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BIODIVERSITY INFORMATION TOOLS FOR USE IN NATIVE VEGETATION DECISIONS

EXPLANATORY DOCUMENT

State Government Victoria

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Cover images: Grassy woodland, Apostle Birds and Tree Ferns, Victoria

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1. INTRODUCTION

The Victorian Government maintains a suite of policies, regulations and programs for the management of native vegetation. To enable these to work effectively and efficiently, the Department of Environment and Primary Industries (DEPI) requires, develops and maintains both site scale and landscape scale information to quantify the contribution that native vegetation makes to Victoria's biodiversity. The purpose of this document is to summarise the concepts, inputs and methods used to develop this information and the associated decision support tools.

Information is an essential part of biodiversity planning and decision making. Information must be fit for the purpose, with a balance achieved between being meaningful, feasible and practical.

Decision makers need to understand the strategic implications and specific impacts of a proposal to ensure their decision results in an outcome appropriate for the policy or program. Combining and understanding native vegetation and biodiversity information is a complex task. Information tools that translate scientific concepts for use in practical situations are highly desirable for decision makers.

Decision makers also need to consider the consequences for landholders and resource managers arising from how policies or programs are implemented. Regulatory processes require a level of assessment effort that is proportionate to the level of risk. Investment processes require consideration of delivery options within a fair and transparent strategic framework.

The purpose of biodiversity information tools is to:

> enable the community and landholders to better understand native vegetation and biodiversity values on both private and public land, including why some areas or impacts are of particular concern in assessment processes

> help inform landholders about potential native vegetation permitted clearing regulatory obligations[1]

> guide local government and DEPI staff when applying decision guidelines and determining offset requirements for removing native vegetation[1]

> contribute to cost effective investment in native vegetation outcomes

> help align regulatory and investment programs.

The design of the biodiversity information tools:

> incorporates advances in scientific capability and understanding

> improves the rigour and consistency of how we define and measure the biodiversity value of native vegetation, particularly in relation to rare or threatened species

> supports the use of a systematic and consistent approach to how we consider the relative benefit of management to enhance native vegetation, the relative impact of individual clearing proposals and the alignment of these where required for offsetting.

In determining how to develop these tools and how to balance the use of information from different methods and scales, a range of operational factors are also considered, including:

> the costs associated with collecting and analysing information (e.g. acquisition of field data or satellite imagery)

> the ability to extrapolate existing data to provide a contextual view (e.g. modelling of species habitats)

> the ability for proponents to access and understand the information (e.g. design and delivery of summary products and web access)

> the ability for interested parties to contribute to the improvement of information (e.g. systems for capturing new data and guidance on key areas for improvement).

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1 *Permitted clearing of native vegetation – Biodiversity assessment guidelines* describes when and how these tools are to be used in the context of the native vegetation permitted clearing regulations.

2. BIODIVERSITY INFORMATION TOOLS

The following information is required to support planning and decision making to protect and manage native vegetation:

> what is native vegetation (definition[2])

> where does the native vegetation occur (extent)

> how is it described and measured (type and condition)

> what native vegetation do individual species, particularly rare or threatened species, occur within (habitat distributions)

> what is the relative contribution of an area of native vegetation to overall biodiversity conservation (strategic biodiversity value)

> when and how are individual species requirements considered.

This information is inter-related. For example, current extent and condition of native vegetation combines with information on the distribution of habitat for a species to indicate the relevant degree of habitat loss and where its conservation options are likely to be located. Options for a broad range of species and native vegetation types need to be combined to provide an overall measure of strategic biodiversity value.

Information is typically derived from two different perspectives:

> site-based information that is collected at the location of a proposed action, for example the extent and condition of native vegetation and the details of proposed changes to land use or management

> landscape scale information that is mapped or modelled information created from data collected across the landscape, but not necessarily at a site in question. Landscape scale information provides contextual factors beyond a given site, for example how widespread the relevant species are and how well connected the values at the site are within the landscape.

Some data is initially collected at sites but is better treated as a contribution to landscape scale information. For example, species observations (or apparent lack of observations) at sites of proposed actions are not, on their own, sufficient basis for a view on the strategic value of the sites. This is because species observations are affected by the time of sampling, the available survey effort, design and expertise, and the normal fluctuations in use of habitat by individuals, particularly mobile fauna. All available observations, taking account of their limitations, need to be combined and extrapolated to provide a whole of landscape view.

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2 Native vegetation is defined in *Permitted clearing of native vegetation – Biodiversity assessment guidelines.*

2.1 Native vegetation extent

Purpose

The extent of native vegetation is the area of land covered by native vegetation. A comprehensive map of the current extent of native vegetation remaining across Victoria is important for decision makers. It also helps land managers and private landholders anticipate where native vegetation is likely to occur within a particular area, and where further assessment of potential actions may be required or desirable. Native vegetation extent includes largely intact areas typical of parks and state forests, and remnant patches and scattered trees typical of rural and peri-urban landscapes. Remnant patches retain some level of native understorey and scattered trees are mature native trees that are in a location without native understorey.

Methods

Extent can be observed and measured at a site, but is also able to be mapped at the landscape scale.

At the site scale, this requires determining whether vegetation is native, confirming certain characteristics (remnant patch or scattered trees) and the quantity present (in area or number of trees).

At the landscape scale, maps were traditionally created by manual interpretation of imagery and extensive ground-truthing. Over time, this has been superseded by more cost effective and timely methods. Maps are now created by modelling of fine-scale satellite imagery and a variety of environmental features datasets. This allows for more transparent methods, and more frequent and cost effective updating to provide a consistent and contemporary view of Victoria's remaining native vegetation.

