species and Communities Program.

requirements will then enable the development of either Targeted actions and/or Landscape actions.

Unlike the Landscape and Targeted action prioritisation processes that underwent a benefit-cost analysis, the Learn action prioritisation process was based on a risk assessment and value of information analysis[29] approach.

Survey, monitoring and research to address information requirements is undertaken by regional staff where they have the capacity and expertise. Alternatively, these Learn actions may best be undertaken by, or in collaboration with, specialists within the department, particularly BCS and CEM, as well as external researchers and organisations.

Each region implemented the Learn action prioritisation process independently, making their own assessments about each component of the process and the regional expertise and capacity to undertake the Learn actions.

6.1 Identifying Learn actions

A list of threatened and Priority species and ecological communities that were screened to the Learn management category (see section 5.1) was collated for each region. Additionally, any Targeted actions that were developed that related to survey, monitoring or research were transferred from the Targeted action management category to the Learn management category. Learn actions focused on monitoring existing populations; surveying for additional populations; threat assessment; and research relating to fire, habitat requirements, biology and ecology, taxonomy and genetics, and threat mitigation techniques.

6.2 Risk assessment and value of information analysis

6.2.1 Identifying threatening processes

Regions identified threats to species and ecological communities allocated to the Learn management category using local knowledge and other resources where available. Where the specific threat impacting a population or occurrence was not known, regions considered the location of the population or occurrence to determine potential threats.

6.2.2 Risk assessment

The risk of each threatening process to each threatened and Priority species and ecological community was analysed through a consequence-likelihood matrix consistent with that outlined in *Corporate Guideline No. 37 – Assessing Risk to the Conservation of Biodiversity Associated with Threatened Species and Threatened Ecological Communities* (DBCA 2022). Risk was assessed at the species and ecological community level over a 10-year timeframe. To deal with quantitative uncertainty due to data limitations, confidence bounds were applied to each risk assessment. Regions considered tenure and conservation status when assessing likelihood and consequence, particularly where the specific threatening process was not known. Species and ecological communities on department-managed land, and/or with a lesser conservation status (Priority, vulnerable or Least Concern), were generally considered less at risk than those occurring on other tenure types and/or with a higher conservation status (critically endangered or endangered).

[29] Value of information analysis assumes that each possible set of actions has an expected outcome, surrounded by a degree of uncertainty. The expected 'value' of perfect information is the difference in outcome achieved based on current versus perfect information. In conservation, perfect information about a system is often unattainable, but additional information may reduce the level of uncertainty and lead to a better decision (Raymond et al. 2019).

6.2.3 Feasibility

The feasibility of implementing Learn actions considered the ecological characteristics of the species and ecological communities, resource requirements (including costs) and availability, tenure and access considerations, and known/available survey, monitoring or research techniques. Cost was considered as part of the feasibility estimate as a benefit-cost process was not applied to determine Learn action priorities.

6.2.4 Improvement in management decisions and outcomes

The Learn action prioritisation process considered to what extent addressing the information requirements would improve management decisions and outcomes for the threatened and Priority species and ecological communities. Regions estimated whether implementation of a Learn action would provide little to no improvement, some improvement, or would significantly improve or alter management decisions and outcomes. The degree of improvement was also recorded to provide further refinement of scoring. Regions applied a value consistent with three broad categories: 0-0.3 little to no improvement, 0.4-0.7 some improvement, and 0.8> significant improvement.

6.2.5 Assessing regional capacity and expertise to address information requirements

Learn actions undertaken by regional staff generally focus on monitoring the status of known populations or occurrences, surveying for additional populations or occurrences, evaluating the effectiveness of management actions, and threat assessment. Regional staff may also lead or contribute to the development and implementation of research projects that support management and decision-making. Monitoring, survey and research is also undertaken by, or in partnership with, specialists within the department, particularly BCS and CEM, as well as external organisations and volunteers.

Each region assessed their capacity and expertise to implement each Learn action. Those actions that were within the region's expertise and capacity progressed to prioritisation. Learn actions beyond the region's current capacity and expertise were allocated to an 'other' category. Regions will pursue collaboration opportunities to address these 'other' Learn actions as they arise with other sections of the department and/or external organisations as appropriate. These 'other' Learn actions were not prioritised as regional staff may not have the expertise to assess the attributes within the Learn action process.

