

Blue Swimmer Crab (2023)

Portunus armatus



Danielle Johnston: Department of Primary Industries and Regional Development, Western Australia, **David Harris:** Department of Primary Industries and Regional Development, Western Australia, **Arani Chandrapavan:** Department of Primary Industries and Regional Development, Western Australia, **Roshan Hanamseth:** South Australian Research and Development Institute, **Daniel Johnson:** New South Wales Department of Primary Industries, **Anna Garland:** Department of Agriculture and Fisheries, Queensland

STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Western Australia	Cockburn Sound	Depleted	Catch, CPUE, fishery-independent recruitment index, egg production index
Western Australia	Peel-Harvey Estuary	Sustainable	Catch, CPUE
Western Australia	Shark Bay	Sustainable	Catch, CPUE, fishery-independent recruitment and breeding stock abundance
Western Australia	Western Australia North Coast	Sustainable	Catch, CPUE
Western Australia	Western Australia South-West Coast	Sustainable	Catch, CPUE
Queensland	North-Eastern Australia	Sustainable	Stock assessment, exploitable biomass, spawning biomass, standardised catch rates, fishery-independent recruitment index, catch, effort

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New South Wales	South Eastern Australia	Depleting	Catch, standardised catch rates, fishery-independent abundance index, estimated biomass
South Australia	Gulf St. Vincent	Sustainable	Fishery-independent legal-sized relative catch rate
South Australia	Spencer Gulf	Sustainable	Fishery-independent legal-sized relative catch rate
South Australia	West Coast	Sustainable	Catch, CPUE

STOCK STRUCTURE

Blue Swimmer Crab is distributed in Australia from the south coast of Western Australia, north to the Northern Territory, across Queensland, down the east coast and to the New South Wales–Victoria border. They are also found in the warmer waters of the South Australian gulfs [Kailola et al. 1993].

In Western Australia, Blue Swimmer Crab is fished in numerous fisheries across five regions. The stock delineation between these regions is unknown [Chaplin et al. 2001; Chaplin et al. 2008]. Stock structure on the east coast of Australia is uncertain, involving overlapping stocks or a semi-continuous stock [Chaplin et al. 2001]. Using a high-resolution oceanographic model coupled with a Lagrangian particle tracking framework to simulate larval dispersal, Hewitt et al. 2022 suggest populations of Blue Swimmer Crab in NSW and Queensland appear to constitute demographically separate stocks, supporting the current assessment and management at the state level. In South Australia, research has identified three separate biological stocks of Blue Swimmer Crab—in Spencer Gulf, Gulf St Vincent and on the coastline west of the Eyre Peninsula [Bryars and Adams 1999; Dixon and Hooper 2011].

Here, assessment of stock status is presented at the biological stock level—North-Eastern Australia (Queensland), South-Eastern Australia (New South Wales), Spencer Gulf, Gulf St Vincent and West coast (South Australia), and at the management unit level—Shark Bay, Cockburn Sound, Peel-Harvey Estuary, Western Australian North Coast and Western Australian South-West Coast (Western Australia).

STOCK STATUS

Cockburn Sound Historically, variation in recruitment of Blue Swimmer Crabs in the Cockburn Sound (Crab) Managed Fishery has been driven by environmental conditions that have led to large fluctuations in stock abundance and annual commercial catch [de Lestang et al. 2010]. A shift by commercial fishers from using gill nets to traps in the mid-1990s resulted in a marked increase in annual crab landings. Following a series of high catches (250–350 t) in the late-1990s, the catch declined significantly to a point where the fishery was closed in 2006 [Johnston et al. 2011]. Subsequent fishery-independent trawl and trap surveys indicated that the strength of recruitment and the spawning stock biomass gradually improved, and the Cockburn Sound fishery was reopened in December 2009 under restricted management measures. However, the commercial fishery, along with recreational fishing south of a line between Woodman Point and Carnac Island, was again closed in 2014 due to unacceptably low stock biomass and egg production.

Initially, a variety of potential factors were implicated in the stock decline experienced in the fishery. These included limited egg production, poor

recruitment due to fishing pressure, and unfavourable environmental conditions, specifically water temperature [de Lestang et al. 2010; Johnston et al. 2011]. However, despite closure to fishing for nearly a decade, neither recruitment nor breeding stock have returned to levels of the mid-2000s [Johnston et al. 2021; Johnston et al. submitted]. While fluctuations in water temperature and salinity remain significant factors, it has recently been proposed that the reduced *P. armatus* biomass in CS more reflects compensatory stock-recruitment dynamics and variability in Chlorophyll *a* levels (as a proxy for primary productivity) [Marks et al. 2021; Johnston et al. In press]. Due to a tightening of industry regulations in recent decades, anthropogenic nutrient inputs (e.g., nitrogen) to CS have been significantly reduced [BMT, 2018]. Consequently, primary productivity in this system is expected to remain at historically low levels in the future [Johnston et al. submitted].