The *Native vegetation extent map* (2010) is based on a combination of sources and techniques:

- 5m RapidEye, 10m Spot, 30m Landsat and 225m MODIS[3] spectral imagery, and 50m ALOS[3] radar data, are analysed to detect the likely presence of woody vegetation
- appropriate site-based training data, filters and analysis are then used to help categorise woody vegetation as either native or exotic (e.g. plantations, urban plantings, windbreaks etc)
- time-series Landsat and MODIS imagery, and appropriate site-based training data are analysed to detect the likely presence of native grass-dominated areas (time-series data can show fluctuations in growth patterns due to seasonal or climate events, which help discriminate between native and exotic grassland/pasture).

Links

Native vegetation extent forms the basis for other contextual information such as retained landscape context and the current distributions and depletion levels of habitats.

Product access and updating

More detailed information on the current method for modelling and classification of native vegetation extent can be found at www.depi.vic.gov.au/nativevegetation

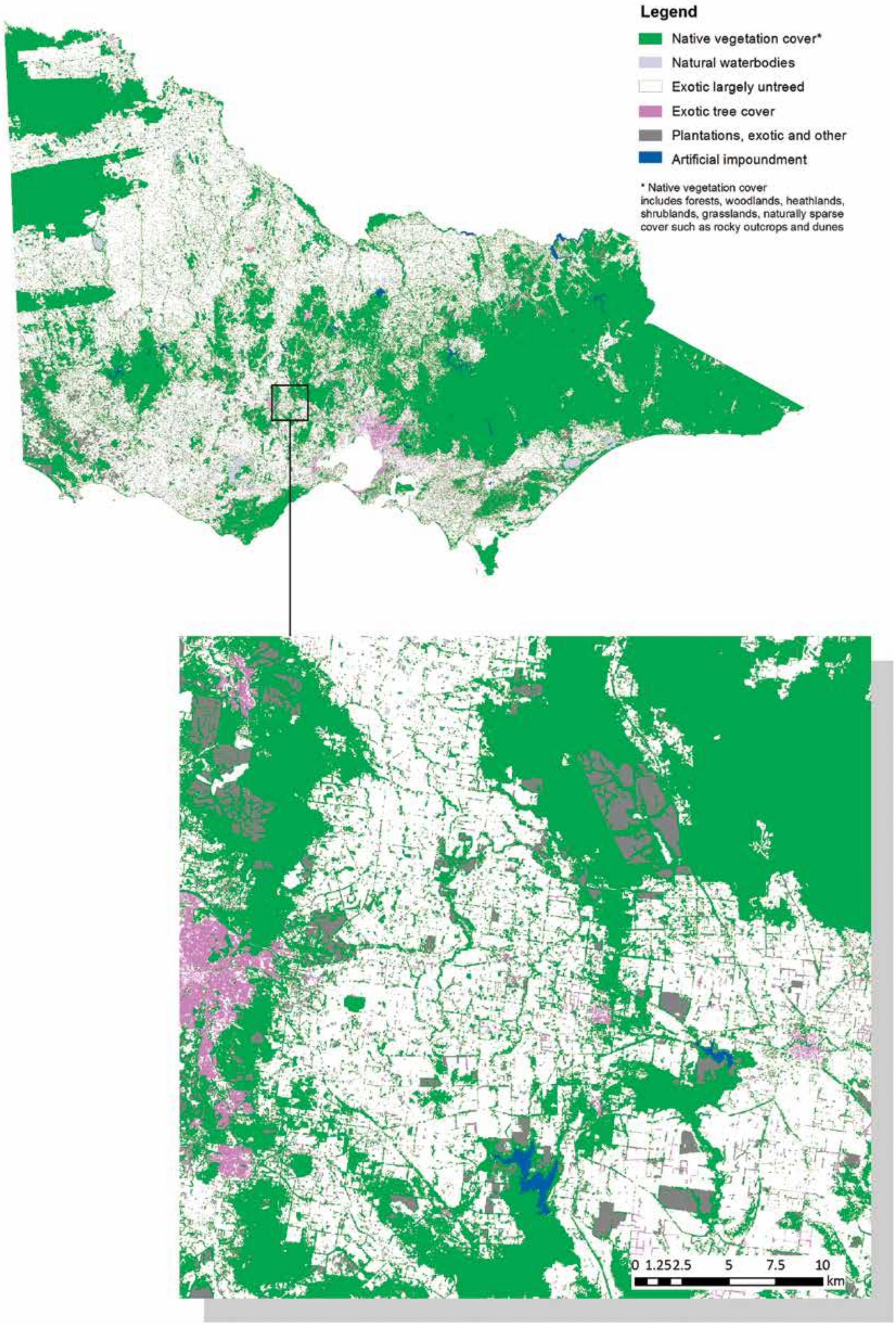
Native vegetation extent map can be viewed via DEPI website – Biodiversity Interactive Map http://mapshare2.dse.vic.gov.au/MapShare2EXT/imf.jsp?site=bim

Periodic re-analysis of native vegetation extent can occur when significant new acquisitions of imagery and site data occur – this is normally in a three to five year timeframe, depending on the availability of resources.

Refinements of mapped data during a site assessment may be appropriate when this information affects the amount of impact or benefit.

3 MODIS – Moderate Resolution Imaging Spectroradiometer; ALOS – Advanced Land Observing Satellite

Figure 1: Example of vegetation cover mapping, including native vegetation extent (as at 2010, based on analysis in 2013)



2.2 Native vegetation type

Purpose

There are many different vegetation types (grassland, heathland, forests etc.) found across the landscape. They can be classified on the basis of co-occurring native plant species and some of the biophysical factors that influence species distributions such as rainfall, topography, soil type and elevation.

In Victoria, Ecological Vegetation Classes (EVCs) are the native vegetation classification system used for planning, regulation and investment. EVCs are a key organising concept for native vegetation conservation, and provide a useful way to summarise and present complex ecological systems. They can be related to other elements of biodiversity and the environment (e.g. fauna habitats, invertebrate habitats, fire behaviours, drought or flood regimes, carbon sequestration) and have been used to represent these elements where there is no better alternative available (for example, in developing a representative conservation reserve system, and in defining fuel accumulation rates and ecological fire regimes).

