King George Whiting (*Sillaginodes punctatus*)

Stock Structure and Biology

The Victorian King George whiting population is considered to comprise a State-wide stock that extends into eastern South Australia. The main fisheries are in Port Phillip Bay, Western Port and Corner Inlet, with commercial fishing now restricted to Corner Inlet following the buyout of commercial net fishing in Port Phillip Bay. In Victorian bays and inlets most King George whiting are harvested as immature fish < 5 yr. of age. Juvenile whiting migrate out of bays and inlets at 3–5 years of age to complete their adult lives in coastal waters where they can live to approximately 20 years old and reach lengths of at least 60 cm. It is thought that the majority of King George whiting that recruit into Victorian bay and inlet fisheries originate from spawning events in coastal waters off far western Victoria and south-east South Australia. King George whiting are highly fecund and have a moderate to high growth rate, reaching the LML of 27 cm in approximately 2.5 years. Offshore spawning and a long-larval dispersal phase prior to settlement in bay and inlet nursery areas mean that settlement rates of larvae are highly variable from year to year depending on ocean currents. This variability, coupled with a short residence time for juveniles within bay and inlet nursery areas (i.e., two-three years when most fish are available for harvest), means that fisheries production and catch rates are naturally highly variable.

Assessment Summary

The status of the Victorian King George whiting stock and associated fisheries were evaluated using:

- Available harvest information for the commercial and recreational sectors
- Nominal CPUE for commercial haul seine in Port Phillip Bay and Corner Inlet-Nooramunga (reference period 1986–2015) (Note: nominal CPUE is used because standardisation has minimal to no influence on seine net CPUE)
- Nominal and standardised CPUE for the recreational fishery from annual creel surveys in Port Phillip Bay and Western Port (reference period 2002–2015)
- Length composition of haul seine fishery catches in Corner Inlet-Nooramunga
- Length composition of recreational fishery catches in Port Phillip Bay and Western Port from creel survey and diary anglers
- Pre-recruit (post-larval) abundance from fishery independent netting surveys in Port Phillip Bay.

This assessment found:

- *Fishing pressure* – commercial harvests have been decreasing over the last two decades, mostly driven by a reduction in netting effort due to commercial licence buy-outs and cessation of netting in PPB (Appendix 2); however, recent high landings in Corner Inlet-Nooramunga have been some of the highest on record (Figure 15). There is no recent information on recreational harvest or effort.
- *Biomass* – Nominal CPUE of King George whiting by commercial haul seine in Port Phillip Bay and Corner Inlet-Nooramunga both increased in 2021/22 (Figure 16). These commercial fishery observations were consistent with results from the Port Phillip Bay recreational creel surveys that showed CPUE trending strongly upward since 2018–2020 to be well above the reference line (Figure 17). Creel survey CPUE from 2021/22 showed a decline in catch, though it is still well above reference period (Figure 17). Similarly, there was an overall

increasing trend in creel survey CPUE for Western Port (Figure 18). Creel surveys in Corner Inlet have only recently been introduced, with only 5 years of data (Figure 19), however data shows a consistent trend over the past 3 years. Overall, CPUE indicators suggest stable to improving stock biomass of King George whiting in Victorian bays and inlets over the last few years after the most recent peak in 2015/16. There are no specific indicators of adult biomass status for King George whiting in coastal waters.

- *Recruitment* – Victoria's whiting fisheries are largely reliant on three year classes (2, 3 and 4+ years of age) so recent recruitment has a major bearing of fishery performance. Recruitment of post-larval King George whiting to Port Phillip Bay has been average or lower in the last few years (Figure 23). The Port Phillip Bay survey data are generally indicative of post-larval recruitment to other Victorian bays and inlets. Consistent moderate to high recruitment between 2016 and 2019 has been responsible for the high catch rates observed throughout the Victoria's bay and inlets fisheries. Due to modest recent recruitment, it is anticipated that whiting fishery performance will decline in bay and inlet fisheries over the next few years.
- *Length compositions* – The various length composition data display no long-term trends or signs of increasing truncation, consistent with the transient nature of King George whiting in bays and inlets. A recent increase followed by a decrease (2015–2018) in median lengths observed for all length frequency data (Figure 20, Figure 21, and Figure 22) are consistent with the passage of the strong 2013 cohort (Figure 23) through the bay and inlet fisheries with moderate numbers of large fish present in the most recent couple of years due to the moderate to good recruitment from 2016–2019.

Stock status summary: Indicators of stock status for King George whiting are all directly related to juvenile life stages, and are highly variable, being primarily driven by recruitment dynamics. Importantly, none of the fishery CPUE or pre-recruit time series show persistently declining trends, providing reassurance that the poorly known and lightly fished adult stock in coastal waters is continuing to be replenished at rates that are sufficient to prevent declines in recruitment potential/egg production. There is no reason to believe this will not continue as fishing mortality is declining as a result of commercial fishery buyouts and the cessation of netting in Port Phillip Bay, the main gear used to targe this species. Recent modest post-larval recruitment is expected to result in a decline in fishery performance, but it is expected to remain within historical bounds so the stock should remain sustainable.