6.2.6 Learn prioritisation scoring

A Learn prioritisation score was calculated for all Learn actions to be implemented by regions based on the risk assessment, feasibility and improvement to management.

7 Prioritising and incorporating actions into regional conservation plans

The relative rankings of scores from each prioritisation process for each region were used to identify the highest priority actions for each management category. A summary of the seven prioritisation processes is outlined in Table 1.

Table 1 Summary of the prioritisation processes for each management category.

Management category	Prioritisation processes	Regional or statewide approach
Landscape actions	One prioritisation process for all Landscape actions per region	Regional process
Targeted actions	Three separate prioritisation processes: 1) Threatened and Priority fauna 2) Threatened and Priority flora 3) Threatened and Priority ecological communities[30]	Statewide process for fauna, and flora not endemic to a single region. Regional process for ecological communities and flora endemic to a single region. Separate rankings for each region.
Learn actions	Three separate prioritisation processes: 1) Threatened, Priority and specially protected fauna 2) Threatened and Priority flora 3) Threatened and Priority ecological communities	Regional process

To identify the highest priority actions:

- For Landscape and Targeted actions, all actions with a benefit-cost score greater than zero[31] were ranked, with the greatest benefit-cost score ranking highest.
- For Learn actions, all actions were ranked using their Learn prioritisation score, with the greatest score ranking highest.

Once ranked, the actions were divided into five equal groups and allocated a priority category (highest, high, moderate, low and lowest).

Actions allocated to the highest prioritisation category were included in section 5 of the regional conservation plan and assigned to the relevant overarching biodiversity conservation strategy (see section 3.2) These highest priority actions will guide the focus for discretionary expenditure by regions. All other priority actions were included in section 6 of regional conservation plans.

Many actions identified through the regional conservation planning process align with multiple overarching strategies, therefore they were assigned based on the nature of the action (what the action is focused on doing) rather than the objective (what the action is focused on achieving). The framework for aligning actions with overarching strategies is outlined in Figure 7.

Several action types were excluded from being allocated a prioritisation category. These action types, the reason for excluding them, and how they are addressed in the regional conservation plans, is summarised in Table 2.

[30] No Targeted actions for threatened and Priority ecological communities were identified for the Goldfields Region as there was insufficient information available to support action development or elicitation of benefit.

[31] Zero was defined as 0.0000000001.

Overarching strategy	Type of action
	• Actions specific to department-managed land that involve: ○ Land acquisition and transfer ○ Rehabilitation, revegetation and restoration ○ Visvisitor access and appropriate land use management ○ Compliance and enforcement related to reserve management • Other actions on or that benefit department-managed land not covered under other action categories
	• Actions specific to threatened and Priority species and ecological communities that involve: ○ Translocation ○ Wildlife licensing ○ Compliance and enforcement related to wildlife • Other actions for threatened and Priority species and ecological communities not covered under other action categories
	• Management of: ○ Altered hydrology ○ Disease ○ Climate adaptation and resilience ○ Fire regimes ○ Pest animals ○ Weeds • Environmental impact assessment and land use planning
	• Proposed/new germplasm collection and storage
	• Liaison with other land managers to encourage biodiversity outcomes on and off department-managed land • Education and awareness-raising • Stakeholder engagement

Figure 7 Approach to allocating conservation actions to overarching biodiversity conservation strategies.

Table 2 Types of regional conservation actions that were excluded from a prioritisation category allocation, and how they are addressed in regional conservation plans.

