

Summary of the 2025 commercial Spot Prawn (*Pandalus platyceros* Brandt) spawner index program

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ABSTRACT

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British Columbia Spot Prawns are assessed based on the spawner index, a catch per unit effort (CPUE) index of the abundance of transitioning and female Spot Prawns. The spawner index is compared to empirically derived spawner abundance thresholds determined at key research sites in Knight and Kingcome Inlets during the 1970s and 1980s, which include a buffer zone to accommodate uncertainty in spawner index estimation. For the duration of the Spot Prawn commercial harvest season, DFO Science and Fisheries Management closely analyze the trends in spawner index during twice-weekly meetings across active Pacific Fishery Management Areas (PFMAs). This report presents a summary of the outcomes of these meetings and biological data obtained during the 2025 commercial season. We aim to update this report annually to maintain an ongoing record of weekly SI summaries and management decision within the commercial Spot Prawn season.

RÉSUMÉ

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En Colombie-Britannique, la crevette tachetée est évaluée en fonction de l'indice des reproducteurs, un indice de capture par unité d'effort (CPUE) qui mesure l'abondance des crevettes tachetées en transition et des femelles. L'indice de reproducteurs doit être comparé aux seuils d'abondance de reproducteurs qui ont été obtenus empiriquement sur les principaux lieux de recherche, aux inlets Knight et Kingcome, pendant les années 1970 et 1980; ces seuils incluent une zone tampon pour tenir compte de toute incertitude dans l'estimation de l'indice de reproducteurs. Pendant toute la saison de pêche commerciale de la crevette tachetée, le Secteur des sciences et le Secteur de la gestion des pêches du MPO procèdent à l'analyse attentive des tendances de l'indice de reproducteurs lors de réunions tenues deux fois par semaine dans l'ensemble des secteurs de gestion des pêches du Pacifique (SGPP). Le rapport présente un résumé des résultats de ces réunions et des données biologiques recueillies pendant la saison de pêche commerciale de 2025. Nous prévoyons de produire un rapport annuel afin d'assurer un suivi continu des résumés hebdomadaires concernant l'indice de reproducteurs ainsi que du processus décisionnel de gestion pendant la saison de pêche commerciale de la crevette tachetée.

1. Introduction

The commercial Spot Prawn (*Pandalus platyceros* Brandt) fishery began in Howe Sound in 1914 but only reached prominence in British Columbia in the mid-1970s (Fisheries and Oceans Canada 2025). Today, the Spot Prawn fishery holds the second highest landed value among invertebrate fisheries in British Columbia, after Dungeness crab, with a value of \$72.51 million in 2023 (Government of British Columbia 2025). Spot Prawns therefore represent 27% of the landed value of invertebrates and approximately 6% of the landed value of the commercial seafood industry in British Columbia. In addition to a commercial fishery, a recreational and First Nations fisheries also exist.

Spot prawns are the largest of the seven commercial shrimp species in British Columbia, reaching carapace lengths of 64 mm and are thought to live up to four years in British Columbia (Butler 1964). As is the case with all *Pandalus* species, Spot Prawns are protandric hermaphrodites. The first two and a half years of their life are spent as male. Between 30 and 40 months of age, Spot Prawns gradually transition to female. They become mature females during their final year, during which time they spawn in the fall and winter and are assumed to release their eggs by April. These females are thought to die soon after releasing their eggs. It is assumed that in British Columbia waters repeat spawning will not occur for these mature female Spot Prawns, though this has been reported elsewhere (Armstrong et al. 1995).

The Spot Prawn fishery is managed by a fixed-escapement model, a standardized CPUE-based index of the abundance of female Spot Prawns. This model is designed to safeguard the spawning stock biomass available at the time of egg hatching (assumed to be the end of March) to provide sufficient recruitment to sustain future Prawn populations (Boutillier 1987; Boutillier and Bond 2000). During the months in which the commercial Spot Prawn fishery occurs, observers quantify and record the maturity stages of Spot Prawns in every 2nd or 3rd trap along a typically 50-trap string. A spawner index sample is then estimated by counting the number of 4 year old Spot Prawns within each trap, correcting for varying bait and gear types with varying catch efficiencies, and averaging the sampled traps along a single line. This threshold represents a minimum monthly index, determined for March when Spot Prawn release their eggs, that is thought to sustain Spot Prawn populations. Fishery thresholds are then back-calculated from this March minimum monthly index based on the estimates of non-commercial fishery mortality obtained from research sites in Knight and Kingcome Inlets across 10 years (1973 to 1982) to determine minimum monthly indices for all months (Boutillier 1987). During the commercial in-season management, Fisheries Managers compare the measured bait- and gear-corrected spawner index to these minimum monthly indices. If the spawner index is found to be below the minimum monthly, the PFMA Subarea is closed for the remainder of the year. For the recreational fishery, if a PFMA Subarea is found to be below threshold during fall surveys, winter recreational Spot Prawn fishing opportunities from January to March are not opened for that Subarea. Food, social and ceremonial fisheries associated with First Nations are open year-round.

In 1987, the March minimum monthly index was established as one four year old Spot Prawn per trap using canned tuna as bait (Boutillier 1987). These spawner index thresholds were increased by a factor of 1.7 in 1988 to accommodate a change from the historical round style traps to the modern conical ones (Boutillier 1988, Figure 1).

