South Australian Charter Boat Fishery
2017/18

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This report uses South Australian Charter Boat Fishery Logbook data provided by licensed commercial operators in the South Australian Charter Boat Fishery (SACBF).

South Australian Research and Development Institute (SARDI) acknowledges and appreciates the efforts of the licence holders that submitted logbook data.

We thanks Louise Abfalter and Nicole Bowden of SARDI who provided valuable assistance in gathering and quality controlling the data and information provided in this report.

This report was internally reviewed by Drs Kathrine Heldt and Crystal Beckmann (SARDI), Mr Jon Pressor (PIRSA Fisheries and Aquaculture) and formally released by SARDI Science Leader, Fisheries, Dr Stephen Mayfield.
EXECUTIVE SUMMARY

This report summarises information on spatial and temporal patterns in nominal catch and effort, client dynamics, fishing activities, and wildlife interactions in the South Australian Charter Boat Fishery (SACBF) between 2007/08 and 2017/18. Nominal catch and estimated weight data for Snapper and King George Whiting (KGW) collected in the SACBF in 2017/18 are considered with information from recreational fishery surveys in relation to allocation of the resources.

The number of active licences in the SACBF ranged from 77 to 79 between 2007/08 and 2011/12, and was 58 in 2017/18, representing a 27% decline since the inception of the fishery.

A total of 14,382 clients participated in trips in the SACBF during 2017/18, representing a minor (<1%) reduction (c.f. 14,461) from 2016/17. Annual client participation rates have stabilised since 2013/14 at between 245 and 260 clients per active licence.

Chartered fishing activities were mostly concentrated in Spencer Gulf, Gulf St. Vincent (GSV) and Kangaroo Island, with Victor Harbor and the South-east, the West Coast, and Other (offshore and shelf) regions comprising the remainder of the spatial area.

KGW (42.7%), Snapper (16.4%), Bight Redfish (13.3%), Silver Trevally (3.8%), and Western Australian (WA) Salmon (3.2%) comprised 79% of the catch in 2017/18. Other species harvested included Southern Calamari (2.8%), Southern Bluefin Tuna (SBT) (2.5%), Southern Garfish (2.1%), Snook (1.9%) and Blue Crab (1.2%). The remainder of the catch comprised 26 species, including small-medium demersal fish (4.3%), large demersal fish (2.5%), small-medium pelagic fish (1.1%), sharks (0.8%), large pelagic fish (other than SBT) (0.3%), and Southern Rock Lobster (SRL) (0.1%).

KGW comprised 35.7% of the total nominal catch in the SACBF in all years combined. Total annual catches of KGW ranged between 29,469 and 54,563 fish between 2007/08 and 2017/18. A total of 26,700 KGW were specifically targeted and retained in 2017/18.

Snapper comprised 20.0% of the total nominal catch in the SACBF in all years combined. Total annual catches of Snapper peaked at 34,450 fish in 2007/08 and declined thereafter to 13,127 fish in 2017/18. A total of 10,344 Snapper were specifically targeted and retained in 2017/18.

Estimated weights of total annual catches of Snapper (39.8 t; catch = 13,127 fish) and KGW (11.9 t; catch = 34,109 fish) taken by clients in the SACBF during 2017/18 were equivalent to ~5.9%
and 1.9% of the total estimated weights of annual catches of these species across all sectors, respectively.

There were 16 interactions with Threatened Endangered and Protected Species (TEPS) in the SACBF between 2007/08 and 2015/16, including four with marine mammals, ten with protected fish species, and two with birds. No wildlife interactions were reported in the fishery in 2016/17 or 2017/18.

Downward trends in client numbers, fleet size (licences and vessels), and annual numbers of trip days may be partly explained by reduced access to two of the three key species during seasonal and spatial management closures, and uncertainty in the stock status of Snapper.

**Keywords:** Recreational Fishing, Commercial Tourism, Participation, Snapper, KGW.
1. BACKGROUND

1.1. Overview

This report provides a summary of logbook data, collected by the Charter Boat Fishery (SACBF) between 1 July 2007 and 30 June 2018. Species-specific summaries are provided for the most commonly taken species in the fishery.

1.2. Description of the fishery

The SACBF is a commercial operation that provides recreational fishers with access to South Australia’s fisheries resources, through the provision of purpose-built vessels, experienced operators and sophisticated fish-finding and navigational technologies. The SACBF contributed $10.5 M to South Australia’s Gross State Product (GSP), and $6.4 M to household income in 2016/17 (Carlin and Morison, 2018). Economic performance indicators driven by some of the fishery performance metrics provided in this report were last summarised for 2016/17, and suggested growth of the fishery was following a decreasing trend (Carlin and Morison, 2018).

Clients in the SACBF mostly use rods and lines but are also permitted to use bait pumps, cockle and crab rakes, crab nets and lobster pots. Operators can extend their service beyond fishing activities to include diving expeditions, ecotours and passenger trips. Charter trips may vary from multiple trips in one day to multiple day trips. The SACBF can operate in all coastal waters, including the gulfs and bays from the state borders of South Australia (SA) and Western Australia (WA) to SA – Victoria (VIC). The SACBF comprises Marine Fishing Areas (MFAs) in five key regions of SA (Fig. 1). These include the West Coast, Spencer Gulf, Gulf St. Vincent/Kangaroo Island, Victor Harbor/South-east and ‘Other’. The ‘Other’ region includes eastern and central Great Australian Bight (GAB) from near Cape Catastrophe, Eyre Peninsula out to the continental shelf slope to the SA - WA border, and offshore areas to the south of Kangaroo Island (Fig. 1). The main species targeted by clients of the SACBF include Snapper (*Chyrsophyrs auratus*), King George Whiting (KGW; *Sillaginodes punctatus*), Bight Redfish (*Centroberyx gerrardi*), WA Salmon (*Arripis truttaceus*), Snook (*Sphyraena novaehollandiae*), Silver Trevally (*Pseudocaranx dentex*), Southern Bluefin Tuna (SBT; *Thunnus maccopyi*), Southern Calamari (*Sepioteuthis australis*) and Southern Garfish (*Hypohamphus melanochir*).
1.3. Management arrangements


The SACBF is a limited entry fishery with 105 licence holders of which 58 were active in 2017/18. Management arrangements include both input and output controls. Input controls include gear limits per passenger, limited number of qualified registered masters per vessel, seasonal/area closures, and the prohibition of licence holders or crew undertaking fishing activities whilst operating a charter (other than assisting clients). Output controls include minimum legal size limits for permitted species, and bag and boat restrictions for retained species (Appendix 3).
1.4. Information sources used for assessment

A total of 58 Marine Fishing Areas (MFAs) are used by PIRSA Fisheries and Aquaculture and SARDI Aquatic Sciences for the purpose of statistical reporting and monitoring of commercial fishing activities (Fig. 1). Charter boat operators are required to provide data describing their fishing activities, daily catch and effort, clients, and interactions with TEPS as defined in the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). The logbook records must be submitted to SARDI Aquatic Sciences within 15 days of the end of each month. Logbook information is entered into a database that is routinely reviewed to ensure the data satisfy research and management needs. Data used in this assessment were collected and submitted for the period between 1 July 2007 and 30 June 2018.