Fishery-independent survey data are currently used to generate juvenile and egg production indices as performance indicators (with associated limit reference levels) in a harvest strategy developed for the Cockburn Sound Crab Fishery [Johnston et al. 2020a]. although the juvenile index has fluctuated since 2014 (0.02-0.25 juveniles/100m²), it has remained substantially below the limit reference level (0.4 juveniles/100 m² trawled). The 2022 index of 0.21 juveniles/100 m² again indicates that recruitment remains at unacceptable levels. Analyses used to derive the egg production index for Cockburn Sound are currently being revised. However, preliminary outputs suggest breeding stock levels remain unacceptable.

On the basis of the evidence provided above, the Cockburn Sound (Crab) Managed Fishery (Western Australia) management unit is classified as an environmentally limited **depleted stock**.

Gulf St. Vincent

In the South Australian gulfs, access to take Blue Swimmer Crabs is provided via a Blue Crab Fishery (BCF) or a Marine Scalefish Fishery (MSF) licence endorsed with quota entitlements. The MSF licence holders predominantly use hoop and drop nets while the pot fishing sector of the BCF uses specifically designed crab pots. Determination of stock status is based on a fishery-independent pot survey with trigger and limit reference points based on survey catch rate, as indices of relative biomass and fishing mortality [PIRSA 2020]. The TACC levels have been set since 1996 to limit Blue Swimmer Crab catches within ecologically sustainable limits set in the management plans [PIRSA 2020]. Since 1999–2000, exploitation rates have been limited by setting the TACC at levels below the maximum historical catch for the fishery. Throughout South Australia, a legal minimum size (LMS) of 110 mm carapace width (CW) is enforced, at which size crabs are approximately 14–18 months old and sexually mature. Females produce at least two batches of eggs each season [Kumar et al. 2003].

The most recent stock assessment reported that 195.1 t was harvested, which represented 72% of the TACC (269.66 t) in the 2021–22 season [Beckmann and Hooper 2023]. In 2022, legal sized fishery independent survey CPUE was 5.4 kg crabs per pot-lift, which was above the trigger (1.7 kg crabs per pot-lift) and target (2.5 kg crabs per pot-lift) reference points [Beckmann and Hooper 2023]. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Furthermore, the above evidence indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence provided above, the Gulf St. Vincent biological stock is classified as a **sustainable stock**.

**North-
Eastern
Australia**

The Queensland Blue Swimmer Crab fishery primarily operates in southern Queensland. Prior to 1998, most fishing was conducted inshore, in and around Moreton Bay. In 1998 commercial pot fishers began exploiting Blue Swimmer Crab populations further offshore, in areas that were previously lightly fished. Fishing in offshore waters peaked in 2003, when the offshore harvest contributed approximately 70% to total harvest. By 2015, the offshore harvest had decreased and returned to levels slightly higher than those pre-expansion. This rise and subsequent fall of harvest in the offshore area may indicate a decline in fishable biomass for the offshore area and the biological stock as a whole [Johnston et al. 2018]. However, proposed management reforms and subsequent over-reporting within the fishery prior to the investment warning released in 2003 likely reduced the reporting reliability of commercial catch records around this time [QDAF 2019].

Queensland assessed the North-Eastern Australia Blue Swimmer Crab stock in 2020 (including data up until the 2018–19 financial year) using an integrated stock assessment model. The model estimated exploitable biomass to be at around 33% relative to unfished levels [Lovett et al. 2020]. Under the current management arrangements (i.e. minimum legal size, no-take females), maximum sustainable yield (MSY) is estimated to be around 722 t [Lovett et al. 2020]. Average combined commercial and recreational harvest from the most recent five years was approximately 297 t (267 and 30 t respectively), less than half of the estimated MSY [Webley et al. 2015; Lovett et al. 2020; Teixeira et al. 2021].

Standardised commercial pot catch rates have been declining since 2003–04 with the 2018–19 fishing year having recorded the lowest catch rate since the introduction of logbooks in 1988–1989 [Lovett et al. 2020]. While standardised catch rates have been low, historical records indicate periods close to this figure (between 1992–93 and 1996–97 fishing years). Standardised catch rates are not available for the current period. Declining standardised catch rates may indicate a reduction in the level of biomass for the North-Eastern Australia biological stock.