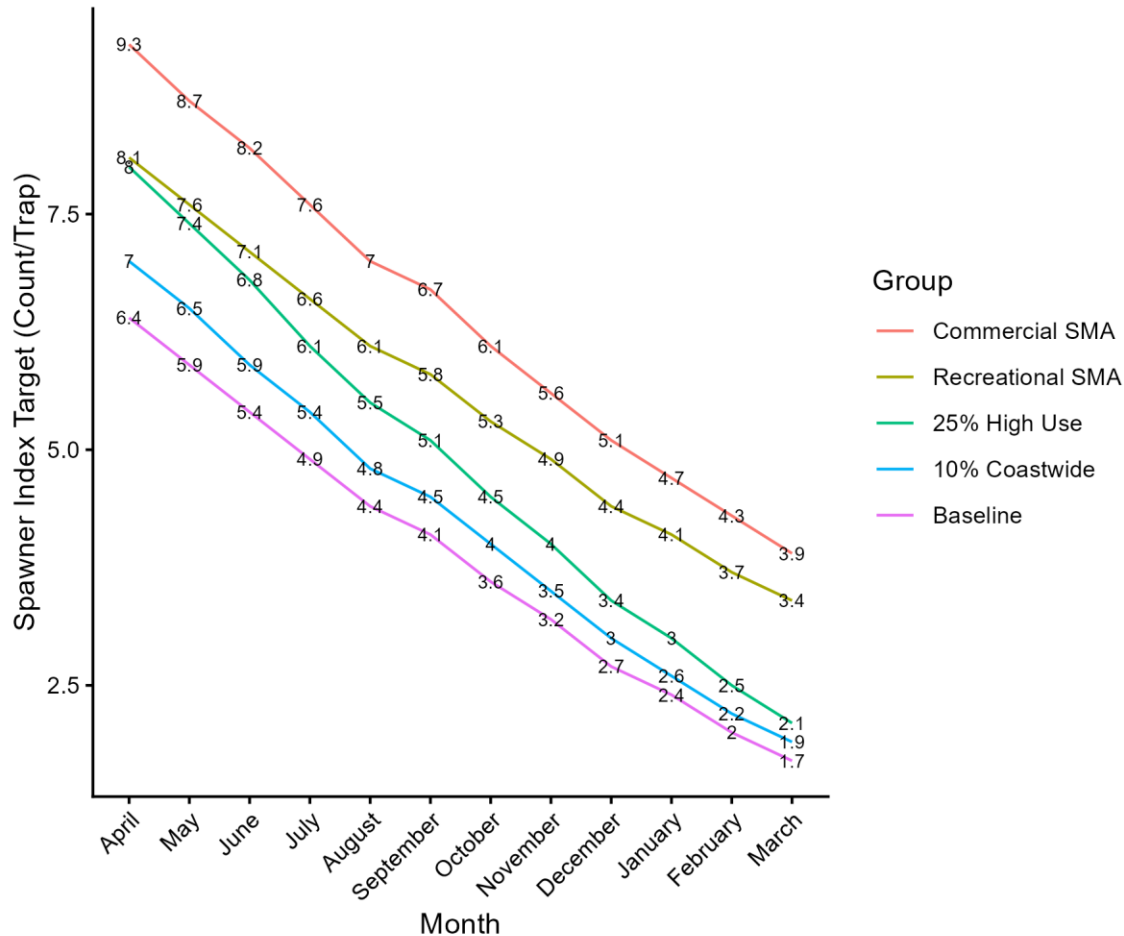


Figure 1: Spawner index threshold by month for each of the 4 management scenarios along with the baseline thresholds as established by Boutillier (1988). Each PFMA Subarea is assigned to either the 10% coastwide, 25% high use or recreational/commercial Special Management Area (SMA). Should the measured spawner index in a given PFMA Subarea fall below the relevant monthly spawner index threshold, the commercial fishery will close for the remainder of the year or the winter recreational fishery will not open for that PFMA Subarea.

To address uncertainty in spawner index estimation, additional threshold buffer zones were implemented starting in 1996. These buffer zones functioned by establishing the spawner index thresholds above the minimum monthly index in order to close PFMA Subareas before they present a potential conservation risk of dropping below the baseline during the time period it takes for Fisheries Management to review the data as well as accommodate the uncertainty inherent with spawner index sampling. Therefore, areas with higher use (commercial and/or recreational) were assigned higher buffer thresholds than lower use areas, which defaulted to coastwide thresholds. A 25% buffer was applied to threshold indices for commercial fisheries in higher use areas summarized in Table 1. In 2001, a coastwide 10% buffer on threshold indices for both commercial and recreational fisheries was also introduced (Harbo and Wylie 2006). Beginning in 2006, a new set of management thresholds was established for the recreational/commercial Special Management Areas (SMAs) of Saanich Inlet, Stuart Channel

and Alberni Inlet. These thresholds were set such that the March minimum monthly index for these special management areas was twice the baseline of 1.7 typically used for the recreational fishery and based on the recommendations of Boutillier and Bond (2000). The commercial thresholds for these high use areas were set to 15% above these recreational thresholds. A summary of these thresholds are provided in Figure 1.

Table 1: Summary of the SMA and 25% High Use Areas with the dates they were established.

Area Name	Subareas	Buffer Group	Year Established
Saanich Inlet	19-7 to 19-12	Recreational/Commercial SMA	Initially 25% Higher Use in 1996, increased in 2006
Howe Sound/Indian Arm	28-1 to 28-7, 28-9, 28-11 to 28-14	25% High Use	1999
Quadra/Cortes Islands	13-1, 13-12 to 13-17	25% High Use	1999
Salmon/Sechelt Inlets	16-5 to 16-11	25% High Use	1999
Tahsis/ Muchalaht Inlets	25-1 to 25-5, 25-8, 25-16	25% High Use	1999
Alberni Inlet/Barkley Sound	23-1 to 23-4	Recreational/Commercial SMA	2006
Stuart Channel	17-5, 17-6, 17-9	Recreational/Commercial SMA	2006
Madeira Park	16-1, 16-2, 16-16 to 16-18	25% High Use	2010
Nanaimo	17-10 to 17-13, 17-15, 17-16, 17-18	25% High Use	2010
Power River/Lund	15-1 to 15-3	25% High Use	2010

During the commercial season, DFO Science, Fishery Managers, and J.O. Thomas and Associates Ltd. (which provide the at-sea observer program) meet twice-a-week to evaluate and discuss the most recent spawner index data and decide on management actions. Once a PFMA Subarea is determined to have dropped to its spawner index threshold, the Subarea closes to commercial fishing for the remainder of the year. Additional considerations such as clusters of fishing effort, lack of sampling, or if an area is surrounded by closed subareas may lead to closures (i.e. an orphaned area). The fishery continues until Fishery Managers agree that a large enough portion of the coast has closed and the remaining clustered fishing effort has become difficult to adequately manage, with additional considerations such as the status of known productive subareas, at which point the commercial fishery is closed for the remainder of the year. The commercial Spot Prawn fishery typically last for about 35 days (based on a five year average; Figure 2).

