South Taranaki Bight Fishing

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Prepared by:
Alison MacDiarmid
Dan MacGibbon
Owen Anderson

For any information regarding this report please contact:
Alison MacDiarmid

+64 4 386 0370
alison.macdiarmid@niwa.co.nz

National Institute of Water & Atmospheric Research Ltd
Private Bag 14901
Kilbirnie
Wellington 6241

Phone +64 4 386 0300

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This report provides up-to-date information about commercial, recreational, and customary fishing in areas in the South Taranaki Bight (STB) likely to be affected by Trans Tasman Resources Ltd (TTRL) proposed iron sand mining activities in the Proposed Project Area (PPA) and areas affected by the median (50th percentile) and 99th percentile sediment plumes above 2mg per litre suspended sediment concentration (SSC) arising from mining at the innermost (Mining Area A) and outermost parts (Mining Area B) of the PPA.

Across the entire time-period analysed from October 2007 to September 2023, commercial set netting was the most common method of fishing in the Mining A Median SSC, Mining A 99th percentile SSC, and Mining B 99th percentile SSC areas. In these areas school shark has been increasingly targeted over this period, while rig and other species have decreased in importance.

Bottom trawling was the most common method in the PPA and Mining B median SSC areas which are further offshore. In both these areas the number of bottom trawl fishing events fluctuated from year to year but generally declined over the time-period and in recent years has been replaced by set netting as the most common fishing method. At the start of the time series red gurnard was most commonly targeted in both areas, but in recent years this has been replaced by school shark.

Closure of inshore areas in the STB to set netting in 2020 most likely explains the decrease in targeting for rig and the increase in targeting for school shark as well as the recent increase in set-netting activities further offshore.

For the PPA, Mining Area A median SSC, and Mining Area B median SSC, bounding boxes of 0.2 degrees had to be constructed around each so as not to violate the release clauses of the data. In all cases the bounding boxes created are substantially larger than the areas the polygons themselves cover, and results in the number of fishing events being inflated. On average, this method over-estimated the number of fishing events in the PPA, Mining B median SSC and Mining A median SSC areas by 7.6, 20.2 and 25.4 times respectively.

For Mining Area A 99th percentile SSC and Mining Area B 99th percentile SSC, the number of fishing events are as reported in the commercial data as there was no need to construct bounding boxes around them.

The number of commercial fishing events summarised here underestimates those from a number of smaller vessels working in the STB, as for most of the time-period they were not required to report at the level of individual fishing events. Only since the 2019/20 fishing year have smaller vessels begun to report at this resolution with the introduction of the Electronic Reporting System (ERS) across the entire New Zealand fishing fleet regardless of vessel size or fishing method.

Changes in Total Allowable Commercial Catch (TACC) over the period do not appear to have affected targeting for the key commercial species in the PPA or areas likely to be affected by the sediment plume.

Recreational fishing in the STB catches a wide range of species but four species (blue cod, snapper, red gurnard and kahawai) comprise over 80% of the catch. The recreational fishery rarely catches species commonly targeted by commercial fishing such as rig and school shark. Recreational fishing catch increased markedly down the coast from Otakeho to Whanganui, which accounted for over half the reported recreational catch from the six adjacent reporting areas.

The reported customary catch comprises at least 14 species of fish and invertebrates but is dominated by snapper and paua which account for over 70% of the total reported catch, followed by kina, kingfish and rock lobster which account for another 23% of the total reported. There is little overlap between the customary catch and the species targeted by the commercial fishery.

1 Background and introduction

The Joint Statement of Experts in the Fields of Effects on Fishing and Effects on Fish dated 20 February 2024 noted, in paragraph 17 on page 4, that the analysis on the effects on fishing is not based on the best available information as the 2017 Trans Tasman Resources Ltd (TTRL) application information on fishing is out of date. The Joint Statement further noted that additional available information that should have been considered includes:

- Recent catch information beyond 30 September 2015 to the end of the most recent fishing year (30 September 2023).
- The effect of fishing restrictions that exclude fishing from specific areas on the West Coast North Island (i.e., changing fishing distribution).
- Changes to the Fisheries (Reporting) Regulations 2017 that provide much finer scale information on commercial catch.
- Changes to catch limits.

TTRL requested NIWA to summarise and update the available commercial, customary and recreational fishing information and make this available to the Decision Making Committee. This information is summarised in the sections below.

2 Commercial fishing

2.1 Data sources

Information on commercial fishing was obtained from records of catch and effort submitted by fishers to Fisheries New Zealand (FNZ) for all fishing years (1 October to 30 September) from 2007/08 to 2022/23. The extract (FNZ RepLog 15358 provided by Fisheries New Zealand) comprised all effort data for all fishing trips that reported a non-zero landing weight from Fisheries Management Areas (FMA) FMA 8 and FMA 9 for all species and all fishing methods. These two FMAs include the coastline and offshore waters for the entire North Island west coast. These data underwent standard NIWA grooming protocols to check for errors and unlikely values. Records were then trimmed to include only those with start positions lying within the proposed project area (PPA – the mining area), the contours for 2 mg per litre suspended sediment concentrations (SSC) released from "Mining Area A" at the inshore end of the PPA (separate contours for the median (50th percentile) and 99th percentiles of SSC), as well as contours for the 2 mg per litre suspended sediment concentrations released from "Mining Area B" at the offshore end of the PPA (separate contours for the median and 99th percentiles of SSC) (see Figure 2-1). Summaries (tables) were then made to determine the numbers of fishing events in each area by the various fishing methods and to identify the main target fish species.

Plots were also made showing the number of fishing events aggregated into 0.2 degree squares for FMA 8 by fishing year from 2007/08 to 2022/23, and all years combined. The 0.2 degree cells are not in the same place each year because their location is based on the location of the fishing events and as fishing did not occur in exactly the same place each year, the locations of the cells vary over time.

Due to the commercially sensitive nature of the data, the release clause of the data supplied by FNZ restricts data on fishing effort to being reported at no finer a resolution than 0.2 degrees. The PPA,

Mining Area A median SSC, and Mining Area B median SSC all have latitudinal and longitudinal extents less than 0.2 degrees. As such, these areas all had bounding boxes extend around them to bring their latitudinal and longitudinal extents up to 0.2 degrees (with equal distances added to their eastern, western, northern and southern extents). Fishing events were then summarised within these bounding boxes so as not to violate the release clause.

Mining area A 99th percentile SSC and Mining Area B 99th percentile SSC are both comprised of several polygons, most of which are also less than 0.2 degrees latitudinally and longitudinally. Fishing events were assigned directly to the individual polygons rather than creating 0.2 degree bounding boxes for each. As the overall extents of all polygons together are more than 0.2 degrees, and no events can be identified to any one of the polygons that comprise the areas, the release clause is not violated.

The magnitude of catches can only be reported at a resolution of one degree. Given that the entire latitudinal and longitudinal extent of the various polygons that comprise the areas of interest is barely more than one degree (yet only take up a small percentage of that area), this is not a helpful resolution and so the magnitude of catches have not been analysed.

2.2 The Proposed Project Area (PPA)

There were 425 fishing events using a total of five separate fishing methods inside the PPA since 2007–08 (Table 1). Bottom trawling was the most important fishing method with 235 events for the time-period (55.2% of all events). The number of bottom trawl events has decreased over the last few years and there were none at all in 2021 and just two and six events in 2022 and 2023 respectively. Set netting was the next most important method with 163 events for the time-period (38.3% of all events). Three other methods were used in the PPA for the time-period; bottom longline, hand line, and purse seine, but these were sporadic for all methods and did not occur in most years. Bottom longline was used in just five years (14 events), handlining in four years (eight events), and purse seine in two years (five events). The overall number of fishing events for all methods combined has declined over time. Fishing effort was higher in the western portion of the mining area (600–700 events since October 2007) than in the east (300–400 events) (Figure 2-1). However, it should be noted that the PPA overlaps 0.2 degree cells and that not all fishing events that occurred in those cells occurred in the mining area. Since 2007/08 there has been some variation in the number of fishing events in the cells that cover the PPA but at no point in time have the cells covering the PPA been the more heavily fished ones (Figure 2-2).

Table 2-1: Annual number of fishing events by method for the PPA for which there were location data. Methods are arranged from left to right in order of most events to least events for the time-period.

Year	Bottom trawl	Set Net	Bottom longline	Hand lining	Purse Seine	Total
2008	13	9	-	-	-	22
2009	14	7	-	-	3	24
2010	10	12	-	-	-	22
2011	50	20	-	-	-	70
2012	30	16	1	-	-	47
2013	28	10	-	-	-	38
2014	14	6	-	-	-	20
2015	5	14	-	-	-	19
2016	11	15	-	-	-	26
2017	17	8	5	-	-	30
2018	12	3	4	1	-	20
2019	11	1	-	-	-	12
2020	12	7	-	4	-	23
2021	-	5	2	1	-	8
2022	2	16	2	2	-	22
2023	6	14	-	-	2	22
Total	235	163	14	8	5	425

There were five main target species associated with fishing (all methods) in the PPA (Table 2). School shark was targeted the most with 137 events (32.2%) followed by trevally with 109 events (25.6%), red gurnard with 103 events (24.2%), and rig with 37 events (8.7%). School shark was targeted every year and trevally, red gurnard, and rig in most years. Leather jackets were targeted in 19 events (4.5%) over four consecutive years from 2009 to 2012 but has not been targeted since. These five species account for over 95% of all events for the time-period. A variety of other species comprised the remaining fishing events and were sporadic over time.