In implementing the Native Vegetation Management Framework (2002), EVCs were the primary driver of Conservation Significance because they provided a useful surrogate for biodiversity and catchment management, and also because they were the only information type that was comprehensively mapped. Consideration of other information types (for example rare or threatened species, landscape context) was through additional criteria which could only be assessed by *ad hoc* field observations and expert opinion.

While the native vegetation permitted clearing regulations use a broader range of comprehensively mapped information to define strategic biodiversity values, EVCs continue to play an important role in understanding native vegetation condition, and changes in condition from actions (see section 2.3).

Methods

In line with the new methods used to model native vegetation extent (see Section 2.1) and species habitats (see Section 2.5), work is progressing to model the distribution of EVCs based on field data and environmental predictors. There are several advantages to this approach:

- the EVC classification can be revised based on explicit analysis of both environmental and plant attribute data, to provide a more consistent and transparent statewide view
- EVCs can be more consistently mapped across Victoria, and can be more readily re-mapped when required
- the influences of climate change on the nature and distribution of EVCs can be more actively considered
- a more dynamic and spatially refined concept of EVCs enables their use in the more nuanced decision tools that are increasingly guiding management and investment decisions.

Links

Native vegetation types are part of the process for estimating strategic biodiversity value, and EVCs have a critical role as the basis for assessing native vegetation condition.

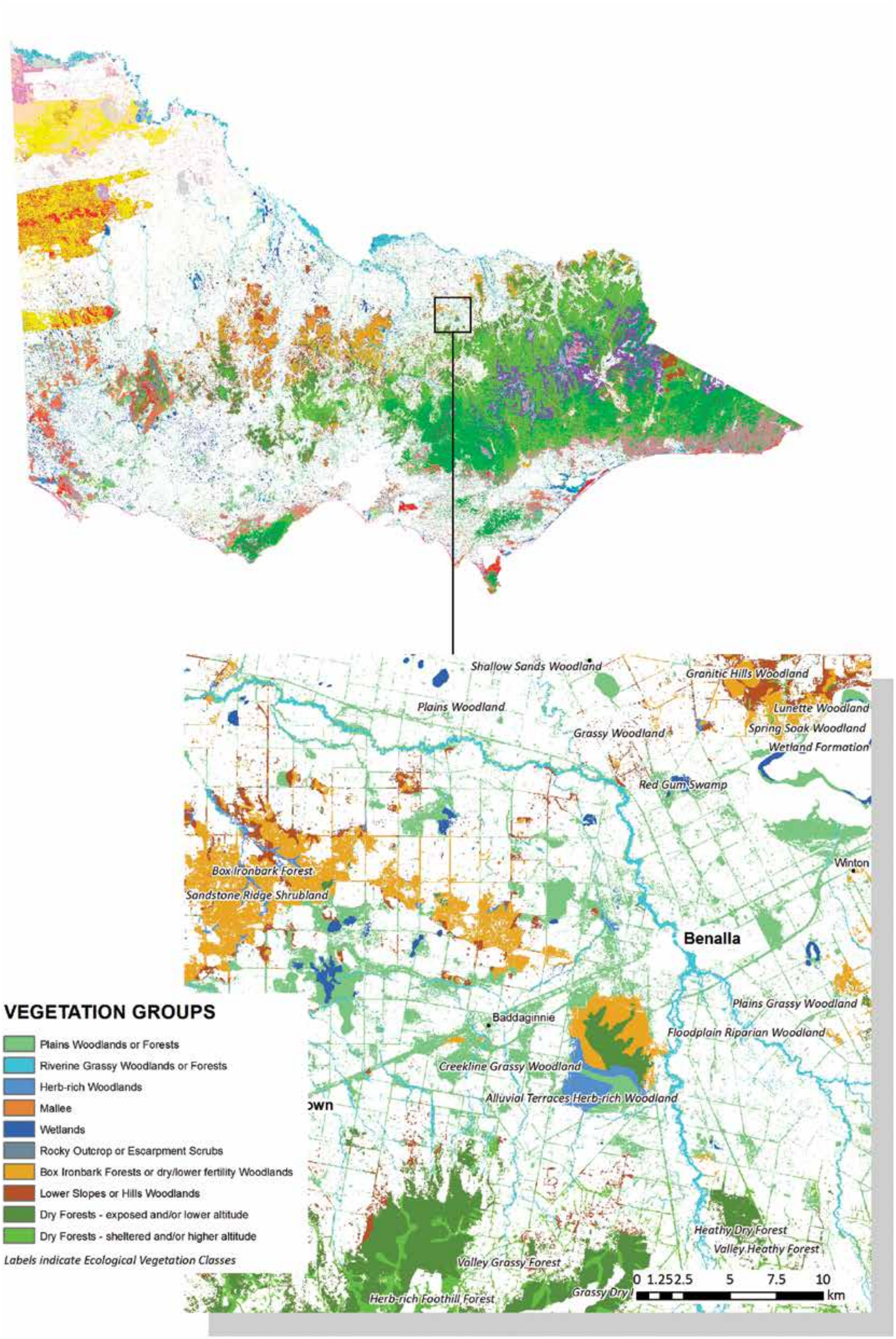
Product access and updating

More detailed information on Ecological Vegetation Classes can be found at www.depi.vic.gov.au/nativevegetation.

Ecological Vegetation Class Mapping can be viewed via DEPI Biodiversity Interactive Map at http://mapshare2.dse.vic.gov.au/MapShare2EXT/imf.jsp?site=bim

The current EVC typology and mapping is being updated and this is expected to be completed during 2013. Until this is finalised, the current EVC classification and mapping will be used where relevant.

