Stock Status Summary 2021

NSW Stock Status Summary – Balmain Bugs (*Ibacus peronii, Ibacus brucei, Ibacus chacei, Ibacus alticrenatus)*

Assessment Authors and Year

Stewart, J. 2020. NSW Stock Status Summary 2018/19 – Balmain Bugs – (*Ibacus peronii, Ibacus brucei, Ibacus chacei, Ibacus alticrenatus).* NSW Department of Primary Industries. Fisheries NSW. 8 pp.

Stock Status

Current stock status	On the basis of the evidence contained within this assessment, Balmain Bugs are currently assessed as **Sustainable** for the NSW component of the stock.

Stock Structure

The common name 'Balmain Bug' refers to four similar species of fan lobster: *Ibacus alticrenatus, I. brucei, I. chacei and I. peronii* (Haddy et al., 2007). These species partially overlap in their distributions on the east coast of Australia. Trawlers off NSW catch all four species. The most commonly caught species are the 'true' Eastern Balmain Bug (*Ibacus peronii*) and the Smooth Bug (*I. chacei*) which both grow in size to 8-9 cm carapace length (CL) and weigh between 300-400 g. The Eastern Balmain Bug occurs mainly on inshore grounds (<80 m deep) and is distributed around southern Australia from about the NSW-Queensland border to southern WA including the east coast of Tasmania and Bass Strait. The Smooth Bug is mostly caught on deeper grounds (40-120 m) and is found off eastern Australia north from about Sydney to central Queensland. A less commonly caught species is the smaller (< 7.5 cm CL) Honey Bug (*I. brucei*) that mainly inhabits outer continental shelf and upper slope depths (120-300 m) off northern NSW and Queensland. A second small species (< 6.5 cm CL) is the Deepwater Bug (*I. alticrenatus*) which occurs mainly at depths of 200-400 m around southern Australia; it is also found in New Zealand waters. Honey Bugs are occasionally targeted by prawn trawlers off the NSW north coast and small quantities of Deepwater Bugs are caught by trawlers targeting fish or prawns on the upper continental slope.

Tagging studies have shown that Smooth Bugs have a northward movement pattern, but that Eastern Balmain Bugs do not (Stewart and Kennelly, 1998). Studies of their reproductive biology showed that maturing Smooth Bugs moved northwards to spawn in waters off Queensland, whereas Eastern Balmain Bugs spawned throughout their range along the NSW coast. It appears that Smooth Bug larvae (phyllosomata) disperse south on the East Australian Current and settle as juveniles on the NSW continental shelf. Given the prevailing influence of the East Australian Current along the east coast out to 150 m depth, a protracted pelagic larval phase and a northerly migration of older stages, true Balmain Bugs, Smooth Bugs and Honey Bugs are thought to each constitute single biological stocks across Queensland and New South Wales (Haddy et al., 2007). However given the commercial catch and effort data cannot be differentiated to a species level due to their similarity in appearance and marketing names, for the purposes of SAFS the stock status of the Balmain Bugs species group is presented at a combined biological stock level — the East Coast biological stock.

The data presented in this summary relate only to the NSW part of the stock.

Stock Status – New South Wales

Catch Trends

Commercial fisheries

NSW commercial landings peaked at approximately 120 tonnes in 1996/97 (Fig. 1). Since that time landings have fluctuated but have declined overall to an average of 36 tonnes p.a. during the previous 5 years, noting increases in recent years to approximately 58 t during 2018/19. The majority of the catch is reported by ocean prawn trawling (Fig. 2).