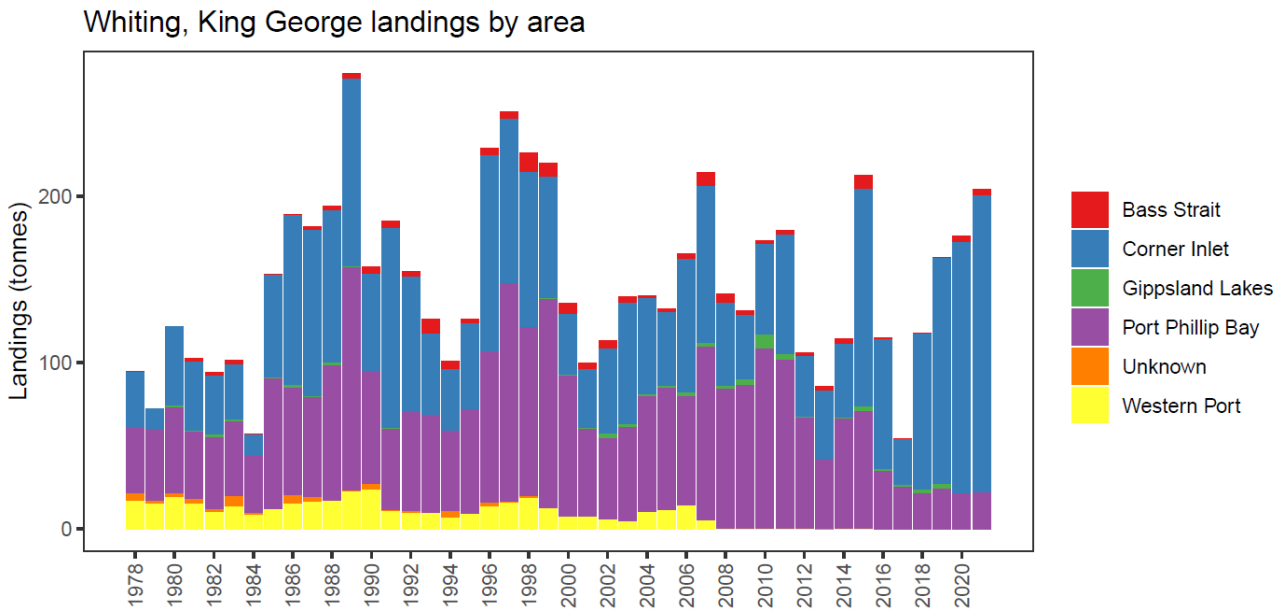
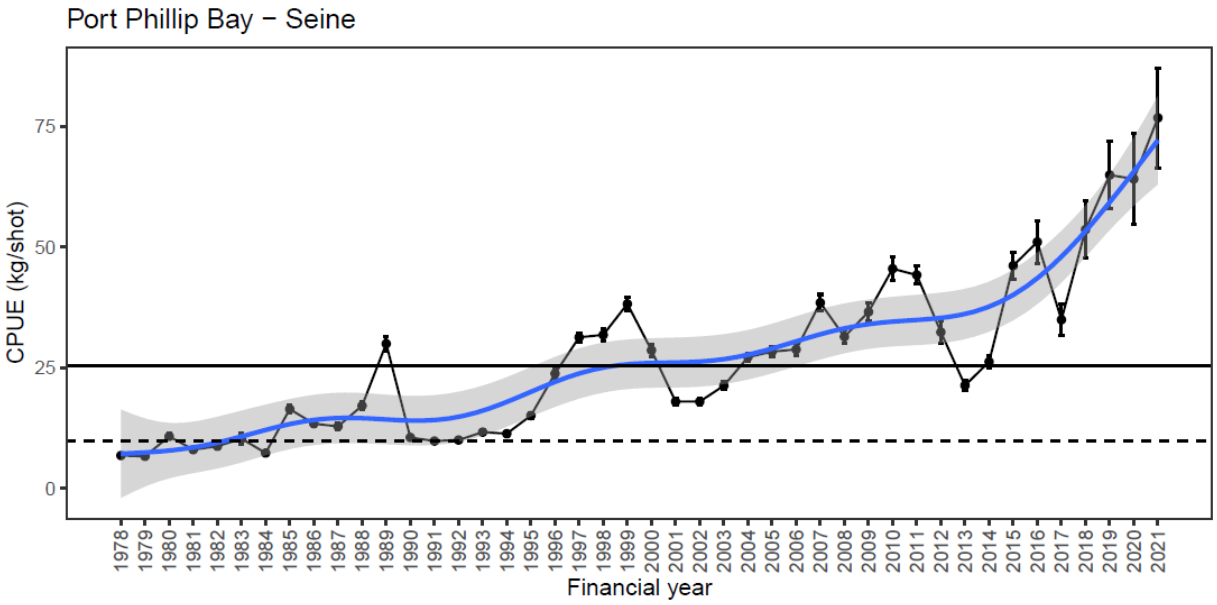


Figure 15 Commercial catch of King George whiting by area in Victorian waters, financial years 1978–2021.