Fishery independent surveys show that recruitment abundance has generally been stable through time, with two distinct peaks observed in 2019–20 (24 crabs per hectare) and 2020–21 (32 crabs per hectare) [QDAF 2023 Unpublished data, Bessell-Browne et al. 2020]. The 2020–21 estimate of recruitment abundance is of particular interest as it surpasses the previous high estimate from 2008–09 by more than 65%. Recruitment target reference points are still yet to be established by Fisheries Queensland. The most recent stock assessment [Lovett et al. 2020] estimated that spawning biomass displays similar trends to the exploitable biomass, and in 2018–19 was estimated to be around 50% of 1988–89 levels. This stock is not considered to be recruitment impaired.

Active commercial pot fishing licences and fishing effort (in days fished) decreased between 2003–04 and 2021–22 by approximately 81 and 85% respectively. Long term trends in effort are directly proportional to the expansion and subsequent contraction of fishing in offshore areas [Sumpton et al. 2015], as well as the introduction of multiple crab symbols on a licence and vessel tracking. Overall fishing pressure on the North-Eastern Australia Blue Swimmer Crab stock is declining.

Spatial closures within the Moreton Bay, Great Sandy Strait and Great Barrier

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Reef Marine Parks provide protection of the Blue Swimmer Crab biomass [Johnston et al. 2018]. Management arrangements in Queensland prohibit the take of female Blue Swimmer Crabs, and a minimum legal size of 115 mm carapace width ensures that a high proportion of male Blue Swimmer Crabs have the opportunity to mate before recruitment into the fishery [Johnston et al. 2018]. Further, the recent transition to a quota-managed fishery and the introduction of a Total Allowable Commercial Catch (263 t) as well as a recreational possession limit of 20 Blue Swimmer Crabs per person (from no limit) should further bolster protection of this species. The current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence provided above, the North-Eastern Australia (Queensland) biological stock is classified as a **sustainable stock**.

Peel-Harvey Estuary Conversion from targeting Blue Swimmer Crabs using gillnets to hourglass traps in the Peel-Harvey Estuary Crab Fishery (PHECF; Area 2 of the West Coast Estuarine Managed Fishery) increased annual commercial crab catches from 2–66 t in the mid-1990s to 45–107 t in the early-2000s. An integrated survey of boat-based recreational fishing in Western Australia estimated the statewide boat-based recreational harvest of Blue Swimmer Crabs to be 46.8 t in 2020–21, with approximately 64% of this catch taken from the Metro Zone (which includes the Swan-Canning Estuary and Peel-Harvey Estuary crab fisheries; Ryan et al. 2022). With no shore-based fishing licence to provide a sampling frame, estimating catch and effort by shore-based recreational fishers in the PHECF is logistically complex and resource intensive. While it is recognised that shore-based recreational fishing likely represents a substantial component of the recreational harvest and effort in this fishery, there are no contemporary estimates. Future approaches to be considered for developing shore-based estimates include disaggregation of data from statewide off-site surveys, PHE on-site surveys, and annual community surveys.

The PHECF gained Marine Stewardship Council certification in 2016, becoming the first fishery certified for both commercial and recreational sectors [Johnston et al. 2015]. The fishery was recertified for a further 5-year period in 2021. Stock assessments for the PHECF use a weight-of-evidence approach wherein information from fishery-independent surveys, commercial monitoring and environmental data are used to determine stock status [Johnston et al. 2020a]. The PHECF is managed under a formal harvest strategy, using standardised commercial catch rates and total catch for each fishing season (December–August; DPIRD, 2020b). Since conversion from nets to traps in 2000–01, annual standardised commercial catch rates have fluctuated (0.8–1.4 kg/traplift) but generally remained above 1 kg/traplift. The commercial catch from the PHECF for the 2021–22 fishing season was 58 t, a marginal increase from the 2020–21 season (55 t). The standardised catch rate of 1.23 kg/traplift for the 2021–22 fishing season increased from 1.12 kg/traplift in 2020–21 and remained well above the harvest strategy threshold (0.7 kg/traplift) for this fishery. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

Several management measures provide additional protection to the breeding stock in this region. The size at maturity (CW50 95%CI: 92.2–94.3 mm CW; Johnston and Yeoh, 2020) for female crabs in this fishery is well below the legal minimum size (127 mm CW), such that under normal environmental conditions female crabs will have the opportunity to spawn before they reach legal size. In addition, the fishery is closed for three months (September–November) over the peak spawning period for crab stocks in southwest WA. Spawning in this fishery

occurs near the mouth of the estuary and in nearshore marine waters following flushing of crabs from the estuary during winter, providing the spawning stock with further spatial protection from fishing. The above evidence indicates that current fishing pressure is unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence provided above, the Peel-Harvey Estuary Crab Fishery (Area 2 of West Coast Estuarine Managed Fishery) (Western Australia) management unit is classified as a **sustainable stock**.

