Maritimes Region Fisheries Atlas: Catch Weight Landings Mapping (2019-2023) on a Hexagon Grid

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ABSTRACT

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This report shows commercial fisheries catch weight landings maps of directed fisheries and bycatch from the Scotian Shelf, the Bay of Fundy, and Georges Bank from NAFO Divisions 4VWX and the Canadian portions of 5Y and 5Z. Five-year composite maps (2019-2023) that aggregate catches for each map series are publicly available and included in this report. The maps aggregate catch weight (kg) per 10 km^2 hexagon grid cell for selected species, species groupings and gear types to identify important fishing areas. These maps may be compared with 2012-2021 landings maps in Parmenter and Gullage (2024), 2014-2018 landings maps in Rozalska and Coffen-Smout (2020), 2010-2014 landings maps in Butler and Coffen-Smout (2017), and 1999-2003 landings maps in *The Scotian Shelf: An Atlas of Human Activities* (DFO 2005). These maps can support decision making in coastal and oceans management, including marine spatial planning, environmental emergency response operations and protocols, Marine Stewardship Council certification processes, marine protected area networks, and ecological risk assessment.

RÉSUMÉ

K. Rozalska and S. Coffen-Smout, 2025. Maritimes Region Fisheries Atlas: Catch Weight Landings Mapping (2019-2023) on a Hexagon Grid. Can. Tech. Rep. Fish. Aquat. Sci. 3683: vii + 80 p. https://doi.org/10.60825/n2cp-th60

Le présent rapport montre les cartes des débarquements par poids des prises issues de la pêche commerciale en tenant compte des pêches dirigées et des prises accessoires pour la plate-forme Néo-Écossaise, la baie de Fundy et le banc de Georges des divisions 4VWX de l'OPANO et les portions canadiennes des divisions 5Y et 5Z. Les cartes composites sur cinq ans (2019 à 2023) qui regroupent les prises pour chaque série de cartes sont accessibles au public et incluses dans le présent rapport. Les cartes incluent le poids des prises (en kilogrammes) par cellule de carte quadrillée hexagonale de 10 km^2 pour les espèces ou les groupes d'espèces choisis et les types d'engins afin de cibler les zones de pêche importantes. Ces cartes peuvent être comparées avec les cartes des débarquements de 2012 à 2021 dans Parmenter et Gullage (2024), les cartes des débarquements de 2014 à 2018 dans Rozalska et Coffen-Smout (2020), les cartes des débarquements de 2010 à 2014 dans Butler et Coffen-Smout (2017), et aux cartes des débarquements de 1999 à 2003 dans *La plate-forme Néo-Écossaise : atlas des activités humaines* (MPO 2005). Elles peuvent soutenir la prise de décision relativement à la gestion des côtes et des océans, notamment la planification spatiale marine, les opérations et les protocoles d'intervention en cas d'urgence environnementale, les processus de certification du Marine Stewardship Council, les réseaux d'aires marines protégées et l'évaluation de risque écologique.

INTRODUCTION

The fisheries catch weight landings maps in this report show vessel-based commercial fisheries landings (directed fisheries and bycatch) for the Scotian Shelf, the Bay of Fundy, and Georges Bank from NAFO Divisions 4VWX and the Canadian portions of 5Y and 5Z. Landings were combined for the years 2019-2023 for selected species, species groupings and gear types. Non-vessel-based fisheries landings (e.g., intertidal clam harvesting) are excluded from maps, as they do not report fishing locations. Data represented in this report does not reflect biomass, or fishing effort, and does not include discards. The commercial fisheries logbook data sources include three regional databases maintained by DFO Policy and Economics Branch: the Maritimes Fishery Information System (MARFIS) database in Maritimes Region, as well as commercial logbook data from Gulf Region and Newfoundland and Labrador Region. This report includes offshore Lobster and Disputed Zone Area 38B Lobster, but not inshore Lobster. Inshore Lobster fishery landings are recorded using a statistical grid rather than with geographic coordinates. Separate atlases were created for the inshore Lobster fishery using reported landings from various time periods, including 2012-2014 (Serdynska and Coffen-Smout 2017), 2015-2019 (Serdynska et al. 2022), and 2011-2022 (Cook et al. 2024).