(a)



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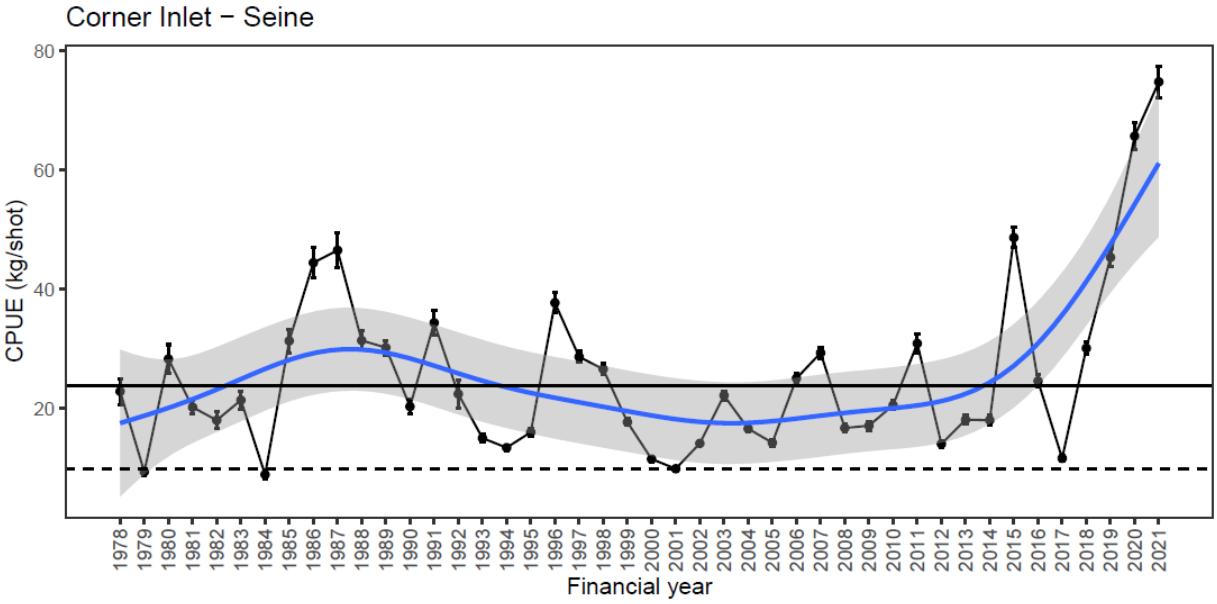


Figure 16 Commercial haul seine catch-per-unit-effort CPUE (nominal) for King George whiting in (a) Port Phillip Bay (PPB) and (b) Corner Inlet (CI), 1977/78–2021/22. Horizontal black line is the mean nominal CPUE during the reference period (1985–2015) and the dashed black line is the minimum CPUE within the reference period. The blue line is a generalised additive model GAM of the CPUE trend with the shaded grey area representing the 95% confidence interval of the GAM.