Shark Bay

The Shark Bay Crab Managed Fishery for Blue Swimmer Crab expanded rapidly between 2000 and 2010. In 2010, it was Australia's highest producing Blue Swimmer Crab fishery, with landings of 828 tonnes (t), collectively caught by the dedicated crab trap sector and as by-product by the prawn and scallop trawl sector. This stock also supports a small (around ~5 t) but important recreational fishery. In late 2011, the crab stock in Shark Bay was found to be at historically low levels (with commercial and survey catch rates below limit reference levels) as a combined result of fishing, recruitment failure and increased natural mortality of the adult stock. This was attributed to the combination of the effects of an extreme marine heat wave event during the summer of 2010–11, two significant flooding events and high fishing pressure in the years prior to the marine heatwave [Chandrapavan et al. 2019].

Commercial fishing for Blue Swimmer Crabs in Shark Bay ceased in April 2012 on a voluntary, industry-agreed basis to facilitate stock rebuilding, at which point the stock was classified as being environmentally limited. During the closure, intensive monitoring of the resource began, using a combination of trawl and trap-based fishery-independent surveys. The surveys provide indices of spawning stock and recruitment levels which are assessed periodically. During 2013, indices of spawning stock increased from 200 kg per square nautical mile (below the limit reference of 300) to 1 789, and recruitment levels improved from 991 kg per square nautical mile (with a limit reference level of 700) to 2 197 (kg per square nautical mile). These improved indices indicated a recovering stock and provided some confidence for the resumption of limited commercial fishing for Blue Swimmer Crabs in Shark Bay [Chandrapavan et al. 2018].

In 2015, the fishery transitioned to a fully managed status under a new management plan, which included a system of individually transferable quotas that applies across all three commercial sectors in Shark Bay. A formal harvest strategy has also now been developed for the fishery, where quota setting is now based on three primary performance indicators of peak spawning (during June), peak recruitment (during February) and residual legal biomass levels (during November), while secondary indicators include quota achievement and standardised commercial trap catch rates [DPIRD, 2020].

From 2013-2019, annual stock assessments have indicated steady stock recovery under catch levels of up to 529 t. In 2019, the TACC was maintained at 550 t and the fishery was deemed fully recovered. The mid-season review of the TACC during April 2020, however, indicated a significantly large recruitment event had occurred where the spawning and recruitment levels were above the limit, and legal biomass and commercial catch rates were well above the target reference levels and above the historical range. This resulted in an increase of the TACC to 650 t for the remainder of the 2019–20 season, the maximum set for this fishery.

By the end of the 2020/21 fishing season, overall declines in catch rates of crabs

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from the November survey indicated some uncertainty in biomass levels supportive of maintaining a 650 t TACC. As such, the TACC was revised for the 2021/22 season to 600 t. Also, during 2021, a number of operator and operational changes took place both within the trap and trawl sectors that influenced the lower than expected catch landings of 401 t. By the end of 2022, further declines in stock indices and commercial trap catch rates were evident which indicated that maintaining a TACC of 600 t was deemed a high risk to stock sustainability if this level of catch was landed. However, as significant operational changes since 2021 provided confidence that there was a low likelihood of landings exceeding 400 t for 2022/23 season, the TACC of 600 t was maintained. A preliminary state-space BDM has been developed for this fishery which provided a median MSY estimate of 482 tonnes. There is considerable uncertainty with this MSY estimate due to the short time series of available fishery-independent CPUE data available for modelling.

On the basis of the evidence provided above, the Shark Bay Crab Managed Fishery (Western Australia) management unit is classified as a **sustainable stock**.

**South
Eastern
Australia**

Blue Swimmer Crabs occur in coastal and estuarine waters along the length of the New South Wales coastline. New South Wales Blue Swimmer Crab populations are at the southern end of the species' distribution along the east coast. A legal minimum size (LMS) of 65 mm carapace length (equivalent to 140 mm carapace width) is enforced for recreational and commercial fishers.

The most recent estimate of the recreational harvest of Blue Swimmer Crabs in NSW was approximately 42,200 crabs weighing approximately 20 t during 2019–20 [Murphy et al. 2022]. The annual recreational harvest of Blue Swimmer Crabs in New South Wales was previously estimated to lie between 150 and 310 t based on the results of the National Recreational and Indigenous Fishing Survey [Henry and Lyle 2003].

