

Sustainable Fisheries Strategy

2017–2027

East Coast Spanish Mackerel Fishery Scoping Study

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Summary

Feature	Details
Species targeted	<i>Commercial</i> –Spanish mackerel (<i>Scomberomorus commerson</i>)
Fisheries symbols	<p><u>Line fishing</u></p> <p>L1—Line fishing south of 24°30'S</p> <p>L2 & L3—Line fishing north of 24°30'S</p> <p><u>Quota/Access symbols</u>—SM</p>
Fisheries legislation	<i>Fisheries Act 1994; Fisheries (General) Regulation 2019; Fisheries (Commercial Fisheries) Regulation 2019; Fisheries Declaration 2019; Fisheries Quota Declaration 2019.</i>
Working Group	No
Harvest Strategy	Under Development
Gear	<p>The following apparatus are currently permitted for use within the East Coast Spanish Mackerel Fishery:</p> <ul style="list-style-type: none"> • Hook and line apparatus. • Recreational fishers may use hook and line, rods and reels and spearfishing gear (exc. Hookah/SCUBA).
Main management methods	<p><i>All fishers</i></p> <ul style="list-style-type: none"> • Permanent and seasonal spatial and temporal closures • Minimum size limits • No take species • Gear restrictions <p><i>Commercial only</i></p> <ul style="list-style-type: none"> • Limited access • 578t Total Allowable Commercial Catch (TACC) limit and species-specific Individual Transferable Quotas (ITQ) • Vessel & tender restrictions <p><i>Recreational only</i></p> <ul style="list-style-type: none"> • Possession limits
Quota (assessed annually)	Spanish mackerel (SM)—578 t
Fishing season	1 July–30 June
Commercial fishery licences	<p>Number of Line symbols: L1—226, L2—190, L3—936,</p> <p>No. quota symbols: SM—240</p>
Total annual harvest by sectors	<p>Commercial: 268t</p> <p>Charter: 22t</p> <p>Recreational: Approx. 33,000 fish (2013/14)</p>

	Harvest by Aboriginal peoples and Torres Strait Islander peoples: Unknown
GVP	\$1.9 million
Stock status	Sustainable
Accreditation under the EPBC Act (Part 13 & 13A)	Part 13: Accredited (expires 28 August 2025)

1 Overview

1.1 Commercial fishery

The *East Coast Spanish Mackerel Fishery* (ECSMF) is a line-only fishery that exclusively targets Spanish mackerel. While the fishery operates along the entire Queensland east coast, including within the Great Barrier Reef Marine Park (GBRMP), most of the effort is focused around the central and northern regions (Fig. 1; Appendix 1). With an estimated Gross Value of Production of \$1.9 million (based on 2017 estimates), the commercial ECSMF is one of Queensland's smaller commercial fisheries.

In order to access the ECSMF, operators must hold both a line (L) fishery symbol and an SM symbol. The line symbol (L), in effect, governs the area where an operator can fish and the types of apparatus permitted for use. For instance, the L1 symbol incorporates tidal waters south of latitude S24°30' to the Queensland – New South Wales border (Appendix 1) and the L2/L3 fishery symbols cover tidal waters north S24°30' through to the tip of Cape York (Appendix 1; Fig. 1). An SM symbol allows a fisher to utilise their own allocated quota and access the fishery, provided they have unused quota remaining. As SM symbol numbers are restricted, this will be the limiting factor with respect to accessing the ECSMF. That is, an operator cannot operate in the ECSMF unless they hold an SM symbol plus a quota allocation for Spanish mackerel.

1.2 Non-commercial Fishing

Spanish mackerel is one of the most valued recreational fish species and attracts a significant level of effort from this sector. While recreational fishers are subject to individual limits, catch reporting is not mandatory and the level of information for this sector is fragmented. The species is included in a routine monitoring program that collects biological information (length, sex and age) from recreationally and commercially caught Spanish mackerel (Department of Agriculture and Fisheries, 2018). However, the majority of the available information on the recreational fishing sector comes from infrequent voluntary recreational fisher surveys (Webley *et al.*, 2015).

The 2013/14 recreational fishers' survey estimates that 55,000 Spanish mackerel were caught in this sector with approximately 40% being discarded (Webley *et al.*, 2009). Subsequent estimates have placed the recreational catch at 211t in Queensland waters *verse* 267t in the commercial ECSMF (Langstreth *et al.*, 2018). The popularity of recreational fishing is also reflected in data for the charter fishery. This data shows that 83 charter fishing operators reported a catch of 22t from the ECSMF during the 2017 period (Department of Agriculture and Fisheries, 2019).

In addition to the recreational and charter fishing sectors, Spanish mackerel will be harvested by Aboriginal peoples and Torres Strait Islander peoples. Catch and effort in this fishing sector remains the least understood. However, DAF anticipates that this sector has comparatively low levels of effort with fishing activities aligning closely with the recreational fishing sector.

A full account of the catch and effort data for the charter fishery is available through Qfish—Queensland's publicly accessible data mining site (<http://qfish.fisheries.qld.gov.au/>). Additional information on the *Queensland Statewide Recreational Fishing Survey* is available on the DAF website: <https://www.daf.qld.gov.au/>.