Table 2-2: Annual number of fishing events by target species for the PPA for which there were location data. Species are arranged from left to right in order of most events to least number of events for the time-period.

Year	School shark	Trevally	Red gurnard	Rig	Leather jacket	Other	Total
2008	4	2	11	5	-	-	22
2009	7	3	10	-	1	3	24
2010	8	-	6	4	3	1	22
2011	15	26	23	4	2	-	70
2012	14	5	13	2	13	-	47
2013	9	13	15	1	-	-	38
2014	6	8	6	-	-	-	20
2015	11	1	4	3	-	-	19
2016	10	11	-	5	-	-	26
2017	12	11	4	1	-	2	30
2018	5	11	1	2	-	1	20
2019	1	8	2	-	-	1	12
2020	1	6	5	7	-	4	23
2021	7	-	-	-	-	1	8
2022	16	-	1	-	-	5	22
2023	11	4	2	3	-	2	22
Total	137	109	103	37	19	20	425

2.3 Mining A median SSC area

There were 378 fishing events using a total of five separate fishing methods inside the Mining A median SSC area since 2007–08 (Table 3). Set net was the most important fishing method with 244 events for the time-period (64.6 %). The number of set net events has decreased since 2016 but the method has been used every year for the time-period. Bottom trawl was the next most common method with 81 events for the time-period (21.4%). The number of events has decreased over time and there has been no bottom trawling at all in the last two years, likely as a result of restrictions put in place to protect Maui's dolphins. Handlining, bottom longlining, and cod potting have all occurred in the Mining A median SSC area but in much lower numbers (35, 17, and 1 event respectively). These methods have occurred in only a minority of years through the time-period and none in the most recent year (2023). Overall, the number of fishing events has fluctuated over the time-period. The Mining A median SSC area is contained discretely within the 0.2 degree cell given in Figure 2-1 which has a range of 300–400 cells for the time-period, which is congruent with the Table 3 which gives 378 fishing events for the time-period. Figure 2-2 indicates that by year, the Mining A median SSC area was generally in the lower ranges of the number of fishing events per cell.

Table 2-3: Annual number of fishing events by method for the Mining A median SSC area for which there were location data. Methods are arranged from left to right in order of most events to the least number of events for the time-period.

Year	Set Net	Bottom trawl	Hand lining	Bottom longlining	Cod potting	Total
2008	23	6	-	1	-	30
2009	6	7	-	-	-	13
2010	16	3	-	-	-	19
2011	25	4	-	-	-	29
2012	23	12	-	2	-	37
2013	16	12	-	-	-	28
2014	10	10	3	3	-	26
2015	15	2	-	-	-	17
2016	30	5	2	1	-	38
2017	8	3	1	1	-	13
2018	10	5	3	6	-	24
2019	5	2	-	-	1	8
2020	14	7	12	-	-	33
2021	11	3	7	3	-	24
2022	16	-	7	-	-	23
2023	16	-	-	-	-	16
Total	244	81	35	17	1	378

There were seven unique target species associated with fishing (all methods) in the Mining A median SSC area (Table 4). School shark was targeted the most with 141 events (37.3%) followed by rig with 109 events (28.8%). Both of these species have been targeted in most years with fluctuating levels of effort. The next most targeted species was trevally with 47 events (12.4%) and was targeted commonly before 2015 after which targeting declined and has stopped altogether since 2020. Blue cod was targeted in 42 events (11.1%), but targeting didn't occur regularly until 2014, although there was none in the most recent year, 2023. Targeting of red gurnard has been sporadic through time, totalling 32 events (8.5%). Leather jacket was only targeted in five events across two years from 2012–2013 and blue warehou in two events in 2022.

Table 2-4: Annual number of fishing events by target species for the Mining A median SSC area for which there were location data. Species are arranged from left to right in order of most events to the least number of events for the time-period.

Year	School shark	Rig	Trevally	Blue cod	Red gurnard	Leather jacket	Blue warehou	Total
2008	11	12	6	1	-	-	-	30
2009	5	1	5	-	2	-	-	13
2010	5	11	-	-	3	-	-	19
2011	10	14	2	-	3	-	-	29
2012	13	10	7	-	3	4	-	37
2013	12	4	7	-	4	1	-	28
2014	8	2	9	6	1	-	-	26
2015	11	4	2	-	-	-	-	17
2016	14	16	4	3	1	-	-	38
2017	6	3	2	1	1	-	-	13
2018	5	10	1	4	4	-	-	24
2019	1	4	2	1	-	-	-	8
2020	-	14	-	12	7	-	-	33
2021	14	-	-	7	3	-	-	24
2022	13	1	-	7	-	-	2	23
2023	13	3	-	-	-	-	-	16
Total	141	109	47	42	32	5	2	378

2.4 Mining A 99th percentile SSC area

There were 1 227 fishing events using a total of eight unique fishing methods inside the Mining A 99th percentile SSC area since 2007–08 (Table 2-5). Set net was the most important fishing method with 814 events for the time-period (66.3 %). The number of set net events has fluctuated over time but declined overall. It is the only method to have been used in all years over the time-period. Bottom trawl was the next most common method with 205 events for the time-period (16.7%) and has declined over the time-period with none at all in 2023. Handlining was the next most common method with 88 events for the time-period (7.2%) and has been sporadic throughout the time-period with some years seeing no handlining at all. Bottom longlining was the fourth most common method with 84 events (6.8%) and occurring in most years through the time-period. Dredging did not occur until 2020 but has occurred every year since. While it only account for 1.7% of all fishing events for the entire time-period, in 2022 and 2023 it accounted for 20 and 12% of all events respectively, making it the second most important method in those years. The remaining methods, cod potting, purse seining, and rock lobster potting have only occurred rarely and none in the last three years. The Mining A 99th percentile SSC area comprises 24 individual areas (1 large and 23 smaller areas) over the South Taranaki Bight covering a number of the 0.2 degree cells (Figure 2-1). The cell categories covered in Figure 2-1 range from the lowest (1–100 events) to the highest (>800 events). The number of events was lowest in the Inshore areas in the upper South Taranaki Bight and highest

in lower South Taranaki Bight. Further offshore fishing was generally of more medium effort (300–700 events). Again, it should be noted that not all events in the individual cells occurred in the polygons that define the Mining A 9^{9t}h percentile SSC area. The distribution of fishing events in the STB by year (Figure 2-2) indicates that the different parts of the Mining A 9^{9t}h percentile SSC area fall into both the lightest and most heavily fished areas each year.

Table 2-5: Annual number of fishing events by method for the Mining A 9^{9t}h percentile SSC area for which there were location data. Methods are arranged from left to right in order of most events to the least number of events for the time-period.

Year	Set net	Bottom trawl	Hand line	Bottom longline	Dredge	Cod potting	Purse seine	Rock lobster potting	Total
2008	88	9	-	9	-	-	-	-	106
2009	35	17	-	2	-	-	4	-	58
2010	66	30	-	3	-	-	-	-	99
2011	60	27	-	1	-	-	-	-	88
2012	60	18	-	3	-	-	-	-	81
2013	49	21	1	1	-	-	-	-	72
2014	58	14	12	11	-	-	-	-	95
2015	62	7	2	2	-	-	-	-	73
2016	79	7	-	-	-	-	-	-	86
2017	61	13	11	13	-	-	-	-	98
2018	56	12	8	13	-	-	-	-	89
2019	23	8	-	-	-	5	-	1	37
2020	40	16	26	2	1	4	1	-	90
2021	11	4	18	6	1	-	-	-	40
2022	28	2	10	12	13	-	-	-	65
2023	38	-	-	6	6	-	-	-	50
Total	814	205	88	84	21	9	5	1	1227

There were six main target species associated with fishing (all methods) in the Mining A 99th percentile SSC area and a variety of other species (Table 2-6). Rig and school shark were the two most common species targeted with 646 (52.6%) and 165 (13.4%) events respectively, which is consistent with the proportion of fishing events that used set net. The number of events that targeted rig has declined substantially over time whereas school shark (which was previously less important than rig) has fluctuated somewhat and increased noticeably in the last three years. Blue cod, trevally, and red gurnard were the next most important species being targeted by 139 (11.3%), 109 (8.9%), and 81 (6.6%) events respectively. Leather jackets were targeted in 37 events (3%) but only for a short period of six years from 2009 to 2014. These six species comprised almost 96% of all fishing events in the Mining A 99th percentile SSC area, with the remaining being comprised of a variety of other species.

Table 2-6: Annual number of fishing events by target species for the Mining A 9^{9t}h percentile SSC area for which there were location data. Species are arranged from left to right in order of most events to the least number of events for the time-period.