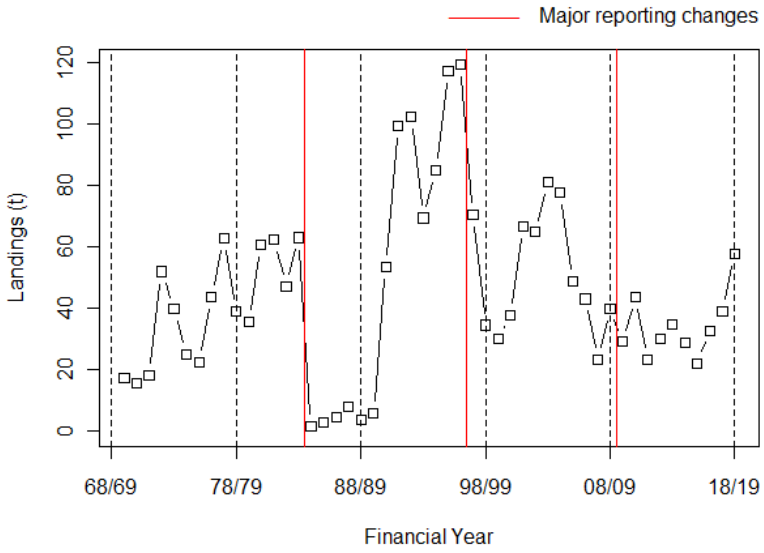

Figure 1. Commercial landings of Balmain Bugs for NSW from 1969/70 to 2018/19 for all fishing methods. Records from the mid to late 1980s are incomplete and should be ignored.

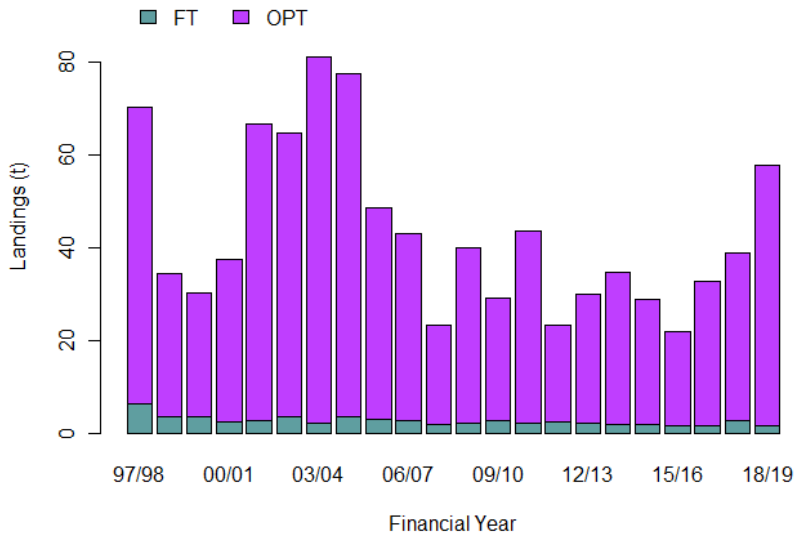

Figure 2. Landings by Fishery of Balmain Bugs in NSW for years 1997/98 to 2018/19. FT = Fish Trawl; OPT = Ocean Prawn Trawl.

Recreational and Indigenous

The annual recreational harvest of bugs in NSW is considered to be minor. There are no data on aboriginal harvest.

Fishing effort trends

Effort in the ocean prawn fishery has declined substantially since the early 2000s, from approximately 16,000 days to an average of 4,660 days during the previous 5 years (Fig. 3).

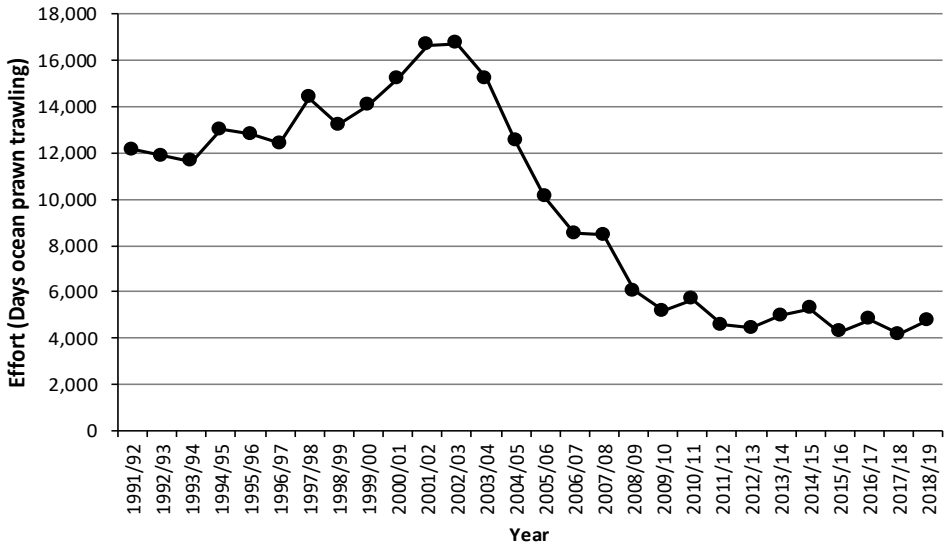

Figure 3. Annual reported days fished Ocean Prawn Trawling in months when fishers reported landing Balmain Bugs 1991/92 to 2018/19.