1.5. Objective

This report summarises information on fishing activities, client participation, spatial dynamics, patterns in nominal catch and effort and TEPS interactions in the SACBF between 2007/08 and 2017/18.
2. METHODS

2.1. Catch and effort statistics

The report constitutes a public-access document and summarises non-confidential data in accordance with the *Fisheries Management Act (2007)*, as provided by licence holders to SARDI Aquatic Sciences in the SACBF Logbook (Appendix 1) and TEPS logbook. For each trip, the operators are required to report a suite of information describing the activities. Logbook information collected includes the master and vessel names, licence number, port of operation, time and date of trip start and end, number of clients and their details, including postal code, state, territory or country. Activities described in entries include instances where clients were game fishing, fishing in inshore (0–50 m in depth), offshore (50–250 m in depth), or deep-water areas (>250 m in depth), using lobster pots, drop-nets and diving. Other information recorded includes whether the charter constitutes an eco-tour, its passenger numbers, number of fishers, area code (MFA), total fishing time (hours: minutes), amount of gear used, target species, and catch in number (not weight; i.e. nominal catch). Additional data collected for KGW and Snapper include numbers of under-size released, legal sized released, retained numbers within size grades, and total estimated weights of the catch of each of the two species during each trip.

Metrics used to assess the performance of the fishery in this report include:

- **Client dynamics**: Annual patterns in numbers of clients, and participation rates, and relative contribution to the client base (local by state and territory, and overseas).
- **Activity patterns**: Number of licences, active licences, active vessels, and fishing activities (e.g. inshore, offshore, deepsea, game fishing and eco-tours).
- **Spatial, annual and seasonal patterns in nominal catch and fishing effort**: All catch data mentioned in this report represent nominal catches (e.g. fish count data) unless otherwise indicated. Nominal catches were aggregated across financial years and species, region or MFA. Annual aggregated nominal catches of individuals of each species (or in some cases, species are grouped for logbook reporting purposes, e.g. ‘Leatherjackets’). Annual and regional trends in fishing effort were expressed as hours fished as a product of the number of clients fishing.
2.2. Wildlife interactions

Interactions with TEPS reported in the Wildlife Interactions Logbook were summarised from data provided in Mackay (2018) and updated to include data from the 2017/18 season. Interactions with TEPS include physical contact between an individual, vessel, or the fishing gear with a protected species.

2.3. Data validation

Validation measures undertaken on the SACBF logbook data include code-driven queries activated during data-entry and reporting stages cross-checking during the collation and processing phases. Regular, random checks of data are undertaken as standard procedure (see Vainickis 2010). Catch and effort data were aggregated, tabulated and cross-checked with previous reports (Steer and Tsolos 2016, Rogers et al. 2017). Authors also discussed data-handling and quality assurance procedures, to confirm that interpretation of the data was consistent with the structure of the logbook reporting system and the activities in the fishery.
3. RESULTS

3.1. Client dynamics

Client participation was highest during the first six years of operation of the SACBF. The annual number of clients that participated in the fishery ranged from 14,382 to 23,710 between 2007/08 and 2017/18 (Table 1), with the lowest number of participants recorded in the terminal year of this reporting period. Patterns in participation closely correlated \((r = 0.93, n = 11)\) with the number of active licences operating in the fishery, which ranged from 58 to 79 between 2007/08 and 2017/18 (Table 1).

Annual participation rates ranged from 245 to 314 clients-per-active licence, and stabilised at 245–260 between 2013/14 and 2017/18 (Table 1). A total of 92.6% of clients participating in the SACBF between 2007/08 and 2017/18 were from Australian states and territories; 4.8% had no recorded details identifying their state or country of origin (Fig. 2A). The overseas component of the client-base comprised people from Great Britain (0.5%), New Zealand (0.3%), the United States (0.2%), and South Africa (0.05%). The remaining 1.5% of overseas clients were from sixty-five other countries. Of the clients participating in the SACBF between 2007/08 and 2017/18 that provided Australian postal codes, 72.3% were South Australian, 14.8% were Victorian, 9.2% were from New South Wales, 1.9% were from Queensland, 0.9% were from Western Australia, 0.5% were from the Northern Territory, 0.25% were from Tasmania, and <0.01% were from the Australian Capital Territory (Fig. 2B).

<table>
<thead>
<tr>
<th>Financial year</th>
<th>No. of clients</th>
<th>Active licences</th>
<th>Participation rate per active licence</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007/08</td>
<td>21,960</td>
<td>78</td>
<td>282</td>
</tr>
<tr>
<td>2008/09</td>
<td>21,431</td>
<td>79</td>
<td>271</td>
</tr>
<tr>
<td>2009/10</td>
<td>21,846</td>
<td>77</td>
<td>284</td>
</tr>
<tr>
<td>2010/11</td>
<td>20,095</td>
<td>77</td>
<td>261</td>
</tr>
<tr>
<td>2011/12</td>
<td>23,710</td>
<td>77</td>
<td>308</td>
</tr>
<tr>
<td>2012/13</td>
<td>23,532</td>
<td>75</td>
<td>314</td>
</tr>
<tr>
<td>2013/14</td>
<td>19,227</td>
<td>74</td>
<td>260</td>
</tr>
<tr>
<td>2014/15</td>
<td>15,138</td>
<td>61</td>
<td>248</td>
</tr>
<tr>
<td>2015/16</td>
<td>15,646</td>
<td>61</td>
<td>256</td>
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<tr>
<td>2016/17</td>
<td>14,481</td>
<td>59</td>
<td>245</td>
</tr>
<tr>
<td>2017/18</td>
<td>14,382</td>
<td>58</td>
<td>248</td>
</tr>
</tbody>
</table>
Figure 2. Annual patterns in client origin in the SACBF between 2007/08 and 2017/18. (A) Inclusive of overseas guests and those of unidentified origin and (B) Australian clients from each state and territory.
3.2. Fleet dynamics

Licences

The total number of licences in the SACBF ranged from 105 to 109 between 2007/08 and 2013/14, and was 102 licences in 2017/18. The number of active licences in the fishery ranged from 77 to 79 between 2007/08 and 2011/12 (Table 1), and declined to 58 in 2017/18.