Five-year composite maps were created that aggregate landed catch weight (kg) per 10 km^2 hexagon grid cell for selected species, species groupings and gear types to identify important fishing areas. Round weights, also known as live weights, (i.e., weights of whole fish) were used for all species. Erroneous data were removed where possible to address missing and incorrect geographic coordinates e.g., data on land, data for bottom fisheries in depths > 1,500 m, and data on the U.S. side of the Gulf of Maine international maritime boundary. Logbook records were also screened for privacy to comply with the Government of Canada's privacy policy (known as the "Rule of Five") on vessel-specific fishing locations (Treasury Board Directive, 2010). For each composite map, the logbook records within DFO unit areas containing data from fewer than five vessel IDs, licence IDs or fisher IDs were excluded. The percentage of total live weight included in each map is presented in Table 1. Each map is publicly available and included in this report. The corresponding digital data containing aggregated catch weight per hexagon grid cell will be published on the Open Data portal (Government of Canada 2025), with the exception of Sea Cucumber data and the related gridded map that were not consented to by licence holders for publication.

These maps may be compared with 2012-2021 landings maps in Parmenter and Gullage (2024), 2014-2018 landings maps in Rozalska and Coffen-Smout (2020), 2010-2014 landings maps in Butler and Coffen-Smout (2017), and 1999-2003 landings maps in *The Scotian Shelf: An Atlas of Human Activities* (DFO 2005). These spatial depictions of human activity do not represent biological distributions of species as species' range distributions are broader than fishing intensity footprints. In addition, management measures influence the fishing effort distribution. These maps, in conjunction with other key datasets at various spatial scales, can support decision making in coastal and oceans management, including marine spatial planning, informing environmental emergency response operations and protocols, informing Marine Stewardship Council certification processes, planning marine protected area networks, and ecological risk assessment.

METHODS

Data Processing

The first step in processing logbook data was to standardize the tabular datasets received from the three DFO regions. Variables in the datasets included: catch latitude and longitude, species landed, live weight, date caught, date landed, DFO unit area, gear type, vessel ID, licence type, licence ID (not available for Newfoundland and Labrador Region), and fisher ID. While similar information is reported and stored in these regional databases, the data is organized using different formats that needed to be standardized before merging them into a single dataset.

Individual logbook entries typically include a reported geographic location. The three regional databases store geographic coordinates using various formats that needed to be recalculated into a single, consistent coordinate format. Maritimes and Gulf Region's logbook entry locations were stored in degrees decimal minutes. Newfoundland and Labrador Region locations were stored in degrees minutes seconds. All coordinates were converted to decimal degrees in preparation for converting the tabular data to spatial data in ArcGIS software. Non-spatial data fields also required standardization prior to combining the datasets. The data fields in the MARFIS (Maritimes Region) database were used as the template table structure, as it contained the majority of the logbook records used in this analysis.

The three regional datasets were then converted to ArcGIS point feature classes using a WGS 1984 coordinate system, which was assumed to be the coordinate system referenced by fishing vessel GPS units used in reported landings locations. The data from all three regions were merged into a single dataset, from which subsequent data products would be created. Logbook entries were parsed based on species, species groupings and gear type to create individual datasets. For select fisheries that are active year-round (i.e., groundfish and scallop), quarterly datasets were also produced.

Missing and Erroneous Geographic Coordinates

Logbook entries provided by all three regions contained records with missing or erroneous geographic coordinates. Known errors and records with missing coordinates were excluded. Not all erroneous coordinates could be detected, therefore it is assumed that additional errors exist in the database.