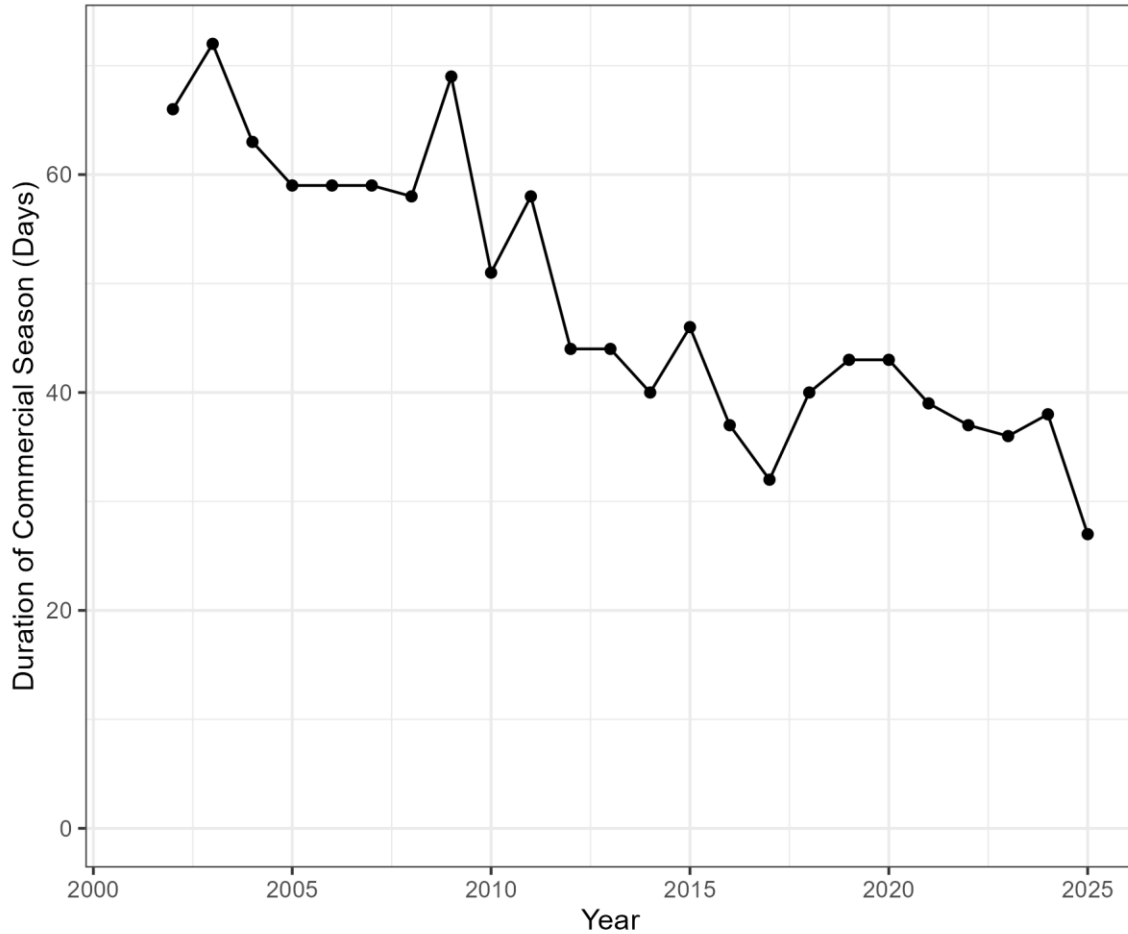
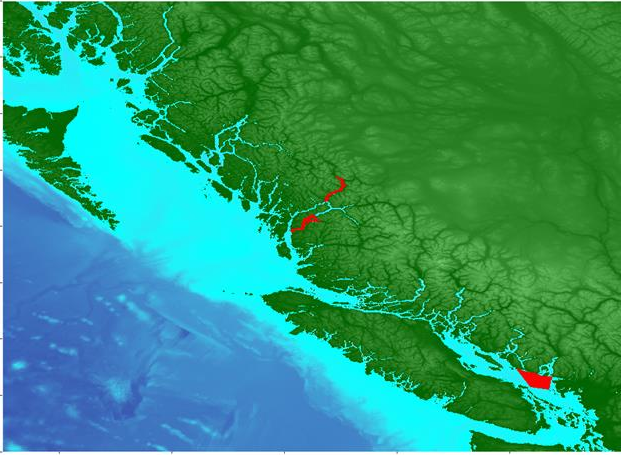
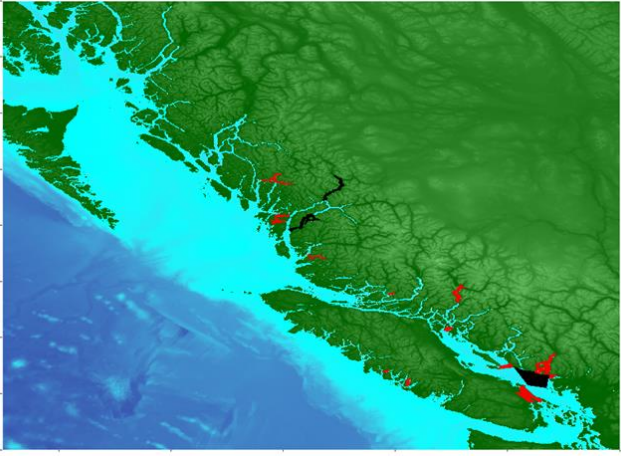


Figure 2: Duration of the commercial Spot Prawn season in days between 2002 and 2025.

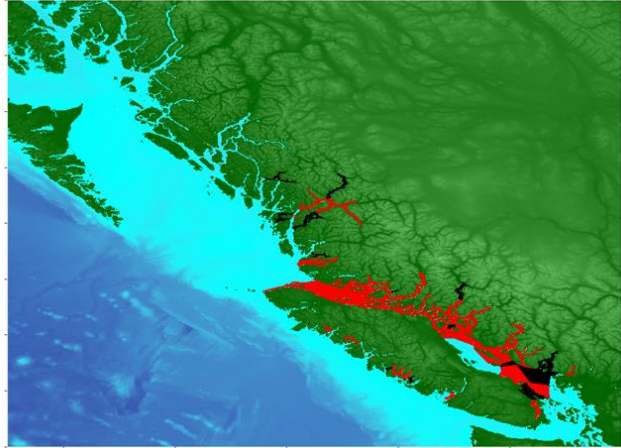
2. Analyses and Results

The 2025 commercial fishery opened on May 14, 2025 and ran for a total of 27 days to June 9, 2025, shorter than the 38 day fishery the previous year. The Spot Prawn management meetings described above took place each Tuesday and Friday from May 20 to June 13. The first PFMA Subareas to close were PFMA 8-8, 8-9, 8-13, 8-14, 29-2 and 29-3, which closed on May 26 following the second in-season meeting (Table 2). Prior to the coastwide closure of the fishery, 35 Subareas out of the 541 Subareas that opened at the start of the season were closed along the BC coast (Figure 3).

Table 2: Summary of the sample collection areas used to calculate spawner indices including dates and PFMA's covered through the spawner index sampling program, as well as the number of samples (strings) collected per week. The Subareas closed column provides a summary of the Subarea closures that were informed by the indicated data set. Areas in red were closed that week and areas in black were closed prior to that week. Weeks 3 and 4 Subarea closures were part of the coastwide closure on June 9 but indicate areas that would have been closed had the fishery continued.

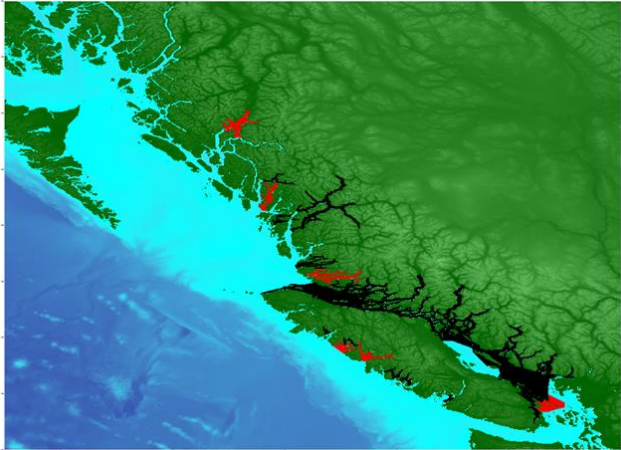
Week	Dates Covered	PFMA's Analyzed	# of SI samples	Subareas closed
1	14/05/2025 – 21/05/2025	3, 5, 8, 10, 12, 13, 15 - 19, 23, 25, 28, 29	332	 Subareas: 8-8, 8-9, 8-13, 8-14, 29-2, 29-3
2	21/05/2025 – 28/05/2025	2, 6, 7, 9, 10, 12, 13, 15 -19, 23, 24, 26, 28, 29, 142	451	 Subareas: 7-7, 7-11, 7-17, 7-29, 9-10, 12-36, 13-16, 13-22, 16-1, 17-1 to 17-9, 17-17, 24-3, 24-10, 28-1 to 28-7, 28-9