Action type	Rationale	How addressed in regional conservation plans
Actions with a benefit-cost score of zero or less	Actions that deliver no value, or may be detrimental, should not be considered in works programming based on the information available during the regional conservation planning process.	Included in section 6 for regions to consider should prioritisation process factors change over time (for example new information that improves feasibility or certainty).
Landscape actions for marine reserves	Marine reserve management actions are prioritised in accordance with marine reserve management plans and the associated performance assessment and research prioritisation frameworks.	Not included in regional conservation plans.
Actions that have already been committed to via a funded and approved strategic program, funding agreement or Memorandum of Understanding	Regions are already committed to delivering these actions. They are therefore not discretionary and have been excluded from the prioritisation process. They will be a priority to deliver regardless of their prioritisation category. Examples of these types of actions are listed in section 3.3.	Not included in regional conservation plans.
Proposed/new translocation activity	New translocation actions should be considered at a statewide/species-wide level through the department's translocation approval process.	Included in section 6 for consideration through the department's translocation approval process.
Proposed/new germplasm collection activity	New threatened flora germplasm collection and storage actions should be considered at a statewide/species-wide level guided by the capacity of facilities to store this material and the purpose of storage and collection.	Included in section 6 for consideration through engagement with specialists from the department's Species and Communities Program, Plant Science and Herbarium Program, and the Threatened Flora Seed Centre.
Actions where all costs for the action are not incurred by the region	Actions requiring other parties to incur costs cannot be accurately costed and may be beyond the region's control to implement. • Liaison actions, as the benefit-cost assumes that the action is fully and successfully implemented by the external stakeholder (for example landowner/manager), however regions can only cost (and control) regional staff liaison costs. • Education and communication actions, as the benefit-cost assumes that the action/behaviour is fully and successfully implemented by the audience of the communication material, however this is difficult to cost (and control). • Land acquisition and transfer actions, as while regions can advocate for and be involved in these actions, they are generally beyond the region's ability to control and/or cost (involve third parties, for example offsets, and/or statewide strategic priorities that are managed through the department's Land Services Unit).	Included in section 6 for regions to consider in their works programming.

Action type	Rationale	How addressed in regional conservation plans
Landscape and Targeted actions that are not on, or do not directly benefit, department-managed land	A primary focus of regions is to implement actions on, or that benefit*, the lands for which they have a management responsibility. However, some Learn actions undertaken by regions on non-department-managed lands are included in the prioritisation process where they inform the conservation status or management of threatened and Priority species and ecological communities on department-managed land or for the department to encourage actions on other lands. * Actions off, but that benefit, department-managed lands are included in the Landscape and Targeted action prioritisation processes. These include actions that are: • on lands adjacent to department- managed land (for example neighbouring properties, buffers) • undertaken in partnership with joint management partners (including potential joint management partners) off department-managed land (relationship building) • incorporating multiple tenure types, including department-managed land.	Included in section 6 for regions to consider if they are : • Liaison actions (as above) • Education and awareness actions • Land acquisition and transfer actions (as above) All other Landscape and Targeted actions that are not on, or do not benefit, department-managed land are not included in the regional conservation plans (available in supporting datasets only).
Learn actions that are beyond the capacity and/or expertise of regions to implement	Actions to be implemented by others cannot be assessed (risk and/or value of information) and their priority for others is beyond the region's control.	Included in section 7 for regions to pursue collaboration opportunities to address these Learn actions as they arise with other sections of the department and/or external organisations as appropriate.
Variations of an action	For some action types, regions developed variations of the same action to test them through the benefit-cost analysis. Regions then used their discretion to select the appropriate variation and this was progressed through to prioritisation categorisation. All other variations were excluded from prioritisation categorisation	Not included in the regional conservation plans (available in supporting datasets only).
Actions that were completed before the 2023/24 financial year	Drafting of the plans commenced in 2023–24, therefore actions already completed were removed to enable prioritisation of new actions to guide future works programming.	Not included in the regional conservation plans (available in supporting datasets only).

8 Review process

Several review processes were undertaken to ensure that the prioritisation processes and outputs reflected in the regional conservation plans were sound and implementable. These included:

- Regional review – focused on ensuring accuracy of information and consideration of any significant challenges and risks associated with focusing on the highest priority actions.
- Cross-regional review – focused on Targeted actions and Learn actions for threatened and Priority species that were allocated to more than one region ('cross-regional actions'), to consider whether they required a consistent approach to prioritisation and implementation.
- Cross-divisional review – focused on seeking feedback on the approach and content of regional conservation plans from other business areas within the department.

Feedback from each review process informed refinement of the approach and regional conservation plans, as well as identification of future strategic conservation opportunities.

9 Monitoring, evaluation and reporting

Within available resources, regions will undertake the actions identified in regional conservation plans through regional and district works programs and collaborative partnerships. An adaptive management approach will be taken to implementing the plans, informed by monitoring results, research findings and other evidence and learnings. Progress towards implementing priority actions will be tracked and reported.

A monitoring, evaluation and reporting process will support the regional conservation plans to provide accountability, understand how regional conservation actions are delivering the overarching biodiversity conservation strategies and contributing to conservation outcomes, and identify opportunities for continuous improvement to maximise benefits.