Spatial dynamics of operations by licences and vessels

The spatial dynamics of the SACBF is characterised by the highest proportion of operators and vessels being located near the main population centres of Adelaide and Port Lincoln (Fig. 3). Key ports where vessels operated from were Port Lincoln (8 licences), Marion Bay (7 licences), Cape Jervis (6 licences) and Port MacDonnell (5 licences). The fishery comprised 59 vessels in 2017/18. Thirty-two licences operated vessels in Gulf St. Vincent and Kangaroo Island and 30 operated in Spencer Gulf. Regional centres along the South-east, from Victor Harbor to Port MacDonnell, had fewer licenced operators (n = 9) and vessels (n = 9; 10.6% of vessels). Only 11 vessels or 12.9% of licence holders operated off the West Coast. Seven vessels and licence holders or 8% of the fleet operated in offshore waters of the ‘Other’ region located in shelf waters of the GAB.

![Figure 3. Spatial dynamics of active charter vessels during 2016–18.](image-url)
Activities during charter trips

Fishing in inshore regions where depths were ≤50 m was the most frequent activity in the SACBF, and comprised 73–80% (Ave = 77 ± 2.7%) of fishing effort between 2007/08 and 2017/18 (Fig. 4). Fishing effort during these activities ranged between 62,979 and 109,780 hours (hrs) (Ave = 87,195 ± 19,032), with peaks in 2007/08 and 2011/12. In 2017/18, trips in inshore regions comprised 74% of charter activities.

Fishing in offshore regions 50–250 m in depth comprised 12–21% (Ave = 16 ± 2.5%) of fishing effort between 2007/08 and 2017/18. Effort during these activities ranged between 13,813 and 23,015 hrs (Ave = 18,237.5 ± 3,226.5) between 2007/08 and 2017/18.

In 2017/18, trips in offshore waters comprised 21% of activities. Ecotourism activities and deepsea fishing in water depths ≥250 m comprised the smallest percentage of activities (only 0.63 and 0.31% of mean annual effort, respectively).

Figure 4. Proportional distribution of activity type in the SACBF between 2007/08 and 2017/18.
3.3. Catch and effort

Seventy-five species (or species groups) of fish, shark, mollusc and cephalopods were caught by clients of the SACBF between 2007/08 and 2017/18 (Table 2). These included a combined total of ~1,335,426 fish, sharks, molluscs and cephalopods. Annual trends in total nominal catches are provided in Fig. 5A.

Total catches during all years combined included KGW (476,714; 35.7% of catch), Snapper (267,282; 20.0% of catch), and Bight Redfish (155,083; 11.6% of catch) (Table 2). A multitude of other species taken in the SACBF each comprised <5% of the total catch. This included, WA Salmon (55,736; 4.2%), Swallowtail (48,944; 3.7%), Silver Trevally (46,960; 3.5%), Southern Garfish (44,966; 3.4%), Southern Calamari (39,184; 2.9%), Snook (38,681; 2.9%), Sweep (21,875; 1.6%), Australian Herring (21,312; 1.6%), Leatherjacket spp. (17,924; 1.3%), SBT (17,125; 1.3%) and Red Mullet (14,459; 1.1%) (Table 2).

Spatial patterns in annual effort indicated that the highest percentages (50–64%; Ave = 57 ± 5%) of fishing activity consistently occurred in GSV and Kangaroo Island, with between 51,221–75,106 hrs reported per year (Fig. 5B). The peak in annual effort in GSV and Kangaroo Island occurred in 2016/17. Spencer Gulf supported between 20% and 35% (Ave = 28 ± 6%) of annual fishing effort, with between 17,569 and 49,629 hrs recorded in the region per year. The peak in annual effort in Spencer Gulf occurred in 2011/12.

In the remaining three regions, the annual average effort (% of total effort) across the fishery was 6% in both the Victor Harbor and South-east, and the West Coast regions, with 4% of the total effort in the Other (offshore) region. Effort peaked in 2010/11 in the Victor Harbor and South-east, and the West Coast regions, and during 2014/15 in the Other (offshore) region. The seasonal signal in the SACBF based on average monthly effort showed consistent peaks between March and May (autumn), and a secondary peak in October (Fig. 5C). Effort was relatively high and had the lowest variability during summer months of December and January. Mean monthly effort was lowest in July, August and November.

A total of 79,852 fish, shark, mollusc and cephalopods were taken in the SACBF in 2017/18. The total catch of all species was 8% lower than for the previous financial year (n2016/17 = 86,464) (Table 2). Four species comprised ~75% of the catch in 2017/18 (Table 2), including KGW (34,109; 42.7%), Snapper (13,127; 16.4%), Bight Redfish (10,604; 13.3%), Silver Trevally (3,033; 3.8%), and WA Salmon (2,524; 3.2%). Other target species that supported minor components of catches were Southern Calamari (2,257; 2.8%), SBT (1,962; 2.5%), Southern Garfish (1,707;
2.1%), Snook (1,515; 1.9%), and Blue Crabs (945; 1.2%) (Table 2). During 2017/18, total effort was 86,038 hrs across the fishery, with 52,302 hrs fished in GSV and Kangaroo Island (61%), 18,219 hrs (21%) fished in Spencer Gulf, 8,854 hrs (10%) fished off the West Coast, 4,963 hrs (6%) fished in the Victor Harbor and South-east region, and 1,700 hrs (2%) fished in the Other (offshore) region.

Figure 5. (A) Annual total catch (number) of all species, (B) Effort as a percentage by geographic region, (C) monthly averaged daily effort by for all species taken in the SACBF between 2007/08 and 2017/18.
Table 2. Annual catch (nominal) by species in the SACBF between 2007/08 and 2017/18. KGW = King George Whiting, SRL = Southern Rock Lobster, SBT = Southern Bluefin Tuna.