Figure 2: Example of Ecological Vegetation Class mapping



2.3 Native vegetation condition

Purpose

Most remaining native vegetation in Victoria has been subject to some disturbances, such as historical land use, grazing or weed and pest animal invasion, and is subsequently reduced in condition. Management of native vegetation requires a detailed understanding of this legacy, how it influences the delivery of ecosystem services and what changes are desirable and feasible.

Measuring the native vegetation condition requires a frame of reference. In managing natural environments it is recognised that:

> vegetation types vary

> there has been a long history of humans in the landscape

> circumstances fluctuate (e.g. seasons, natural disturbance events)

> degradation and rehabilitation occurs

> naturalness is valued.

The frame of reference must accommodate these considerations and is therefore based, for each EVC, on the characteristics of mature stands that are likely to represent pre-settlement circumstances.[4] This information is described in a benchmark for each vegetation type. The approach accepts that condition at any one point in time may reflect natural fluctuations and underlying degradation, and that the use of condition information must take this into account.

2.3.1 Site condition (habitat hectares) assessment

Methods

In Victoria, the condition of the vegetation is measured using the habitat hectares assessment method which provides a practical and consistent method for quantifying vegetation condition so it can be combined with other information as required in decision making processes. The method was developed in 2003 and revised in 2013 to take advantage of information, technology and decision techniques that improve consistency, utility and effectiveness.

The method requires assessors to collect primary data on the presence of observable characteristics, such as percentage cover and species diversity of life forms (e.g. trees, shrubs, ground ferns and tussock grasses), and the size of trees (where this is relevant) as an indicator of 'time to recovery of habitat values'. These data are then compared to benchmark levels for these characteristics for the relevant vegetation type, and combined by weighting their relative importance for the relevant EVC. The assessment results in a condition score as a percentage of the benchmark, then the score can be multiplied by the assessed area of native vegetation to give the habitat hectare amount.

The revised habitat hectare assessment method seeks to improve the accuracy and consistency of the method. The *Habitat hectares manual* v 2.0 is expected to be finalised by December 2013. Until this time, the existing Habitat hectare v 1.3 method will continue to be used.

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4 This conforms with international practice which uses 1750 as a notional reference point for when the scale of anthropogenic impacts on natural landscapes started to accelerate due to the technological changes associated with the Industrial Revolution.

2.3.2 Change in native vegetation condition

Purpose

A habitat hectares assessment provides a snapshot of current native vegetation condition at a site which contributes to an understanding of the relative biodiversity value of a location. Decision makers also require a view of how (and how much) condition may change in future, either with or without a change in land use or management. For native vegetation clearing this change is referred to as loss, and for improved management (either voluntary, as a result of investment, or for offsetting purposes) this change is referred to as site gain. When estimating how condition may change, an understanding of the inherited characteristics of ecosystems arising from evolutionary history, and consideration of what will be possible in future (given any prior irreparable damage and ongoing changes in climate) are both required. Site gain is a key input in determining the gain in the contribution to biodiversity that native vegetation offsets can generate.

Methods

Site gain is estimated by specifying changes in the security and management of native vegetation and applying rules about the expected increase over a defined period in the different site condition attributes. Site gain is scored in habitat hectares, and measures improvements in condition from actions which exceed any existing land management obligations.

More detailed information on the method for calculating gain can be found in the *Native vegetation gain scoring manual (version 1)* and at www.depi.vic.gov.au/nativevegetation.

2.3.3 Native vegetation condition modelling

Purpose

Decision makers require a model of native vegetation condition across the landscape for several purposes:

- as an input to contextual analyses; for example, when prioritising options, high condition is preferred to low condition (all other things being equal)
- as an input to predicting the return on investment for projects and program evaluations
- as the initial approximation of site condition score for some regulatory assessment pathways.

Methods

The model is based on a two stage process. Firstly, survey data on a number of site condition attributes from known high condition sites are extrapolated to produce a spatial model of the benchmarks. Secondly, current site condition data from a large number of sites are combined with the benchmark model and a range of other environmental data to predict the current condition of native vegetation across the landscape.

Links

Native vegetation condition modelling is part of the process for analysing strategic biodiversity value.