Groundfish, crustacean and mollusc points that were located in depths of greater than 1,500 metres were assumed to be errors, as the gear used to fish those species is not used at those depths. A bathymetry dataset obtained from the General Bathymetric Chart of the Oceans (GEBCO Compilation Group, 2019) was used to overlay landings points to determine which ones were in depths greater than 1,500 m. In addition, some points were located on land. All points located more than one kilometre inland from the coast were excluded. A one-kilometre buffer inland of the coastline was created to include points that were on land, but still close to the water. This allowed some additional points to be included in the maps that may have had minor inaccuracies or rounded coordinates. Points located on the U.S. side of the Gulf of Maine international maritime boundary in NAFO divisions 5Y and 5Z were also removed. All of the regional logbook datasets listed the DFO unit area (subsets of NAFO divisions also known as statistical area) for each record; however, some points were located particularly far from their reported unit area. For example, points reported in unit areas within the Gulf of St. Lawrence, but

located on the Scotian Shelf were assumed to have erroneous coordinates and were removed. A review of the maps by the DFO Maritimes Region Commercial Data Division and Resource Management staff revealed a small number of additional errors consisting of isolated points and records in areas that are known to not have fishing activity. The percentage of total live weight included in the maps (Table 1) ranged from 36.4 percent (mackerel) to 99.8 percent (shrimp trawl). The data not shown on each map had been removed due to missing or erroneous coordinates, or those screened out due to privacy policy (see below). Presentation of sea urchin landings was considered, however, none of the logbook records had coordinates.

Although each regional database is reviewed for quality and to correct reporting errors in logbook records, DFO's Scallop and Benthic Habitat Unit conducts additional screening on scallop records and their corrected data were analyzed. Missing or erroneous Scallop coordinates were corrected where possible using Vessel Monitoring System (VMS) data which records vessel location while fishing. Missing or erroneous Scallop weights were also corrected where possible using commercial fishing logs. Other DFO Science teams also conduct fishery-specific commercial data reviews to correct original records in the MARFIS database, including ad hoc and planned data reviews for Lobster, Groundfish, Herring, Snow Crab, and Shrimp.

Privacy Screening

To comply with the Government of Canada's privacy policy on vessel-specific fishing locations (Treasury Board Directive 2010), privacy assessments were conducted for maps to identify DFO unit areas containing data from fewer than five vessel IDs, licence IDs or fisher IDs, known as the "Rule of Five." Figure 1 shows the DFO unit areas in the Maritimes region. If this threshold was not met, confidential information such as catch weight has been withheld from these unit areas to protect the identity or activity of individual vessels or companies.

In order to conduct privacy assessments against the Rule of Five, each logbook record was first assigned to a DFO unit area. DFO unit areas were derived by DFO for fisheries management and stock assessment purposes and are subsets of larger NAFO subdivisions (NAFO 2020). Although each of the regional logbook databases already included the DFO unit area, there was inconsistency between how the regions assigned unit areas to each record. To maintain consistency, a spatial data layer maintained by DFO was used to assign each record to a DFO unit area. The number of unique occurrences of vessel ID, licence ID and fisher ID per DFO unit area was tabulated for each species, species grouping and gear type. If all three variables passed the Rule of Five in a given unit area, the data within that unit area were included in the final map. DFO unit areas failing to meet the privacy screening threshold are symbolized by grey-shaded hatching in catch weight maps and are labelled as privacy screened areas. Digital data published to the Open Maps portal will not include personal information such as fisher ID, vessel ID or licence ID.

For Hagfish, offshore Lobster and offshore Clam fisheries with low numbers of licence holders, consent was sought from licence holders to publicly release map products. Consents from Sea Cucumber licence holders were not provided, resulting in the inclusion of a Sea Cucumber fishing zones map rather than a gridded catch weight map.