3	28/05/2025	5 - 8, 10,	393
	–	12, 13,	
	04/06/2025	15 - 19, 23, 24, 26 - 29	



Subareas: 8-6, 8-7, 8-10 to 8-12, 10-3 to 10-6, 10-12, 12-1 to 12-35, 12-37 to 12-48, 13-1 to 13-15, 13-17 to 13-21, 13-23 to 13-43, 15-1 to 15-6, 16-1 to 16-22, 17-10 to 17-16, 17-18 to 17-21, 18-7, 18-8, 19-7 to 19-12, 23-4, 24-4, 24-5, 24-7, 24-13, 24-14, 25-9, 25-10, 26-5, 28-11 to 28-14, 29-1, 29-4, 29-5

4	04/06/2025	6, 7, 11,	234
	–	18, 19,	
	12/06/2025	23 - 25, 29	



Subareas: 6-1, 7-9, 7-10, 11-3 to 11-10, 18-1 to 18-6, 18-9 to 18-11, 25-1 to 25-4, 25-6, 25-8, 25-11 to 25-14, 25-16

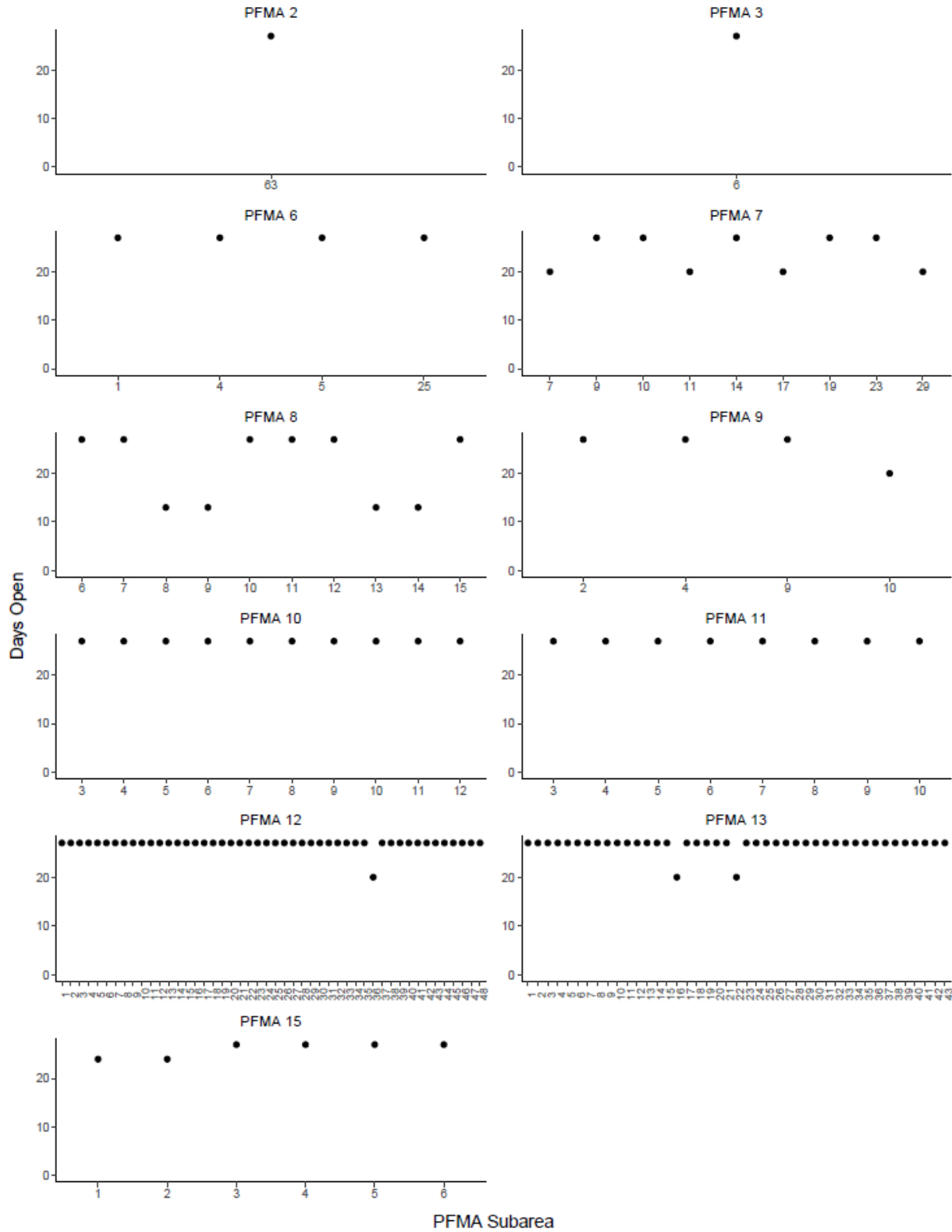


Figure 3: Number of days each PFMA Subarea was open during the 2025 commercial Spot Prawn season. Only PFMA Subareas from which spawner index samples were obtained or those which were closed for reasons other than spawner index (for example, an orphaned area or an area closed due to vessel concentration) were included.