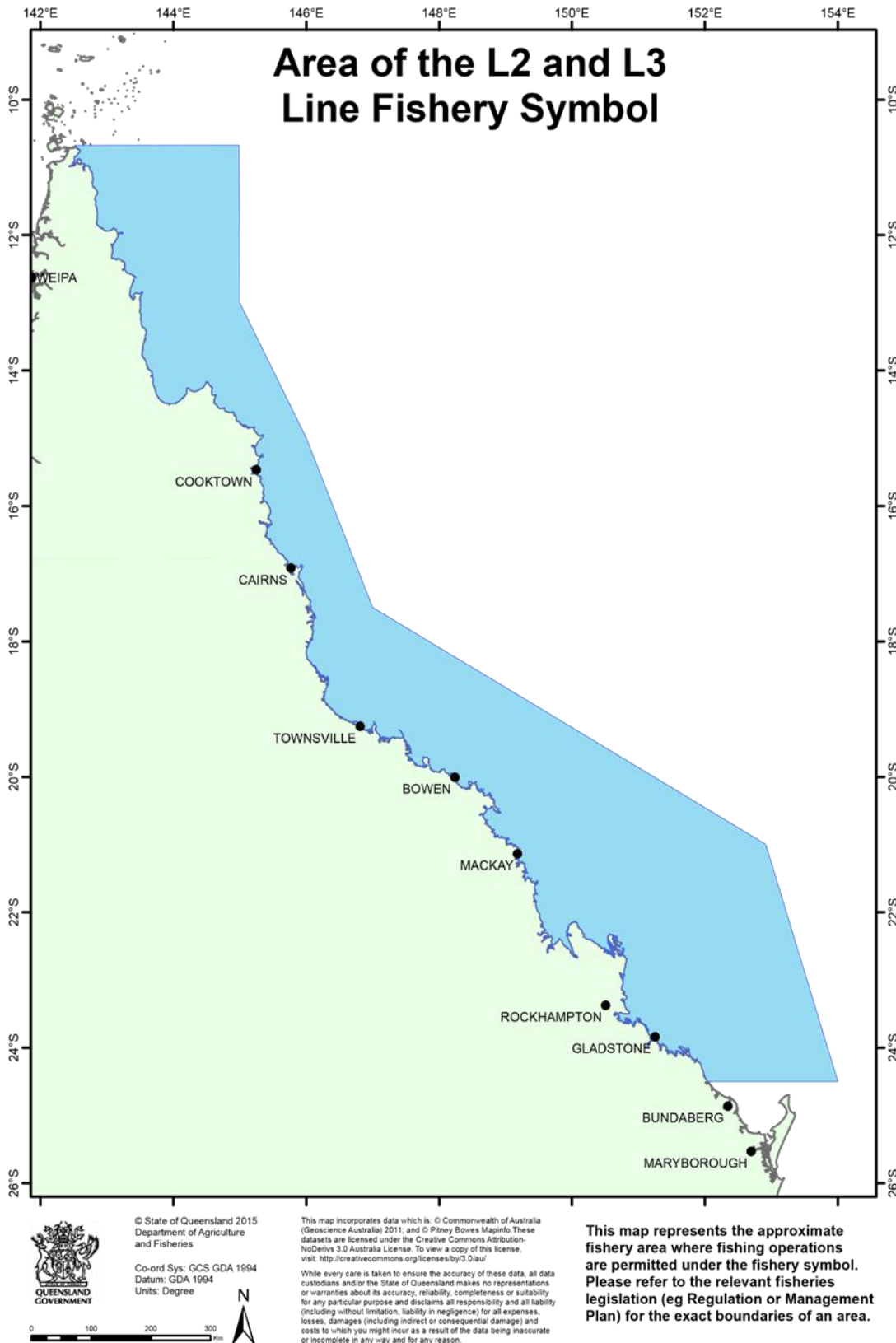


Figure 1. The prescribed fishing area for the L2 and L3 fishery symbols that represent the primary fishing groups for the East Coast Spanish Mackerel Fishery (ECSMF). Operators are permitted fish for Spanish mackerel below the southern border of the L2/L3 fishing area providing they hold an L1 and SM fishery symbol.

2 Legislation & Advisory Bodies

The ECSMF is managed in accordance with the broader objectives of the *Fisheries Act 1994* and the relevant subordinate legislation e.g. *Fisheries (Commercial Fisheries) Regulation 2019*;

Fisheries Declaration 2019; and *Fisheries Quota Declaration 2019*. While this fishery does not currently have a Fisheries Working Group, formation of fishery-specific advisory bodies for all of Queensland's fisheries is an objective of the *Queensland Sustainable Fisheries Strategy 2017–2027*, and one will be formed in the near future (Department of Agriculture and Fisheries, 2017).

3 Key Management Controls

Catch and effort in the commercial Spanish mackerel fishery is managed using a number of input and output controls including individual transferable quotas (ITQs), gear restrictions, vessel restrictions and spatial/temporal closures. Vessel length is restricted to a maximum of 20m and tenders are limited by number, size and proximity to the primary vessel *i.e.* they must stay within 5 nautical miles from primary boat, if not on the same reef. Gear is restricted to three fishing lines at a time with no more than six hooks (total). As a significant portion of the fishing activity occurs within the GBRMP, provisions governing the use of marine resources within the marine park also exert significant influence on the extent of all ECSMF operations (commercial, recreational and charter fishing). A spatial closure also occurs in Platypus Bay due to the risk of ciguatera poisoning.

A Total Allowable Commercial Catch (TACC) limit has been used in the ECSMF since 2003 and it is administered through Individual Transferable Quotas (ITQs). The TACC limit is currently set at ~578t and the quota year for all commercial fishers runs from 1 July to 30 June. While Spanish mackerel stock assessments take into account catch from the recreational and charter fishing sectors, this portion of the catch is not accounted for in the TACC limit.

Steps have recently been undertaken as part of the *Queensland Sustainable Fisheries Strategy 2017–2027* to improve the responsiveness of the TACC setting process and minimise the overexploitation risk for Spanish mackerel. On 1 September 2019, new fishing regulations commenced for a range of fisheries including the ECSMF. One of the more significant changes for this fishery relates to the Spanish mackerel TACC and how it is defined in the legislation. Historically, the total quota entitlement for Spanish mackerel was defined in the *Fisheries Regulation 2008*. The *Fisheries Regulations 2008* has now been replaced with the *Fisheries (Commercial Fisheries) Regulation 2019* and the *Fisheries Declaration 2019*. As part of this process, provisions setting the annual Spanish mackerel quota were moved to a third piece of legislation: *Fisheries Quota Declaration 2019*. While these changes are procedural, it improves the responsiveness of the Spanish mackerel TACC setting processes. To this extent, the new arrangements provide the TACC with the flexibility needed to address changing trends and stock signals (positive or negative) or account for new information.

Minimum size limits apply to Spanish mackerel in the recreational, charter and commercial sectors. Commercial fishers participating in the fishery are required to report catch and effort to Fisheries Queensland through Quota reporting systems and compulsory logbooks. Recreational fishers are not required to hold a licence and the sector is not subject to mandatory reporting requirements.

Refer to the *Fisheries Act 1994* and the relevant subordinate legislation (available at: <https://www.legislation.qld.gov.au/>) for a full account of the rules governing the use of the L and SM

fishery symbols. The catch harvested by Aboriginal peoples and Torres Strait Islander peoples is managed in consideration of the *Native Title Act 1993*.