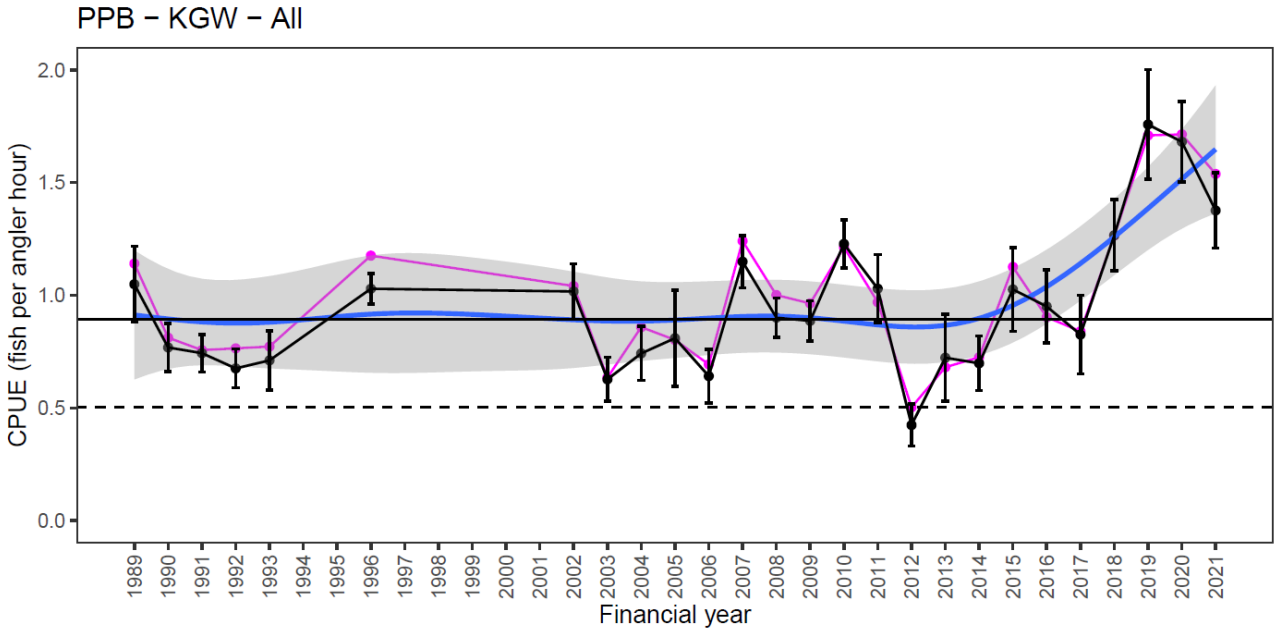


Figure 17 Catch-per-unit-effort (CPUE) of King George whiting (KGW) by recreational anglers interviewed in creel surveys undertaken in Port Phillip Bay (PPB) from 1988/89–2021/22 financial years. Black line is nominal CPUE (±SE), magenta line is standardised CPUE, blue line is a generalised additive model (GAM) of the standardised CPUE trend with the shaded grey area representing the 95% confidence interval of the GAM. Horizontal black line is the mean standardised CPUE during the reference period (i.e. 1989–2015) and the dashed black line is the minimum standardised CPUE within the reference period.

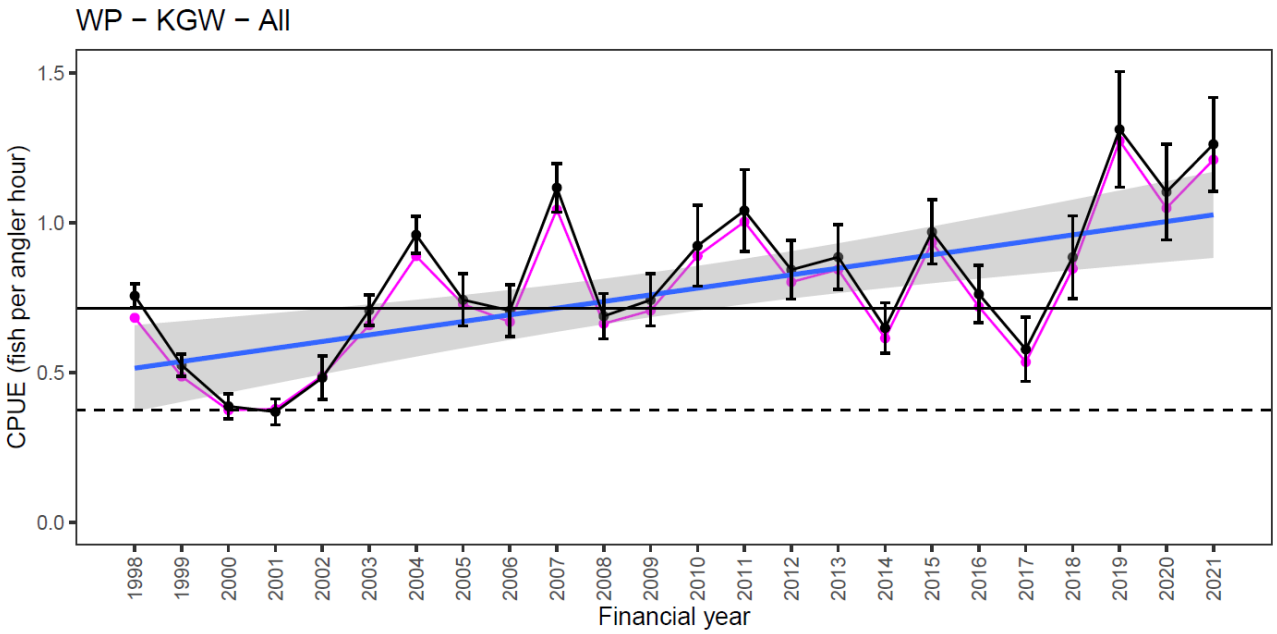


Figure 18 Catch-per-unit-effort (CPUE) of King George whiting (KGW) by recreational anglers interviewed in creel surveys undertaken in Western Port Bay (WP) from 1997/98–2021/22 financial years. Black line is nominal CPUE (±SE), magenta line is standardised CPUE, blue line is a generalised additive model (GAM) of the standardised CPUE trend with the shaded grey area representing the 95% confidence interval of the GAM. Horizontal black line is the mean standardised CPUE during the reference period (1998–2015) and the dashed black line is the minimum standardised CPUE within the reference period.