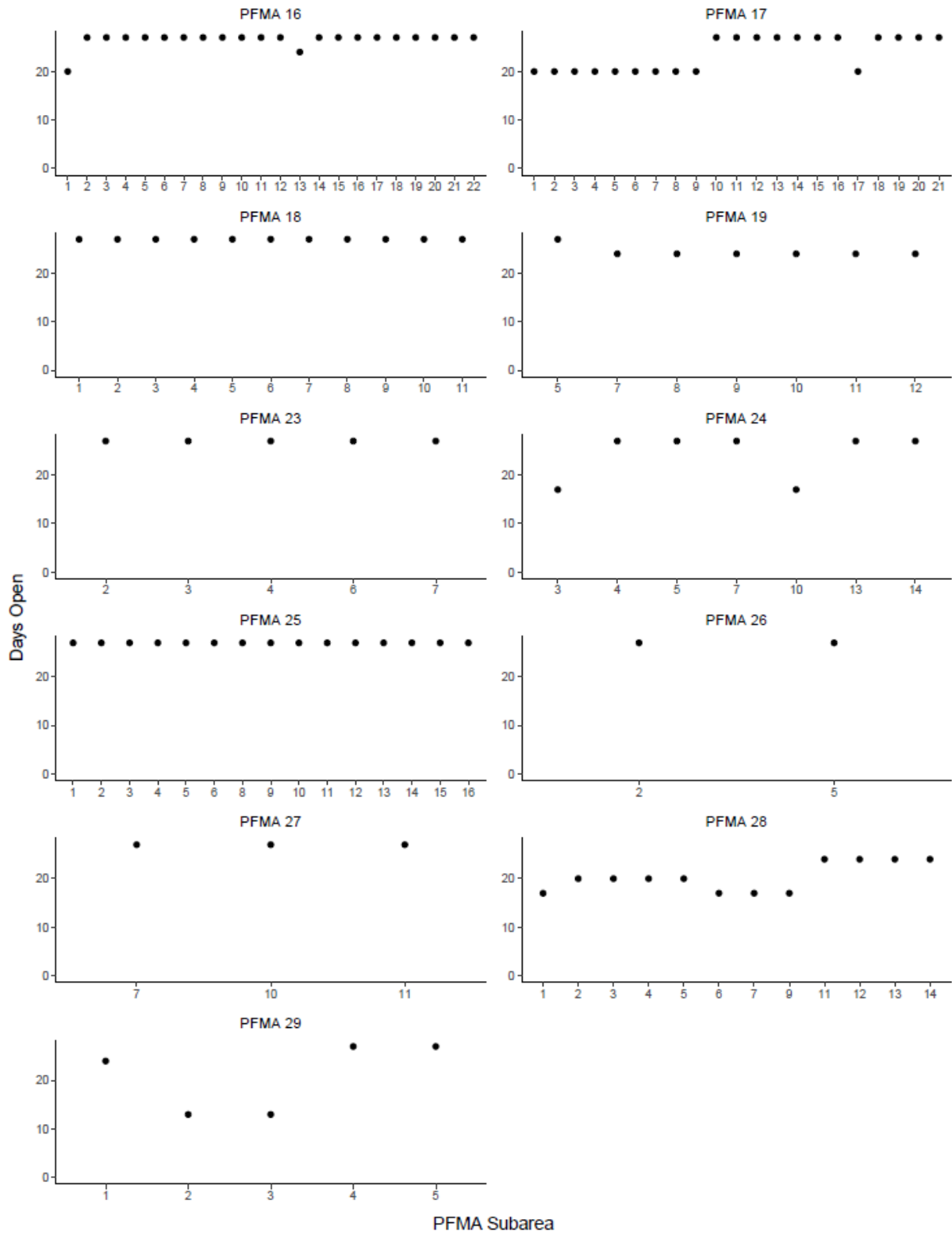


Figure 3 continued.

The in-season spawner index program was led by J.O. Thomas which determined sampling effort based on where fishing was concentrated. Fisheries observers have been the primary source of data obtained in-season since 2002 when the current Spawner Index Sampling Program was established. In 2025, 23 PFMA's and a total of 141 Subareas were sampled as part of the program (Table 2). Seventeen observers determined the maturity stages of a total of 553,690 Spot Prawns which were sampled from 21,777 traps aboard 190 vessels (Figure 4). This sampling effort resulted in a total of 1,409 spawner index samples, a sample being the mean spawner index of all sampled traps on a single line, 641 fewer spawner index samples than collected in 2024 (Figure 5, Table 3). This resulted in between 234 and 451 spawner index samples collected per week with an average of 353 spawner index samples collected per week (compared to 342 in 2024).

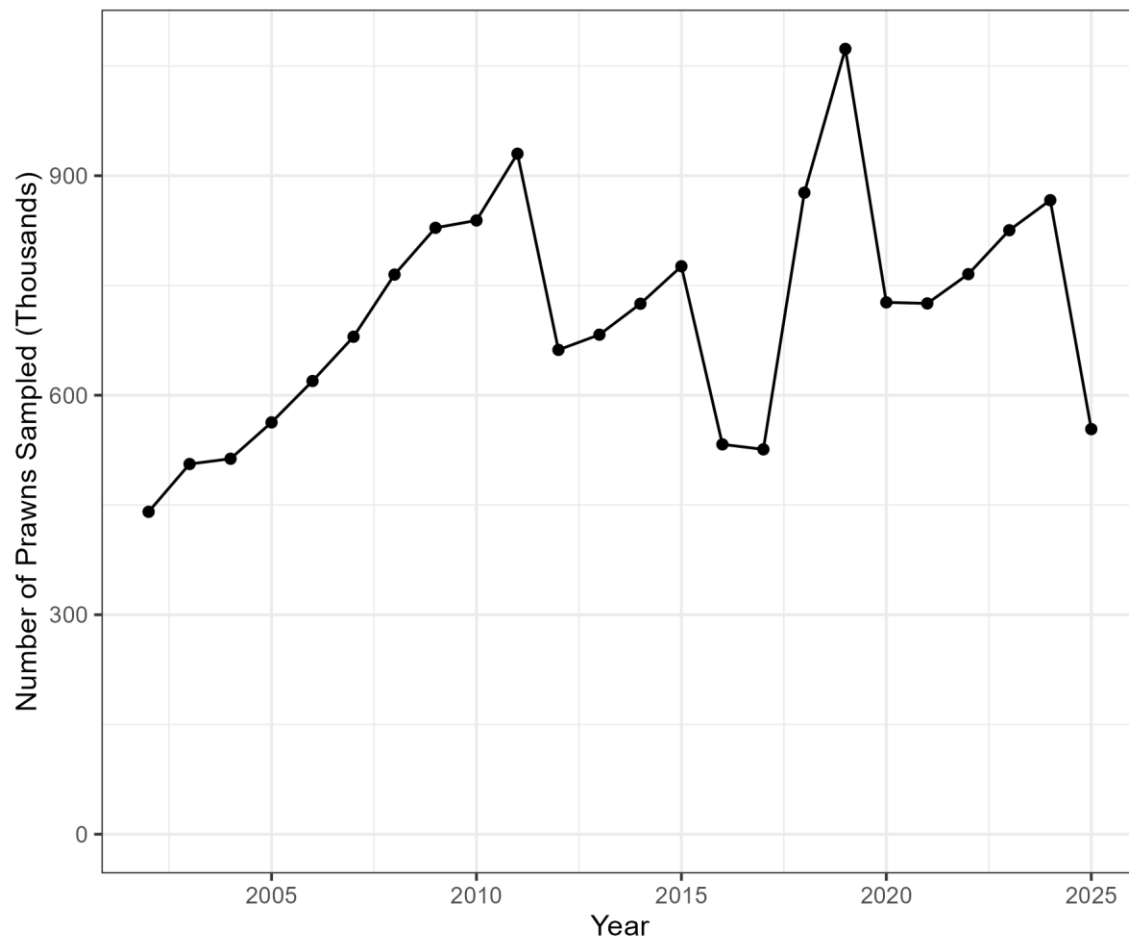


Figure 4: Number of Spot Prawns sexed each year as part of the in-season spawner index program from 2002 to 2025.