4 Assessment History

The ECSMF has been the subject of a number of risk assessments and there is a reasonable level of information on the structure and health of Spanish mackerel stocks. In 2004 a whole-of-fishery Ecological Risk Assessment (ERA) was completed for the fishery (Ryan *et al.*, 2004). This was followed by a separate assessment examining the impact of the fishery on the most vulnerable bycatch and byproduct species (Department of Primary Industries and Fisheries, 2005). Spanish mackerel stocks have also been the subject of a detailed stock assessment (O'Neill *et al.*, 2018) and have indicative sustainability assessments through the *National Status of Australian Fish Stocks* (SAFS) processes (Langstreth *et al.*, 2018) (Appendix 2).

Spanish mackerel has been included in a long-term biological monitoring program since 1999. This program collects length, sex and age data from commercial and recreational fishers, which is used in stock assessments (Department of Agriculture and Fisheries, 2018).

5 Licence & Fishery Symbols

Access to Queensland's commercial fisheries is managed using fishery symbols.¹ These symbols define what gear can be used in each fishery (e.g. N = Net, L = line, T = trawl) and the area of operation. While operators can have multiple fishery symbols attached to their licence (e.g. N1, N2 and L1 or a L1 and T1), they can only use one fishery symbol at a time. The notable exceptions to this are a) the crab (C1) fishery symbol that can be used in conjunction with a line (L) and net (N) fishery symbol; and b) fishing symbols related to quota, such as those used in the ECSMF. In each fishery, the total number of symbols represents the number of fishers that could potentially access the fishery at any one time. This differs from data on the number of 'active' licences, which represents the number of operators that have used their symbol to access the fishery over a 12 month period.

Licensing arrangements for the ECSMF have evolved through time with the area of operation and permitted activities becoming more prescriptive. The L1, L2 and L3 symbols were introduced in 1993 and superseded the more generic Line (L) fishing symbol. However, the most significant change for the ECSMF was the introduction of quota and the SM symbol in 2003 (Table 1). Under this system, fishers must have a valid licence with a line fishing symbol (primarily L1, L2 or L3), an SM symbol and valid quota.

Licensing data has shown that the number of L1, L2 and L3 symbols have declined since 1999. This decline was more pronounced in the L1 symbol where total numbers reduced by around 86% over the 1999 to 2017 period (Table 1; Fig. 2). This is in contrast to the number of L2 and L3 fishery symbols, which declined by 21% and 36% (respectively) over the same period. This discrepancy is largely attributed to a 2008/09 latent effort review that removed the majority of the L1 symbols from the system

¹ Data on the total number of fishing symbols represents the total number of operators that can (potentially) access the fishery at one point in time. This differs from the number of 'active' licences that shows the number of operators that have reported catch from the fishery over a 12-month period. In the CRFFF the total number of operators that can access the fishery will be limited by a) the number of RQ symbols and b) the distribution of quota.

(Fig. 2). As the L2 and L3 were not subject to the same review process, the numerical decline in these symbols was less severe (Table 1, Fig. 2).

As SM symbol numbers are restricted, this will be the limiting factor with respect to commercial fishers accessing the ECSMF. When compared to the line symbols, the SM symbol has experienced a decline of around 50 licences in the 15 years since implementation (Table 1). A number of factors would have contributed to the observed declines. In 2004, the total number of licences was reduced by approximately 10% through a *Department of Environment, Water, Heritage and the Arts* buyback scheme under the GBRMP Structural Adjustment Package. Smaller reductions also occurred as part of licence buyback schemes connected with the introduction of the net free areas in 2015 and 2016 (Department of Agriculture and Fisheries, 2016a; b)

Data on the number of licences active in the ECSMF can be split into a pre and post-2003 period (Table 2). Participation rates were much higher prior to 2003 when the fishery was largely managed through input controls. With a maximum participation rate of 549 in 2001/02, the number of active licences in the pre-quota period was two to three times that observed post-2003 (Table 2, Fig. 2b). Since the implementation of the SM quota the number of active licences have remain relatively consistent. During this period, around 65% of all SM symbols were active in the fishery each year (Table 2).

DAF reporting systems define an 'active' licence as any licence that reports catch from the fishery irrespective of the days fished, the frequency of fishing events, or the amount of catch reported. To this extent, the active licence data does not take into consideration a) the intentions of the fisher and b) differentiate between species that were taken opportunistically and those that were actively targeted. These factors are significant as the active licence data may not be an accurate reflection the current fishing environment or the broader priorities of the fishery. This inference relates to the byproduct component of the fishery, as line fishers can retain many byproduct species, which will be recorded under the catch for another line fishery.

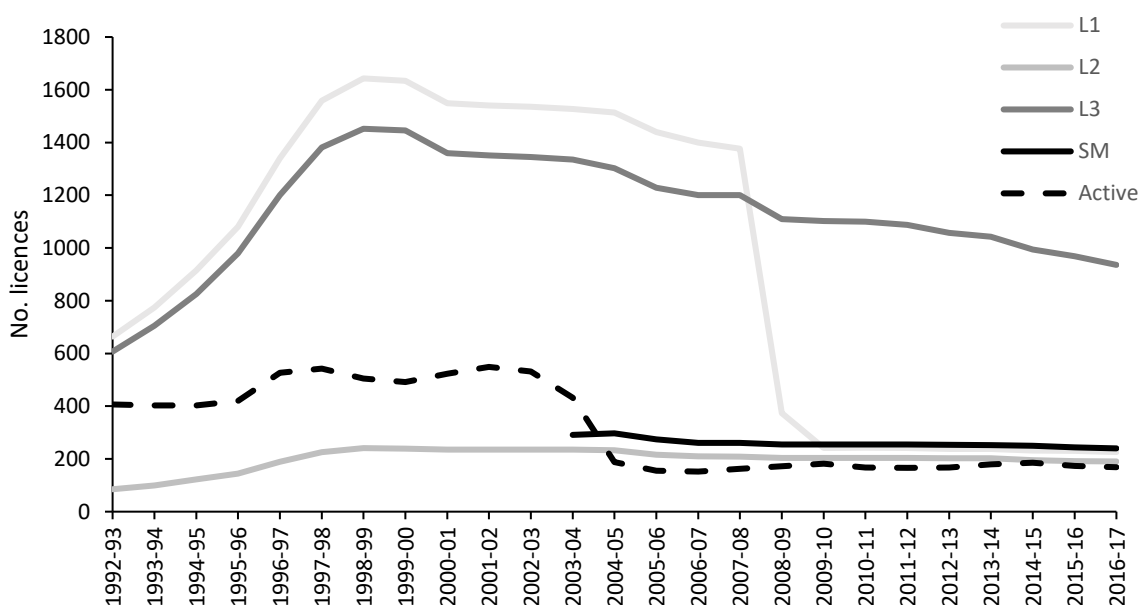


Figure 2. Licence summary for the ECSMF: the number of total and active Line (L1, L2, L3) and SM quota fishery symbols

Table 1. An overview of the total number of line (L) and Spanish mackerel (SM) fishery symbols that can potentially access the ECSMF. SM symbols were implemented in the 2003/04 financial year. Licence holders wanting to access the fishery must hold a line fishery symbol (primarily L1, L2, or L3), an SM symbol and quota.