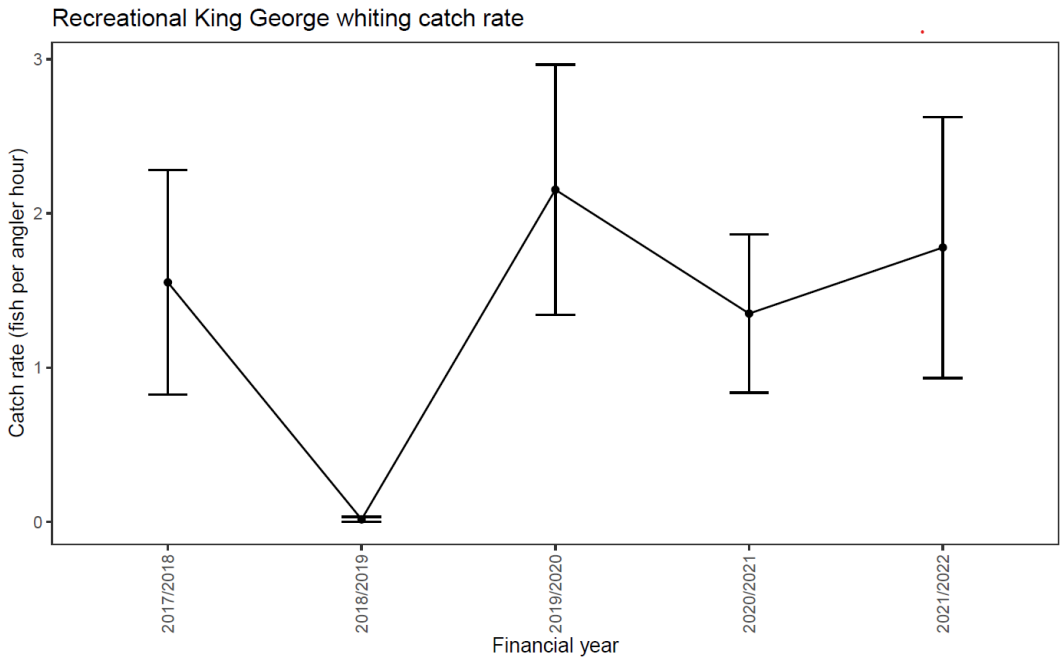


Figure 19 Catch-per-unit-effort (CPUE) of King George whiting (KGW) by recreational anglers interviewed in creel surveys undertaken in Corner Inlet (CI) from 2017/18–2021/22 financial years.