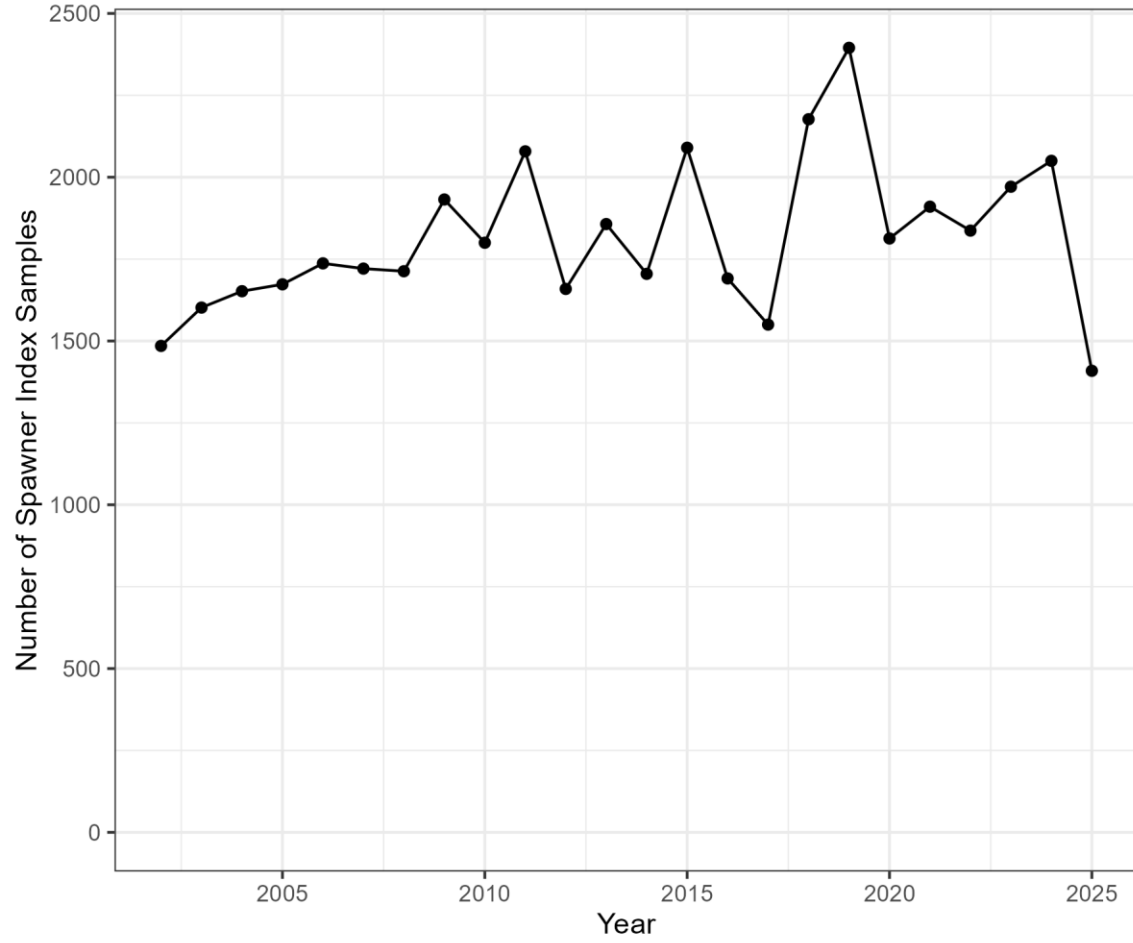


Figure 5: Number of spawner index samples collected each year as part of the in-season spawner index program from 2002 to 2025.

Table 3: Table of analysis metrics for 2025, 2024, the means of the past five, ten, and twenty-four years, as well as the range of observed values since 2002.

Measurement	Since 2002	Past 10 Years	Past 5 Years	Previous Year (2024)	Current Year (2025)	Range Since 2002
Duration of Commercial Season (days)	48.3	37.2	35.4	38	27	27 - 72
Number of Vessels Active in Fishery	198.7	191.4	191.6	190	190	177 - 213
Number of Observers	16.8	18.2	18.2	16	18	12 - 20
Number of Prawns Sexed	708k	747k	747k	867k	554k	440k – 1073k
Number of SI Samples	1812.8	1880.3	1835.4	2050	1409	1409 - 2395
Mean SI at Start of Season	15.5	15.9	16.6	18.9	16.2	11.5 – 22.2
Mean Rate of SI Decline	-0.33	-0.41	-0.38	-0.37	-0.53	-0.56 to -0.12

During the first week of the commercial season, the mean spawner index was 16.2, a value over twice the baseline threshold suggesting populations were healthy (Figure 6). This mean spawner index was less than in 2024, when the mean spawner index during the first week of the commercial season was 18.9 (Table 3). Over the course of the 2025 commercial fishing season, the rate of decrease in the spawner index, determined by Subarea, ranged from -2.94 to 0.43 spawner index units per day with an average rate of -0.53. This decline was a more rapid decline from the 2024 rate of -0.37 (Figure 7, Table 3).

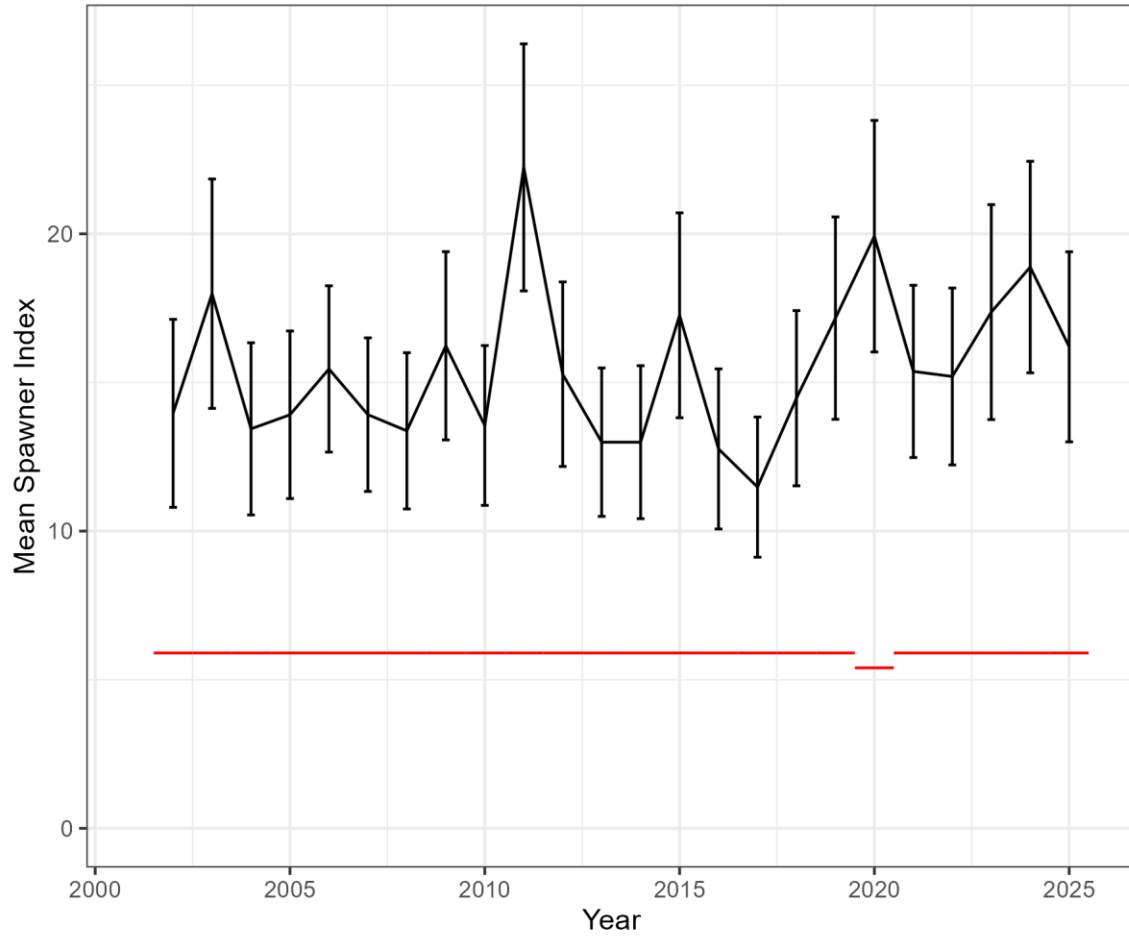


Figure 6: Mean spawner index during the first week of the commercial fishery from 2002 to 2025. Error bars represent standard error. The red line indicates the baseline threshold for the month when the fishery began each year.