<table>
<thead>
<tr>
<th>Species</th>
<th>07/08</th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>12/13</th>
<th>13/14</th>
<th>14/15</th>
<th>15/16</th>
<th>16/17</th>
<th>17/18</th>
<th>All yrs</th>
<th>All yrs %</th>
</tr>
</thead>
<tbody>
<tr>
<td>KGW</td>
<td>52,531</td>
<td>54,563</td>
<td>49,788</td>
<td>54,327</td>
<td>54,563</td>
<td>42,289</td>
<td>35,526</td>
<td>29,469</td>
<td>35,424</td>
<td>34,125</td>
<td>34,109</td>
<td>42.7</td>
<td>476,714</td>
</tr>
<tr>
<td>Snapper</td>
<td>34,450</td>
<td>30,830</td>
<td>31,828</td>
<td>28,562</td>
<td>28,865</td>
<td>25,569</td>
<td>22,233</td>
<td>20,071</td>
<td>16,801</td>
<td>14,946</td>
<td>13,127</td>
<td>16.4</td>
<td>267,282</td>
</tr>
<tr>
<td>Blight Redfish</td>
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<td>17,872</td>
<td>14,034</td>
<td>16,922</td>
<td>17,397</td>
<td>14,454</td>
<td>11,746</td>
<td>12,557</td>
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<td>10,604</td>
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<td>155,083</td>
</tr>
<tr>
<td>Silver Trevally</td>
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<td>3,933</td>
<td>3,033</td>
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<td>46,960</td>
</tr>
<tr>
<td>WA Salmon</td>
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<td>6,075</td>
<td>1,954</td>
<td>4,816</td>
<td>5,694</td>
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<td>3,566</td>
<td>2,524</td>
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<td>55,736</td>
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<tr>
<td>Southern Calamari</td>
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<td>2,307</td>
<td>7,401</td>
<td>6,571</td>
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<td>2,364</td>
<td>2,257</td>
<td>2.8</td>
<td>39,184</td>
</tr>
<tr>
<td>SBT</td>
<td>554</td>
<td>736</td>
<td>1,035</td>
<td>1,144</td>
<td>1,552</td>
<td>1,788</td>
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King George Whiting

Five MFAs in Spencer Gulf (19, 30, 32 and 33), Investigator Strait (40 and 42), GSV and Backstairs Passage (36 and 44) supported ~80% of the catch of KGW (Fig. 6A). The remainder of the spatially explicit catch data in 22 MFAs were confidential across the time-series. At the regional scale, catches of KGW were taken in Spencer Gulf, Gulf St. Vincent and Kangaroo Island, and along the West Coast (Fig. 6B).

KGW comprised 35.7% of the total nominal catch in the SACBF in all years combined, and 42.7% of the total catch in 2017/18 (Table 2). Total annual catches of KGW ranged between 29,469 and 54,563 fish between 2007/08 and 2017/18 (Fig. 6C). Total annual catch of KGW was 34,109 fish in 2017/18. Annual targeted numbers of KGW retained ranged between 24,524 and 48,498 fish, with the peak occurring in 2012/13. Targeted catches of KGW retained in 2017/18 was 26,700 fish. Trends in catches were relatively stable between 2007/08 and 2011/12, declined between 2011/12 and 2013/14, and stabilised thereafter (Fig. 6C). Estimated weight of the nominal catch of KGW ranged between 9.6 t in 2014/15 and 19.1 t in 2008/09, and was 11.9 t in 2017/18. Mean estimated annual weight of the nominal catch of KGW was 14.8 ± 3.6 tonne.

Catches of sub-legal KGW that were released ranged between 2,202 and 8,848 fish (Ave = 5,050 ± 1,848) between 2007/08 and 2017/18 (Fig. 6D). This was the equivalent of 7.5–16.8% (Ave = 11.5 ± 2.7%) of the total catch, with the lowest percentage in 2014/15 and the highest in 2007/08. A total of 3,656 fish that were less than or equal to the minimum legal length (MLL) were released in 2017/18. Catches of KGW ≥ MLL that were released ranged between 246 and 1,170 fish (Ave = 637 ± 248.3). This was the equivalent of 0.8–2.2% (Ave = 1.5 ± 0.4 %) of the total catch, with the lowest percentage occurring in 2014/15 and the highest in 2007/08. A total of 732 KGW that were ≥ MLL were released in 2017/18.

Client numbers targeting KGW ranged between 8,273 and 4,490 between 2011/12 and 2017/18 (Fig. 6E). The mean annual number of clients participating in trips targeting KGW across all years was 6,374 ± 1,543.8. Downward trends in annual KGW catches corresponded with declining effort and the number of clients targeting the species. Target effort ranged between 19,124 and 36,574 hrs between 2007/08 and 2017/18, with the peak in 2011/12 (Fig. 6E). In 2017/18, effort targeted at KGW recorded by 42 licence holders across the fishery was 20,694 hrs (Fig. 6E). Seasonal patterns of proportional catches pooled across all years and regions indicated the peak months were in autumn, spring and early summer. Winter months had the lowest catches (Fig. 6F).
Figure 6. KGW. A. Spatial patterns in percentage catches in MFAs between 2007/08 and 2017/18. B. Annual catch by region. C. Annual patterns in target and non-target nominal catch. D. Numbers of legal and under-size fish released. E. Target effort and number of clients targeting the species, and F. Seasonality of catches between 2007/08 and 2017/18.
Snapper

Five MFAs in southern GSV and the Backstairs Passage (MFA 44), central (23 and 32) and southern Spencer Gulf (39), and Investigator Strait (40) supported >60% of the catch of Snapper between 2007/08 and 2017/18 (Fig. 7A). The remainder of the spatially explicit catch data in 20 MFAs were confidential. Catches of Snapper were mostly taken in the regions of GSV and Kangaroo Island, and Spencer Gulf (Fig. 7B). The remaining ~10% of the catch was taken in the West Coast, Victor Harbor and South-east, and Other regions (offshore) (Fig. 7B).

Snapper comprised 20.0% of the total nominal catch in the SACBF in all years combined, and 16.4% of the total nominal catch in 2017/18 (Table 2). Total annual catches of Snapper peaked at 34,450 fish in 2007/08 and declined thereafter to 13,127 fish in 2017/18 (Fig. 7C). The number of Snapper specifically targeted and subsequently retained was 10,344 fish in 2017/18 (Fig. 7C). Catches underwent a step-wise decline, ranging from 31,127 to 25,341 fish between 2007/08 and 2011/12, and then declined steadily to 10,344 fish in 2017/18 (Fig. 7C). Estimated weight of the catch ranged between 39.8 t in 2017/18 and 92.9 t in 2009/10. Mean estimated annual weight of the catch of Snapper was 67.7 ± 19.9 tonnes.

Catches of sub-legal Snapper and were released between 2007/08 and 2017/18 ranged between 8,273 and 22,269 fish (Ave = 14,550 ± 4,685.9). This was the equivalent of 41.2‒79.9% (Ave = 60.6 ± 11.0%) of the total catch, with the lowest percentage occurring in 2014/15, and highest percentage (n = 10,482) in 2017/18 (Fig. 7D). Catches of Snapper that were ≥ MLL and were released each season ranged between 668 and 3,080 fish (Ave = 1,737 ± 892.3). This was the equivalent of 4‒10% (Ave = 6.7 ± 1.8 %) of the total catch with the lowest percentage occurring in 2014/15 and highest percentage in 2008/09. A total of 759 Snapper ≥ MLL were released in 2017/18.