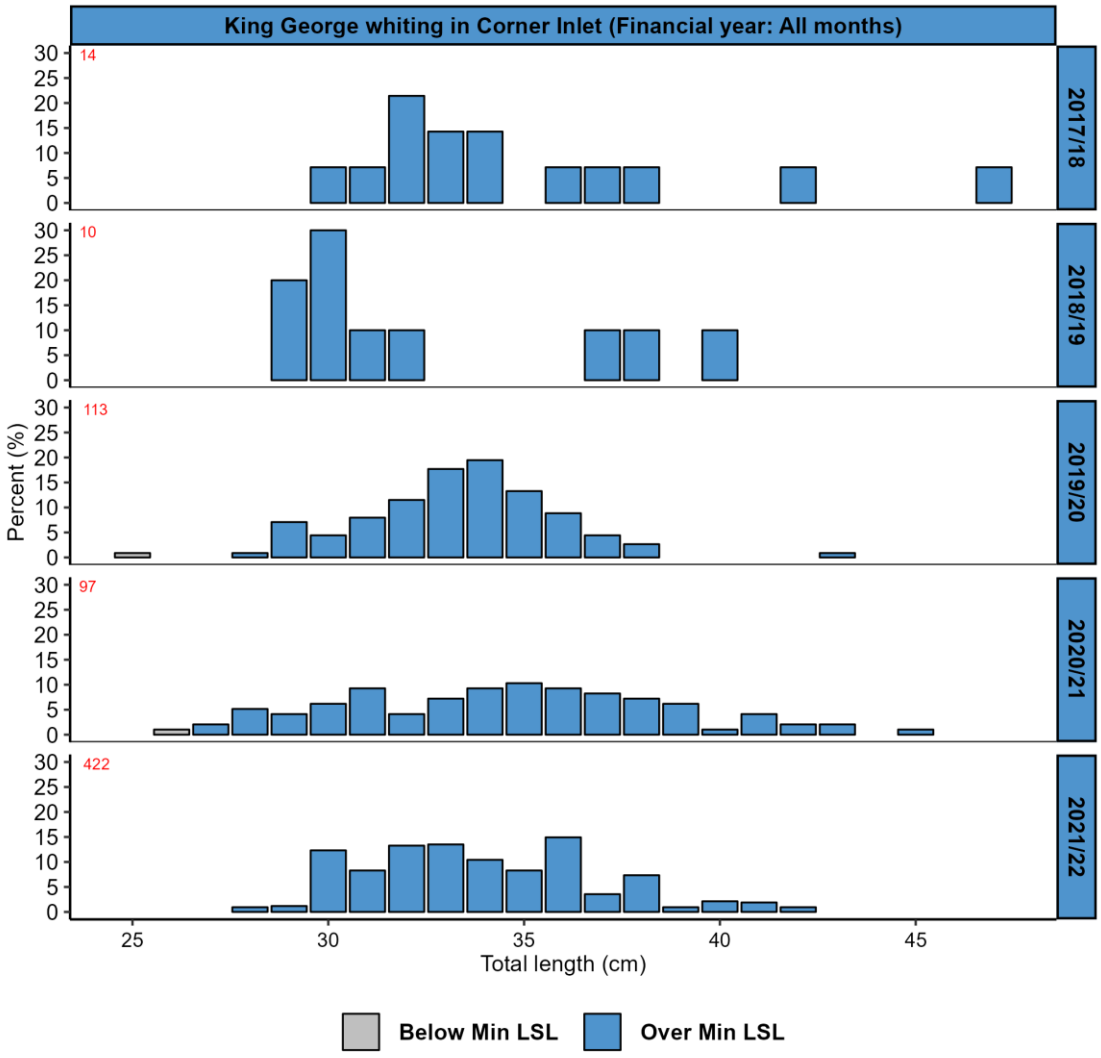


Figure 20 Length frequency histograms for Corner Inlet (CI) King George whiting a) haul seine (H6) catches from 2016/17–2020/21 fiscal years, and b) creel surveys. Red numbers on x-axis indicate numbers of fish measured scaled to sampled catch weights.