The primary indicators for biomass and fishing mortality are commercial catch and standardised catch rates from the commercial fishery (2009–22) and catch rates from fishery-independent surveys in Wallis Lake (2018–22). Commercial catches of this species tended to fluctuate around a long-term average of about 144 t over the period 2000–01 to 2016–17. However, following the implementation of quota management (December 2017) and the increase in LMS (60 to 65 mm CL) reported commercial landings in 2017–2018 and 2018–19 declined to 104 t and 84 t, respectively [Johnson 2023]. State-wide estuary catch during the most recent complete quota year (July 2021 to June 2022) was 47 t. Standardised commercial catch rates (in mean CPUE kg-day⁻¹) sharply declined under revised management arrangements in 2017–18. From 2017–18 standardised catch rates for fishing trapping in Wallis Lake (60% of average landings) and other main estuaries (15% of average landings) have declined. Catch rates in Wallis Lake and other main estuaries in 2021–22 were 54% and 25% lower than 2017–18, respectively [Johnson 2023]. In 2020–21, average catch rate of undersized crabs from fishery-independent surveys (3.4 crabs per trap⁻¹) was 65% lower than 2019–20. Similarly, catch rates of legal sized crabs from fishery independent surveys declined for the fourth consecutive year with catch rates in 2021–22 (0.94 crabs per trap⁻¹), 45% lower than 2018–19 (1.73 crab per trap⁻¹) [Johnson 2023].

The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. However, for the period 2017–18 to 2021–22 the biomass declined, but the stock is not yet considered to

be recruitment impaired.

Catch-MSY model-assisted catch-only assessment [Martell and Froese 2013] was fitted to commercial catch from 1984–85 to 2021–22 using the 'simpleSA' package in R [Haddon et al. 2018]. Modelling suggests that the current biomass of Blue Swimmer Crab in NSW waters is depleted to 31% relative to unfished levels with a 95% confidence interval of 6%–57% [Johnson 2023]. The assessment estimated maximum sustainable yield (MSY) to be around 149 t. Average combined commercial and recreational harvest over the last five years was approximately 100 t (90 and 12 t respectively), with estimated landings in 2014–15 (239 t) equivalent to the upper bound of estimated MSY (238 t).

The increased LMS is greater than the onset of sexual maturity protecting a large proportion of egg producing females from harvesting [Johnson et al. 2010; Johnson 2023]. The size-structure of observed catches from the Wallis Lake trap fishery (2018-20) indicate that 60% of the total catch of female and berried Blue Swimmer Crabs were below the current LMS [Johnson 2023]. The magnitude of winter harvest in Wallis Lake, that disproportionally impacts large mated pre-spawning females resulting in declining summer harvest in the following year, has declined in recent years [Schilling et al. 2022]. Additionally, the implementation of a daily possession limit for all ocean fisheries (25 kg) has reduced fishing pressure on the offshore spawning stock, resulting in a decline in harvest rate. However, if the level of fishing mortality permitted under existing management arrangements (i.e., TAC 225 t) is combined with recreational catches estimated at 10–20% of total harvest, Catch-MSY model outputs include some trajectories that deplete biomass to less than 20% of unfished levels within five years [Johnson 2023].

NSW estuaries are subject to periodic flooding events which have the potential to limit catches during large-scale floods, the most recent occurring in 2018 and 2022. The impact of factors other than changed population dynamics, including changed fishing practices, locations, catch reporting and catchability need to be investigated further. Nevertheless, under the rapidly declining biomass and relatively low levels of recruitment in recent years, the above evidence indicates that the current level of fishing mortality is likely to cause the stock to become recruitment impaired.

On the basis of the evidence provided above, the South Eastern Australia biological stock is classified as a **depleting stock**.

Spencer Gulf

In the South Australian gulfs, access to commercially harvest Blue Swimmer Crabs is provided via a Blue Crab Fishery (BCF) or a Marine Scalefish Fishery (MSF) licence endorsed with quota entitlements. The MSF licence holders predominantly use hoop and drop nets while, the pot fishing sector of the BCF uses specifically designed crab pots. Determination of stock status is based on a fishery-independent pot survey with trigger and limit reference points based on survey catch rate, as an index of relative biomass and fishing mortality [PIRSA 2020]. The TACC levels have been set since 1996 to limit Blue Swimmer Crab catches within ecologically sustainable limits set in the management plans [PIRSA 2020]. Since 1999–2000, exploitation rates have been limited by setting the TACC at levels below the maximum historical catch for the fishery. Throughout South Australia, a legal minimum size (LMS) of 110 mm carapace width (CW) is enforced, at which size crabs are approximately 14–18 months old and sexually mature. Females produce at least two batches of eggs each season [Kumar et al. 2003].