Year	Rig	School shark	Blue cod	Trevally	Red gurnard	Leather jacket	Other	Total
2008	74	14	8	7	3	-	-	106
2009	27	6	2	5	3	9	6	58
2010	58	4	-	8	5	17	7	99
2011	52	7	-	21	3	3	2	88
2012	52	9	-	13	3	4	-	81
2013	34	15	2	13	5	3	-	72
2014	51	7	23	11	2	1	-	95
2015	50	12	4	4	2	-	1	73
2016	67	12	-	4	2	-	1	86
2017	56	7	21	10	-	-	4	98
2018	52	7	16	6	6	-	2	89
2019	22	1	5	3	5	-	1	37
2020	34	2	30	4	15	-	5	90
2021	-	14	18	-	7	-	1	40
2022	4	23	10	-	14	-	14	65
2023	13	25	-	-	6	-	6	50
Total	646	165	139	109	81	37	50	1227

2.5 Mining B Median SSC area

There were 531 fishing events using a total of seven unique fishing methods inside the Mining B Median SSC area since 2007–08 (Table 2-7). Bottom trawl was the most important fishing method with 353 events for the time-period (66.5 %). The number of bottom trawl events has declined over time but has been used in each year for the time-period. Set net was the next most common method with 123 events for the time-period (23.2%). The number of set net events was relatively steady until decreasing to a low period from 2019 to 2021 but has since increased in 2022 and 2023 to its highest levels in the time-period. Bottom longline was the next most important method with 30 events (5.6%) for the time-period, but its use has been sporadic through time with a number of years having no bottom longline effort in this area. Midwater trawl used on the bottom, purse seine, midwater trawl, and handline have all been used but only occasionally and only accounted for between one and 14 fishing events (0.2–2.6%). The number of fishing events has fluctuated over the time-period but has overall been declining. Most of the Mining B Median SSC area was enclosed in a cell with 400–500 fishing events with the tip of the southern portion being in a cell with 700–800 fishing events for the time-period (Figure 2-1). The distribution of fishing events in the STB by year (Figure 2-2) indicates that the Mining B Median SSC area tends to fall into levels of medium intensity.

Table 2-7: Annual number of fishing events by method for the Mining B Median SSC area for which there were location data. Methods are arranged from left to right in order of most events to the least number of events for the time-period.

Year	Bottom trawl	Set net	Bottom longline	Midwater trawl on the bottom	Purse seine	Midwater trawl	Handline	Total
2008	23	8	1	1	-	1	-	34
2009	23	8	7	1	3	-	-	42
2010	24	7	1	3	-	-	-	35
2011	65	11	5	3	-	-	-	84
2012	38	10	1	-	-	-	-	49
2013	43	6	-	1	-	-	-	50
2014	23	7	-	3	-	2	-	35
2015	10	8	-	1	-	-	-	19
2016	15	6	-	-	-	-	-	21
2017	20	6	9	1	-	-	-	36
2018	16	5	2	-	-	-	1	24
2019	21	1	-	-	-	-	-	22
2020	18	3	-	-	-	-	-	21
2021	1	3	1	-	-	-	-	5
2022	2	21	3	-	-	-	-	26
2023	11	13	-	-	4	-	-	28
Total	353	123	30	14	7	3	1	531

There were five main target species associated with fishing (all methods) in the Mining B Median SSC area (Table 2-8). Red gurnard was targeted the most with 178 events (33.5%) followed by trevally with 132 events (24.9%). Red gurnard has been targeted in all years and trevally in all but two years, but both have had overall declining levels of effort over the time-period. The next most targeted species was school shark with 120 events (22.6%). The number of events targeting school shark was relatively steady until declining to the lowest levels from 2019–2021 and then increasing again to their highest levels for the time-period from 2022 and 2023. This follows the same general pattern for set net fishing events, which is the most common method for targeting school shark in the region. Leather jackets and jack mackerel were both targeted in 42 fishing events (7.9%) for the time-period, but leather jackets have not been targeted since 2013, whereas jack mackerel has been targeted in a handful of events in almost all years for the time-period. A variety of other species were targeted at various times throughout the time-period and comprised the remaining 3.2% of fishing events.

Table 2-8: Annual number of fishing events by target species for the Mining B Median SSC area for which there were location data. Species are arranged from left to right in order of most events to the least number of events for the time-period.

Year	Red gurnard	Trevally	School shark	Leather jacket	Jack mackerel	Other	Total
2008	15	-	2	8	7	2	34
2009	17	4	9	4	7	1	42
2010	9	2	5	12	4	3	35
2011	41	27	9	2	2	3	84
2012	21	4	8	14	2	-	49
2013	24	17	6	2	-	1	50
2014	12	11	4	-	3	5	35
2015	9	1	8	-	-	1	19
2016	3	11	4	-	3	-	21
2017	6	12	15	-	2	1	36
2018	1	15	7	-	1	-	24
2019	5	14	1	-	2	-	22
2020	8	7	3	-	3	-	21
2021	1	-	4	-	-	-	5
2022	2	-	22	-	2	-	26
2023	4	7	13	-	4	-	28
Total	178	132	120	42	42	17	531

2.6 Mining B 99th percentile SSC area

There were 889 fishing events using a total of six unique fishing methods inside the Mining B 99th percentile SSC area since 2007–08 (Table 2-9). Set net was the most important fishing method with 527 events for the time-period (59.3 %). The number of set net events has fluctuated over time, appearing to have an overall declining pattern until 2021 then increasing somewhat in 2022 and 2023. Bottom trawl was the next most common method with 328 events for the time-period (36.9%), increasing in the first three years to a high of 41 events before declining thereafter with the last three years being the lowest in the time series. Bottom longline, handline, purse seine, and midwater trawl all occurred but in small numbers with between one and 19 events (0.1–2.1%) and sporadically. Across all methods there has been an overall decline in the number of fishing events. The Mining B 99th percentile SSC area comprises three separate polygons which cover a number of cells with a wide range of fishing events (Figure 2-1). The number of events is lowest in inshore areas (covering the 1–100 and 200–300 events categories) and highest further offshore (covering cells ranging from 200–300 events and 600–700 events). By year, the Mining B 99th percentile SSC area generally overlaps cells with low to medium levels of fishing events (Figure 2-2).

Table 2-9: Annual number of fishing events by method for the Mining B 9^{9t}h percentile SSC area for which there were location data. Methods are arranged from left to right in order of most events to the least number of events for the time-period.

Year	Set net	Bottom trawl	Bottom longline	Hand line	Purse seine	Midwater trawl	Total
2008	44	10	1	-	-	-	55
2009	22	28	1	-	2	-	53
2010	33	41	-	-	-	-	74
2011	45	53	-	-	-	-	98
2012	41	35	1	-	-	1	78
2013	33	36	-	-	-	-	69
2014	37	25	1	1	2	-	66
2015	39	19	-	-	-	-	58
2016	53	13	-	-	-	-	66
2017	33	19	6	1	-	-	59
2018	40	18	4	1	-	-	63
2019	20	9	-	-	-	-	29
2020	31	14	-	1	1	-	47
2021	8	3	3	3	-	-	17
2022	20	2	2	2	-	-	26
2023	28	3	-	-	-	-	31
Total	527	328	19	9	5	1	889

There were five main target species associated with fishing (all methods) in the Mining B 99th percentile SSC area and a variety of other species (Table 2-10). Rig was the most important species being targeted in 357 events (40.2%) but has declined in importance over time. School shark was the next most important target with 178 events (20.0%). The number of events targeting school shark increased from the beginning of the time-period before reaching a relatively steady period from 2011–2017 before declining markedly to a low in 2019–2020 and then increasing again to the highest levels in 2022 and 2023 during which time it was the most important target species in the Mining B 9^{9t}h percentile SSC area. Trevally was the next most important species with 130 targeted events (14.6%). The number of events targeting trevally fluctuated over time but in the last three years, there have been no events at all targeting them. Red gurnard was the fourth most important target species with 128 targeted events (14.4%). After increasing to a maximum of 27 events in 2011 there has been an overall declining number of events targeting red gurnard since, with between just one and seven events each year since 2016. There were 60 fishing events (6.7%) targeting leather jackets for the time-period, but this was restricted to a short period between 2009 and 2013 after which there have been no events targeted at this species. These five species comprised 96% of all fishing events, with the remaining being targeted at a variety of other species.

Table 2-10: Annual number of fishing events by target species for the Mining B 9^{9t}h percentile SSC area for which there were location data. Species are arranged from left to right in order of most events to the least number of events for the time-period.

Year	Rig	School shark	Trevally	Red gurnard	Leather jacket	Other	Total
2008	41	3	3	7	-	1	55
2009	14	8	7	8	8	8	53
2010	24	8	4	8	29	1	74
2011	31	14	24	27	2	-	98
2012	23	18	4	14	18	1	78
2013	19	14	14	19	3	-	69
2014	24	13	17	10	-	2	66
2015	25	14	6	11	-	2	58
2016	42	11	11	1	-	1	66
2017	23	15	13	3	-	5	59
2018	35	8	13	5	-	2	63
2019	18	2	7	1	-	1	29
2020	27	2	7	7	-	4	47
2021	-	11	-	3	-	3	17
2022	2	18	-	1	-	5	26
2023	9	19	-	3	-	-	31
Total	357	178	130	128	60	36	889