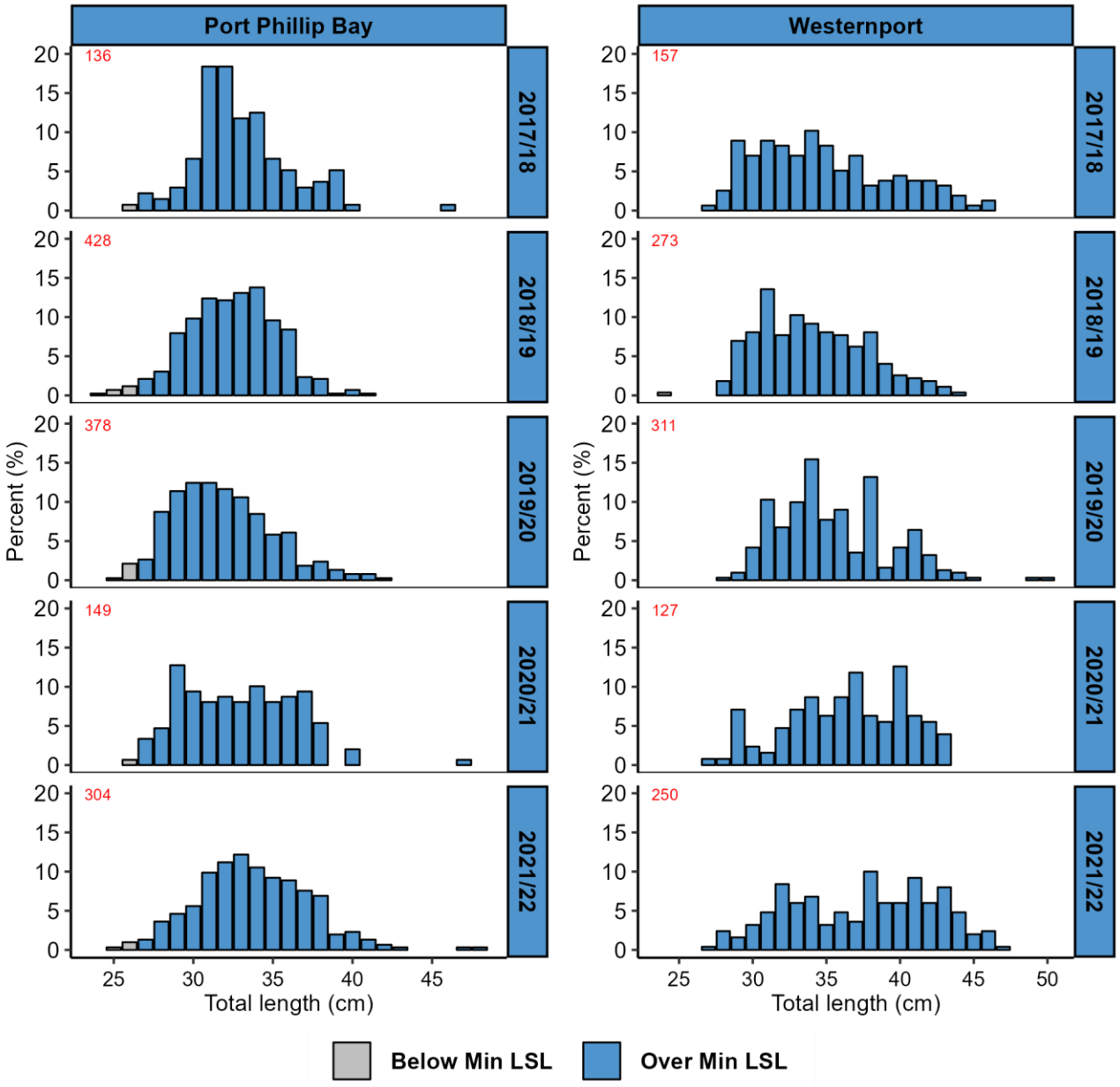
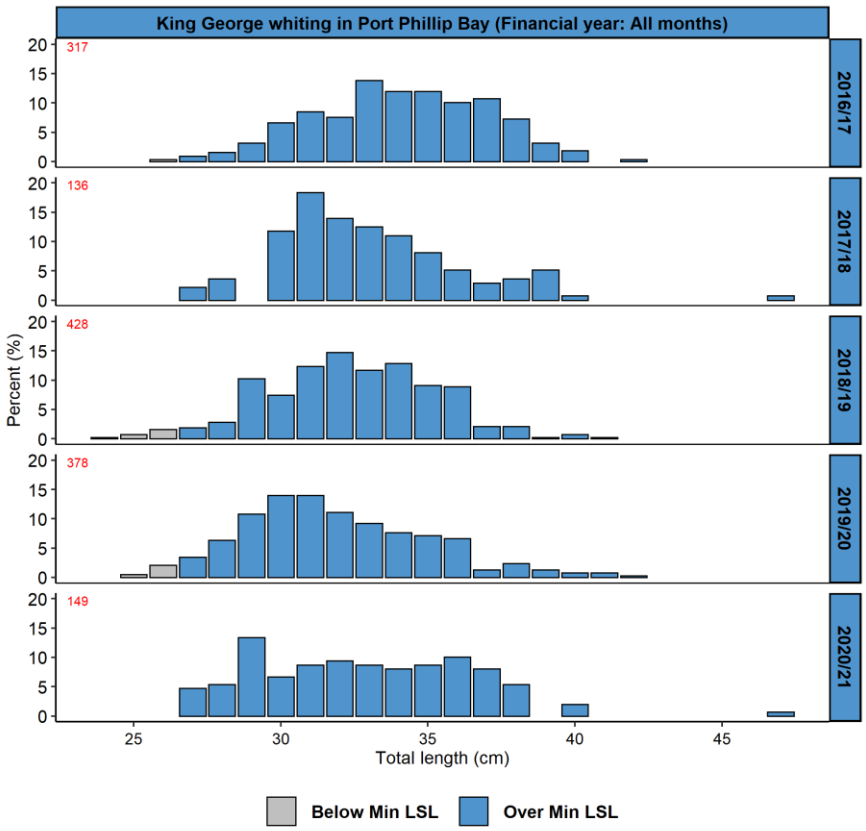


Figure 21 Frequency histograms of recreational King George whiting length composition from Port Phillip Bay and Western Port 2017/18–2021/22. Red numbers indicate numbers of fish measured. Grey bars are those fish equal to or larger that the Legal-Size Limit (LSL) and white bars are sub-legal sized fish less than the LSL.

(a)



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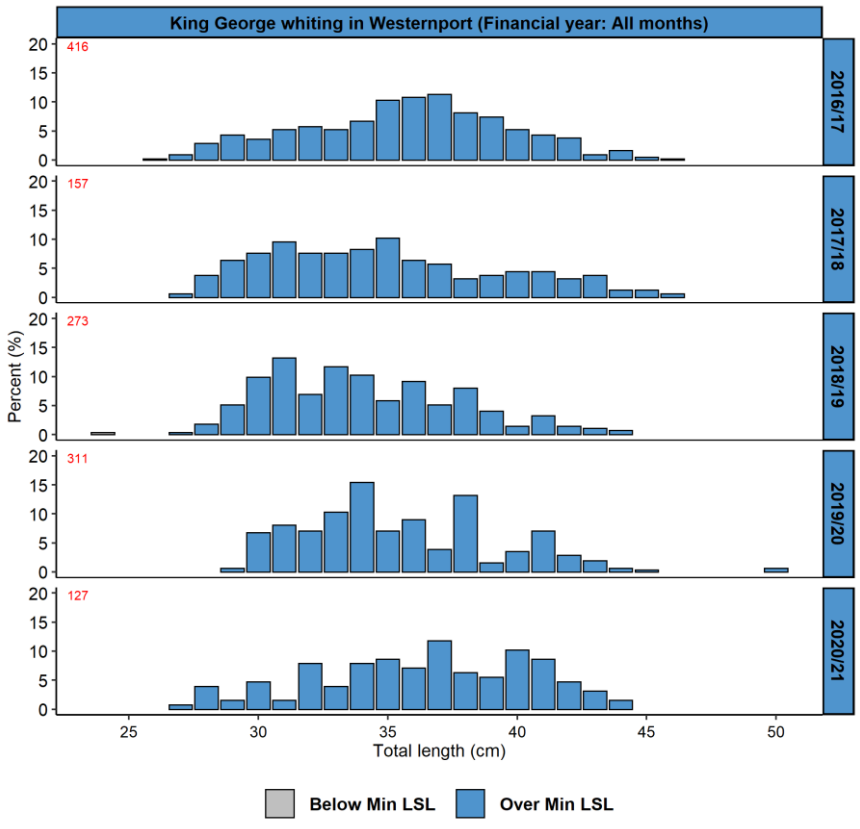