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The most recent stock assessment reported that 326.3 t was harvested, which represented 86% of the TACC (381.67 t) for the 2021–22 season [Beckmann and Hooper 2023]. In 2022, legal sized fishery independent survey CPUE was 4.1 kg crabs per pot-lift, which was above the trigger reference point (2.4 kg crabs per pot-lift) [Beckmann and Hooper 2023]. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Furthermore, the above evidence indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence provided above, the Spencer Gulf biological stock is classified as a **sustainable stock**.

West Coast On the West Coast of South Australia, access to take Blue Swimmer Crabs is provided via a Marine Scalefish Fishery (MSF) licence. MSF licence holders predominantly use hoop and drop nets. The West Coast zone is not subject to the quota management system and is managed separately to the BCF. This zone of the fishery operates under the Management Plan for the MSF [PIRSA 2018] that specifies general performance indicators assessed in Smart et al. [2023].

Catches continued to decline during 2000s and early 2010s, dropping to a low of 31.2 t in 2016, and have since increased to 58 t in 2021–22 [Smart et al 2023]. The primary indices of biomass and fishing mortality for the West Coast biological stock are the commercial CPUE and catch trends. Comparison of recent CPUE and catch trends to values in the past decade is considered to provide a reliable proxy for relative biomass and fishing mortality. These historical values have been stable at relatively high levels, indicating that the biomass of this stock was unlikely to be depleted or that recruitment was unlikely to be impaired in the past decade. The total targeted effort was 1,059 fisher days in 2021–22 which produced a CPUE (targeted crab net effort) by fisher day of 58 kg.fisher/day. The CPUE in 2021–22 was the lowest since 2017–18 (51 kg.fisher/day) and was similar to the previous ten-year average (60 kg.fisher/hr). The above evidence indicates that the biomass of this stock is unlikely to be depleted, that recruitment is unlikely to be impaired and that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence provided above, the West Coast biological stock is classified as a **sustainable stock**.

Western Australia North Coast The Western Australia North Coast management unit comprises two dedicated Blue Swimmer Crab trap fisheries: the Pilbara Crab Managed Fishery (PCMF) and the Exmouth Gulf Developing Crab Fishery (EGDCF). In addition, Blue Swimmer Crab is taken as by-product by three prawn trawl fisheries: the Exmouth Gulf Prawn Managed Fishery (EGPMF), Onslow Prawn Managed Fishery (OPMF) and Nickol Bay Prawn Managed Fishery (NBPMF). Total extractions of Blue Swimmer Crab from the North Coast Crab management unit in 2022 was 17.6 t, which represented a slight decline on the reported catch of 18.9 t in 2021. Negligible Blue Swimmer Crab catches have been reported in recent years from the EGDCF and the OPMF, with both fisheries catching the species intermittently.

The annual standardised catch rate from the PCMF provides an index of abundance for the preliminary harvest strategy that is used to assess fishery performance. The catch rate has fluctuated markedly over the last 20 years, ranging from 0.46 kg/traplift in 2007 to a peak of 1.9 kg/traplift in 2013. These

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fluctuations appear to be predominantly in response to interannual changes in environmental conditions, primarily water temperature, that lead to recruitment variability. Despite the 2021 catch rate (0.42 kg/traplift) falling marginally below the harvest strategy threshold (0.46 kg/traplift), the 2022 catch rate of 0.84 k

**Western
Australia
South-West
Coast**

The Western Australia South-West coast management unit comprises a number of minor Blue Swimmer Crab trap and setnet fisheries: the Warnbro Sound Crab Managed Fishery (WSCMF), the Swan-Canning Estuary Fishery (SCEF—Area 1 of the West Coast Estuarine Managed Fishery), the Mandurah to Bunbury Developing Crab Fishery (MBDCF) and the South Coast Estuarine Managed Fishery (SCEMF), in addition to blue swimmer crab taken as by-product in other net and trawl fisheries. Note: in line with outcomes from a 2018 review of the south-west WA blue swimmer crab resource (DPIRD 2018), the MBDCF was closed in September 2022 (fishing ceased in July 2021), and the Warnbro Sound Crab Managed Fishery was closed in May 2023 (fishing ceased in June 2022).

Despite the closure of the MBDCF, total reported landings of Blue Swimmer Crab for the Western Australia South-West coast management unit increased from 16.0 t in 2021 to 25.9 t in 2022. This was primarily due to a considerable increase in catch reported for the SCEMF, rising from 3.5 t in 2021 to 15.9 t in 2022. Stock abundance of Blue Swimmer Crabs in estuaries along the WA south coast appears to be heavily influenced by the strength of the warm, southward flowing Leeuwin Current. During strong current years, crabs recruit from more northern stocks while increased water temperatures provide improved conditions for growth and reproduction. Consequently, annual catch and effort is highly variable in response to these pulses of abundance. As the strength of the Leeuwin Current (LC) is strongly associated with the ENSO cycle, three successive years of La Niña events (2020–22) resulted in a stronger than average current during this period.