Year	No. Symbols			
	L1	L2	L3	SM
1992/93	664	85	607	-
1993/94	774	99	705	-
1994/95	915	122	825	-
1995/96	1080	144	979	-
1996/97	1340	189	1200	-
1997/98	1558	226	1381	-
1998/99	1643	241	1452	-
1999/2000	1634	239	1446	-
2000/01	1549	235	1360	-
2001/02	1540	235	1351	-
2002/03	1535	235	1345	-
2003/04	1527	235	1335	291
2004/05	1514	233	1302	297
2005/06	1440	216	1228	274
2006/07	1399	210	1201	261
2007/08	1376	209	1200	261
2008/09	374	204	1109	255
2009/10	241	204	1102	255
2010/11	243	204	1100	255
2011/12	241	204	1088	255
2012/13	238	202	1057	254
2013/14	238	202	1043	252
2014/15	232	195	994	250
2015/16	231	192	969	244
2016/17	226	190	936	240

Table 2. The number of active licences; primary and dory days effort; and total catch (tonnes). The fishery season runs from 1 July to 30 June.

Year	Active Licences	Effort		Catch (t)
		Primary	Dory	
1992/93	406	8553	18551	470
1993/94	403	8932	18884	453
1994/95	403	7661	16097	417
1995/96	420	7662	15437	411
1996/97	527	10224	20036	517
1997/98	542	11649	23546	669
1998/99	505	11109	21704	656
1999/2000	492	11161	22484	705
2000/01	523	11209	22546	540
2001/02	549	13455	25265	693
2002/03	531	14546	27318	774
2003/04	432	10549	20438	553
2004/05	188	4738	8402	308
2005/06	155	4050	6602	269
2006/07	152	3821	6855	234
2007/08	162	3439	6329	209
2008/09	172	4638	9394	308
2009/10	182	5376	11696	390
2010/11	167	4921	10882	282
2011/12	166	4205	9173	254
2012/13	167	3810	7996	261
2013/14	180	4462	9178	305
2014/15	186	4986	11067	300
2015/16	174	4686	9385	277
2016/17	168	3704	6747	268

6 Catch & Effort

6.1 Effort

As systems used by DAF only monitor reported catch they do not fully account for the inexact nature of line fishing. If for example, an operator was targeting Spanish mackerel in the ECSMF but only caught trevally, effort would be reported against the *East Coast Inshore Fin Fish Fishery* (ECIFFF) not the ECSMF. Similarly, if an operator retains a Spanish mackerel and a trevally in a single fishing event then they would technically be fishing in both the ECSMF and the ECIFFF. The primary reason for this is that line fisheries on the Queensland east coast (i.e. ECSMF, ECIFFF, *Rocky Reef Fin Fish Fishery* (RRFFF) and the *Coral Reef Fin Fish Fishery* (CRFFF)) are primarily defined by the species being retained.

The above points are important to consider as effort data submitted to DAF may not reflect the intentions of a fisher at that point in time and may provide a truncated assessment of the current fishing environment. While noting these caveats, the effort data has been provided as part of this assessment as it a) provides a broader overview of how the fishery operates through time and b) provides insight on the direct fishing pressures that are exerted on a species or species complex. To this extent, this data allows inferences to be drawn with respect to effort fluctuations through time and changing fishing behaviours.

Total effort for the ECSMF is recorded as both primary vessel days and associated dory days.² Effort trends (Table 2; Fig. 3) for the fishery mirror those observed in the licensing data (Fig. 2) and reflect key changes in the ECSMF management regime. The largest decline in effort, once again, can be linked to the introduction of quota and the SM fishery symbol. This change alone reduced the number of operators that were permitted to retain Spanish mackerel and by extension the amount of effort that can be used in the fishery. Used in this context, the introduction of quota served its purpose and provided management with an effective mechanism to control commercial effort.

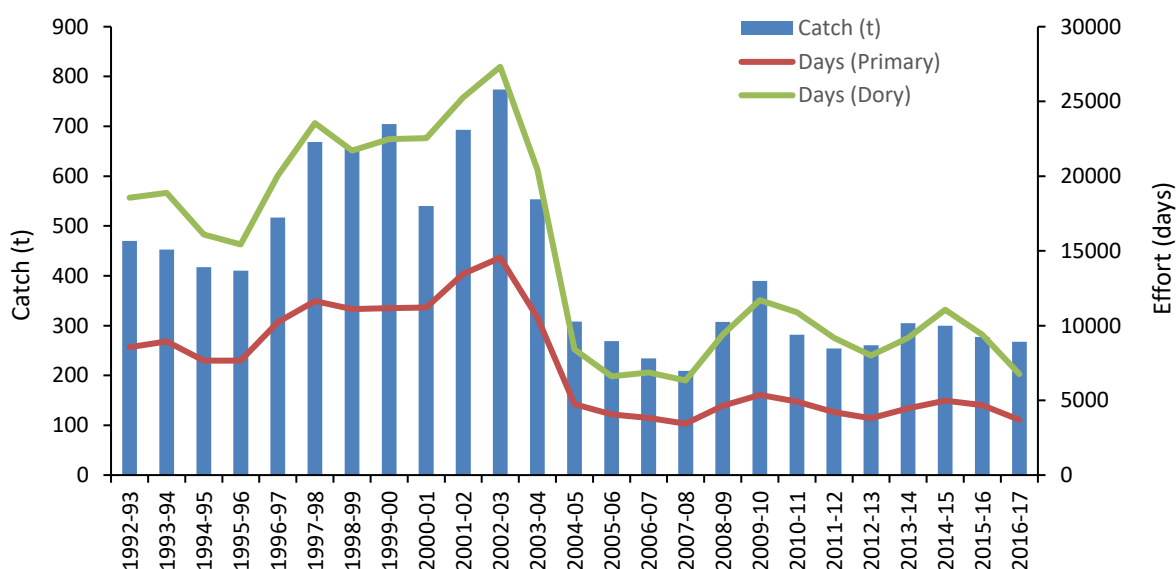


Figure 3. Catch (t) and effort (primary and dory vessel days) summary for the ECSMF from 1992–2017.