10 Glossary

Area management plans guide the management of reserves under the CALM Act. A plan may cover a single or several reserves. Management plans are prepared by the Conservation and Parks Commission through the department and contain a statement of the policies, guidelines and a summary of current and proposed management activities for a reserve. Area management plans also include the Forest Management Plan.

Conservation advice documents are developed to guide recovery planning and identify actions for conservation and recovery of threatened species and ecological communities. They are developed when a native species or ecological community is listed as threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Recovery plans may also be developed for some species and ecological communities with more complex planning needs.

Conservation value is the collective social, cultural and economic 'worth' or 'importance' placed on biodiversity assets, conservation elements, reserves or landscapes that are identified as requiring mitigation from threats. Conservation values can include native plants and animals, as well as the habitats and ecosystems that these species rely on, their inherent properties and the processes that maintain them, and the social values or benefits we derive or believe they embody, including Aboriginal cultural heritage, recreation use and nature-based tourism.

Conservation element is a biodiversity feature identified through the Landscape action development process that is being impacted by one or more threats and for which mitigation actions are developed. Conservation elements are generally classified into biotic elements,

such as plants, animals, vegetation units; and abiotic elements, such as rocks, water and mountains.

Landscapes are individual or groups of landforms, habitats, ecosystems, vegetation complexes or biogeographic regions where conservation outcomes are aimed to be achieved. Landscapes may include department-managed land including reserves, a combination of unallocated Crown land, unmanaged reserve, and/or private property where a specific conservation asset exists or threatening process is occurring.

Landscape-scale describes a spatial unit greater than individual landscapes and reserves and can include administrative management units such as a region, sub-region or group of reserves.

Least concern is a category in the IUCN Red List, an international classification system for species according to their extinction risk. A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category (IUCN 2012).

Phytophthora dieback is the common name for the disease in native ecosystems caused by plant pathogens from the genus *Phytophthora*.

Priority species and ecological communities may possibly be threatened but do not meet the criteria for listing under the BC Act because of insufficient survey or are otherwise data deficient. They are added to the Priority Fauna, Priority Flora or Priority Ecological Communities for Western Australia lists under priority 1, 2 and 3. These three categories are ranked in order of prioritisation for survey and evaluation of conservation status so that consideration can be given to their potential listing as threatened. Species or ecological communities that are adequately known and not threatened but rare, near threatened, or that have been recently removed from the threatened species or ecological communities list or other specially protected species lists for reasons other than taxonomy are placed in priority 4. Priority lists are maintained by the department and published on the department's website.

Recovery plans and Interim recovery plans outline the actions needed to support threatened species or ecological communities survive and 'recover' to a healthy level. They are prepared in accordance with Part 6 of the BC Act where it is considered necessary. The Australian Government may also make or adopt recovery plans under the EPBC Act.

Reserve system managed by the department includes national parks, nature reserves, conservation parks, regional parks, State forest, timber reserves, marine nature reserves, marine parks and marine management areas and other lands and waters managed under the CALM Act, predominantly for a conservation purpose.

Species is used as a generic term in preference to taxon or taxa, recognising that it also includes taxonomically distinct and named subspecies (subsp.) and varieties (var.)

Specially protected species are listed by order of the Minister as specially protected under section 13(1) of the BC Act meeting one or more of the following categories: species of special conservation interest (conservation dependent), migratory species, cetaceans, species subject to international agreement, or species otherwise in need of special protection (other specially protected).

Threatened Ecological Communities (TECs) are naturally occurring groups of plants, animals and other organisms interacting in a unique habitat which is listed as threatened (critically endangered, endangered, vulnerable or collapsed) pursuant to sections 27-33 of the BC Act. TECs are listed because they are under identifiable threat of extinction.

Threat mitigation programs are actions or programs that attempt to mitigate or reduce the impact of threatening processes through direct management intervention, such as fencing, weed and feral animal control, and fire management.

Threatened fauna are species of native animals listed as threatened (critically endangered, endangered, vulnerable, extinct or extinct in the wild) pursuant to section 19-26 of the BC Act. Threatened fauna are listed because they are under identifiable threat of extinction.

Threatened flora are species of plants that are listed as threatened (critically endangered, endangered, vulnerable, extinct or extinct in the wild) pursuant to sections 19-26 of the BC Act. Threatened flora are listed because they are under identifiable threat of extinction.

Threatening processes are processes that threaten, or may threaten, the survival, abundance or evolutionary development of a native species or ecological community.

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