Client numbers targeting Snapper ranged between 5,229 in 2017/18 and 13,148 in 2009/10 (Fig. 7E). The average annual number of clients targeting Snapper across all years was 9,030 ± 3,112. There was a 60% decline in the numbers of clients targeting Snapper on trips between 2009/10 and 2017/18. Target effort ranged between 25,497.9 and 66,452.8 hrs between 2007/08 and 2017/18, with the peak in 2009/10 (Fig. 7E). In 2017/18, effort targeted at Snapper recorded by 35 licence holders across the fishery was 25,497.9 hrs.

Seasonal patterns of proportional catches pooled across all years and regions indicated the peak months for catching Snapper in the SACBF were in December and January (summer), March (autumn), and October (spring). Lowest nominal catches occurred during winter (Fig. 7F).
Bight Redfish

The MFAs 39 and 40 in southern Spencer Gulf and Investigator Strait supported >60% of the catch of Bight Redfish. MFAs 27 out from Coffin Bay, and 44 in Backstairs Passage supported 8% and 5% of the nominal catches of Bight Redfish, respectively (Fig. 8A). The remainder of the spatially explicit catch data in 23 MFAs were confidential across the complete time-series. At the broader regional scale, catches of Bight Redfish were predominantly taken in Gulf St. Vincent and Kangaroo Island, the West Coast and Other (offshore) regions (Fig 8B).

Bight Redfish comprised 11.6% of the total nominal catch in the SACBF in all years combined, and 13.3% of the total nominal catch in 2017/18 (Table 2). Total annual catches of Bight Redfish ranged between 8,970 and 17,872 fish between 2007/08 and 2017/18 (Fig. 8C). Total annual catches of Bight Redfish peaked in 2009/10 and 2012/13, declined thereafter to 8,970 fish in 2016/17 and increased to 10,604 fish in 2017/18. The number of Bight Redfish targeted and retained was 3,976 fish in 2017/18. Targeted catches peaked at 8,860 fish in 2008/09, and ranged between 3,856 and 8,860 fish between 2007/08 and 2017/18. Non-target catches of this species where higher than target catches in most years with the exceptions of 2007/08 and 2008/09.

Client numbers targeting Bight Redfish during trips in the SACBF ranged between 989 in 2017/18 and 2,098 in 2012/13 (Fig. 8D). The mean annual number of clients participating in charter trips taking Bight Redfish across all years was 1,555 ± 427.

Effort targeted at Bight Redfish ranged between 5,366 and 12,706 hrs between 2007/08 and 2017/18, with peaks in 2008/09 and 2012/13 (Fig. 8D). In 2017/18, effort targeted at Bight Redfish was recorded by 14 licence holders across the fishery and was 5,882 hrs. Effort targeting the species declined by 54% over the ten-year period between 2009/10 and 2017/18.

Seasonal patterns of proportional nominal catches of Bight Redfish pooled across all years and regions indicated the peak periods for catching Bight Redfish in the SACBF occurred in March (autumn), October (spring) and December (summer) (Fig. 8E). Lowest nominal catches occurred during winter.
Figure 8. Bight Redfish. A. Spatial patterns in percentage catches in MFAs between 2007/08 and 2017/18. B. Annual catch by region. C. Annual patterns in target and non-target nominal catch. D. Target effort and number of clients targeting the species, and E. Seasonality of catches between 2007/08 and 2017/18.
Silver Trevally

The MFAs 30 and 39 in southern Spencer Gulf, 40 and 42 in Investigator Strait, and 44 in Backstairs Passage supported >60% of the catch of Silver Trevally (Figure 9A). The remainder of the spatially explicit catch data for the species in 21 MFAs were confidential across the time-series. Silver Trevally were mostly taken from Spencer Gulf (73.7%), Gulf St. Vincent and Kangaroo Island (24.1%) (Fig. 9B). The West Coast, Victor Harbor and South-east supported the remaining 2.3% of catches.

Silver Trevally comprised only 3.5% of the total nominal catch in the SACBF in all years combined, and 3.8% of the total nominal catch in 2017/18 (Table 2). Target catch data were largely confidential with the exception of the data for 2010/11 (Fig. 9C). The targeted nominal catch of Silver Trevally was 565 fish in 2010/11. Nominal total annual catches of Silver Trevally ranged between 3,033 and 5,479 fish between 2007/08 and 2017/18. Nominal total annual catches of Silver Trevally peaked in 2010/11 and 2015/16 at 5,479 and 5,326 fish, respectively. The number of Silver Trevally retained was 3,033 in 2017/18 (Fig. 9C).

Data describing fishing effort and number of clients targeting the species were confidential for all years with the exception of 2010/11 (Fig. 9D). Effort spent targeting Silver Trevally by 123 clients serviced by five licence holders in 2010/11 was 542 hrs.

Seasonal patterns of proportional nominal catches of Silver Trevally pooled across all years and regions indicated the peak months for catching Silver Trevally in the SACBF were in December and January (summer), March (autumn), and October (spring) (Fig. 9E). Lowest nominal catches occurred during winter.
Western Australian Salmon

The MFAs 44 and 42 in Backstairs Passage and Investigator Strait supported >90% of the nominal catches of WA Salmon (Fig. 10A). The remainder of the spatially explicit catch data in 25 MFAs were confidential across the complete time-series. At the broader regional level, catches of WA Salmon were mostly taken from Gulf St. Vincent and adjacent to Kangaroo Island (93%) (Fig. 10B). Totals of 5.1% and 1.2%, respectively, were taken in Spencer Gulf and along the West Coast.

WA Salmon comprised only 4.2% of the total nominal catch in the SACBF in all years combined, and 3.2% of the total catch in 2017/18 (Table 2). Annual patterns in catches of WA Salmon were multi-modal and highly variable over time, with peaks in 2008/09, 2013/14 and 2015/16 (Fig. 10C). Annual catches declined from 7,112 to 2,524 fish between 2013/14 and 2017/18, despite a modal peak in 2015/16. Targeted catches of WA Salmon ranged from 1,614 to 5,818 fish between 2007/08 and 2017/18. Targeted catches were also multi-modal with peaks at 5,818 fish in 2007/08, and 4,008 fish in 2013/14.

Client numbers targeting WA Salmon during trips in the SACBF ranged between 410 in 2017/18 and 1,580 in 2007/08 (Fig. 10D). The mean annual number of clients participating in charter trips targeting WA Salmon across all years was 902 ± 389.

Effort targeted at WA Salmon by clients in the fishery ranged between 549 and 3,273 hrs from 2007/08 to 2017/18, with peaks in 2009/10 and 2014/15 (Fig. 10D). In 2017/18, effort targeted at WA Salmon recorded by seven licence holders was 768 hrs.