² Dory days represent the number of dory days (exc. primary vessel) plus primary days where no tenders were used.

Effort for the fishery is distributed along the entire east coast of Queensland, stretching from the NSW boarder to the tip of Cape York (Appendix 3). Over the past three years, the vast majority of effort falls under the L2/L3 symbols, north of Bundaberg, although the L1 symbol does have a few consistent hotspots of effort. The most concentrated effort is offshore, between Mackay and Cape York. Spawning aggregation sites have consistently high effort over the three yearly effort maps shown in Appendix 3.

6.2 Catch

Catch and effort since 2003/04 has fluctuated widely. After a depression in both catch and effort between 2006 and 2008, catch peaked in 2009/10 before falling again to between 250–300t annually. Over the past three years, catch has remained steady between 52%–56% of the total quota allowance. Effort for both primary and dory days has followed this trend, although primary effort experienced slightly less variability (Table 2; Fig. 3).

When compared to other species, there is a good baseline of information on the structure and health of the east coast Spanish mackerel stocks. Two stock assessments have been completed for the species on the Queensland east coast (Campbell *et al.*, 2012; O'Neill *et al.*, 2018) and both include standardised catch rates. Both of these have been provided in Appendix 4. The most recent stock assessment (O'Neill *et al.*, 2018) indicated that the east coast Spanish mackerel stocks were being fished at or around Maximum Sustainable Yield (MSY).

6.3 Bycatch

In this fishery, bycatch is mostly composed of species managed under other line fisheries and low-value discarded species. Operators targeting Spanish mackerel will hold at least one of the east coast line fishing symbols (L1, L2 or L3) and can therefore retain non-Spanish mackerel product as part of the RRFFF or ECIFFF. There is also a high portion of SM operators with RQ entitlements, and they are permitted to retain CRFFF species.

In the ECSMF, operators will catch and retain a number of incidentally caught species including shark mackerel, cobia, trevally, barracuda, mackerel tuna, spotted mackerel, school mackerel, snapper and regulated coral reef fin fish (Department of Primary Industries and Fisheries, 2005). These species are all managed as part of the RRFFF, CRFFF and ECIFFF. The remainder of the non-target bycatch will mostly consist of undersized Spanish, school and spotted mackerel, undersized coral reef fin fish, mackerel tuna, trevally, barracuda, northern blue fin tuna, yellowfin tuna, marlin, wahoo, shark, leaping bonito, remora and, for operators without RQ quota, regulated coral reef fin fish (Department of Primary Industries and Fisheries, 2005).

6.4 Species of Conservation Interest

Logbook data for the ECSMF reveal four interactions with species of conservation interest (SOCI): one loggerhead turtle (2008), two barramundi cod (2017) and one humphead Maori wrasse (2017). All of these entries were recorded as being released alive with an interaction defined as any physical contact with a listed species, including interactions with fishing gear and vessel collisions.

In addition to the SOCI data, a report on bycatch and byproduct species interactions in the ECSMF identified infrequent interactions with sharks, sea birds (boobies and gannets), a juvenile dolphin (unspecified), a pilot whale, other whales (specifically boat strikes) and chinaman fish, which are not listed in the SOCI logbooks but are a no-take species in Queensland (Department of Primary Industries and Fisheries, 2005).

7 References

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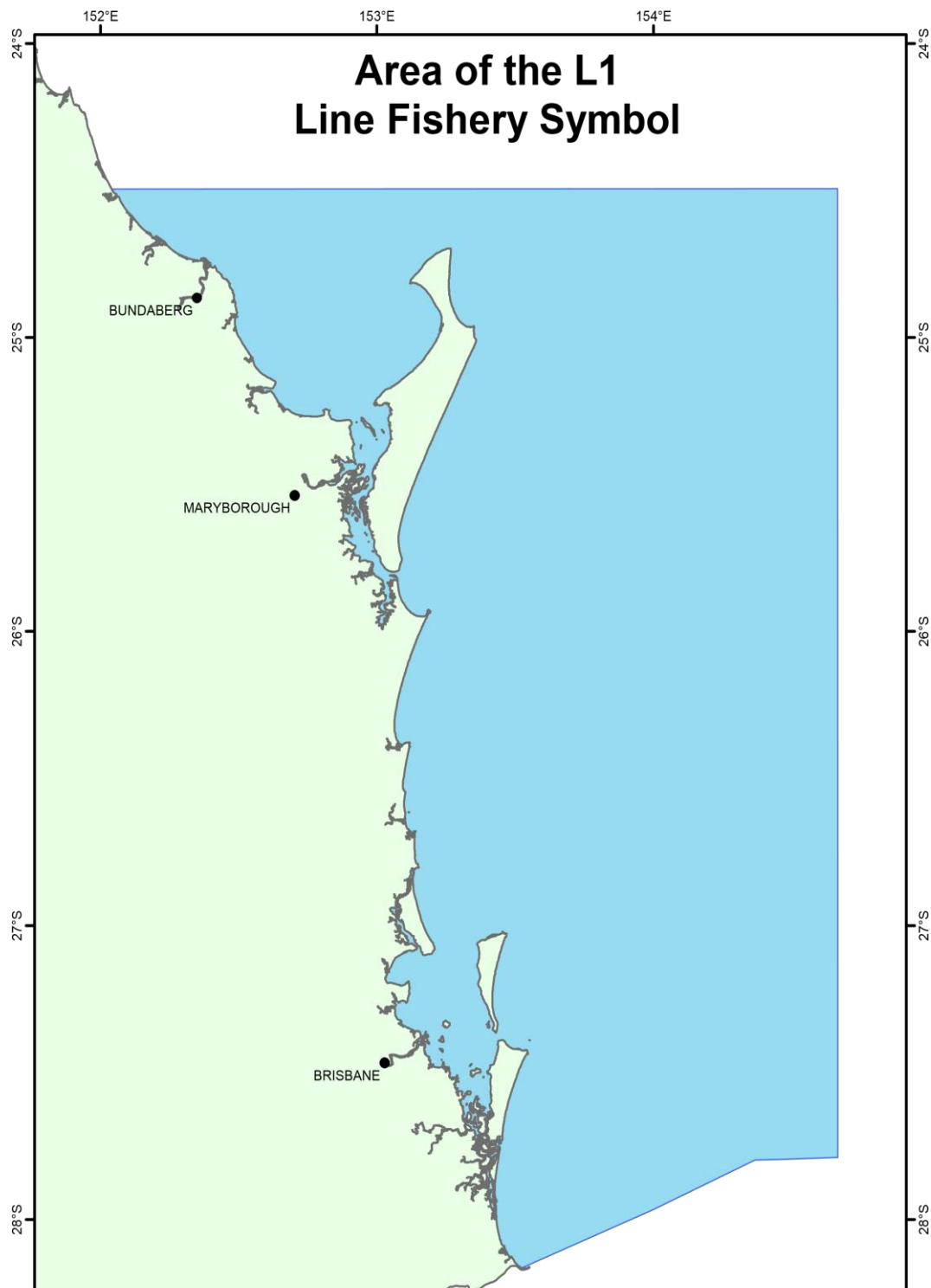
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8 Appendix