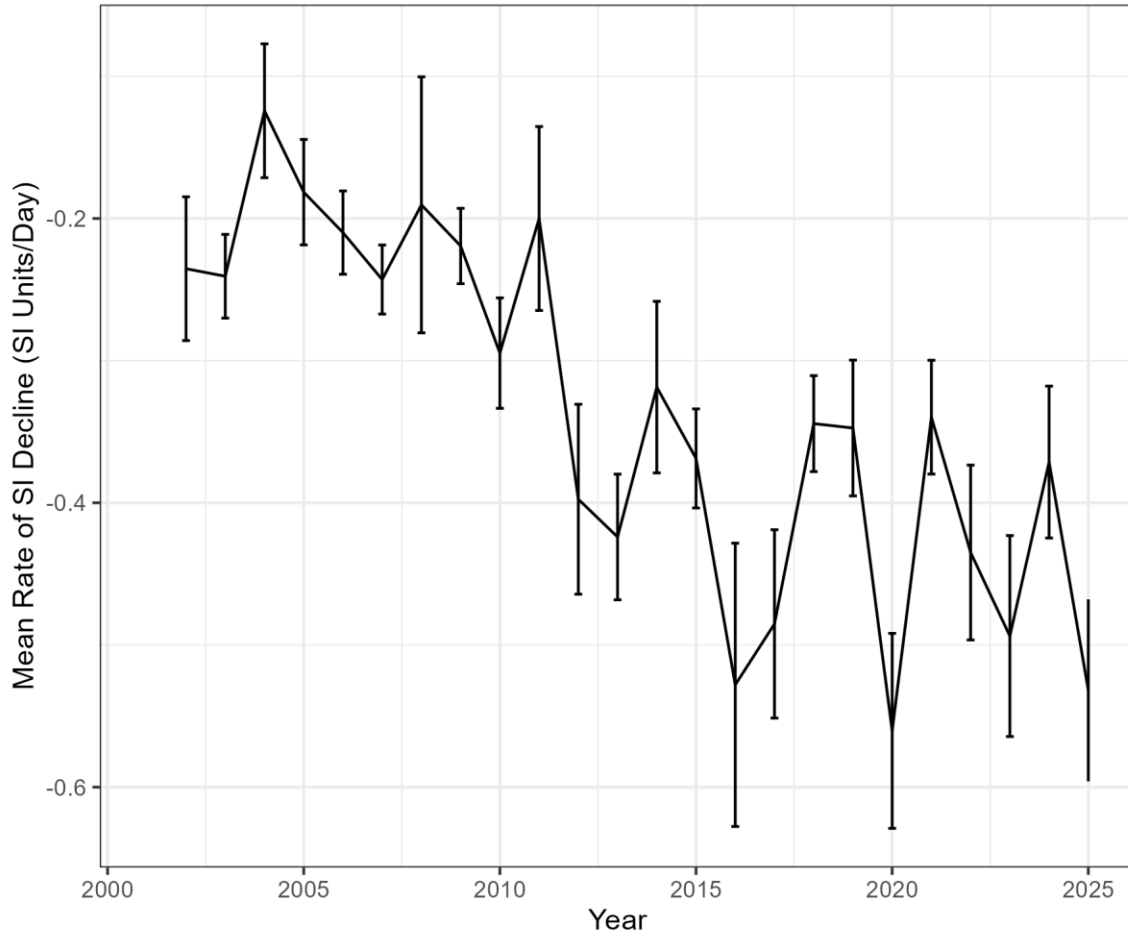


Figure 7: Mean rate of daily decline of the spawner index averaged across all PFMA Subareas from 2002 to 2025. Error bars represent standard error.

The 2025 season began with a mean difference between the first SI estimate and the monthly threshold of 6.71 SI units (Figure 8). This start to the commercial season was closer to monthly thresholds than was observed in 2024, where the mean difference was 6.96. The commercial season began with Spot Prawn populations in the green or healthy zone (the average coastwide SI was greater than twice the baseline threshold).

A post-season proxy of stock health can be obtained through analysis of the last measured estimate of spawner index (Figure 9). On average, the final best estimate for spawner index was 4.06 SI units above the threshold for any given area, suggesting that coastwide the fishery was closed in the yellow or caution zone (being between threshold and twice the coastal baseline). This final spawner index of 2025 was on average greater than the final 2024 difference of 3.30 SI units. Many areas were closed while still well above the threshold such that they were in the green zone and were closed a bit earlier than was necessary from a science perspective but rather due to other management considerations such as vessel concentrations.