Catch rate trends

Catch rates of Balmain Bugs (kg per day ocean prawn trawling) have fluctuated since the early 1990s, but show an overall slightly increasing trend (Fig. 4).

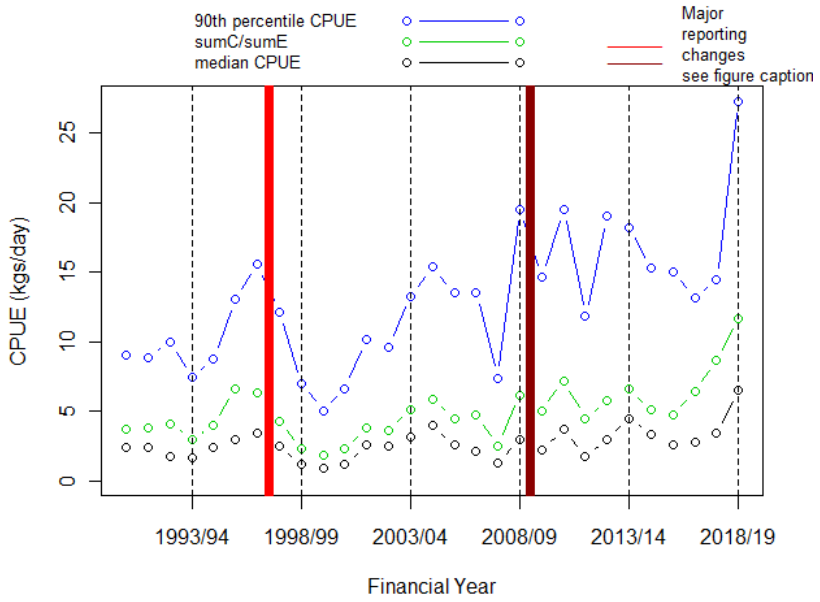

Figure 4. Commercial catch rates (kg/day) of Balmain Bugs using Ocean Prawn Trawling for years 1990/91 to 2018/19 in NSW.

Stock Assessment Methodology

Year of most recent assessment	2020 on data up to and including 2018/19
Assessment method	Weight of Evidence. 1. Landed catch 1991/92 to 2018/19. 2. Catch rates 1991/92 to 2018/19. 3. Fishing effort 1991/92 to 2018/19. 4. Size structure in landed catch 2005/06 to 2015/16.
Main data inputs	1. Reported landed catch from logbooks 1991/92 to 2018/19. 2. Reported landed catch and effort from logbooks 1991/92 to 2018/19. 3. Days of effort Ocean Prawn Trawling from logbooks. 4. Size structure in landed catch 2005/06 to 2015/16 obtained through a Port Monitoring program.

Key model structure and assumptions	1. Reported logbook records are accurate. 2. Reported logbook records are accurate. Nominal catch rates are not very different from standardized catch rates and can be used to infer the relative abundance of exploitable Balmain Bugs. 3. Reported logbook records are accurate. 4. The sampling program produced estimates of size distributions that were representative of landings.
Sources of uncertainty evaluated	Logbook data were examined for obvious spurious records which were removed for analytical purposes.

Status Indicators and Limits Reference Levels

Biomass indicator or proxy	1. Catch rates, being median nominal catch rates (kg per day ocean prawn trawling). 2. Size composition in landings for the 2 main species Balmain and Smooth bugs.
Biomass Limit Reference Level	1. No formal reference level for catch rates; however, trends are assessed to estimate trends in exploitable biomass. 2. No formal reference level for size compositions; however, trends are assessed.
Fishing mortality indicator or proxy	1. Landed catch 2. Fishing effort 3. Size composition in landed catch for the 2 main species Balmain and Smooth bugs
Fishing mortality Limit Reference Level	No formal reference levels determined. Trends in indicators through time are used to estimate trends in fishing mortality