- APPENDIX 1—Fishery symbols permitted to fish in the East Coast Spanish Mackerel Fishery (ECSMF) including the prescribed fishing areas.
- APPENDIX 2—Summary of the National Status of Australian Fish Stocks (SAFS) and Queensland Stock Status processes listing.
- APPENDIX 3—Effort distribution maps for the 2014/15, 2015/16 and 2016/17 seasons.
- APPENDIX 4—Standardised catch rates for Spanish mackerel.

APPENDIX 1—Fishery symbols permitted to fish in the *East Coast Spanish Mackerel Fishery* (ECSMF) including the prescribed fishing areas.



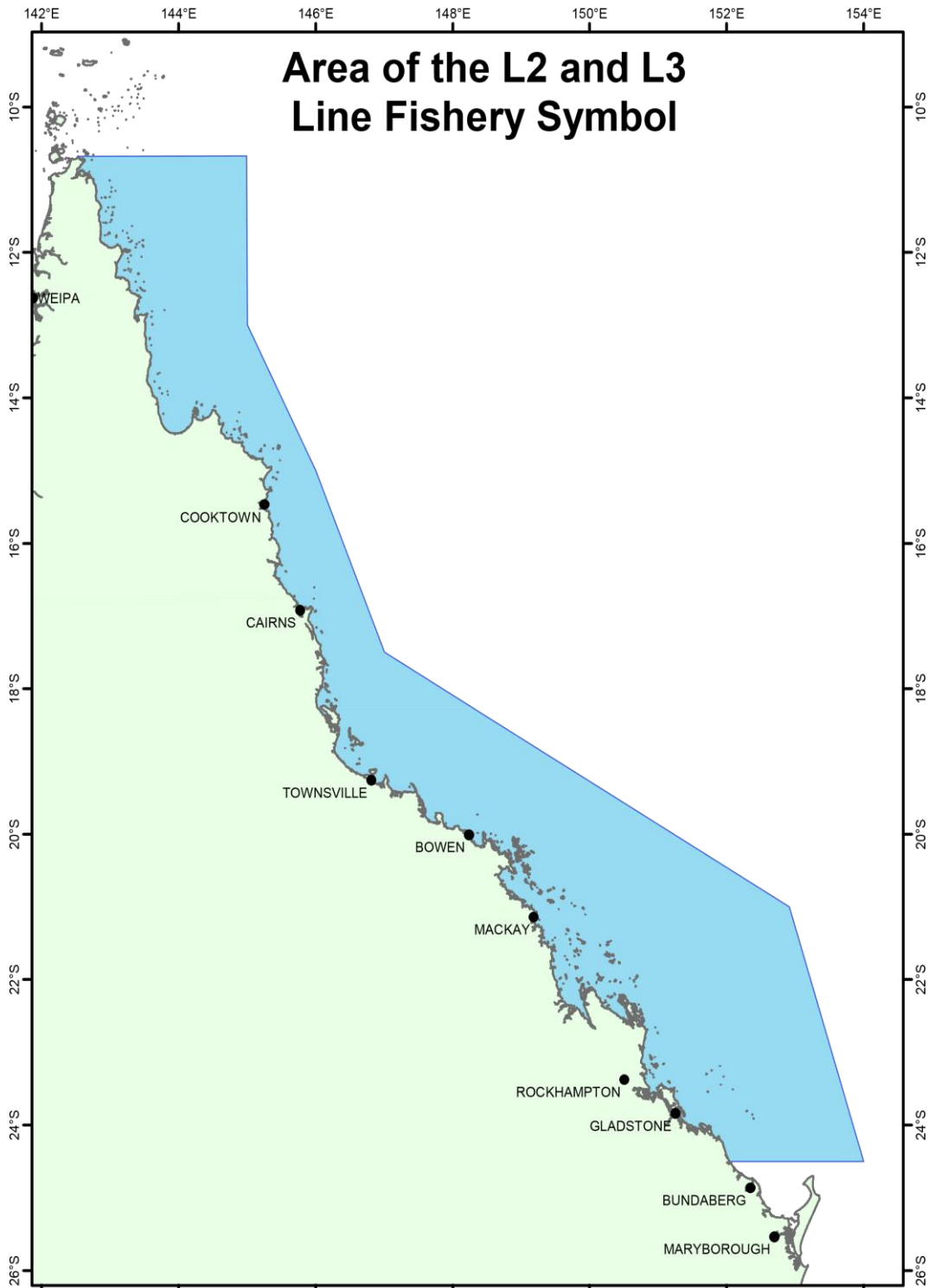
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This map represents the approximate fishery area where fishing operations are permitted under the fishery symbol. Please refer to the relevant fisheries legislation (eg Regulation or Management Plan) for the exact boundaries of an area.