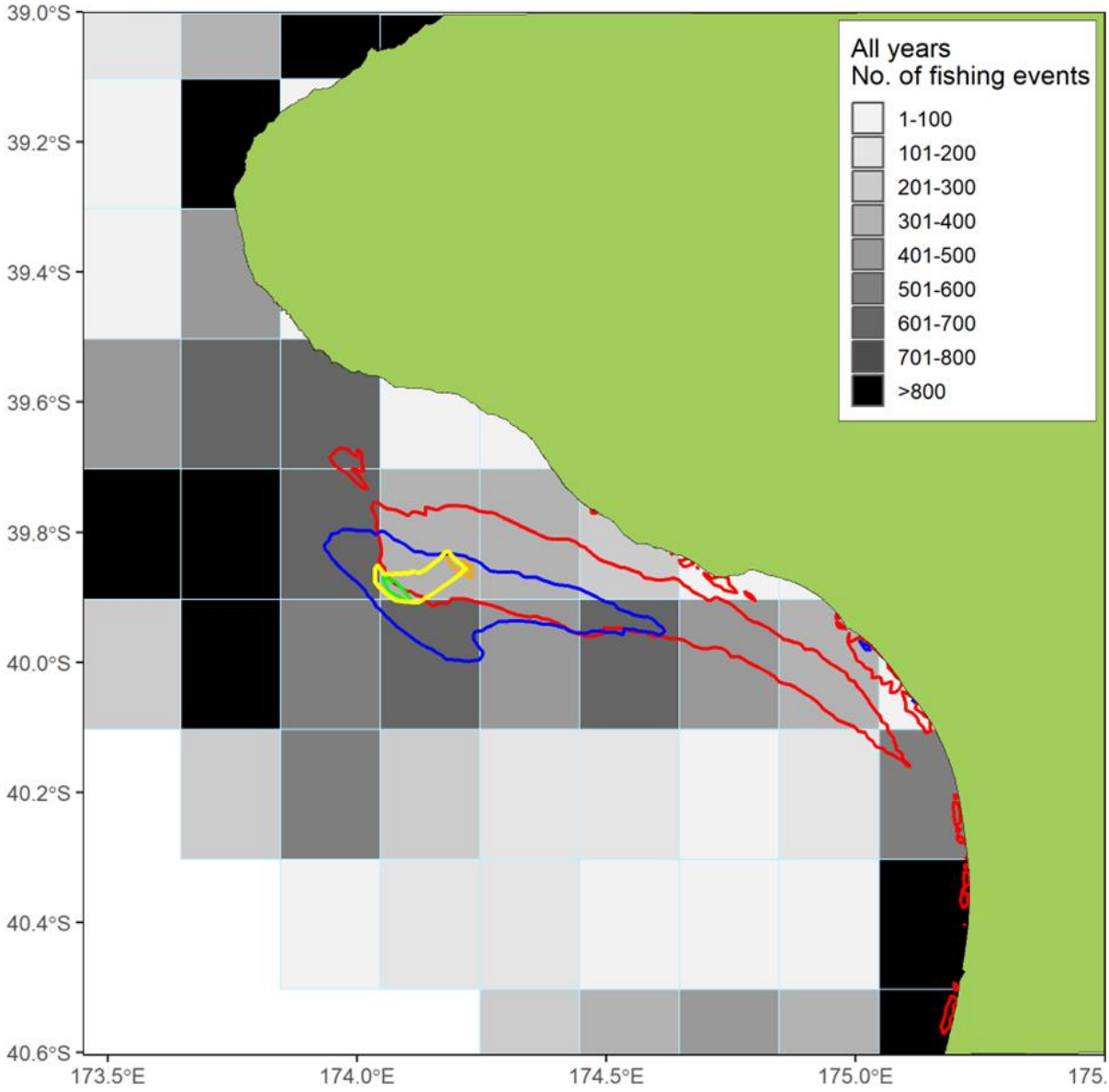
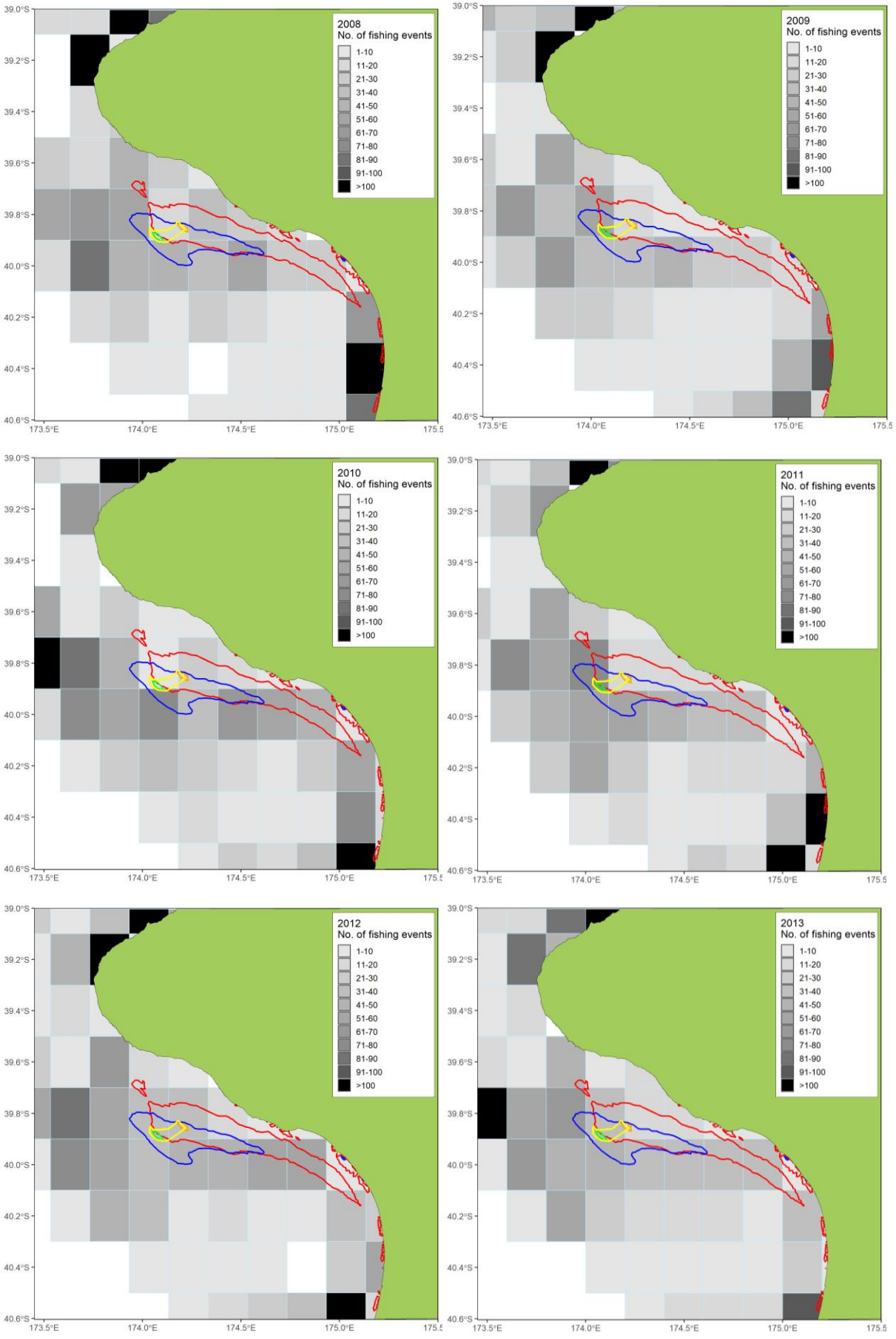
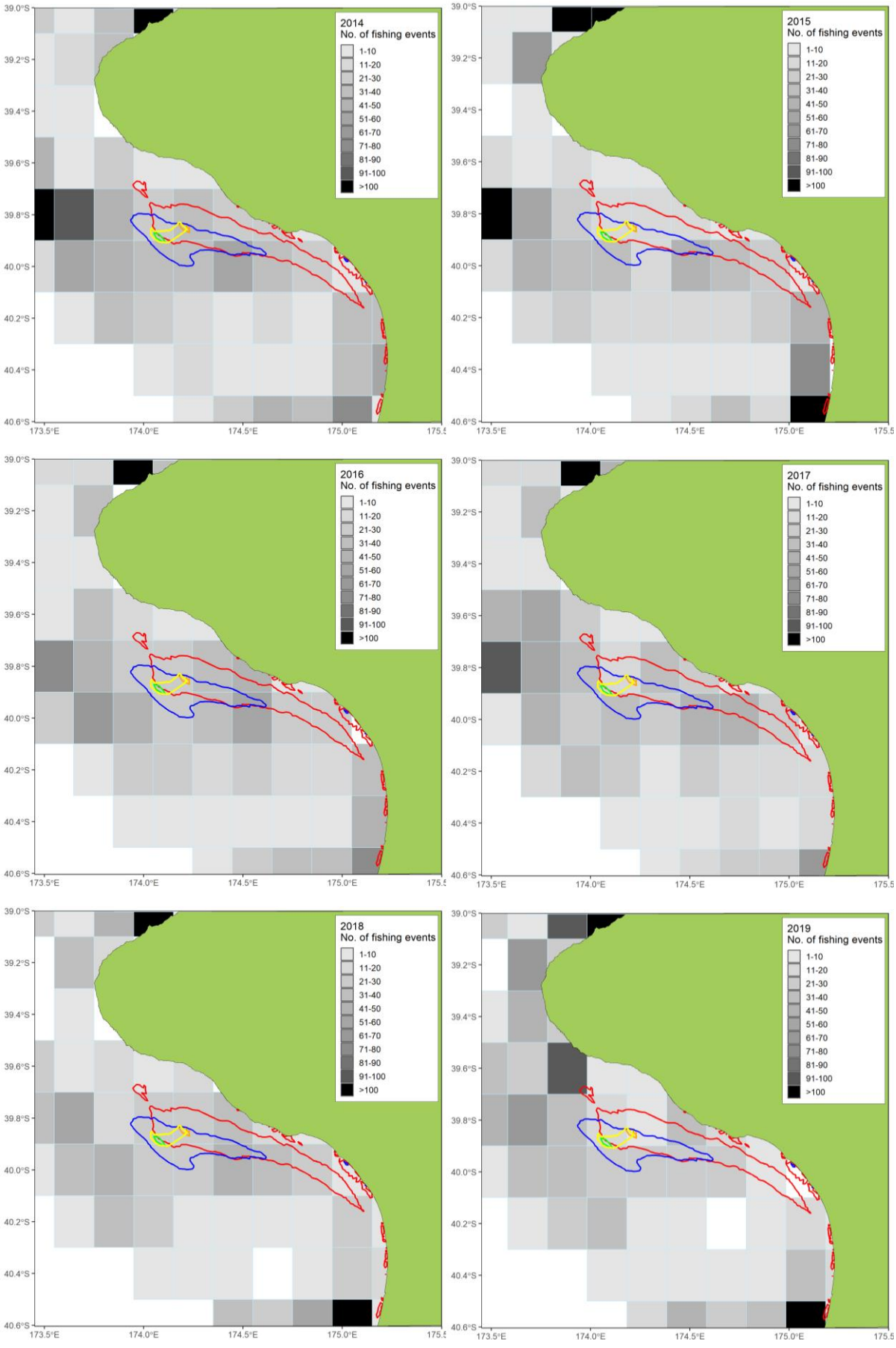


Figure 2-1: The number of fishing events aggregated into 0.2 degree squares for FMA 8 for fishing years 2008–2023. The PPA is shown in yellow, Mining A median SSC area in orange, Mining A 9^{9t}h percentile SSC area in red, Mining B Median SSC area in green, and Mining B 9^{9t}h percentile SSC area in blue.