Catch rates for all minor Blue Swimmer Crab fisheries on the South-West Coast remain above threshold levels and within historic ranges, indicating that the Blue Swimmer Crab biomass in this management unit is unlikely to be depleted and that current levels of fishing mortality are unlikely to cause the stock to become recruitment impaired.

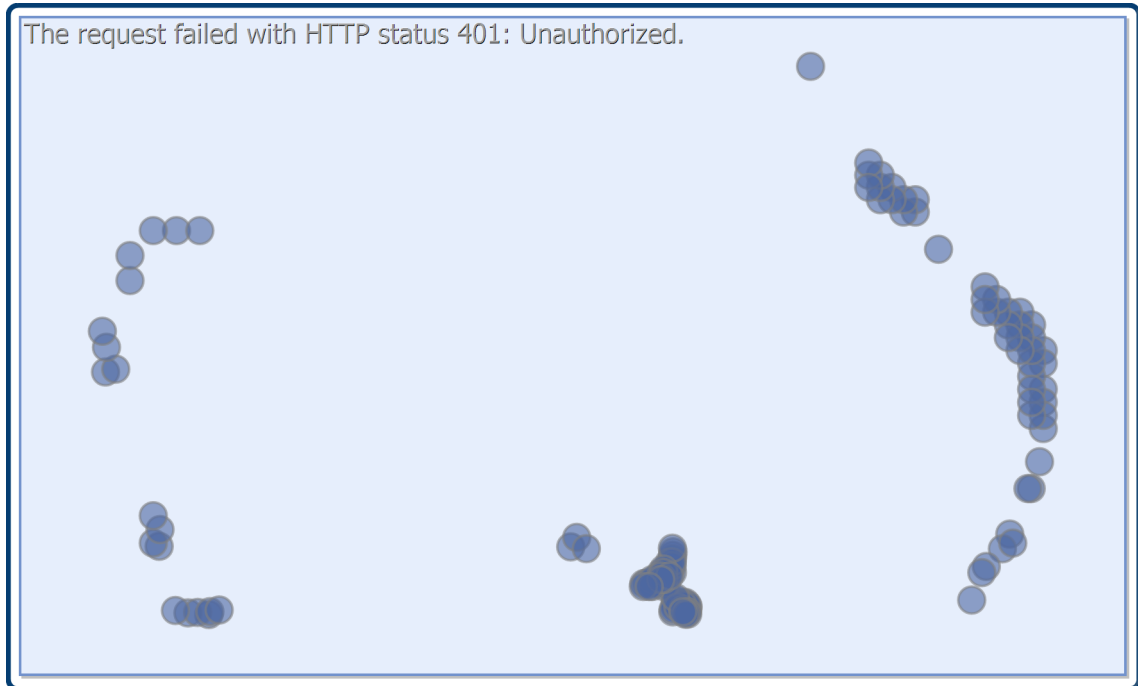
On the basis of the evidence provided above, the Western Australia South-West Coast management unit is classified as a **sustainable stock**.

BIOLOGY

Blue Swimmer Crab Biology [de Lestang et al. 2003a,b; Sumpton et al. 2003]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Blue Swimmer Crab	3–4 years, ~ 200 mm CW	Varies among locations, 6–14 months, 86–110 mm CW

DISTRIBUTION



Blue Swimmer Crab Spatial Distribution

TABLES

Fishing methods	New South Wales	Queensland	South Australia	Western Australia
Charter				
Traps and Pots		✓		
Unspecified				✓
Commercial				
Blue Swimmer Crab Trap			✓	
Crab Trap	✓	✓		✓
Fish Trap	✓			
Gillnet				✓
Mesh Net	✓			
Otter Trawl	✓	✓		✓
Traps and Pots				✓
Unspecified			✓	
Various	✓			

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Recreational				
Blue Swimmer Crab Trap	✓			✓
Coastal, Estuary and River Set Nets			✓	✓
Dip Net	✓			
Diving			✓	✓
Hoop Net	✓			
Traps and Pots	✓	✓		

Management Methods				
	New South Wales	Queensland	South Australia	Western Australia
Charter				
Gear restrictions		✓		
Male-only harvest		✓		
Possession limit		✓		
Processing restrictions		✓		
Size limits		✓		
Spatial closures		✓		
Commercial				
Effort limits				✓
Gear restrictions	✓	✓	✓	✓
Harvest Strategy		✓		
Individual transferable quota		✓		
Limited entry	✓	✓	✓	✓
Male-only harvest		✓		
Processing restrictions		✓		