Figure 22 Frequency histograms of recreational King George whiting from creel survey length composition (a) Port Phillip (b) Western Port fiscal years 2016/17–2020/21. Red numbers indicate numbers of fish measured. Grey bars are those fish equal to or larger that the Legal Size Limit (LSL) and white bars are sub-legal sized fish less than the LSL.

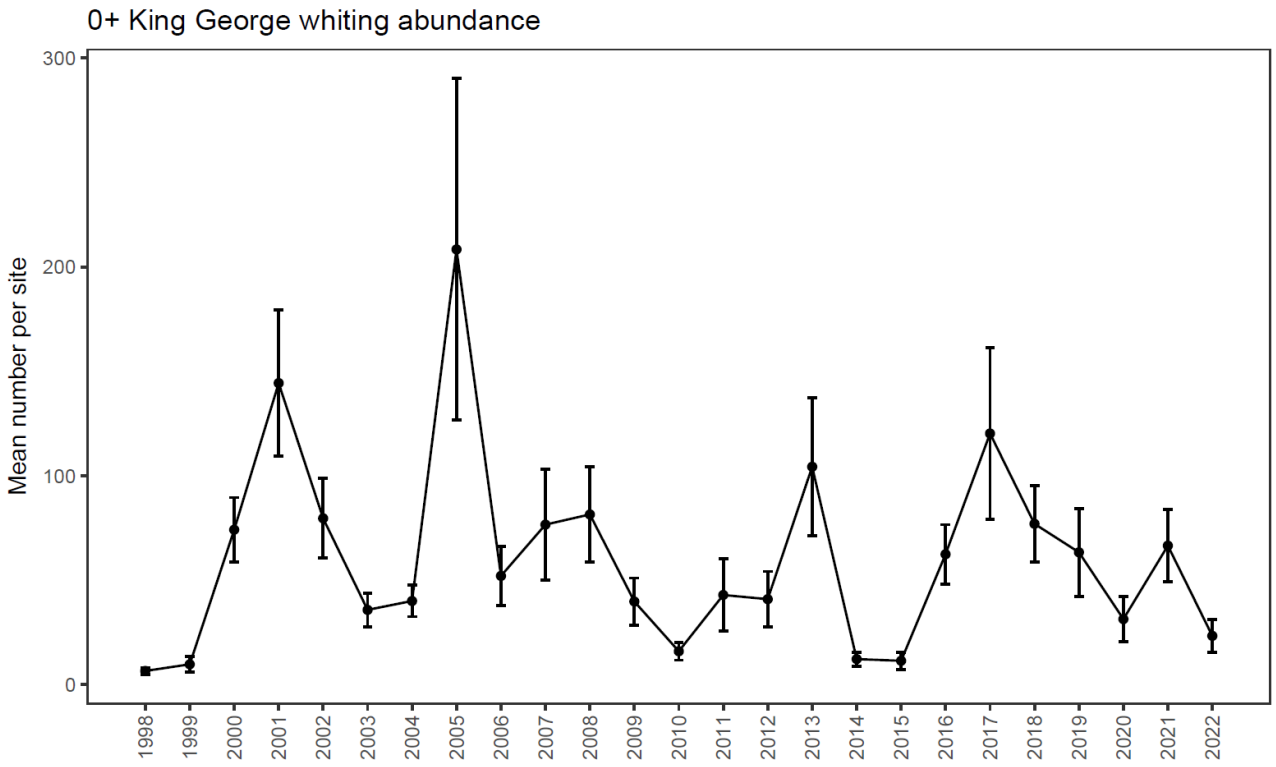

Figure 23 Port Phillip Bay King George whiting pre-recruit (0+ age) trawl survey catch rates (±SE) 1998–2022