2008
No. of fishing events
1-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
>100
2009
No. of fishing events
1-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
>100
2010
No. of fishing events
1-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
>100
2011
No. of fishing events
1-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
>100
2012
No. of fishing events
1-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
>100
2013
No. of fishing events
1-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
>100
39.0°S
39.2°S
39.4°S
39.6°S
39.8°S
40.0°S
40.2°S
40.4°S
40.6°S
173.5°E
174.0°E
174.5°E
175.0°E


2014
No. of fishing events
1-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
>100
2015
No. of fishing events
2016
No. of fishing events
2017
No. of fishing events
2018
No. of fishing events
2019
No. of fishing events
39.0°S
39.2°S
39.4°S
39.6°S
39.8°S
40.0°S
40.2°S
40.4°S
40.6°S
173.5°E
174.0°E
174.5°E
175.0°E

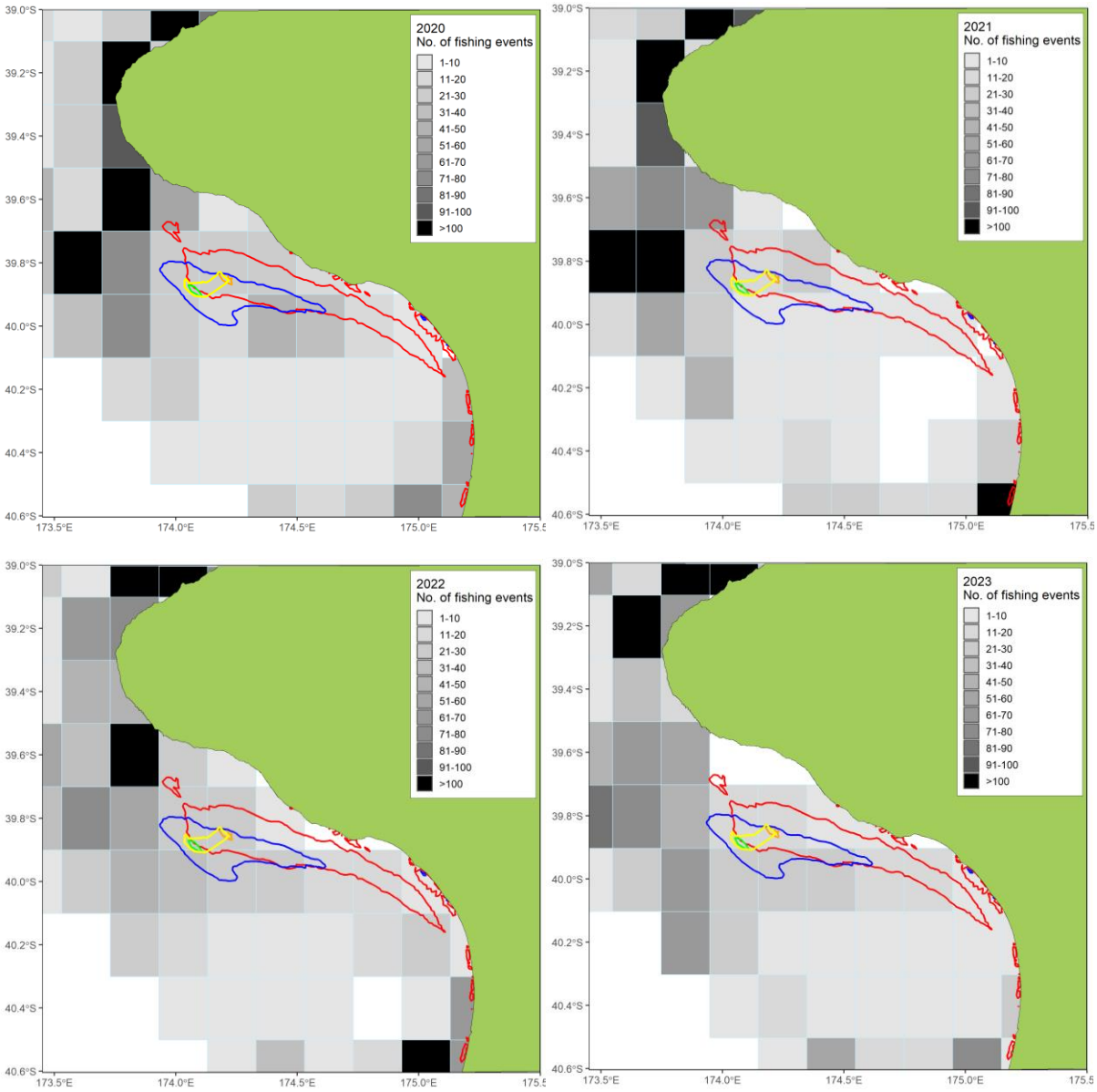


Figure 2-2: The number of fishing events aggregated into 0.2 degree squares for FMA 8 by fishing year from 2008 to 2023. The PPA is shown in yellow, Mining A 9^{9t}h percentile SSC area in red, Mining A median SSC area in orange, Mining B 9^{9t}h percentile SSC area in blue, and Mining B Median SSC area in green.

2.7 Changes in Total Allowable Commercial Catch (TACC) for key species

Changes in the TACC have occurred for the key species targeted in the areas of interest over the 16 years reported here. These are provided in Table 2-11. TACCs were constant over the period for Jack mackerel, leather jacket, red gurnard, rig, school shark and trevally but reduced to present levels in 2012 for blue cod, in 2023 for blue warehou.

Table 2-11: TACC for key targeted species in the STB each fishing year from 2007/08 until 2022/23.

Year	Blue cod (FMA 8)	Blue warehou (FMA 8)	Jack mackerel (FMA 7, 8, 9)	Leather jacket (FMA 2, 7, 8)	Red gurnard (FMA 8)	Rig (FMA 8)	School shark (FMA 8)	Trevally (FMA 7, 8, 9)
2008	74	233	32,537	1,136	543	310	529	2,153
2009	74	233	32,537	1,136	543	310	529	2,153
2010	74	233	32,537	1,136	543	310	529	2,153
2011	74	233	32,537	1,136	543	310	529	2,153
2012	*34	233	32,537	1,136	543	310	529	2,153
2013	34	233	32,537	1,136	543	310	529	2,153
2014	34	233	32,537	1,136	543	310	529	2,153
2015	34	233	32,537	1,136	543	310	529	2,153
2016	34	233	32,537	1,136	543	310	529	2,153
2017	34	233	32,537	1,136	543	310	529	2,153
2018	34	233	32,537	1,136	543	310	529	2,153
2019	34	233	32,537	1,136	543	310	529	2,153
2020	34	233	32,537	1,136	543	310	529	2,153
2021	34	233	32,537	1,136	543	310	529	2,153
2022	34	233	32,537	1,136	543	310	529	2,153
2023	34	*160	32,537	1,136	543	310	529	2,153

3 Recreational Fishing

3.1 Data collection

Recreational fishing catch data collected occasionally from boat ramp surveys, fisher logbooks, ad hoc samples, and one-off surveys are available from Fisheries New Zealand through their *rec_data* database. Although these data represent only a fraction of all recreational fishing activities and are recorded at a coarse spatial resolution relative to the proposed project area, they can provide an indication of the main methods used and species caught in the area. Data for the Taranaki region were obtained from Fisheries New Zealand from six adjacent reporting areas (Figure 3-1) along the Taranaki coast (OTK, HWR, PTE, WVL, WNG, RTN), disregarding older records (prior to 2005), and summarised to identify the main species caught and methods used.

