

## Species & Communities of Interest

Biosis projects involve work that relates to an enormous range of threatened species and communities. Below are some of the species and communities of interest that have been present within our recent projects.

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Common name or name of Community	Scientific name	Brief description of work completed
Growling Grass Frog	<i>Litoria raniformis</i>	Biosis has completed targeted surveys, monitoring, salvage operations, and site-management plans for the GGF. A significant habitat modelling exercise has been undertaken for Department of Sustainability and Environment Victoria. In 2011 and 2012 a research project has been undertaken to investigate movements and survival of Growling Grass Frogs translocated into newly created habitat at the Aurora development at Epping Victoria.
Striped Legless Lizard	<i>Delma impar</i>	Multiple large-scale surveys and salvage operations have been completed for the Striped Legless Lizard on projects within the ACT and Victoria. Biosis' detailed knowledge and experience with the species led to an engagement with the Victorian Department of Sustainability and Environment to prepare a Strategic Approach and Operational Plan for translocation of the species in the Melbourne growth area as part of the Strategic Impact Assessment of the expanded Melbourne Urban Growth Boundary.
Southern Bent-wing Bat	<i>Miniopterus schreibersii bassanii</i>	Biosis uses the latest in fauna detection technology to conduct surveys for Southern Bent-wing Bat in western Victoria. Experienced Biosis zoologists use remote bat call detectors as well as thermal imaging technology to conduct seasonal investigations of roost-site caves for the purposes of estimating potential effects of wind energy developments. Biosis has analysed survey findings to develop a habitat preference model for the species. Biosis has also compiled several bird and bat management and monitoring plans for wind energy facilities throughout the range of this species in Victoria and South Australia.

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Golden Sun-moth	<i>Synemon plana</i>	Biosis has undertaken hundreds of surveys for Golden Sun-moth across Victoria, NSW and the ACT, and has discovered several new populations. This has included co-ordination of regional-wide surveys for the species throughout remnant grassland areas; evaluation of the broad scale distribution of the species; and development of rigorous survey methods. Biosis has established Golden Sun-moth offset sites, prepared species management plans and undertaken monitoring of populations.
Corangamite Water Skink	<i>Eulamprus tympanum marnieae</i>	As part of the ecological assessments for the expansion of the Colac Quarry, Biosis conducted long-term surveys and wrote a conservation management plan for Corangamite Water Skink.
Alpine She-oak Skink	<i>Cyclodomorphus praealtus</i>	The Alpine She-oak Skink was the subject of targeted survey work in the Mount Hotham area. The results were used to inform development in the village area, and for a major new ski-field assessment.
Grassland Earless Dragon	<i>Tympanocryptis pinguicolla</i>	Novel techniques have been employed to search for Grassland Earless Dragon in remnant native grassland areas in the ACT and west of Melbourne. Survey techniques include use of optical laparoscopy to inspect spider burrows, as well as the use of artificial arthropod burrows.
Brown Toadlet Southern Toadlet	<i>Pseudophryne bibroni</i> <i>Pseudophryne semimarmorata</i>	Biosis has conducted multiple surveys for these two species in the urban fringe of Melbourne and for the proposed Dundas Tablelands Wind Farm.
Alpine Tree Frog	<i>Litoria verreauxii alpina</i>	Alpine Tree Frog has been the subject of targeted surveys in the Mount Hotham area to assist with the design of walking trail developments and the proposed Wire Plain Car Park.
Dwarf Galaxias Australian Grayling	<i>Galaxiella pusilla</i> <i>Prototroctes maraena</i>	Biosis aquatic ecologists have conducted surveys for these species across southern Victoria as part of ecological assessment work on numerous urban development proposals; the Victorian Desalination Project Transfer Pipeline; and for Catchment Management Planning.
Brolga	<i>Grus rubicunda</i>	Biosis zoologists recently took to the skies to conduct aerial surveys to locate breeding sites in south-western Victoria. On the ground, Biosis has undertaken detailed home-range study of breeding Brolgas in the Penshurst area to determine turbine-free buffer areas for wind farm design. Collision-risk modelling has been undertaken for Brolgas at the proposed Stockyard Hill, Mortlake and Penshurst wind farms. Biosis zoologists are part of the Victorian Brolga Research Project Scientific Advisory group.