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Protection of egg-bearing females	✓		✓	✓
Size limit	✓		✓	✓
Size limits		✓		
Spatial closures	✓	✓	✓	✓
Spatial zoning	✓		✓	✓
Temporal closures			✓	✓
Total allowable catch	✓	✓	✓	✓
Trip limits		✓		
Vessel restrictions	✓	✓		✓
Recreational				
Bag limits			✓	✓
Boat limits			✓	✓
Gear restrictions	✓	✓	✓	✓
General recreational licence or fishing boat licence (not species specific)	✓			✓
Limited entry (licensing)				✓
Male-only harvest		✓		
Passenger restrictions				✓
Possession limit		✓		
Processing restrictions		✓		
Protection of egg-bearing females	✓		✓	✓
Size limit	✓		✓	✓
Size limits		✓		
Spatial closures	✓	✓	✓	✓

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Spatial zoning				✓
Temporal closures				✓

Catch				
	New South Wales	Queensland	South Australia	Western Australia
Charter				Negligible
Commercial	48.2774 t	231.553 t	57.9886 t	552.065 t
Indigenous	Unknown	Unknown	Unknown	Unknown
Recreational	27 t (2013–14)	26 t (2019–20)	251 t (2021–22)	47 t (2015–16)

Western Australia – Recreational (Catch). Boat-based recreational catch in 2017–18 [Ryan et al. 2019]. Does not include scoop netting and other methods of recreational fishing.

Queensland – Indigenous (Management Methods). for more information see: <https://www.daf.qld.gov.au/business-priorities/fisheries/traditional-fishing>

Queensland – Commercial (Catch). Queensland commercial and charter data have been sourced from the commercial fisheries logbook program. Further information available through the Queensland Fisheries Summary Report <https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-research/data/queensland-fisheries-summary-report>

Queensland – Commercial (Management Methods). Harvest strategies available at: <https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable/harvest-strategy>

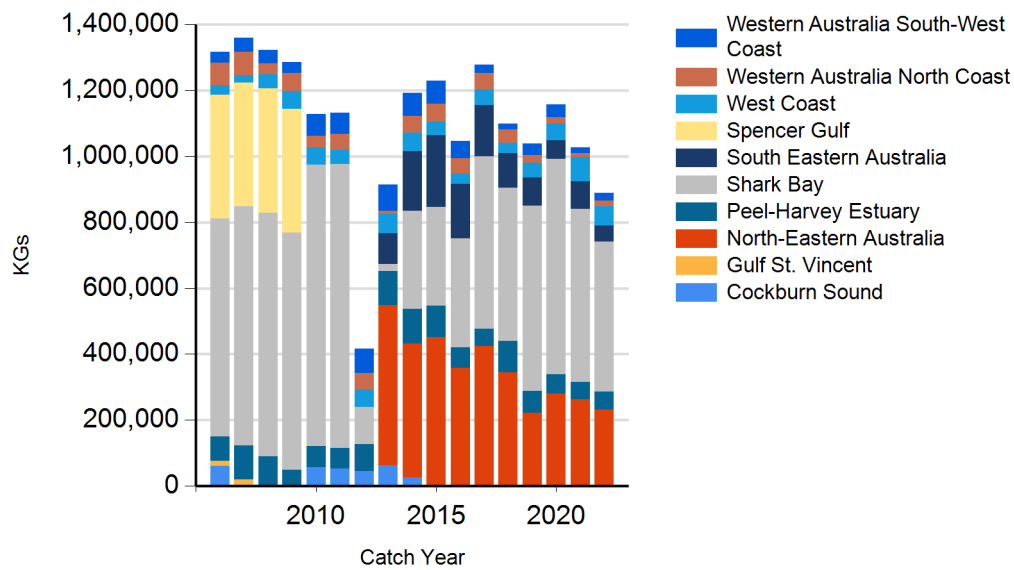
Queensland – Recreational Fishing (Catch). Data are based at the whole of Queensland level and derived from statewide recreational fishing surveys. Where possible, estimates have been converted to weight (tonnes) using best known conversion multipliers. Conversion factors may display regional or temporal variability. In the absence of an adequate conversion factor, data presented as number of fish.

New South Wales – Indigenous (Management Methods). <https://www.dpi.nsw.gov.au/fishing/aboriginal-fishing>

New South Wales – Recreational (Catch) . Recreational catch estimate of 20 t t is based on (i) an estimated recreational catch of 42,200 Blue Swimmer Crabs by NSW resident recreational anglers in 2019–20 [Murphy et al. 2021]; and (ii) an assumed mean weight of kept Blue Swimmer Crabs of 0.225 kg/crab.

CATCH CHART

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Commercial catch of Blue Swimmer Crab - note confidential catch not shown.

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