

Theme: Fauna

The Gippsland Lakes is recognised as a Wetland of International Importance under the Ramsar Convention, largely due to its role in supporting fauna. The site meets seven of the current listing criteria, six of which are related to fauna:

- Supports threatened species
 - Australasian bittern (*Botaurus poiciloptilus*)
 - Australian fairy tern (*Sternula nereis nereis*)
 - Curlew sandpiper (*Calidris ferruginea*)
 - Eastern curlew (*Numenius madagascariensis*)
 - Hooded plover (*Thinornis rubricollis rubricollis*)
 - Green and golden bell frog (*Litoria aurea*)
 - Growling grass frog (*Litoria raniformis*)
 - Australian grayling (*Prototroctes maraena*)
- Supports animal species in critical life stages of breeding, migration and drought refuge
- Supports > 20,000 waterbirds
- Supports > 1% of the population of three waterbird species:
 - Australian fairy tern
 - Chestnut teal
 - Little tern
- Provides important habitat for native fish, including nursery areas
- Supports > 1% of the population of the Burrunan dolphin (*Tursiops australis*)

The fauna of the Gippsland Lakes provide social, cultural and economic benefits to a wide variety of people. The lakes are an important commercial fishery with 10 Gippsland Lakes Fishery Access Licences and a further nine Gippsland Lakes (Bait) Fishery Access Licence holders. The site is also an important recreational fishery. Tourism for the Gippsland Lakes and broader East Gippsland region is estimated at \$267 million annually (Worley Parsons 2013).

Fish

Indicators and thresholds

Native fish abundance and diversity is critical to the ecological character of the Ramsar site and have been used as the indicators of condition. A recent assessment of fish stocks in the Gippsland Lakes derived thresholds for abundance as follows, and these have been adopted (Conron et al. 2016):

- Good = above average
- Fair = average
- Poor = below average
















In terms of diversity, the recent update to the ecological character description (Hale unpublished) recognised that there is insufficient data to set a quantitative LAC. This is also the case for setting condition thresholds related to fish diversity.

Locations

Native fish are important throughout the Ramsar site, in both the main lakes and the fringing wetlands. Data, however, are limited to the main lakes.

Results

Summary

Indicator	Status and trends				Summary	
	Unknown	Poor	Fair	Good		
Fish abundance					<p>The Gippsland Lakes is a recognised important commercial and recreational fishery and supports the largest commercial fishery of black bream in the State, accounting for 90 percent of the total catch. The Lakes also support diversity of native fish, that are not associated with commercial or recreational fisheries, with a total of 180 species recorded. Data on abundance and populations, is however, limited to fisheries species based on catch rates. Recent assessments by Fisheries Victoria have indicated that populations of black bream have remained stable over recent years, but numbers of juveniles have increased suggesting potential future increases in the adult population. There have been above average numbers of King George whiting and garfish. Populations of silver trevally may be in decline.</p>	
						Black bream
						King George whiting and Garfish
					Silver trevally	
	Data quality:  Fair					
	Data custodian: Fisheries Victoria					
Fish diversity					<p>The Gippsland Lakes support an abundance and diversity of native fish in addition to commercially and recreationally important species (Warry and Hindell 2012). Over 180 species of fish have been recorded within the Gippsland Lakes (Hindell, DELWP, unpublished data) spanning a wide range of life cycles.</p> <p>At this point in time, there is insufficient data to determine condition with respect to fish diversity.</p>	
	Data quality:  Poor					

Status

Black bream is the most targeted species in the Gippsland Lakes by both recreational and commercial fishers. An assessment of stocks and catch rates indicates that catch per unit effort (CPUE) is highly variable over time (Figure 1). The recent assessment by Fisheries Victoria indicating an average population in recent years which equates to “fair” with no sustained trend (Conron et al. 2016).