Seasonal patterns of proportional catches of WA Salmon pooled across all years and regions indicated the peak months for catching WA Salmon in the SACBF were December and January (summer) (Fig. 10E). Lowest catches occurred during winter and early spring.
Figure 10. WA Salmon. A. Spatial patterns in percentage catches in MFAs between 2007/08 and 2017/18. B. Annual catch by region. C. Annual patterns in target and non-target nominal catch. D. Target effort and number of clients targeting the species. E. Seasonality of catches between 2007/08 and 2017/18.
Snook

Catches of Snook in medium- to high-catch MFAs were taken by <5 licences and were confidential. Data for 22 MFAs in the fishery were confidential across the complete time-series. Snook were predominantly taken by clients on charters in Gulf St. Vincent and off Kangaroo Island (67%) and Spencer Gulf (29.5%) (Figs.11A and 11B). Small proportions of annual catches were taken off the West Coast (1.8%; all years) during the early stages of the fishery.

Snook comprised only 2.9% of the total nominal catch in the SACBF in all years combined, and 1.9% of the total nominal catch in 2017/18 (Table 2). Catches were highly variable between years and ranged between 1,515 and 5,376 fish with a declining overall trend over time (Fig. 11C). Mean annual nominal catch was 3,516 ± 1,145.9. Peak catches occurred in 2007/08, 2010/11 and 2016/17. The total catch was 1,515 fish in 2017/18. Targeted catches of Snook ranged from 604 to 3,673 fish between 2007/08 and 2016/17. Targeted catches were multi-modal with peaks in 2007/08, 2010/11 and 2016/17. Target catch data collected for Snook were confidential in 2017/18.

Client numbers targeting Snook during trips in the SACBF ranged between 183 in 2013/14 and 1,112 in 2010/11 (Fig.11D). The mean annual number of clients (excluding 2017/18 – confidential data) participating in charter trips targeting Snook across all years was 649 ± 343.

Effort targeted at Snook ranged between 304 and 2,125 hrs between 2007/08 and 2016/17 (Fig. 11D), with modal peaks occurring in 2007/08, 2010/11 and 2016/17. Target effort data for Snook collected in 2017/18 were confidential.

Seasonal patterns of proportional nominal catches of Snook pooled across all years and regions indicated the peak months for catching Snook in the SACBF were October (spring) to January (summer) (Fig. 11E).
Figure 11. Snook. A. Spatial patterns in percentage catches in MFAs between 2007/08 and 2017/18. B. Annual catch by region. C. Annual patterns in target and non-target nominal catch, D. Target effort and number of clients targeting the species, and E. Seasonality of catches between 2007/08 and 2017/18.
Southern Bluefin Tuna

Over 70% of SBT were taken in MFAs 39 (30%) in the approach to southern Spencer Gulf west and NW Kangaroo Island and Western Investigator Strait, MFA 44 (24%) in Backstairs Passage, and MFA 58 (17%) in the South-east adjacent to the SA-Vic border (Fig. 12A). The remainder of the spatially explicit catch data in 15 MFAs were confidential across the time-series. At the broader regional scale, SBT were predominantly taken by clients on charters in Gulf St. Vincent and off Kangaroo Island, Victor Harbor and the South-east, West Coast and Other (offshore) regions (Fig. 12B).

SBT comprised 1.3% of the total nominal catch in the SACBF in all years combined, and comprised 2.5% of the total catch in 2017/18 (Table 2). Total catches of SBT increased annually between 2007/08 and 2015/16 from 554 to 2,393 fish per annum (Fig.12C). The total catch of SBT decreased and stabilised at 1,962 fish in 2017/18. Mean annual catch of SBT was 1,557 ± 614 fish.

Targeted catches of SBT ranged from 494 to 1,928 fish between 2007/08 and 2017/18. Targeted catches were bi-modal with peaks in 2014/15, 2015/16 and 2017/18. The total catch was 1,418 fish in 2017/18 (Fig. 12C).

The number of clients targeting SBT during trips in the SACBF ranged from 763 in 2007/08 to 2,578 in 2014/15. A total of 2,334 clients participated in charter trips targeting SBT in 2017/18 (Fig. 12D). The mean annual number of clients participating in charter trips targeting SBT across all years was 1,743 ± 639.

Effort targeted at SBT ranged between 4,637 and 13,494 hrs between 2007/08 and 2017/18, with three modal peaks in 2009/10, 2014/15 and 2015/16 (Fig. 12D). A total of 10,716 hrs of effort targeting the species occurred during 2017/18.

Seasonal patterns of proportional nominal catches of SBT pooled across all years and regions indicated that summer and autumn months had a higher percentage of catch than the winter and spring months (Fig. 12E).
Figure 12. SBT. A. Spatial patterns in percentage catches in MFAs between 2007/08 and 2017/18. B. Annual catch by region. C. Annual patterns in target and non-target nominal catch, D. Target effort and number of clients targeting the species, and E. Seasonality of catches between 2007/08 and 2017/18.
Southern Calamari

The spatial distribution of the catch of Southern Calamari was characterised by the highest catches taken from MFAs in central Spencer Gulf (MFA 32; 35.6% of catch) and MFA 36 in central GSV (12.9% of catch) (Fig. 13A). MFA 21 (9% of catch) in northern Spencer Gulf, MFA 30 (6% of catch) and MFA 33 (8% of catch) in southern Spencer Gulf were also key regions where the species was taken. MFAs 43 and 44 along the eastern side of the Fleurieu Peninsula comprised 8% and 7% of the catch, respectively. A total of 19 of the MFAs assessed comprised confidential data across the complete time-series. At the regional level, Southern Calamari were mostly taken by clients in Spencer Gulf (65%), Gulf St. Vincent and off Kangaroo Island (33%) (Figs 13A and B), with the remaining 2% taken in the Other, West Coast, Victor Harbor and South-east regions.

Southern Calamari comprised 3.0% of the total nominal catch in the SACBF in all years combined, and 2.9% of the total nominal catch in 2017/18 (Table 2). Annual patterns in catches of Southern Calamari and ranged between 2,137 and 3,348 individuals between 2007/08 and 2010/11, and peaked at 7,401 in 2011/12 (Fig. 13C). Catches decreased between 2014/15 and 2017/18, in-line with reduced targeting of the species after 2013/14. Targeted catches ranged from 683 to 1,748 between 2007/08 and 2017/18 (Fig. 13C). The nominal catch of Southern Calamari was 2,257 in 2017/18. Targeted catches peaked at 1,910 in 2009/10 and 1,748 in 2013/14.

Client numbers targeting Southern Calamari during trips in the SACBF ranged between 195 in 2017/18 and 554 in 2009/10 (Fig. 13D). The mean annual number of clients participating in charter trips targeting Southern Calamari across all years was 327 ± 106.