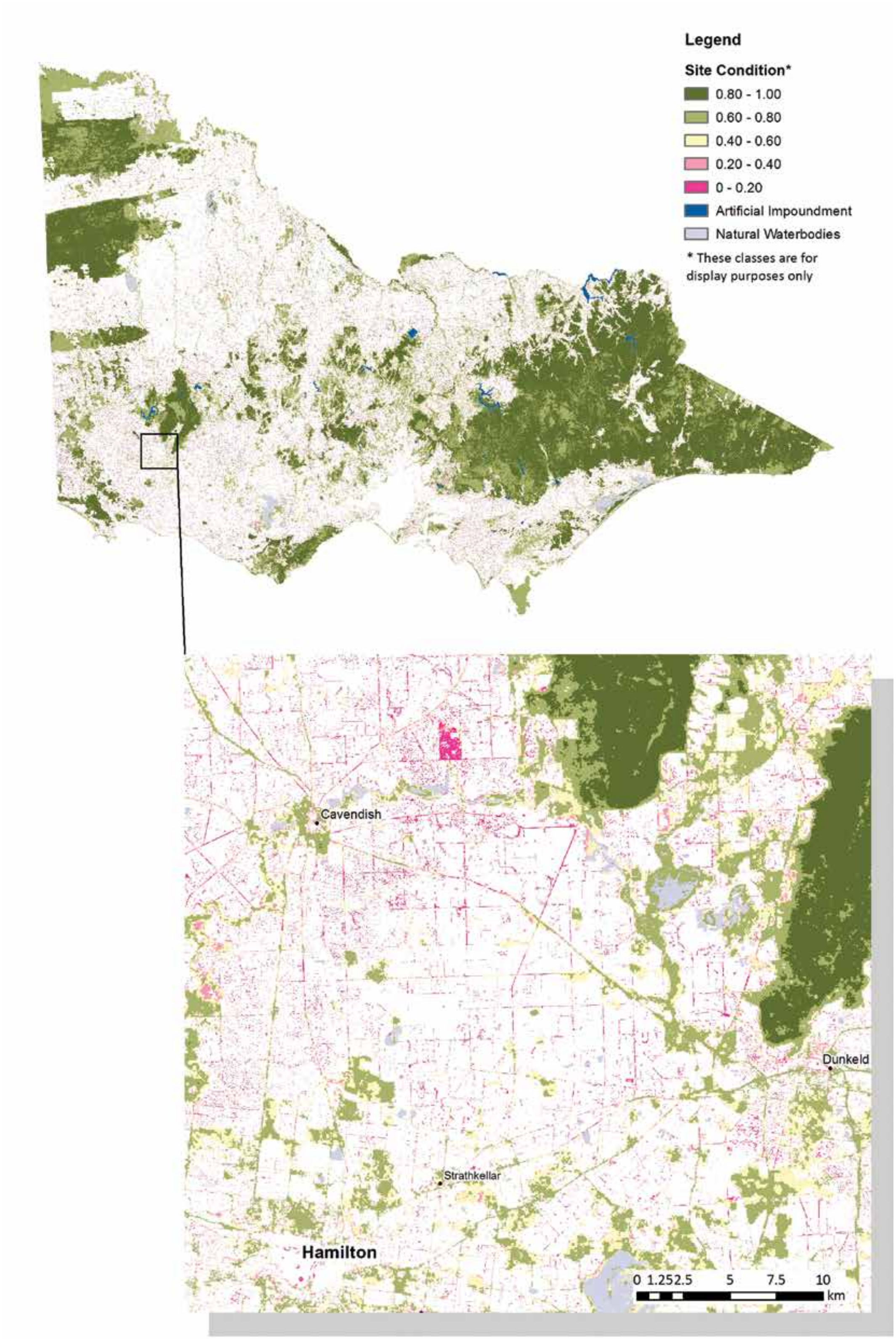
Product access and updating

More detailed information on the method can be found at www.depi.vic.gov.au/nativevegetation.

Periodic re-modelling of native vegetation condition can occur when significant new acquisitions of imagery and site data occur – this is normally in a five to ten year timeframe, depending on the availability of resources.

Refinements of mapped data during a site assessment may be appropriate when this information affects the amount of impact or benefit.

Figure 3: Example of native vegetation site condition mapping



2.4 Connectivity

Purpose

Ecological function at the landscape scale is a key consideration in planning for healthy and resilient natural systems. Connectivity in natural systems is important for a range of reasons, for example:

> the vigour of species and/or populations can be limited by how much habitat is available

> the ability for species to recolonise areas following major disturbances (for example, fires or floods) depends on the amount and location of adjacent undisturbed habitats

> in fragmented landscapes, gaps between remaining areas of habitat limit the movements of species through landscapes and reduce their options for maintaining genetic diversity

> the need to adapt to climate change accentuates the importance of these considerations and will influence the way they need to be considered.

Regulatory and investment decisions requires an awareness of how these broader scale strategic considerations influence native vegetation.

Methods

Assessment of connectivity considers the following components:

1. Retained landscape context – how much native vegetation or habitat remains, where is it located and how might it support landscape scale connections or flows for species (both individuals in the short term, and populations in the longer term). Retained landscape context is currently considered using two different methods. Firstly, a stand alone spatial analysis focused at the site scale which considers how much native vegetation or habitat is around a particular site and how far away it is. This is calculated at multiple scales to reflect the needs of a variety of species. Secondly, as part of integrated strategic value analysis (see Section 2.6) that considers the spatial aggregation of values and gives preference to more consolidated options.
2. Future landscape context – as species adapt to climate change, which locations will have enhanced importance (e.g. refugia) and which species combinations will establish dominance in which settings. Assessment work is currently exploring this issue based on species habitat modelling (see Section 2.5) and climate envelope scenarios, although there are inherent limitations because of difficulties in predicting the results of competition between species.
3. Levels of ecological functionality – how much retained (or improved) context is needed to provide for sufficiently resilient species, ecological systems and processes. This largely remains in the field of research, although some 'rules of thumb' are emerging.
4. Levels of engagement – how communities and resource managers within key landscapes can be motivated and enabled to achieve sufficient levels of ecological functionality. Practical methods for explicitly including this dimension in strategic and operational decision making are in the early stages of development.

Links

Landscape context is an important consideration when measuring strategic biodiversity value, both within integrated analyses (see Section 2.6) and to mask out low value areas in the *Strategic biodiversity map*.

2.5 Species habitat distributions

Purpose

Species have many different habitat requirements: they need feeding and breeding opportunities, they must tolerate climates and episodic disturbances, and they must interact successfully with each other. Consequently, different species are found in different locations across the landscape. Some species have highly specific habitat requirements, while other species can thrive in a number of different habitat types. It is important to understand the distribution of a species' preferred habitat as part of making decisions that enable species to persist in the future. Modelling past and current distributions may provide insights into how species will redistribute themselves in future as part of adaptation to climate change. Individual field observations of species are a critical source of information, however extrapolation by modelling is essential to put these observations in context.

2.5.1 Species habitat distribution models

Methods

Species Habitat Distribution Models (HDM) predict the suitability of a location for a particular flora or fauna species based on its geographic and environmental characteristics. HDMs were developed using:

> mapped presence data available from across Victoria, and neighbouring parts of New South Wales and South Australia

> systematically allocated absence data, which informs the analysis about the environments where the species is highly unlikely to occur

> techniques which address the uneven sampling in the Victorian Biodiversity Atlas, and also provide estimates of the variation in certainty in models across the landscape.

