

# Ecological Health Recommendations Work Plan

Species	Requirements (habitat/food)	Threats	Link to swimming in the river	Recommendations	Actions	Measure
Powerful Owl	<ul style="list-style-type: none"> <li>Habitat – forest and woodland, dense riparian vegetation, tree hollows.</li> <li>Food – possums, gliders, flying fox.</li> </ul>	Susceptible to loss of habitat, in particular, loss of large hollow bearing trees.	<p>The Powerful Owl's native vegetation habitat stabilises creek banks and acts as a filter that limits erosion and cleanses the water.</p> <p>This reduces the amount of sediment and pollutants, including litter, nutrients, oils, fertilisers and heavy metals, entering the waterways.</p>	<ul style="list-style-type: none"> <li>Maintain and enhance dense vegetation, including large canopy trees.</li> <li>Maintain presence of hollow bearing trees, and encourage man-made hollows for the owls to roost.</li> <li>Benefits of dense vegetation: <ul style="list-style-type: none"> <li>Habitats for Ring-tailed Possums, the main food source of the Powerful Owl.</li> <li>Stops erosion of the river bank.</li> <li>Filters sediment and pollutants from entering the water.</li> <li>Creates shade and pleasant recreational areas for people.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Map the presence of hollow bearing trees in the catchment.</li> <li>Encourage strategic installation of man-made hollows.</li> <li>Work with councils to provide dense vegetation habitat.</li> <li>Establish and promote Citizen Science app for iconic species.</li> </ul>	Hollow bearing trees mapped. Citizen Science sightings of species.
Southern Myotis	<ul style="list-style-type: none"> <li>Habitat – tree hollows, slow flowing water, dense riparian vegetation.</li> <li>Food – aquatic macroinvertebrates.</li> </ul>	Susceptible to loss of habitat in particular loss of large hollow bearing trees and loss of macroinvertebrate food resources due to altered water quality and flows.	<p>Microbats live in the riparian native vegetation which stabilises creek banks and acts as a filter that limits erosion and cleanses the water.</p> <p>Macroinvertebrates, that rely on as a good source, are highly sensitive to poor water quality.</p>	<ul style="list-style-type: none"> <li>Maintain and enhance dense vegetation, such as walls of canopy trees to create habitats for the Southern Myotis.</li> <li>Encourage installation of man-made bat flats as homes for the microbats.</li> <li>Benefits of dense vegetation: <ul style="list-style-type: none"> <li>Stops erosion of the river bank and reduces turbidity in the river, providing improved water clarity for a more pleasant swimming experience.</li> <li>Filters sediment, nutrients and other pollutants from entering the water, thereby improving water quality for swimming.</li> <li>Creates shade and pleasant recreational areas for people.</li> <li>Reduces weed cover and maintenance of vegetation.</li> <li>Provides habitat for many other desirable animals, including the Powerful Owl.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Map riparian vegetation.</li> <li>Work with councils to identify areas to provide dense riparian vegetation.</li> <li>Establish and promote Citizen Science app for iconic species.</li> </ul>	Citizen Science sightings of species.