Stock Assessment Results

1. Nominal median catch rates since 1990/91 show variability but overall an increasing trend (Fig. 4).	See Fig. 4

2. The landed sizes of both Balmain and Smooth Bugs since 2005/06 have been remarkably stable (Figs. 5 & 6).

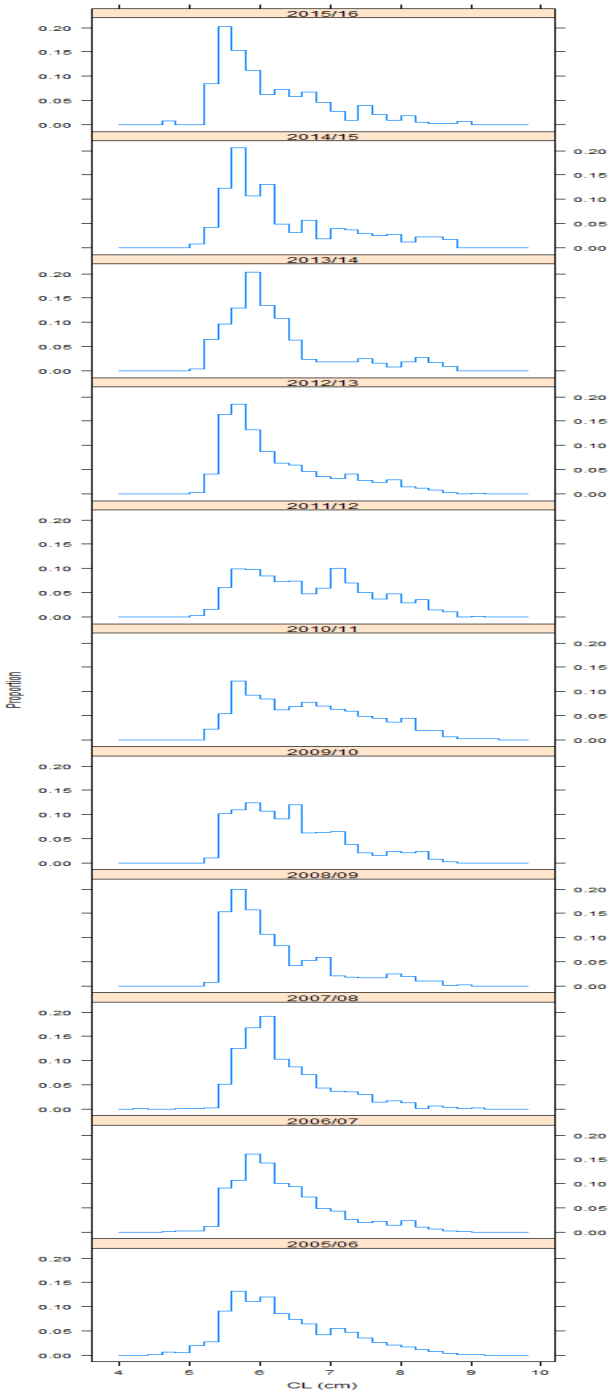

Figure 5. The length distribution of landed Balmain Bugs in NSW 2005/06 to 2015/16.