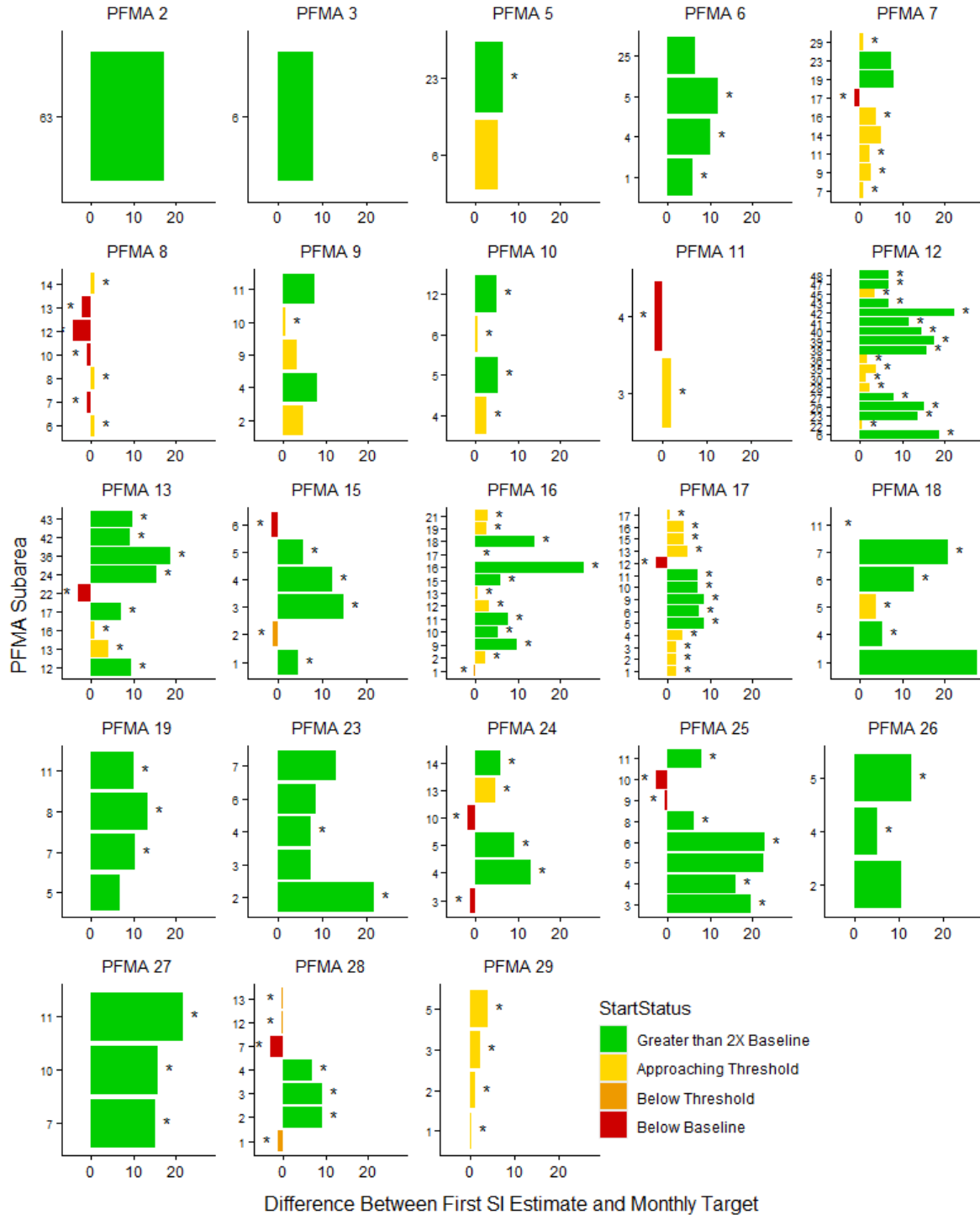


Figure 8: Difference between the initial best estimate of the spawner index and the monthly threshold for each PFMA Subarea in the 2025 commercial spawner index program. Colours indicate how the estimate compares to the threshold: Green indicates the estimate is more than twice the baseline and well above threshold; yellow indicates the estimate is between the threshold and twice the baseline; orange indicates the estimate is between the baseline and the threshold; and red indicates the estimate is below the baseline. Stars indicate Subareas that were closed during the 2025 commercial season.

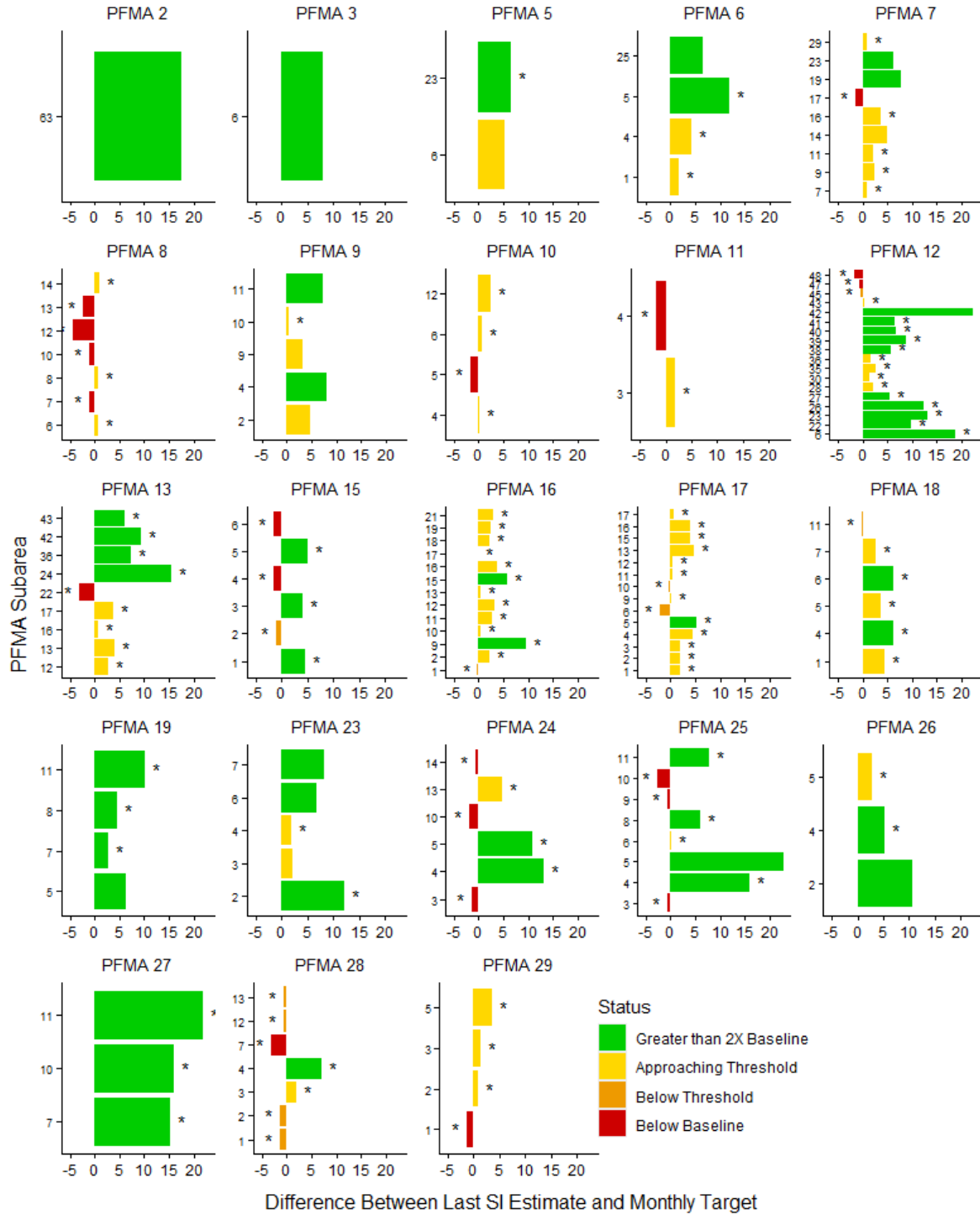


Figure 9: Difference between the final best estimate of the spawner index and the monthly threshold for each PFMA Subarea in the 2025 commercial spawner index program. Colours indicate how the estimate compares to the threshold: Green indicates the estimate is more than twice the baseline and well above threshold; yellow indicates the estimate is between the threshold and twice the baseline; orange indicates the estimate is between the baseline and the threshold; and red indicates the estimate is below the baseline. Stars indicate Subareas that were closed during the 2025 commercial season.

Spawner index data during the commercial Spot Prawn season, grouped by PFMA subarea, as well as from fisheries-independent surveys in the fall and winter can be accessed in the Government of Canada open data portal: [British Columbia Spot Prawn \(*Pandalus platyceros*\) Spawner Index - Open Government Portal](#)

3. Areas of Concern

PFMAs 8, 10, 11, 15, 24, and 28 had a large percentage of subareas below their thresholds at the end of the 2025 season. Area 8 in particular has been an area of concern for the past two years. We advise monitoring effort be prioritized in these areas to ensure the populations in the PFMAs do not become depleted

4. Conclusions

The start of the 2025 season was weaker than the start of the 2024 commercial season, with a mean SI value of 16.2, lower than the five year average of 16.7. This estimate, however, was over twice the monthly baseline threshold and in combination with the small number of closures within the first week of the fishery indicate that the stock was healthy at the start of the commercial fishery. The daily rate of the decline during the commercial season was more rapid than the five year average (-0.52 compared to -0.38), indicating Spot Prawn SI dropped faster than it has historically.

Given the number of PFMA Subareas where the final spawner index measurement was below the minimum monthly index baseline, monitoring effort at the beginning of the season is recommended to cover PFMAs 8, 11, 15, 24 and 28 to ensure the sustainability of Spot Prawns in these areas, with PFMA 8 being a priority. Continued rigorous in-season monitoring is essential to ensure future sustainable harvesting of this species.

5. Acknowledgements

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