Models have been developed for all rare or threatened Victorian species where sufficient data is available. Each model shows the relative likelihood that an area is habitat, from highly likely to highly unlikely (i.e. the model is a continuous index of suitability).

Models of habitat are not intended to be equated with species presence. Other factors such as natural disturbances, losses due to historic catastrophes, and the impact of predators and seasonal factors all influence whether a species is present in habitat at any given time.

For use in the permitted clearing of native vegetation regulation, two further steps are taken with HDMs:

> thresholds are applied to the models because lower likelihood areas do not receive species-specific consideration in the assessment process

> to guide application of a risk-based approach to regulating habitat loss, habitats for rare or threatened species are divided into two groups depending on how much suitable habitat is remaining for each species.

Highly localised habitats for rare or threatened species

Highly localised habitats for rare or threatened species are very limited in extent and typically are also geographically highly restricted. For example, some species may only be found in one or two locations over a few hundred hectares. The applied threshold is less than 2000 ha which is based on the area of occupancy threshold for the IUCN Red List VU D2 criterion. Highly localised habitats can also include a similarly limited sub-habitat that is disproportionately important for a wide-ranging rare or threatened species. For example, some species have very localised breeding or roosting colonies. All mapped and modelled highly localised habitats are considered to be of equal importance for that species, as even one instance of vegetation removal (habitat loss) could result in a significant biodiversity impact. Highly localised habitats are modelled where data is adequate, or where this is not the case, they are represented by the buffering of known site records.

Dispersed habitats for rare or threatened species

Dispersed habitats for rare or threatened species are less limited in extent and less restricted than highly localised habitats. Dispersed habitats often arise where originally widespread habitats have become significantly depleted and fragmented. In this situation, many locations contribute to providing habitat for a species and there is merit in discriminating between the relative contribution of each location (see Section 2.5.2).

Links

HDMs are based on records provided through the Victorian Biodiversity Atlas (VBA), a web-based information system designed to manage information about native and naturalised species occurring in Victoria. The system includes species attribute information, including origin, conservation status, vital attributes and life-form, along with more than six million records of species distribution and abundance, including systematic survey data, herbarium and museum records, and general observations. The VBA replaced several earlier systems, including the Flora Information System, the Atlas of Victorian Wildlife, the Aquatic Fauna Database and the VROTPop system. The VBA encompasses vertebrate and invertebrate animals, vascular and non-vascular plants, and fungi. It also encompasses terrestrial and aquatic environments, including marine waters to the three nautical mile statutory limit. The VBA can be accessed at http://vba.dse.vic.gov.au/vba/. The general public have access to basic information, while registered users can also directly contribute new data. DEPI manages the data in conjunction with key partners, including reviewing new records and managing the consequences of taxonomic and naming changes. Access to VBA is free of charge but there may be restrictions on use and/or costs imposed by some of the data owners (not all of the data in the VBA are owned by DEPI).

HDMs are used to create species habitat importance models (see next Section).

Product access and updating

More detailed information can be found at www.depi.vic.gov.au/nativevegetation.

Species Habitat Distribution Models can be viewed via DEPI Website – Biodiversity Interactive Map http://mapshare2.dse.vic.gov.au/MapShare2EXT/imf.jsp?site=bim

Lists of which rare or threatened species are classified as highly localised or dispersed habitats can be found at www.depi.vic.gov.au/nativevegetation.

Periodic re-analysis of species models will be desirable every one to two years, particularly if there is an influx of new records as part of a major project. New species records will be quality assured through the standard processes of the VBA.

2.5.2 Species habitat importance models

Purpose

In addition to knowing where habitats occur, information on the relative importance of locations for each species improves the targeting of management and the risk assessment pathways for regulations. Habitat importance models (HIMs) provide a measure of the importance of a location in the landscape as habitat for each rare or threatened species in relation to other suitable habitats for that species.

A habitat importance score has been developed and measures the importance of a location in the landscape for rare or threatened species[5]. If native vegetation at a site provides habitat for multiple rare or threatened species, it will have a habitat importance score for each species.

Methods

Relative suitability of habitat and the modelled landscape context of native vegetation are combined by geometric mean to provide the habitat importance score for these models.

Product access and updating

Details for accessing species habitat importance models can be found at www.depi.vic.gov.au/nativevegetation.

Habitat importance maps have been prepared for use in the native vegetation permitted cleaning regulations.

Improvements in data and methods will periodically enhance the determination of habitat importance scores, with priority given to species that have drivers of habitat importance that are not well reflected by the general approach. For example, wide ranging fauna species which have different breeding and feeding sub habitats.

Revisions of native vegetation extent may trigger the need to update HDMs and HIMs to account for the effect of any significant occurrences of losses or gains.

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5 Rare or threatened species are species listed in:

- DEPI's Advisory List of Rare or Threatened Plants in Victoria as 'endangered', 'vulnerable', or 'rare', but does not include the 'poorly known' category
- DEPI's Advisory List of Threatened Vertebrate Fauna in Victoria as 'critically endangered', 'endangered' or 'vulnerable', but does not include 'near threatened' or 'data deficient' categories
- DEPI's Advisory List of Threatened Invertebrate Fauna in Victoria as 'critically endangered', 'endangered' or 'vulnerable', but does not include 'near threatened' or 'data deficient' categories.