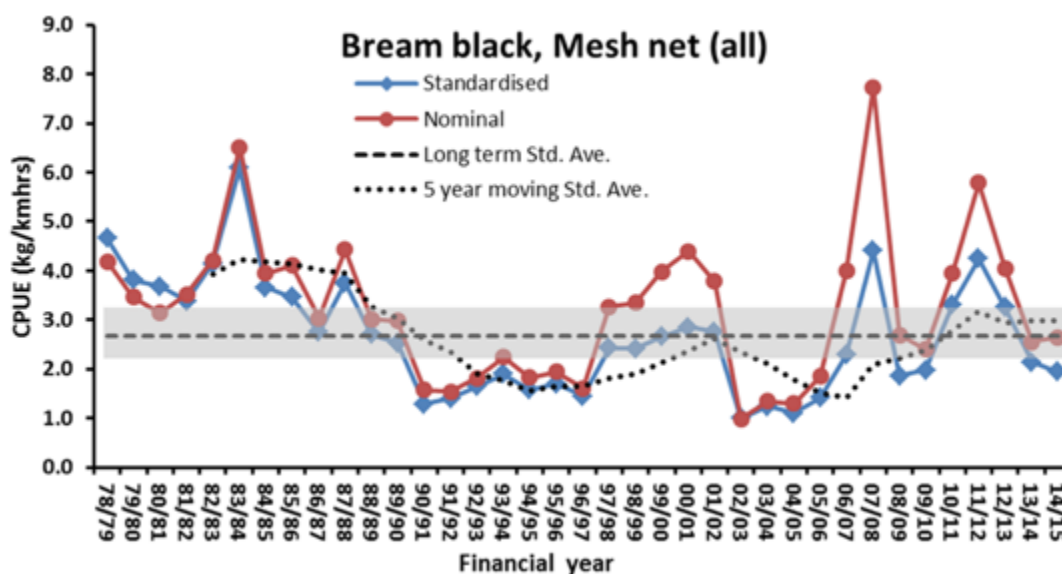


Figure 1: Catch per unit effort (kg/km/hr) for black bream from the Gippsland Lakes by mesh net from 1978/79 to 2014/15 (Conron et al. 2016).

Data on abundance of the next three most common fishery species is provided in Table 1. This indicates that two were “above average” in abundance over the past five years, representing “good” condition and one below average, representing poor condition.

Table 1: Stock status determinations using catch per unit effort (kg/km/hr) for key species of the Gippsland Lakes commercial fishery (Conron et al. 2016).

Measure	King George whiting	Garfish	Silver trevally
Long term average	3.6	13	21
Recent five year average	12	38	14
Trend in recent five years	Decreasing	Decreasing	Decreasing
Status	Above average	Above average	Below average

The Gippsland Lakes support an abundance and diversity of native fish in addition to commercially and recreationally important species (Warry and Hindell 2012). Over 180 species of fish have been recorded within the Gippsland Lakes (Hindell, DELWP, unpublished data) spanning a wide range of life cycles.

At this point in time, there is insufficient data to determine condition with respect to fish diversity.

Trend

The trend in abundance of indicator commercial fish species as provided by the fisheries stock assessment (Conron et al. 2016) was for a stable population of black bream, but recent deteriorating trends for King George whiting, garfish and silver trevally. The catch rates of all these species are highly variable and it is not known if this trend will be sustained.

Influencing factors and threats

Fish species within the Gippsland Lakes Ramsar site are distributed according to their salinity tolerances, availability of structural habitat and productivity. A number of freshwater native fish species occur in the freshwater and fresher areas of the variably saline fringing wetlands as well as the lower reaches of the rivers within the Ramsar site. This includes resident species that spend their entire lives within freshwater environments such as river blackfish (*Gadopsis marmoratus*); but more common are species that rely on the connection between freshwater and estuarine or marine environments to complete parts of their life cycles. This

includes species such as shortfin (*Anguilla australis*) and longfin (*Anguilla reinhardtii*) eels which live the majority of their lives in freshwater environments before migrating to the sea to breed and die, with young returning to freshwater; and species such as pouched lamprey (*Geotria australis*) that live the majority of their lives in marine environments, migrating to freshwater environments to breed.

There are a small number of estuarine resident fish species within the Gippsland Lakes such as river garfish (*Hyporhamphus regularis*), estuary perch (*Macquaria colonorum*) and black bream (*Acanthopagrus butcheri*) that reside in the estuarine areas of the site (including the large coastal lagoons). Salinity regimes are important for successful spawning and recruitment of these species, especially the recreationally important Black Bream (Hindell et al. 2008).

The majority of species are either estuarine opportunists or marine stragglers. These species stay in the lower to mid zones of the lakes (utilising marine habitats such as seagrass) until conditions become too fresh. Their use of the lakes is largely dependent on the extent of higher salinity conditions and the extent of seagrass habitats and these species will be displaced from the lakes during high freshwater inflows. This group includes conservation significant species groups such as pipefish, seahorses and dragons as well as larger species such as wrasse, cod and dory.

References

- Conron, S., Giri, K., Hall, K., and Hamer, P. (2016). Gippsland Lakes Fisheries Assessment 2016. Department of Economic Development, Jobs, Transport and Resources, Queenscliff, Victoria.
- Hindell, J.S., Jenkins, G.P., and Womersley, B. (2008). Habitat utilisation and movement of black bream *Acanthopagrus butcheri* (Sparidae) in an Australian estuary. *Marine Ecology Progress Series* **366**: 219–229.
- Warry, F.Y. and Hindell, J.S. (2012). Fish Assemblages and Seagrass Condition of the Gippsland Lakes. Arthur Rylah Institute for Environmental Research, Heidelberg, Victoria.
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