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Plains Wanderer	<i>Pedionomus torquatus</i>	The grasslands of the western Melbourne Urban Growth Area are home to many significant, yet often highly cryptic species, like the Plains Wanderer. Biosis zoologists work with specially trained pointer dogs to detect this small ground bird.
Hooded Plover	<i>Thinornis rubricollis</i>	A 12-month monitoring program of the Williamson's Beach population, including assessment of breeding success, was conducted as part of Biosis ecological investigations for the Victorian Desalination Project.
Orange-bellied Parrot	<i>Neophema chrysogaster</i>	In order to ascertain potential impacts of proposed commercial-scale wind energy developments on the Orange Bellied-parrot, Biosis undertook surveys across the species range in western Tasmania, south-western Victoria and south-eastern South Australia.
Mallee Emu-wren	<i>Stipiturus mallee</i>	Biosis conducted regional surveys for Mallee Emu-wren within suitable age-class Mallee habitats as a component of assessment of the proposed Long-term Waste Storage Facility at Nowingi, Victoria.
Southern Brown Bandicoot	<i>Isoodon obesulus obesulus</i>	The Department of Sustainability and Environment engaged Biosis to deploy remote sensor cameras across large areas of Southern Brown Bandicoot habitat in the Yarra Valley and Westernport regions.
Mountain Pygmy Possum	<i>Burramys parvus</i>	Biosis has worked with several stakeholders to develop Recovery Plans for the Mount Buller population of the Mountain Pygmy-possum.
Broad-toothed Rat	<i>Mastacomys fuscus</i>	Working for the Victorian Department of Sustainability and Environment, Biosis zoologists used remote sensor cameras to determine the presence of Broad Toothed-rat in areas of habitat that were burnt in the 2009 wildfires.
<p>Plains Grassland EVC</p> <p>Western (Basalt) Plains Grasslands Community (FFG Act listed as threatened)</p> <p>Natural Temperate Grassland of the Victorian Volcanic Plain (EPBC Act listed as critically endangered)</p>		<p>Biosis has undertaken numerous surveys of these grassland communities to the north and west of Melbourne. Information about their extent and quality is used to plan for potential impacts, and also for the development of management plans aimed at restoration of this community within reserves. Biosis has developed programs and are monitoring management of this community in grassland reserves at Epping, Altona and Bundoora. The distribution of the Natural Temperate Grassland of the Victorian Volcanic Plain was mapped at 1:5,000 scale as part of the Strategic Impact Assessment for Melbourne's western growth areas. The community also contains several threatened species for which targeted surveys and habitat assessment have been undertaken. Assessments were undertaken on both private and public land and reports will inform the future management and conservation of this community.</p>

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<p>Plains Woodland EVC</p> <p>Grey Box (<i>Eucalyptus microcarpa</i>) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (EPBC Act listed as endangered)</p>		<p>One of the few remnants of this community in the greater Melbourne area was assessed in detail. Biosis botanists determined native vegetation offset potential, and developed a management plan for the community.</p>
<p>Plains Grassy Woodland EVC Western Basalt Plains (River Red Gum) Grassy Woodland Floristic Community (FFG Act listed as threatened) Grassy Eucalypt Woodland of the Victorian Volcanic Plain (EPBC Act listing as critically endangered)</p>		<p>Biosis worked with the Victorian Department of Sustainability and Environment to plan a woodland reserve in northern Melbourne as part of the Strategic Impact Assessment Report (SIAR) process.</p>
<p>Herb-rich Plains Grassy Wetland (West Gippsland) Community (FFG Act listed as threatened) Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (EPBC Act listed as critically endangered)</p>		<p>These communities have been surveyed and mapped as part of Biosis work on major projects including road and windfarm installations. The Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains community was mapped in areas of farmland in Victoria's west to assist with planning for the placement of wind turbines and associated infrastructure. Biosis has also developed a monitoring program for a wetland reserve area at Seaford. The program will monitor native plant and weed cover over ten years to guide management at maintaining suitable ecological condition. The site, which contains two state significant plant species, is an important example of this community in the Melbourne area.</p>