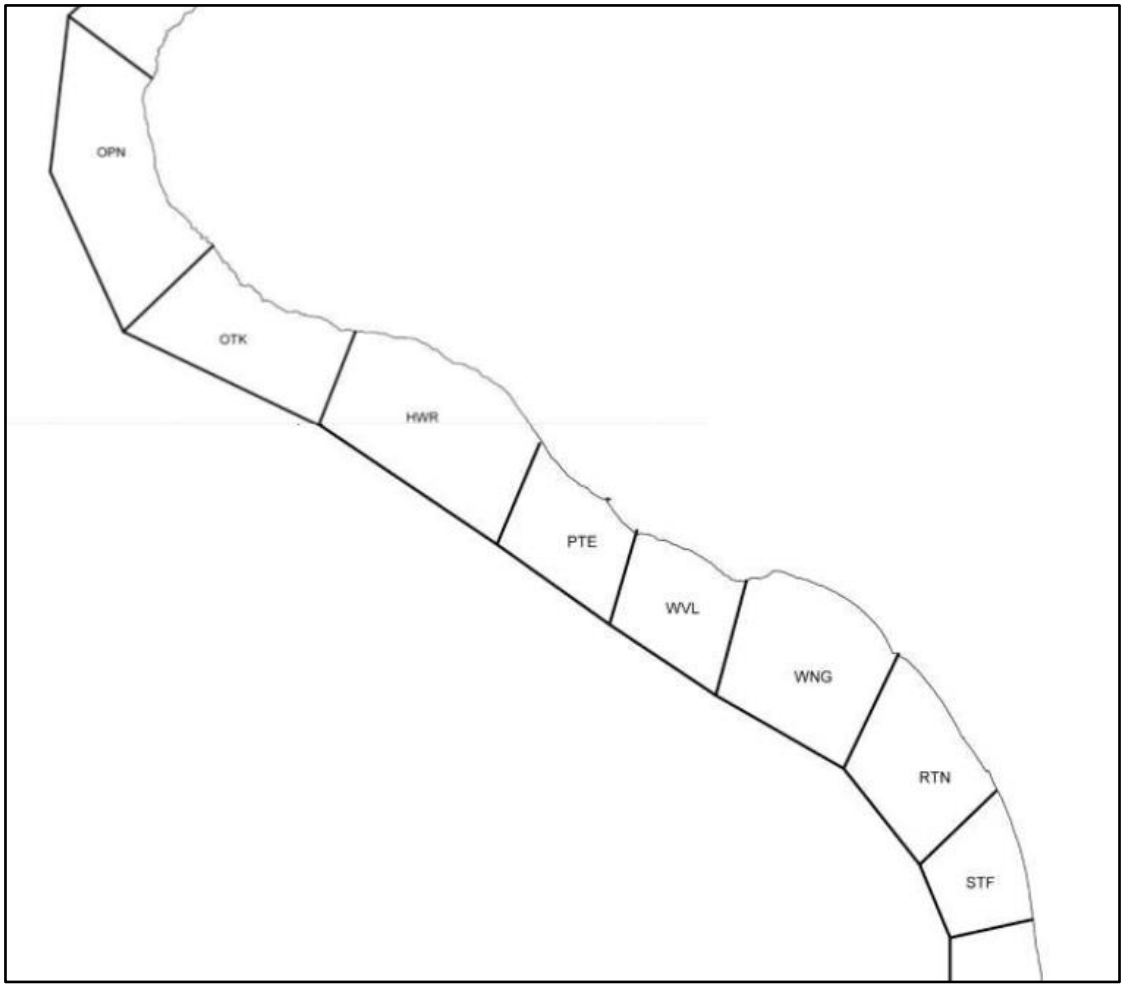


Figure 3-1: Recreational fishing reporting areas used in the Fisheries New Zealand *rec_data* database.

3.2 Area Otakeho (OTK)

Since 2005, recreational fishing records from within the reporting region OTK have amounted to 92 fish, mostly blue cod and tarakihi (Table 3-1). These accounted for just 0.35% of the total reported recreational catch from all six recreational fishing areas considered.

Table 3-1: Otakeho (OTA): Recreational fishing catch species and percentage of catch since 2005.

Species code	Scientific name	Common name	Percent of catch
BCO	*Parapercis colias*	Blue cod	41.3
TAR	*Nemadactylus macropterus & N. rex*	Tarakihi	25.0
GUR	*Chelidonichthys kumu*	Red gurnard	9.8
SNA	*Pagrus auratus*	Snapper	8.7
KAH	*Arripis trutta, A. xylabion*	Kahawai	5.4
ALB	*Thunnus alalunga*	Albacore tuna	4.3
WSE	Labridae	Wrasses	2.2
EMA	*Scomber australasicus*	Blue mackerel	1.1
HAP	*Polyprion oxygeneios*	Hapuku	1.1
STY	*Notolabrus celidotus*	Spotty	1.1

Baitfishing was the most reported method by recreational fishers in the area, accounting for 95.7% of the total catch (Table 3-2).

Table 3-2: Otakeho (OTA): Reported recreational fishing methods and percentage of catch since 2005.

Fishing method	Percent of catch
Baitfishing	95.7
Trolling with lure	4.3

3.3 Area Hawera (HWR)

Since 2005, recreational fishing records from within the reporting region HWR have amounted to 537 fish, mostly blue cod, snapper, and tarakihi (Table 3-3). These accounted for just 2.03% of the total reported recreational catch from all six recreational fishing areas considered.

Table 3-3: Hawera (HWR): Recreational fishing catch species and percentage of catch since 2005.

Species code	Scientific name	Common name	Percent of catch
BCO	*Parapercis colias*	Blue cod	53.8
SNA	*Pagrus auratus*	Snapper	22.7
TAR	*Nemadactylus macropterus & N. rex*	Tarakihi	17.3
GUR	*Chelidonichthys kumu*	Red gurnard	1.7
KAH	*Arripis trutta, A. xylabion*	Kahawai	1.1
SPD	*Squalus acanthias*	Spiny dogfish	1.1
TRE	*Pseudocaranx georgianus*	Trevally	0.7
CAR	*Cephaloscyllium isabellum*	Carpet shark	0.4
SCH	*Galeorhinus galeus*	School shark	0.4
SPO	*Mustelus lenticulatus*	Rig	0.4
BAR	*Thyrsites atun*	Barracouta	0.2
BMA	*Scorpis violacea*	Blue maomao	0.2

Baitfishing was the most reported method by recreational fishers in the area, followed by longlining (Table 3-4).

Table 3-4: Hawera (HWR): Reported recreational fishing methods and percentage of catch since 2005.

Fishing method	Percent of catch
Baitfishing	80.3
Long-lines	17.5
Trolling (lure and bait)	2.2

3.4 Area Patea (PTE)

Since 2005, recreational fishing records from within the reporting region PTE have amounted to 3 342 fish, mostly blue cod, snapper, rock lobster, and red gurnard (Table 3-5). These accounted for 12.65% of the total reported recreational catch from all six recreational fishing areas considered.

Table 3-5: Patea (PTE): Recreational fishing catch species and percentage of catch since 2005.

Species code	Scientific name	Common name	Percent of catch
BCO	*Parapercis colias*	Blue cod	61.1
SNA	*Pagrus auratus*	Snapper	14.6
CRA	*Jasus edwardsii*	Rock lobster	5.6
GUR	*Chelidonichthys kumu*	Red gurnard	4.9
SPD	*Squalus acanthias*	Spiny dogfish	2.6
TAR	*Nemadactylus macropterus & N. rex*	Tarakihi	2.1
SUR	*Evechinus chloroticus*	Kina	1.5
KAH	*Arripis trutta, A. xylabion*	Kahawai	1.4
BAR	*Thyrsites atun*	Barracouta	1.0
SCH	*Galeorhinus galeus*	School shark	1.0
SPO	*Mustelus lenticulatus*	Rig	0.9
RRC	*Scorpaena cardinalis & S. papillosus*	Red scorpion fish	0.7
TRE	*Pseudocaranx georgianus*	Trevally	0.4
SBR	*Pseudophycis barbata*	Southern bastard cod	0.4
UNI		Unidentified	0.4
CAR	*Cephaloscyllium isabellum*	Carpet shark	0.3
HAP	*Polyprion oxygeneios*	Hapuku	0.1
SPE	*Helicolenus* spp.	Sea perch	0.1
WSE	*Labridae*	Wrasses	0.1
JDO	*Zeus faber*	John dory	0.1
KIN	*Seriola lalandi*	Kingfish	0.1
ROC	*Lotella rhacinus*	Rock cod	0.1
THR	*Alopias vulpinus*	Thresher shark	0.1
TRA	*Trachichthyidae*	Roughies	0.1
BWS	*Prionace glauca*	Blue shark	<0.1
LEA	*Meuschenia scaber*	Leatherjacket	<0.1
SKA	Rajidae Arhynchobatidae (Families)	Skate	<0.1
TRU	*Latris lineata*	Trumpeter	<0.1

Baitfishing and jigging were the most reported methods by recreational fishers in the area (Table 3-6).

Table 3-6: Patea (PTE): Reported recreational fishing methods and percentage of catch since 2005.

Fishing method	Percent of catch
Baitfishing	75.7
Baitfishing and jigging	5.0
Both fishing methods BA & PL used together, i.e. Baitfishing & Plastic soft baits	3.1
Long-lines	8.4
SCUBA diving	7.1
Snorkel diving	0.1
Trolling with lure	0.7

3.5 Area Waverly (WVL)

Since 2005, recreational fishing records from within the reporting region WVL have amounted to 5 731 fish, mostly blue cod, snapper, and red gurnard (Table 3-7). These accounted for 21.7% of the total reported recreational catch from all six recreational fishing areas considered.

Table 3-7: Waverly (WVL): Recreational fishing catch species and percentage of catch since 2005.