Figure 4a: Example map of species habitat importance model – Brush-tailed Phascogale (for dispersed habitat – areas are ranked in terms of importance)

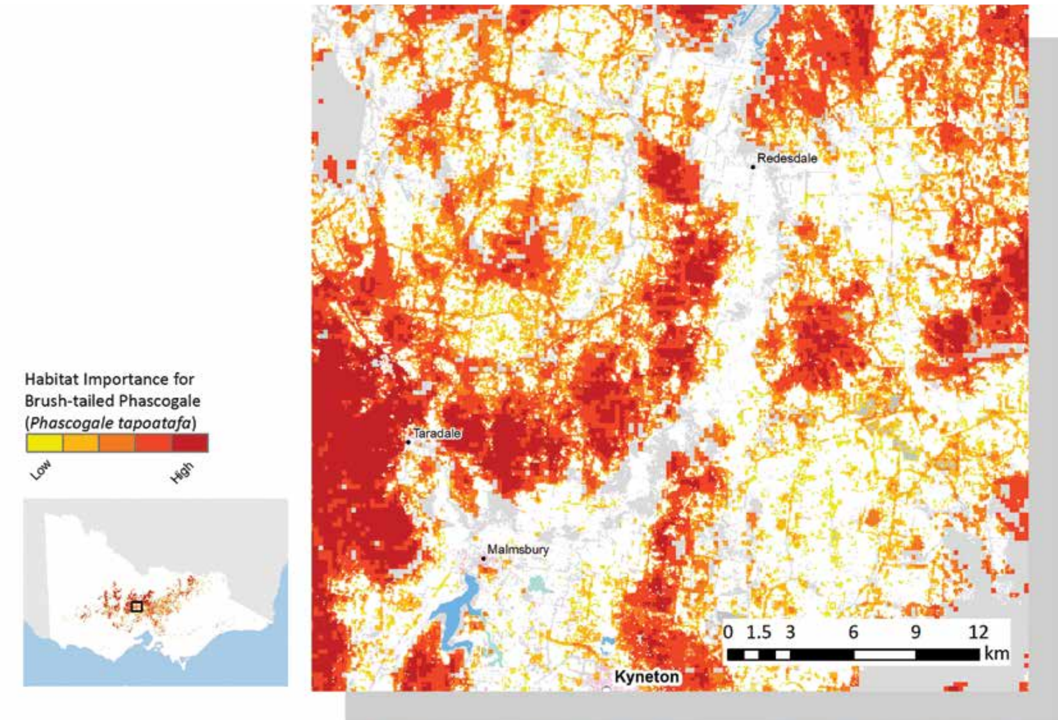
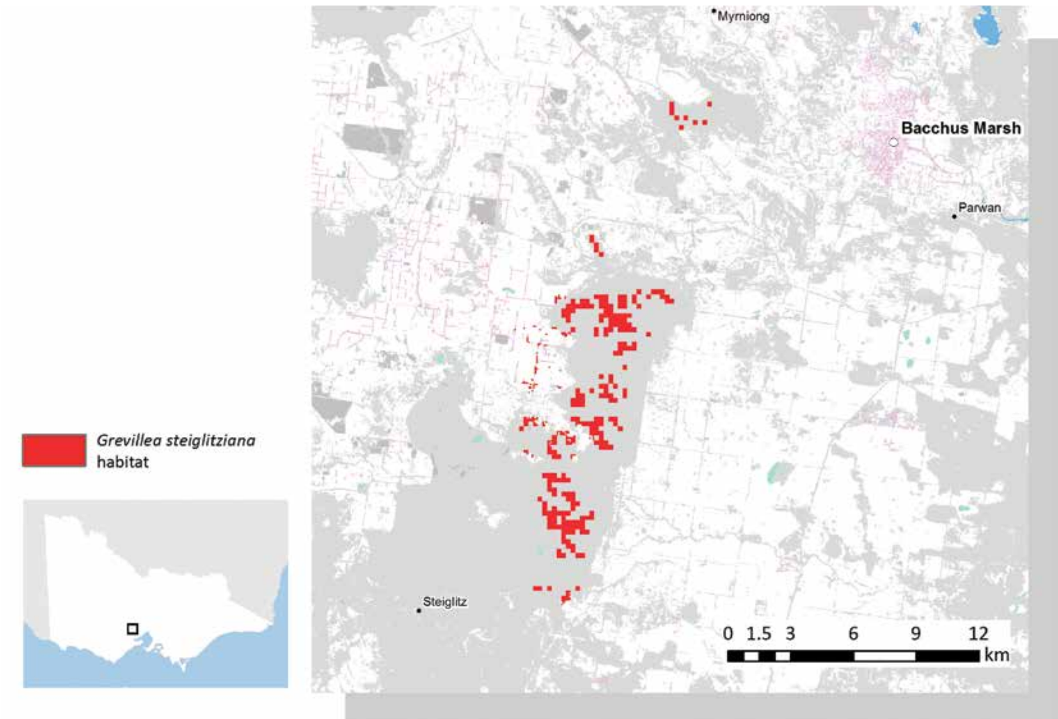


Figure 4b: Example map of species habitat importance model – *Grevillea steiglitziana* (for highly localised habitat – all is considered equally important)



2.6 Strategic biodiversity value

Purpose

Decision makers need access to an objective, comprehensive and spatially explicit view of strategic biodiversity values. This needs to be more than just a description of the significant biodiversity characteristics at each site, it needs to identify the value of a site relative to the value of all other locations across the Victorian landscape. DEPI's NaturePrint initiative coordinates the development and application of datasets and techniques to enable this view. Ideally, these analyses would be based on complete information on all biodiversity and relevant ecological considerations at all places in Victoria. Given this level of information is not available, the NaturePrint approach relies on robust modelling and extrapolation from available primary data to describe vegetation patterns or types, species habitat distributions and native vegetation condition and context (see earlier Sections). Poorly known biodiversity assets (for example invertebrates and fungi) rely on these analyses to be surrogates for their consideration.