Effort targeted at Southern Calamari ranged between 352 and 1,202 hrs between 2007/08 and 2017/18, with peaks in 2009/10 and 2013/14 (Fig.13D). In 2017/18, effort targeted at Southern Calamari recorded by seven licence holders was 390 hrs. Effort targeting Southern calamari peaked in 2013/14 (Fig. 13D).

Seasonal patterns of proportional nominal catches of Southern Calamari pooled across all years and regions indicated the peak months for taking the species were October (spring), December (summer) and May (autumn) (Fig. 13E). Lowest nominal catches occurred during months of July and August (winter).
Figure 13. Southern Calamari. A. Spatial patterns in percentage catches in MFAs between 2007/08 and 2017/18. B. Annual catch by region. C. Annual patterns in target and non-target nominal catch, D. Target effort and number of clients targeting the species, and E. Seasonality of catches between 2007/08 and 2017/18.
Southern Garfish

The spatial distribution of landings of Southern Garfish was characterised by high catches in MFA 32 in central Spencer Gulf (44% of the catch), and MFA 36 in central GSV that comprised 31% of the catch (Fig 14A). Locations in MFA 43 in central eastern GSV supported 6% of the catch of Southern Garfish (Fig. 14A). The remainder of the spatially explicit catch data for Southern Garfish (n=14 MFAs) were confidential across the complete time-series. Catches of Southern Garfish in the SACBF were taken in Spencer Gulf (58%), Gulf St. Vincent and Kangaroo Island (42%) (Fig. 14B).

Garfish comprised 3.4% of the total nominal catch in the SACBF in all years combined, and 2.1% of the total catch in 2017/18 (Table 2). Total annual catches ranged between 1,365 and 7,117 fish between 2007/08 and 2017/18 (Fig. 14C). Annual patterns in catches were bi-modal with peaks in 2011/12 and 2013/14. The total catch of Southern Garfish was 1,707 in 2017/18. Data on annual target catch, target effort and the number of clients targeting Southern Garfish were confidential in 2007/08, 2012/13, and between 2014/15 and 2017/18.

Effort and client data were available for five separate seasons. Between 2008/09 and 2013/14, 132 to 307 clients per annum targeted the species (Fig. 14D). Effort spent targeting Southern Garfish was during trips run by 5–7 licence holders and ranged between 433 and 755 hrs.

Seasonal patterns of proportional nominal catches of Southern Garfish pooled across all years and regions indicated the peak months for catching the species in the SACBF were in December and January (summer) (Fig. 14E).
Swallowtail

The spatial distribution of the catch of Swallowtail was characterised by the highest catch (78%) taken from MFA 39 adjacent to the entrance to Spencer Gulf, and MFA 40 located in Investigator Strait along the southern coastline and SW corner of southern Yorke Peninsula (Fig. 15A).

A total of 19 of the MFAs comprised confidential data across the time-series. At the broader regional spatial scale, catches of Swallowtail were taken in Gulf St. Vincent and Kangaroo Island and the Other (offshore) regions (Fig. 15B).

Swallowtail comprised only 3.7% of the total nominal catch in the SACBF in all years combined, and 1.9% of the total catch in 2017/18 (Table 2). Total annual catches ranged between 1,372 and 7,919 fish between 2007/08 and 2017/18 (Fig. 15C). Annual patterns in catches of Swallowtail peaked in 2008/09 and 2012/13 (Fig. 15C). The total catch was 1,491 in 2017/18. The catch was taken by between 13 and 23 licence holders (Ave = 18 ± 4). Target catch data target effort and the number of clients targeting Swallowtail were confidential for all years with the exception of 2008/09, during which there was no targeted catch and effort (Fig. 15D).

Seasonal patterns of proportional catches of Swallowtail pooled across all years and regions indicated the peak months for catching the species in the SACBF were in April (autumn), October (spring) and December (summer) (Fig. 15E).
Figure 15. Swallowtail. A. Spatial patterns in percentage catches in MFAs between 2007/08 and 2017/18. B. Annual catch by region. C. Annual patterns in nominal catch, D. Target effort and number of clients targeting the species, and E. Seasonality of catches between 2007/08 and 2017/18.
3.4. Wildlife Interactions

There were 16 TEPS interactions in the SACBF between 2007/08 and 2015/16 (Table 3). These included four interactions with marine mammals, ten with protected fish species (White Sharks and Sygnathids), two with birds, and none with reptiles (e.g. marine turtles) (Mackay 2018). No wildlife interactions were reported in the fishery in 2016/17 or 2017/18. (Table 3).

Table 3. Summary of interactions with TEPS in the SACBF sourced from Wildlife Interaction logbooks.

<table>
<thead>
<tr>
<th>TEPS</th>
<th>07/08</th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>12/13</th>
<th>13/14</th>
<th>14/15</th>
<th>15/16</th>
<th>16/17</th>
<th>17/18</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pinnipeds</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Cetaceans</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Fishes</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Reptiles</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Birds</td>
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<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>2</td>
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</tbody>
</table>
4. DISCUSSION

This report synthesises information sourced from the SACBF Logbook describing the seasonal, spatial and temporal patterns of fleet and activity dynamics, client participation, catch and effort, and interactions with TEPS. It also provides information on catches of KGW and Snapper in the SACBF in relation to total catches of these species in SA waters.

The size of the active component of the SACBF fleet reduced in size considerably (~25%) over the past decade from 78 to 58 active licences. However, the client participation rate remained relatively stable at between 245 and 260 clients per active licence since 2013/14, suggesting that the remaining charter businesses maintained the capacity to service clients from South Australia (72%), Victoria (15%), and New South Wale (9%) that continued to support the industry. Broader information describing the origin of the client-base showed that the overseas tourism component was comparatively insignificant when compared to the Australian component, with the former accounting for <5% of the total clientele.

The SACBF operates out of several ports in Spencer Gulf, GSV, Kangaroo Island and Investigator Strait and targets Snapper, KGW, WA Salmon, Silver Trevally, Southern Calamari and a wide range of other species. The remainder of the fleet accesses a mix of demersal and pelagic species in exposed shelf waters in the South-east, the West Coast of Eyre Peninsula, and Other (offshore and shelf) regions of the state. Fishing in inshore areas where bottom depths are generally ≤50 m explained 77% of the recorded fishing activities and effort in the SACBF. By comparison, fishing activities in offshore regions where bottom depths are 50–250 m comprised ~16% of the fishing effort. High powered vessels, modern fish-finding and navigation technology allows operators to consistently return to known areas, search for target species, and operate where they experienced previous success. Online remote-sensing information is also used to locate productive surface patches and temperature ‘breaks’ when targeting pelagic species, such as tunas.