Striped Marsh Frog	<ul style="list-style-type: none"> <li>Habitat – wetlands, floodplains, flooded grassland, woodlands, slow moving creeks, pools and ponds.</li> <li>Food – will eat anything smaller than it.</li> </ul>	Susceptible to degraded water quality, herbicides and pesticides.	<p>Frogs are freshwater bio-indicators – animals and plants that can be used to determine the health of freshwater habitats.</p> <p>They are very sensitive to water pollution which means that changes in the abundance and diversity of frogs can be used as a measuring tool to determine water quality.</p>	<ul style="list-style-type: none"> <li>Construction of offline wetlands to treat low flow stormwater with deep pools for habitat. High flows will be bypassed to balance water quality improvements with the community's desire for healthy and productive wetlands that support wildlife including Striped Marsh Frogs and Long-necked Turtles.</li> <li>Benefits of constructed wetlands: <ul style="list-style-type: none"> <li>Removes pollutants from stormwater runoff, thereby improving river quality for swimming (e.g. reduces nutrients, sediment and rubbish entering the river).</li> <li>Reduces flow velocity into the river, thus increasing the biological health of the river.</li> <li>Creates pleasant environments for many passive recreational pursuits.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Map current wetlands.</li> <li>Identify areas suitable for new offline wetlands.</li> <li>Build capacity of community and councils to understand, build and maintain wetlands.</li> <li>Establish and promote Citizen Science app for iconic species.</li> </ul>	<ul style="list-style-type: none"> <li>Number of wetlands in catchment.</li> <li>Key habitat areas mapped and</li> <li>referenced in strategic plans and LEPs.</li> <li>Citizen Science sightings of species.</li> </ul>
Eastern Long-necked Turtle	<ul style="list-style-type: none"> <li>Habitat – rivers, lakes, swamps and ponds, including farm dams.</li> <li>Food – invertebrates such as worms, snails and insect larvae.</li> </ul>	Susceptible to decline in water quality, entanglement in rubbish, loss of habitat.	The vegetation of the turtle's habitat helps stabilise banks and protect from erosion. Its invertebrate food sources are also sensitive to changes in water quality.	<ul style="list-style-type: none"> <li>Construction of offline wetlands to treat low flow stormwater with deep pools for habitat. High flows will be bypassed to balance water quality improvements with the community's desire for healthy and productive wetlands that support wildlife including Striped Marsh Frogs and Long-necked Turtles.</li> <li>Benefits of constructed wetlands: <ul style="list-style-type: none"> <li>Removes pollutants from stormwater runoff, thereby improving river quality for swimming (e.g. reduces nutrients, sediment and rubbish entering the river).</li> <li>Reduces flow velocity into the river, thus increasing the biological health of the river.</li> <li>Creates pleasant environments for many passive recreational pursuits.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Map current wetlands.</li> <li>Identify areas suitable for new offline wetlands.</li> <li>Build capacity of community and councils to understand, build and maintain wetlands.</li> <li>Establish and promote Citizen Science app for iconic species.</li> </ul>	Citizen Science sightings of species.
Bar-tailed Godwit	<p>Habitat – Intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It is found often around beds of seagrass and, sometimes, in nearby saltmarsh.</p> <p>Food – molluscs, worms and aquatic insects.</p>	<p>Major threats to species includes habitat loss such as land clearing, reclamation and drainage of intertidal areas.</p> <p>Habitat degradation due to weed invasion, altered flows and water pollution.</p> <p>Bar-tailed Godwits also need to be separated from contact with humans, dogs, cats and foxes. Interaction scares off the Godwits and prevents them from feeding or breeding.</p>	<p>Mangroves and salt marshes provide breeding habitat for wading birds.</p> <p>These habitats improve water quality by filtering pollutants, stabilising and improving the soil and protecting shorelines from erosion and flooding.</p>	<ul style="list-style-type: none"> <li>Create oyster reefs as barriers to protect the mudflats that the Godwit relies on.</li> <li>Benefits of oyster reefs: <ul style="list-style-type: none"> <li>Provides a natural barrier between the shorebirds and human contact/recreational swimming areas, dogs, cats and foxes etc.</li> <li>Oyster reefs will buffer ferry wake, which destroys the mudflat areas where these shorebirds feed.</li> <li>Oyster reefs provide essential habitat structures for fish.</li> </ul> </li> </ul> <p>*Note: the Billion Oyster Project in New York has been incredibly successful and has driven mass community support. We are scoping the roll out of this project in the Parramatta River. <a href="http://www.billionoysterproject.org/">http://www.billionoysterproject.org/</a></p>	<ul style="list-style-type: none"> <li>Identify opportunities to create oyster reefs near mudflats.</li> <li>Identify opportunities for signage and education materials to protect mudflats and Bar-tailed Godwits.</li> <li>Promote intertidal habitat creation.</li> <li>Establish and promote Citizen Science app for iconic species.</li> </ul>	<ul style="list-style-type: none"> <li>Citizen Science sightings of species.</li> <li>Opportunities for oyster reefs identified.</li> </ul>