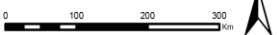


Area of the L2 and L3 Line Fishery Symbol



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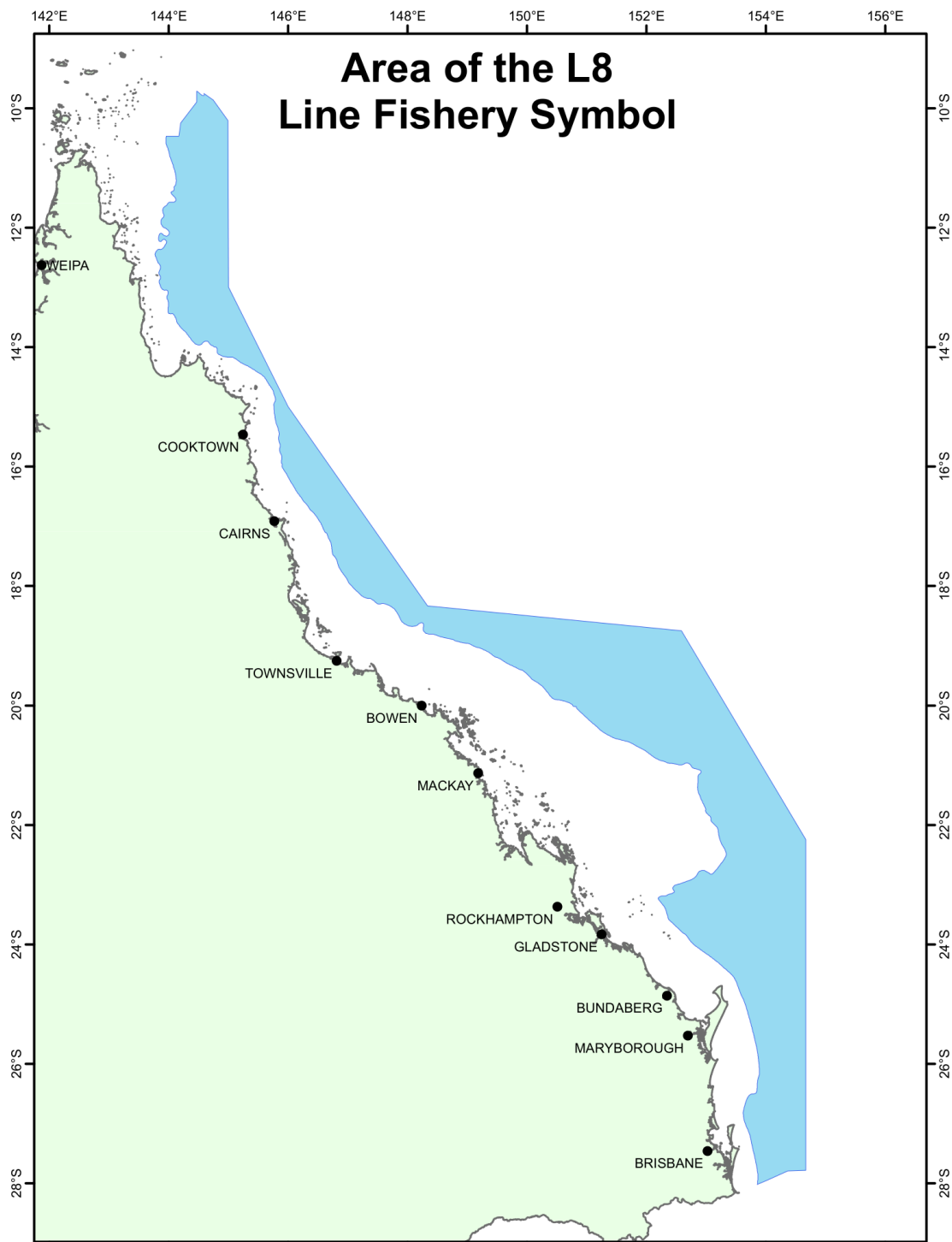
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 Units: Degree



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This map represents the approximate fishery area where fishing operations are permitted under the fishery symbol. Please refer to the relevant fisheries legislation (eg Regulation or Management Plan) for the exact boundaries of an area.



Area of the L8 Line Fishery Symbol



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Department of Agriculture
and Fisheries

Co-ord Sys: GCS GDA 1994
Datum: GDA 1994
Units: Degree



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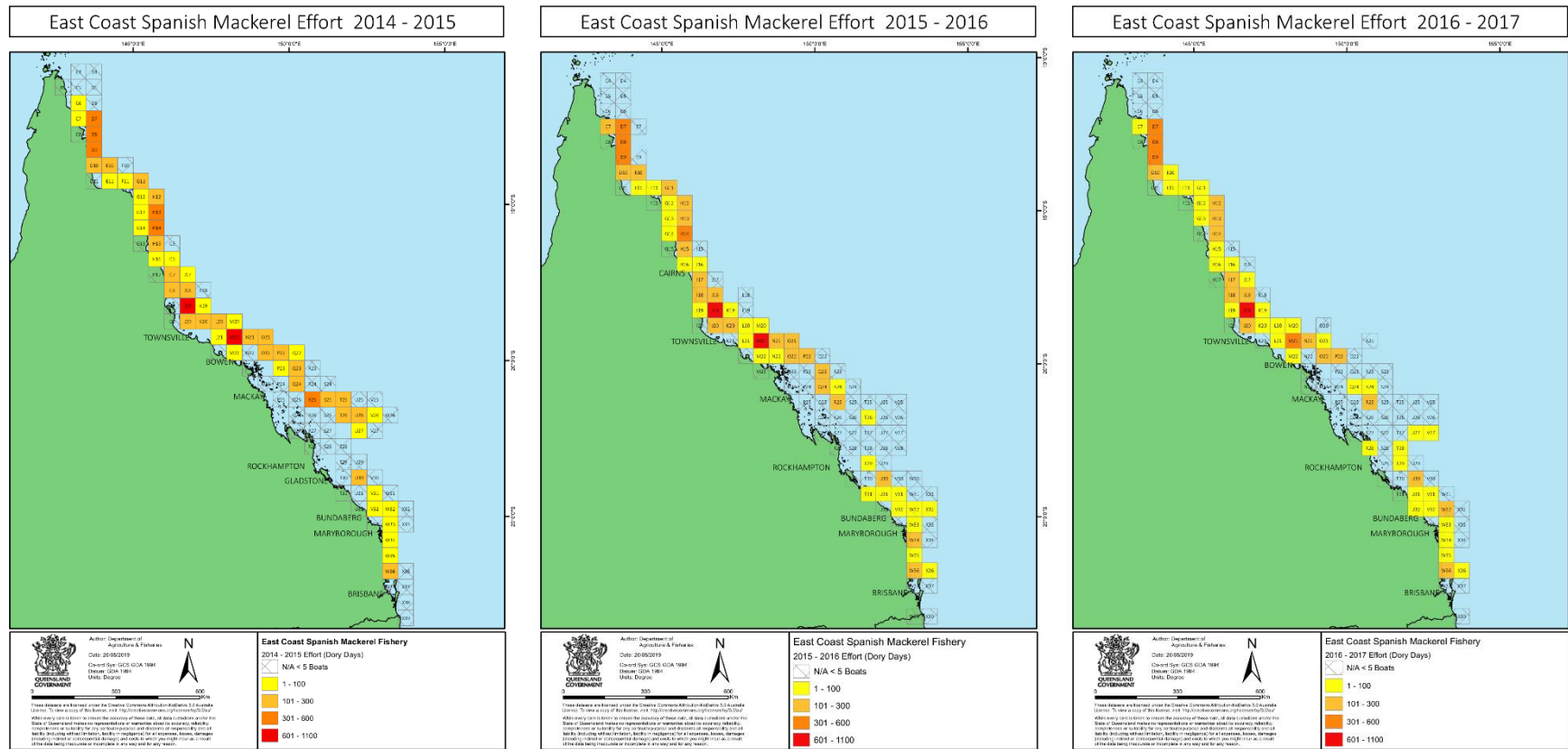
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APPENDIX 2—Summary of the *National Status of Australian Fish Stocks (SAFS)* and Queensland Stock Status processes listing.