Species code	Scientific name	Common name	Percent of catch
BCO	*Parapercis colias*	Blue cod	58.0
SNA	*Pagrus auratus*	Snapper	15.7
GUR	*Chelidonichthys kumu*	Red gurnard	4.9
KAH	*Arripis trutta, A. xylabion*	Kahawai	4.2
TAR	*Nemadactylus macropterus & N. rex*	Tarakihi	3.2
SPO	*Mustelus lenticulatus*	Rig	2.6
SPD	*Squalus acanthias*	Spiny dogfish	1.9
CRA	*Jasus edwardsii*	Rock lobster	1.4
TRE	*Pseudocaranx georgianus*	Trevally	1.3
RCO	*Pseudophycis bachus*	Red cod	1.2
CAR	*Cephaloscyllium isabellum*	Carpet shark	0.8
SHA		Shark	0.7
SUR	*Evechinus chloroticus*	Kina	0.7
RRC	*Scorpaena cardinalis & S. papillosus*	Red scorpion fish	0.7
BAR	*Thyrsites atun*	Barracouta	0.6
SCH	*Galeorhinus galeus*	School shark	0.6
SPE	*Helicolenus* spp.	Sea perch	0.6
HAP	*Polyprion oxygeneios*	Hapuku	0.2
SKA	Rajidae Arhynchobatidae (Families)	Skate	0.1
WSE	Labridae	Wrasses	0.1
STY	*Notolabrus celidotus*	Spotty	0.1
JDO	*Zeus faber*	John dory	0.1
LEA	*Meuschenia scaber*	Leatherjacket	0.1

Species code	Scientific name	Common name	Percent of catch
CON	*Conger* spp.	Conger eel	<0.1
EMA	*Scomber australasicus*	Blue mackerel	<0.1
JMA	*Trachurus declivis, T. murphyi, T. novaezelandiae*	Jack mackerel	<0.1
OCT	*Pinnoctopus cordiformis*	Octopus	<0.1
EEU		Eels, freshwater	<0.1
KIN	*Seriola lalandi*	Kingfish	<0.1
ROC	*Lotella rhacinus*	Rock cod	<0.1

Baitfishing was the most reported method by recreational fishers in the area, followed by longlining (Table 3-8).

Table 3-8: Waverly (WVL): Reported recreational fishing methods and percentage of catch since 2005.

Fishing method	Percent of catch
Baitfishing	83.5
Long-lines	6.0
Baitfishing and jigging	3.6
Both fishing methods used together, i.e., Baitfishing & Plastic soft baits	2.3
SCUBA diving	1.9
Jigging	1.4
Trolling with lure	1.0
Potting (i.e., for crayfish)	0.2

3.6 Area Whanganui (WNG)

Since 2005, recreational fishing records from within the reporting region WNG have amounted to 14 001 fish, mostly blue cod, snapper, red gurnard, and kahawai (Table 3-9). These accounted for over half (53.01%) of the total reported recreational catch from all six recreational fishing areas considered.

Table 3-9: Whanganui (WNG): Recreational fishing catch species and percentage of catch since 2005.

Species code	Scientific name	Common name	Percent of catch
BCO	*Parapercis colias*	Blue cod	36.4
SNA	*Pagrus auratus*	Snapper	18.6
GUR	*Chelidonichthys kumu*	Red gurnard	14.9
KAH	*Arripis trutta, A. xylabion*	Kahawai	10.6
SPD	*Squalus acanthias*	Spiny dogfish	5.8
TAR	*Nemadactylus macropterus & N. rex*	Tarakihi	3.4
SPO	*Mustelus lenticulatus*	Rig	2.7
SHA		Shark	1.2
BAR	*Thyrsites atun*	Barracouta	1.1
ROC	*Lotella rhacinus*	Rock cod	0.8

Species code	Scientific name	Common name	Percent of catch
SCH	*Galeorhinus galeus*	School shark	0.8
FLA		Flats	0.7
CRA	*Jasus edwardsii*	Rock lobster	0.4
RRC	*Scorpaena cardinalis & S. papillosus*	Red scorpion fish	0.3
TRE	*Pseudocaranx georgianus*	Trevally	0.3
CAR	*Cephaloscyllium isabellum*	Carpet shark	0.2
YEM	*Aldrichetta forsteri*	Yellow-eyed mullet	0.2
KIN	*Seriola lalandi*	Kingfish	0.2
RCO	*Pseudophycis bachus*	Red cod	0.1
SDO	*Cyttus novaezealandiae*	Silver dory	0.1
STG		Stargazer	0.1
SBR	*Pseudophycis barbata*	Southern bastard cod	0.1
WSE	Labridae	Wrasses	0.1
JDO	*Zeus faber*	John dory	0.1
KEL	*Chironemus marmoratus*	Kelpfish	0.1
EMA	*Scomber australasicus*	Blue mackerel	0.1
HAP	*Polyprion oxygeneios*	Hapuku	0.1
STR		Stingray	0.1
STY	*Notolabrus celidotus*	Spotty	<0.1
LEA	*Meuschenia scaber*	Leatherjacket	<0.1
OCT	*Pinnoctopus cordiformis*	Octopus	<0.1
SKA	Rajidae Arhynchobatidae (Families)	Skate	<0.1
JMA	*Trachurus declivis, T. murphyi, T. novaezelandiae*	Jack mackerel	<0.1
SPE	*Helicolenus* spp.	Sea perch	<0.1
BWS	*Prionace glauca*	Blue shark	<0.1
SOL		Sole	<0.1
PUF	*Sphoeroides pachygaster*	Pufferfish	<0.1
BAC	*Bathygadus cottoides*	Codheaded rattail	<0.1
EEU		Eels, freshwater	<0.1
EMO	*Etmopterus molleri*	Blackbelly lantern shark	<0.1
MOR	Muraenidae	Moray eel	<0.1
PAR	*Girella tricuspidata*	Parore	<0.1
RMU	*Upeneichthys lineatus*	Red mullet	<0.1
THR	*Alopias vulpinus*	Thresher shark	<0.1

Baitfishing was the most reported method by recreational fishers in the area, followed by longlining (Table 3-10).

Table 3-10: Whanganui (WNG): Reported recreational fishing methods and percentage of catch since 2005.

Fishing method	Percent of catch
Baitfishing	75.0
Long-lines	10.0
Both fishing methods BA & PL used together, i.e., Baitfishing & Plastic soft baits	4.4
Baitfishing and jigging	4.1
Trolling with lure	3.1
Set net	0.8
Set netting	0.8
Plastic soft baits	0.4
Trolling (lure and bait)	0.4
Jigging	0.3
SCUBA diving	0.3
Trolling with a bait	0.2
Snorkel diving	0.1
Dive (spear fishing)	<0.1
Spinning	<0.1

3.7 Area Rātana (RTN)

Since 2005, recreational fishing records from within the reporting region RTN have amounted to 2 707 fish, mostly blue cod, snapper, and red gurnard (Table 3-11). These accounted for 10.25% of the total reported recreational catch from all six recreational fishing areas considered.

Table 3-11: Rātana (RTN): Recreational fishing catch species and percentage of catch since 2005.

Species code	Scientific name	Common name	Percent of catch
BCO	*Parapercis colias*	Blue cod	42.2
SNA	*Pagrus auratus*	Snapper	20.1
GUR	*Chelidonichthys kumu*	Red gurnard	12.3
KAH	*Arripis trutta, A. xylabion*	Kahawai	5.1
SPO	*Mustelus lenticulatus*	Rig	4.8
SHA		Shark	3.7
TAR	*Nemadactylus macropterus & N. rex*	Tarakihi	3.0
SPD	*Squalus acanthias*	Spiny dogfish	2.3
BAR	*Thyrsites atun*	Barracouta	1.8
RCO	*Pseudophycis bachus*	Red cod	1.4
CRA	*Jasus edwardsii*	Rock lobster	1.0
SCH	*Galeorhinus galeus*	School shark	0.9
JMA	*Trachurus declivis, T. murphyi, T. novaezelandiae*	Jack mackerel	0.3
CAR	*Cephaloscyllium isabellum*	Carpet shark	0.3
CON	*Conger* spp.	Conger eel	0.2

Species code	Scientific name	Common name	Percent of catch
JDO	*Zeus faber*	John dory	0.1
TRE	*Pseudocaranx georgianus*	Trevally	0.1
EEU		Eels, freshwater	0.1
HAP	*Polyprion oxygeneios*	Hapuku	0.1
STR		Stingray	0.1
EMA	*Scomber australasicus*	Blue mackerel	<0.1
OSE	*Ophisurus serpens*	Snake eel	<0.1
RRC	*Scorpaena cardinalis & S. papillosus*	Red scorpion fish	<0.1
SQU	*Nototodarus sloanii & N. gouldi*	Arrow squid	<0.1
SQX		Squid	<0.1

Baitfishing was the most reported method by recreational fishers in the area, followed by trolling and longlining (Table 3-12).

Table 3-12: Rātana (RTN): Reported recreational fishing methods and percentage of catch since 2005.

Fishing method	Percent of catch
Baitfishing	73.6
Trolling with lure	11.0
Long-lines	9.7
Both fishing methods BA & PL used together, i.e. Baitfishing & Plastic soft baits	2.7
Baitfishing and jigging	1.1
SCUBA diving	1.0
Trolling with a bait	0.4
Jigging	0.3
Trolling (lure and bait)	0.1
Kon tiki	0.1

3.8 All areas combined

Since 2005, recreational fishing records from within all 6 reporting regions have amounted to 26 410 fish, mostly blue cod, snapper, and red gurnard (Table 3-13).

Table 3-13: All areas: Recreational fishing catch species and percentage of catch since 2005.