Consistent with the previous assessment of the SACBF (Steer and Tsolos 2016), Snapper, KGW and Bight Redfish continued to comprise a substantial percentage of annual catches in the most recent assessment year, as well as across the 11-year time-series between 2007/08 and 2017/18. The remainder of the landings include comparatively smaller catches of over 70 different species, most of which individually comprise ≤ 4% of total annual catches.

Patterns in total annual catches of KGW and Snapper reflect a combination of stock-specific, fishery-, and management-related factors, some of which include reduced numbers of licensed
operators and clients participating in the fishery and corresponding declines in annual effort. Seasonal trends in Snapper and KGW catch and effort were responsive to management measures aimed at maintaining the sustainability of the stock, such as the implementation of seasonal and spatial closures during spawning periods (Appendix 3). Snapper catches were highest during December and January showing that successful targeted fishing occurred directly following the annual seasonal and spatial closures. In some regions, such as northern Spencer Gulf, reduced confidence in the stock status (Steer et al. 2018a, b), combined with the implemented closures may explain part of the observed reduction in targeting of Snapper. The opposite was apparent for KGW, as nominal catches were highest in the two months prior to the closure period during May (Appendix 3).

Numbers of KGW and Snapper that were released due to being smaller than the minimum legal length declined and then stabilised in-line with overall patterns in catches and effort throughout the time-series. Client motivations for catching these species vary and are predominantly for eating purposes in the case of KGW of all sizes, whereas clients tend to target small to medium Snapper for eating, and the larger fish for sport-fishing purposes. Release of Snapper <MLL that have been raised to the surface quickly can lead to barotrauma and impact survival probability (Conron et al. 2010; Hughes and Stewart 2013). Impacts of different fishing practices, gear types, fight times and barotrauma on the fate of fish following their release, and the efficacy of handling practices and release devices requires further assessment and research.

The suite of species that support the catch composition in the SACBF exhibits complex regional and spatial patterns (Appendix 2) that are not necessarily apparent at the scale of individual or grouped MFAs. Operators in the fleet are limited by their ability to access some isolated areas, and are responsive to changes in availability and encounter rates of different stocks, as well as preferences of clients for targeting species found in offshore shelf waters. For example, the Bight Redfish is a long-lived, slow-growing species of high eating quality. The species is targeted around deep reef edges and drop-offs in depths of 20–70 m that are mostly located in isolated, offshore southern gulf and shelf waters. Historically, this species was mostly targeted in Commonwealth managed commercial fisheries; however, catches of Bight Redfish in the SACBF peaked in 2009/10 and 2012/13 and the species continued to support the fishery in 2017/18, comprising 13.3% of the catch (c.f. 16.4% Snapper). Catches of Bight Redfish followed a similar pattern to the trajectories for KGW in regions with offshore access (mostly outside the gulfs).

Targeting of pelagic species, including WA Salmon and Snook was highly variable, and catches and effort targeting SBT increased steadily until 2015/16, before peaking and stabilising in recent
years. A total of 385 SBT were taken in 2017/18 and this popular game-fishing target species comprised 23% of the total catch in the Victor Harbor and South-east, despite only comprising 2.5% of the total annual catch during the most recent assessment year. This highly migratory species aggregates to feed in the eastern Great Australian Bight and South-east (Bonney Upwelling Region) between summer and mid-winter, and is mostly targeted by clients using trolling lures. SBT were targeted frequently during 2014/15 and 2015/16, which coincided with a broadening of the spatial distribution and availability of the stock. Whilst targeting of pelagic species does not constitute a high percentage of total annual catches across the fleet, access to these species provides a diversity of potential targets, whilst reducing targeting of primary target species (Steer et al. 2018a, b). Diversification of potential target species allows operators to satisfy client demands across a range of weather conditions in inshore and offshore areas, and to provide a range of game fishing experiences.
REFERENCES


Appendix 1. Example of logbook entry for a single trip by an operator in the SACBF.

![SOUTH AUSTRALIAN CHARTER BOAT FISHERY LOGBOOK](image)

**CATCH AND ACTIVITY RECORD FOR THE CHARTER TRIP**

<table>
<thead>
<tr>
<th>Anglo</th>
<th>No. Fish</th>
<th>Angling</th>
<th>Year (mm)</th>
<th>No. Fish</th>
<th>Remarks</th>
<th>Total Harvest Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNA</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
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<td>2</td>
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<td>7</td>
</tr>
<tr>
<td>GMA</td>
<td>3</td>
<td>6</td>
<td>12</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Estimated Harvested Weight (kg) 3.74 133
Appendix 2. Regional patterns in catches of key species in 2017/18.

Victor Harbor and South-east

In the Victor Harbor and South-east regions, catches were dominated by Snapper (n = 407; 24.8%), SBT (n = 385; 23.4%), Australian Bonito (‘Mackerel Tuna’) (n = 119; 7.2%), Gummy Shark (n = 107; 6.5%), and Morwong (Jackass / Teraki) (n = 103; 6.3%) during 2017/18 (Table 2). The remaining 31.8% of the catch comprised 22 other species.

GSV and Kangaroo Island

In the GSV and Kangaroo Island regions, catches comprised KGW (30.5%), Snapper (18.3%), Bight Redfish (17.7%), Silver Trevally (5.5%) and Australian Salmon (5.3%) (Table 2) during 2017/18. The remaining 22.7% of the catch comprised 40 other species.

West Coast

In the West Coast region, catch compositions largely comprised KGW (n = 2,072; 35.5 %), Bight Redfish (n = 2067; 35.4%), Snapper (n = 399; 6.8%), and SBT (376; 4.7%). The remaining 11.1% of the catch comprised 24 species.

Other

In the ‘Other’ (offshore) region, catch compositions were mostly supported by Bight Redfish (n = 373; 52%), KGW (n = 113; 15.8%), SBT (n = 72; 10.1%), and Snapper (n = 26, 3.6%) during 2017/18 (Table 2). The remaining 15.2% of the catch comprised 15 species.

Spencer Gulf

In the Spencer Gulf region, the catch compositions were dominated by KGW (n = 17,946; 69.2%), Snapper (n = 3,927; 15.1%), and Southern Calamari (n = 1,201; 4.6%) in 2017/18 (Table 2). The remaining 6.1% of the catch comprised 25 species.
Appendix 2 - Fig 1. Spatial dynamics of catches of key species taken in the SACBF from Victor Harbor and the South-east, GSV and Kangaroo Island in 2017/18.
Appendix 2 - Fig 2. Spatial dynamics of catches of key species taken in the SABCF from the West Coast, ‘Other’ (Offshore), and Spencer Gulf regions in 2017/18.
Appendix 3. Summary of SACBF bag and boat limit and closures (PIRSA Fisheries & Aquaculture (2019)).