Methods

Identifying the relative value of all locations requires the combination of information on the many different types of biodiversity and the characteristics of the landscape that influence the opportunities for their conservation. NaturePrint uses Zonation conservation planning software[6] for this purpose. The objective of the analysis is to rank all locations across Victoria for their ability to represent all the biodiversity types of interest (hundreds of vegetation types and species) on the basis of efficient and effective spatial coverage of these types. As the various values of different locations are compared, wherever two locations have the same values the preference is given to the location with better vegetation condition. The analysis is bottom-up and iterative. It starts with a predetermined set of locations that are more or less devoid of biodiversity value. The lowest rank (i.e. the place which is the most degraded and poorly located example of the most common biodiversity type) is chosen first, then the analysis is rerun to identify the next lowest contribution. This enables the progressive identification of the most consolidated spatial configuration whilst ensuring simultaneous and equitable consideration of good options for each individual type. The analysis places all locations on a continuous spectrum of relative overall value, but does not identify how much of this spectrum can or should be managed for conservation.

For use in the native vegetation permitted clearing regulations, the strategic biodiversity value ranking is converted to a score that enables the strategic importance of different locations to be directly compared in numerical terms (e.g. such that a location with a score of 0.4 can be considered to be twice the strategic value of a location with a score of 0.2). This score is combined with the extent of any potential impact to identify the relative risk to biodiversity of that particular proposal. This enables risk and proportionality to be better reflected in the application and decision making processes for native vegetation permitted clearing.

Product access and updating

A *Strategic biodiversity map* provides a strategic view of the relative importance of native vegetation and potential revegetation areas for the conservation of Victoria's biodiversity.

More detailed information on the NaturePrint approach can be found at www.depi.vic.gov.au/nativevegetation.

The *Strategic biodiversity map* can be viewed via DEPI Website – Biodiversity Interactive Map http://mapshare2.dse.vic.gov.au/MapShare2EXT/imf.jsp?site=bim

Periodic re-analysis will be undertaken within a year of implementation of the reforms to the native vegetation permitted clearing regulations, and subsequently is expected every one to two years, depending on need and the availability of resources.

Revisions of native vegetation extent may trigger the need to update the *Strategic biodiversity map* to account for the effect of any significant occurrences of losses or gains.

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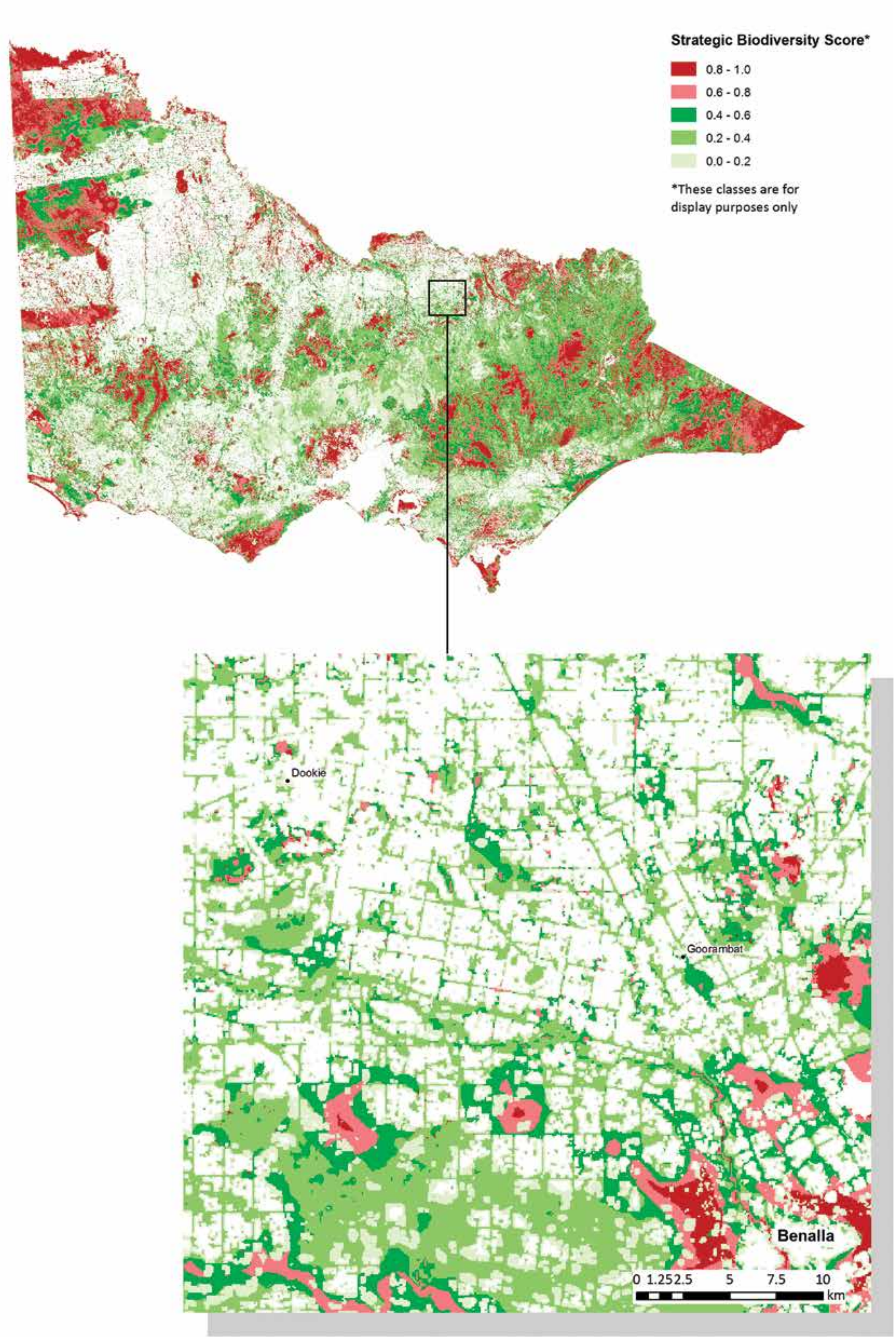
6 http://cbig.it.helsinki.fi/software/zonation

Figure 5: Example of strategic biodiversity mapping



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