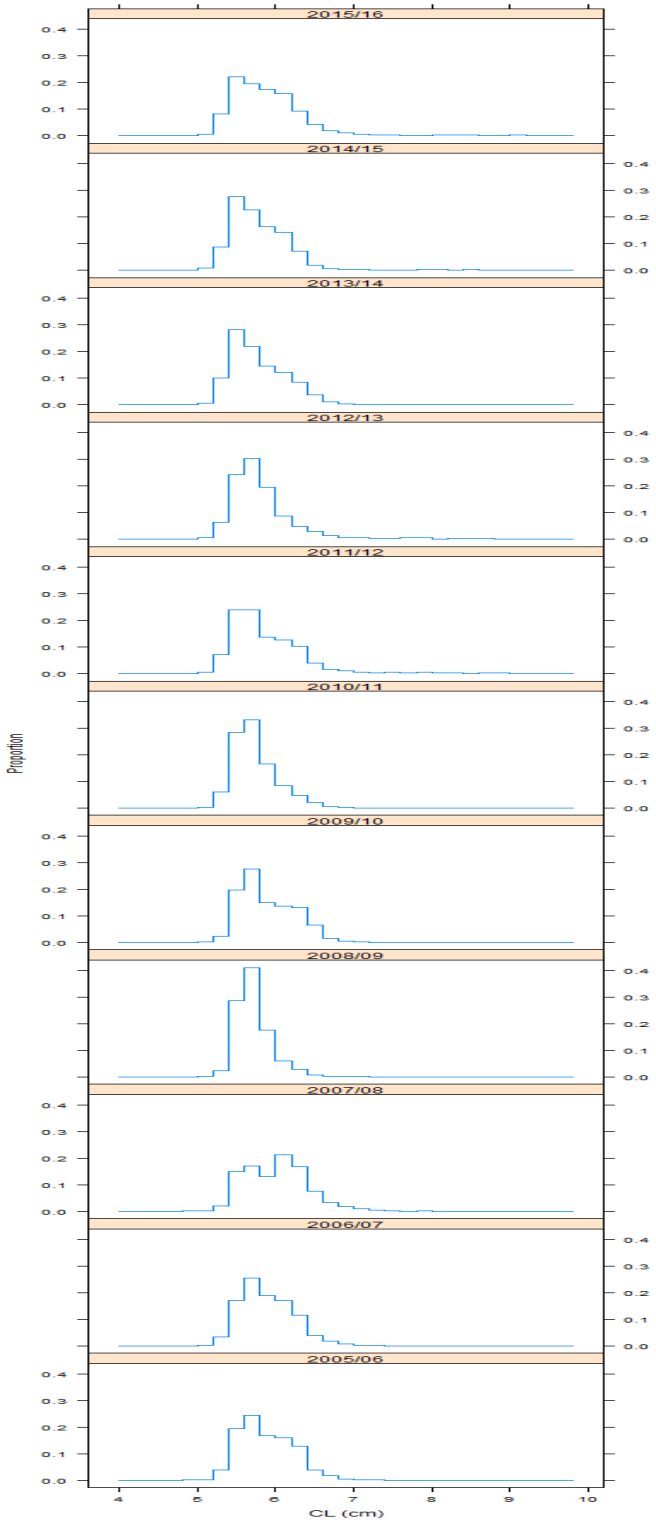

Figure 6. The length distribution of landed Smooth Bugs in NSW 2005/06 to 2015/16.

Biomass status in relation to Limit	Variable but overall increasing trends in catch rates suggest cyclical variability in availability with more recent increases. Stability in the landed sizes of both Balmain and Smooth bugs since 2005/06 infer stability in exploitable biomass of both species. These indicators suggest the exploitable biomass is stable to increasing.
Fishing mortality in relation to Limit	Declines in landed catch and fishing effort infer declines in fishing mortality since the early 2000s, noting 3 recent years of increases in catch (but not effort). Stability in the landed sizes of both Balmain and Smooth Bugs since 2005/06 infer sustainability at this level of fishing mortality.
Previous SAFS stock status	Fully Fished in NSW assessments 2002/03 to 2014/15. SAFS: Sustainable (2012) Sustainable (2014) Sustainable (2016) Sustainable (2018)
Current SAFS stock status	The stock in NSW is not considered to be recruitment impaired. The current level of fishing mortality is unlikely to cause the biological stock to become recruitment impaired. On the basis of the evidence provided above, Balmain Bugs in New South Wales is classified as a sustainable stock

Qualifying Comments

The assessment of stock status for a complex of four species is of moderate risk as declines in abundance of individual species may be masked. However, for the Balmain Bug species complex this is unlikely given the relatively small landings of the Honey Bug and Deepwater Bug due to limited trawling in their habitats in recent times. A significant decline in Ocean Prawn Trawling has certainly reduced fishing mortality throughout the state. It is noted that no length-based monitoring has occurred since 2015/16 so any changes in size (or species) compositions will not be detected.

References

Haddy, JA, Stewart, J and Graham, KJ 2007, Fishery and biology of commercially exploited Australian fan lobsters (*Ibacus spp.*), in KL Lavalli and E Spanier (eds), The biology and fisheries of the Slipper Lobster, Crustacean Issues, vol. 17, CRC Press, Boca Raton.

Stewart, J. and Kennelly, S. J. 1998. Contrasting movements of two exploited Scyllarid lobsters of the genus *Ibacus* off the east coast of Australia. Fisheries Research, 36: 127-132.