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Spiny Rice-flower	<i>Pimelea spinescens</i>	Biosis lead the development of survey protocols for Spiny Rice Flower and has also developed the translocation protocols in conjunction with the Spiny Rice Flower recovery team. Biosis has supervised and managed the salvage and monitoring of translocated plants at various sites, including the plants from the Deer Park Bypass (into the Ravenhall Grasslands on behalf of VicRoads) and Cairnlea (on behalf of VicUrban, now Places Victoria). In 2006, Biosis undertook mapping of grassland habitat for Spiny Rice-flower throughout the City of Hobsons Bay. Biosis prepared a management plan for areas containing this species within Caroline Springs residential development.
Matted Flax-lily	<i>Dianella amoena</i>	Biosis has been involved in developing the translocation and monitoring protocols for Matted Flax-lily. Biosis has managed the translocation of plants and subsequent monitoring at a number of sites, including the Aurora Development (Epping, for Places Victoria), Melbourne Wholesale Markets (Department of Business & Innovation) and Lancaster Gate (also for Places Victoria).
Coastal Upland Swamp of the Sydney Basin Bioregion		As a part of the longwall mining ecological monitoring programs, Biosis undertakes detailed quantitative monitoring of this Endangered Ecological Community (EEC) using a Before-After Control-Impact survey design. The aim of the ecological monitoring of upland swamps is to determine whether changes in hydrology (potentially resulting from subsidence associated with longwall mining) result in changes to the flora species richness and diversity .
Littlejohn's Tree Frog	<i>Litoria littlejohnii</i>	Biosis undertakes detailed quantitative monitoring of this threatened species as a part of the longwall mining ecological monitoring programs. The aim of the ecological monitoring of this threatened species is to determine whether changes in hydrology (potentially resulting from subsidence associated with longwall mining) result in impacts to breeding habitat for this species and whether this results in changes to the distribution of the species.
Green and Golden Bell Frog	<i>Litoria aurea</i>	Biosis has undertaken impact assessment and monitoring for Green and Golden Bell Frog. Starting with baseline habitat assessment, to targeted surveys and implementation of monitoring programs, Biosis has a detailed understanding of the key aspects of this species ecology.
Hairy Joint Grass	<i>Arthraxon hispidus</i>	Biosis has undertaken targeted surveys for Hairy Joint Grass in northern NSW.
Square-stemmed spike rush	<i>Eleocharis tetraquetra</i>	Biosis has undertaken targeted surveys for Square-stemmed Spike Rush in northern NSW.

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Freshwater wetlands on Coastal Floodplains EEC		Biosis has conducted surveys to determine the location and extent of this community at sites in northern NSW. Biosis provided management recommendations to avoid and mitigate impacts to this community.
Macquarie Perch	<i>Macquaria australasica</i>	Macquarie Perch has been the target of survey work within the Sydney Catchment Area. Biosis has been involved with the species translocation in the ACT.
Alpine <i>Sphagnum</i> Bogs and Associated Fens; Alpine Bog Community; Alpine Snowpatch Community; and <i>Caltha introloba</i> Herbland Community (now <i>Psychrophila introloba</i> ).	N/A	Significant, yet often small in size, these communities respond to specific hydrological regimes in Victoria's alpine environment. As part of ongoing work in the alps, Biosis has surveyed and mapped these communities at a number of locations in Mount Buller, Mt Stirling, Mount Hotham and Falls Creek Alpine Resorts as well as the Alpine National Park. Biosis botanists have assessed community condition, threats and potential impacts from development, including recommendations to protect and manage these areas.
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland		Biosis has been involved in numerous small and large-scale projects across northern Victoria and the ACT which involved the mapping of this community and subsequent preparation of Ecological Due Diligence Reports and Ecological Impact Assessments. Several of these projects have also included targeted surveys for the threatened flora and fauna associated with this ecological community.
Pink-tailed Worm-lizard	<i>Aprasia parapulchella</i>	Biosis has played a key role in survey and management of this species, especially in recent years. Biosis conducted the habitat assessment, targeted surveys, impact assessment, management plan (including the design of a Pink-tailed Worm-lizard Conservation Area) and provision of Commonwealth EPBC Act Referral advice regarding the Pink-tailed Worm-lizard for the new Googong Township in NSW (2010-2012). Biosis has also conducted numerous rock turning targeted surveys for this species throughout the ACT and the surrounding areas of NSW.
Trailing Hop Bush	<i>Dodonaea procumbens</i>	Biosis has mapped the distribution of Trailing Hop-bush in the Wimmera, written translocation plans and recommended measures to mitigate impacts to roadside populations.
Koala	<i>Phascolarctos cinereus</i>	Biosis zoologists have conducted numerous Koala habitat assessments in Victoria, NSW and Queensland and have written Koala Management Plans to accompany planning applications and for incorporation into construction management plans.