Species code	Scientific name	Common name	Percent of catch
BCO	*Parapercis colias*	Blue cod	45.2
SNA	*Pagrus auratus*	Snapper	17.7
GUR	*Chelidonichthys kumu*	Red gurnard	10.9
KAH	*Arripis trutta, A. xylabion*	Kahawai	7.3
SPD	*Squalus acanthias*	Spiny dogfish	4.1
TAR	*Nemadactylus macropterus & N. rex*	Tarakihi	3.5
SPO	*Mustelus lenticulatus*	Rig	2.6
CRA	*Jasus edwardsii*	Rock lobster	1.3
SHA		Shark	1.2
BAR	*Thyrsites atun*	Barracouta	1.1
SCH	*Galeorhinus galeus*	School shark	0.8
TRE	*Pseudocaranx georgianus*	Trevally	0.5
RCO	*Pseudophycis bachus*	Red cod	0.5
ROC	*Lotella rhacinus*	Rock cod	0.5
RRC	*Scorpaena cardinalis & S. papillosus*	Red scorpion fish	0.4
FLA		Flats	0.4
CAR	*Cephaloscyllium isabellum*	Carpet shark	0.3
SUR	*Evechinus chloroticus*	Kina	0.3
SPE	*Helicolenus spp.*	Sea perch	0.2
YEM	*Aldrichetta forsteri*	Yellow-eyed mullet	0.1
WSE	Labridae	Wrasses	0.1
HAP	*Polyprion oxygeneios*	Hapuku	0.1
SBR	*Pseudophycis barbata*	Southern bastard cod	0.1
KIN	*Seriola lalandi*	Kingfish	0.1
JDO	*Zeus faber*	John dory	0.1
SDO	*Cyttus novaezealandiae*	Silver dory	0.1
JMA	*Trachurus declivis, T. murphyi, T. novaezelandiae*	Jack mackerel	0.1
STG		Stargazer	0.1
SKA	Rajidae Arhynchobatidae (Families)	Skate	0.1
STY	*Notolabrus celidotus*	Spotty	0.1
EMA	*Scomber australasicus*	Blue mackerel	<0.1
UNI		Unidentified	<0.1
LEA	*Meuschenia scaber*	Leatherjacket	<0.1
KEL	*Chironemus marmoratus*	Kelpfish	<0.1
STR		Stingray	<0.1
CON	*Conger* spp.	Conger eel	<0.1
OCT	*Pinnoctopus cordiformis*	Octopus	<0.1

Species code	Scientific name	Common name	Percent of catch
BWS	*Prionace glauca*	Blue shark	<0.1
ALB	*Thunnus alalunga*	Albacore tuna	<0.1
EEU		Eels, freshwater	<0.1
THR	*Alopias vulpinus*	Thresher shark	<0.1
SOL		Sole	<0.1
PUF	*Sphoeroides pachygaster*	Pufferfish	<0.1
TRA	*Trachichthyidae*	Roughies	<0.1
BAC	*Bathygadus cottoides*	Codheaded rattail	<0.1
EMO	*Etmopterus molleri*	Blackbelly lantern shark	<0.1
PAR	*Girella tricuspidata*	Parore	<0.1
TRU	*Latris lineata*	Trumpeter	<0.1
MOR	Muraenidae	Moray eel	<0.1
SQU	*Nototodarus sloanii & N. gouldi*	Arrow squid	<0.1
OSE	*Ophisurus serpens*	Snake eel	<0.1
BMA	*Scorpis violacea*	Blue maomao	<0.1
RMU	*Upeneichthys lineatus*	Red mullet	<0.1
SQX		Squid	<0.1

Baitfishing was the most reported method by recreational fishers in the area, followed by longlining (Table 3-14).

Table 3-14: All areas: Reported recreational fishing methods and percentage of catch since 2005.

Fishing method	Percent of catch
Baitfishing	77.0
Long-lines	9.0
Baitfishing and jigging	3.7
Both fishing methods BA & PL used together, i.e., Baitfishing & Plastic soft baits	3.5
Trolling with lure	3.1
SCUBA diving	1.6
Jigging	0.5
Set net	0.4
Set netting	0.4
Trolling (lure and bait)	0.3
Plastic soft baits	0.2
Trolling with a bait	0.1
Snorkel diving	<0.1
Potting (ie. for crayfish)	<0.1
Dive (spear fishing)	<0.1
Spinning	<0.1
Kon tiki	<0.1

4 Customary fishing

4.1 Data sources

Information on customary fishing was provided by FNZ (Fisheries New Zealand RepLog 15432) and summarised. This fishing is reported on a coarse spatial scale, with the relevant reporting area extending from New Plymouth in the north to Whanganui in the south, and available only for the period since 2006.

4.2 Customary catch

In the period between 2006 and the present about 45 t of customary catch has been reported from this reporting region. Customary catch in this area and time-period has mainly comprised snapper (43.6%), pāua (30.1%), kina (10.9%), kingfish (7.6%), and rock lobster (4.7%) (Table 4-1). A further eight species or species groups were reported, each accounting for 1% or less of the total.

Table 4-1: Customary fishing catches since 2006 for FNZ reporting areas which encompass the PPA and sediment plume.

Species code	Family	Scientific name	Common name	Percent of catch
SNA	Sparidae	*Pagrus auratus*	Snapper	43.6
PAU	Haliotidae	*Haliotis iris*	Pāua	30.1
SUR	Echinometridae	*Evechinus chloroticus*	Kina	10.9
KIN	Carangidae	*Seriola lalandi*	Kingfish	7.6
CRA	Palinuridae	*Jasus edwardsii*	Rock lobster or kōura	4.7
TAR	Cheilodactylidae	*Nemadactylus macropterus*	Tarakihi	1.0
SPO	Triakidae	*Mustelus lenticulatus*	Rig	0.2
BCO	Pinguipedidae	*Parapercis colias*	Blue cod	0.1
GUR	Triglidae	*Chelidonichthys kumu*	Red gurnard	<0.1
KAH	Arripidae	*Arripis trutta*	Kahawai	<0.1
FLA			Flatfish (8 species)	<0.1
TRE	Carangidae	*Pseudocaranx dentex*	Trevally	<0.1
YEM	Mugilidae	*Aldrichetta forsteri*	Yellow-eyed mullet	<0.1

5 Discussion and summary

This analysis indicates the degree of overlap of fishing in the STB with the PPA and other areas affected by the sediment plume.

Across the entire time-period analysed from October 2007 to September 2023 commercial set netting was the most common method of fishing in the Mining A Median SSC, Mining A 99th percentile SSC, and Mining B 99th percentile SSC areas. In these areas school shark has been increasingly targeted over this period while rig and other species have decreased in importance.

Bottom trawling was the most common method in the PPA and Mining B median SSC areas which are further offshore. In both these areas the number of bottom trawl fishing events fluctuated from year to year but generally declined over the time-period and in recent years has been replaced by set

netting as the most common fishing method. At the start of the time series red gurnard was most commonly targeted in both areas but in recent years this has been replaced by school shark.

In 2020 new commercial and recreational set netting closures were put in place in the STB banning the use of setnets within 4 nautical miles along the coast from Hawera southwards to Wellington. In addition, set-net closures were extended within from 2 nautical miles to 7 nautical miles offshore along the coast from Hawera northwards to the Waiwhakaiho River in north Taranaki.

This closure of the inshore areas to set netting most likely explains the decrease in targeting for rig and the increase in targeting for school shark as well as the recent increase in set-netting activities further offshore. Rig are most common inshore at depths of less than 50 m and females move into shallow coastal waters to give birth to live pups in spring and summer, whereas school sharks are more widely distributed in the STB (see maps on pages 33-34 in MacDiarmid et al. 2015).

For the PPA, Mining Area A median SSC, and Mining Area B median SSC, bounding boxes of 0.2 degrees had to be constructed around each so as not to violate the release clauses of the data. In all cases the bounding boxes created are substantially larger than the areas the polygons themselves cover, and results in the number of fishing events being inflated. On average, this method over-estimated the number of fishing events in the PPA, Mining B median SSC and Mining A median SSC areas by 7.6, 20.2 and 25.4 times respectively.

For Mining Area A 99th percentile SSC and Mining Area B 99th percentile SSC, the number of fishing events are as reported in the commercial data as there was no need to construct bounding boxes around them.

The number of commercial fishing events summarised here underestimates those from a number of smaller vessels working in the STB as for most of the time-period they were not required to report at the level of individual fishing events (e.g., small vessels using rock lobster pots, ring nets, blue cod pots etc). Only since the 2019/20 fishing year have smaller vessels begun to report at this resolution with the introduction of the Electronic Reporting System (ERS) across the entire New Zealand fishing fleet regardless of vessel size or fishing method.

Changes in TACC over the period do not appear to have affected targeting for the key commercial species in the PPA or areas likely to be affected by the sediment plume.

Recreational fishing in the STB catches a wide range of species but four species, blue cod, snapper, red gurnard, and kahawai comprise over 80% of the catch. The recreational fishery rarely catches species commonly targeted by commercial fishing such as rig and school shark. Recreational fishing catch increased markedly down the coast from Otakeho to Whanganui which accounted for over half the reported recreational catch from the six adjacent reporting areas.

The reported customary catch comprises at least 14 species of fish and invertebrates but is dominated by snapper and paua which account for over 70% of the total reported catch, followed by kina, kingfish and rock lobster which account for another 23% of the total reported. There is little overlap between the customary catch and the species targeted by the commercial fishery.

6 Acknowledgements

We thank Fisheries New Zealand for access to the fishing data reported here.

7 References

MacDiarmid, A., Thompson, D., Grieve, J. (2015) Assessment of the scale of marine ecological effects of seabed mining in the South Taranaki Bight. *NIWA Client Report* WLG2015-13 for TTR Ltd: 105.