Species	SAFS Stock name	2016 SAFS status	2017 QLD status (Non-SAFS year)	2018 SAFS status
Spanish Mackerel (<i>Scomberomorus commerson</i>)	East Coast Queensland	Sustainable	Not Assessed	Sustainable

APPENDIX 3—Effort distribution for Spanish mackerel for the 2014/15, 2015/16 and 2016/17 and fishing seasons.



APPENDIX 4—Standardised catch rates for Spanish mackerel (O'Neill *et al.*, 2018).

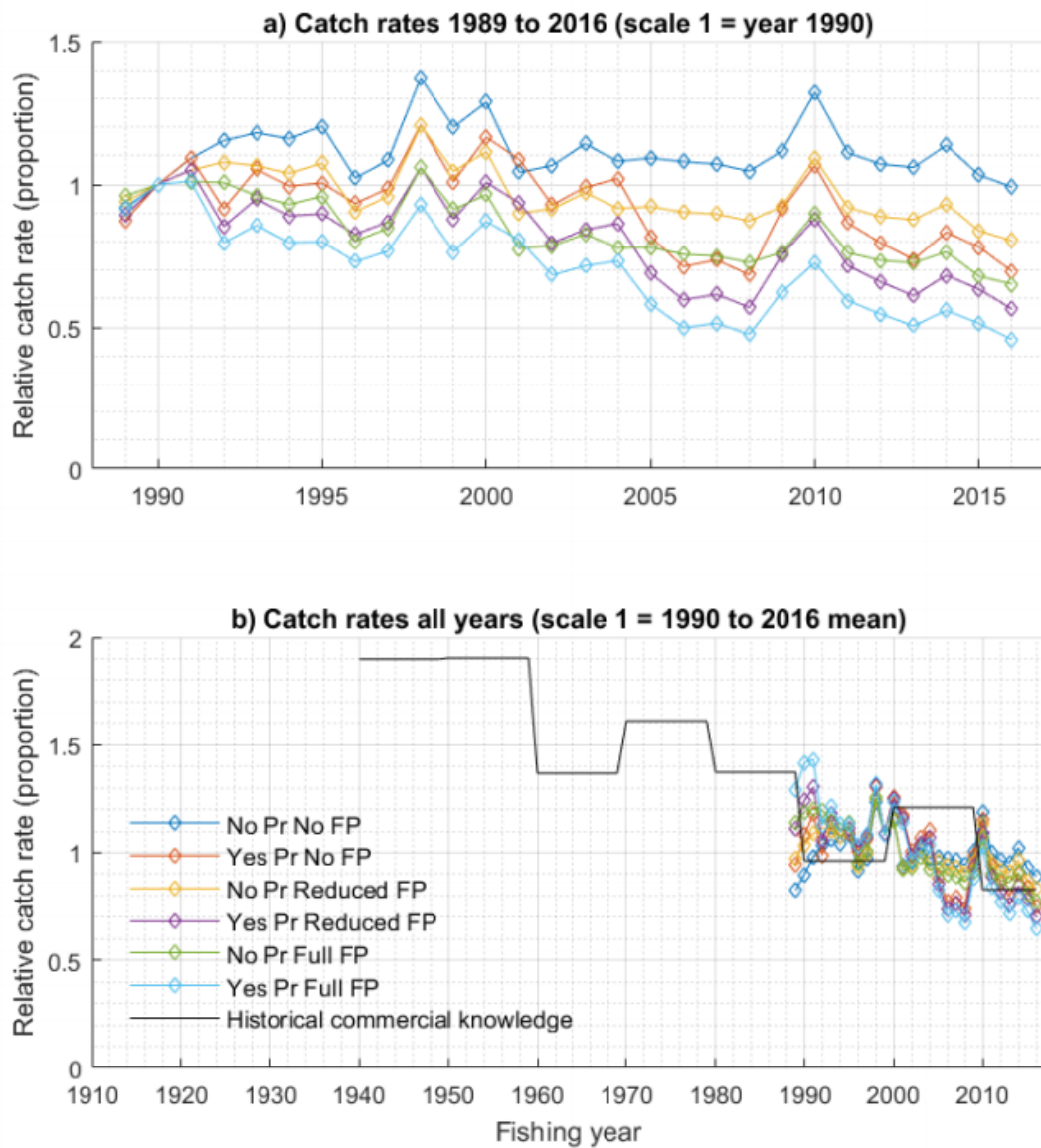


Figure 22. Overlay of standardised catch rates for a) the six commercial time series 1989–2016 and b) with decadal catch rates calculated using data sourced from historical surveys of commercial fishers 1940–2016. The mean relative standard error on decadal catch rates was 0.17.