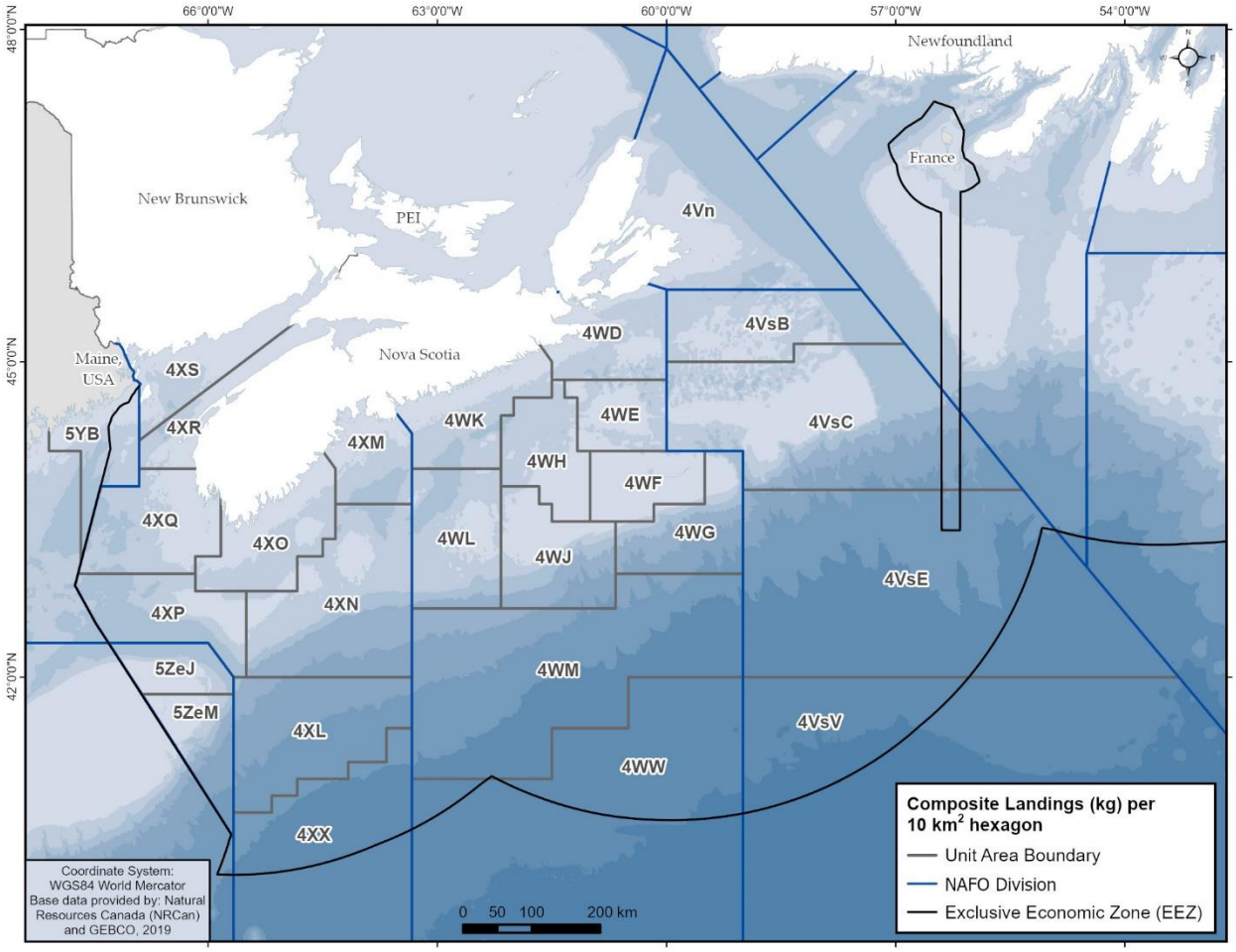

Figure 1. DFO Unit Areas in the Maritimes Region

Table 1. Summary of landed weights in metric tonnes (t) of logbook records for 2019-2023; proportion of landed weights presented within each map (2019-2023); landed weight for 2014-2018; and the percentage changes in landings between 2014-2018 and 2019-2023.
Note: Logbook entries per species include all gear types. Data excluded from maps include those with missing or erroneous coordinates, and those excluded due to privacy screening.

Fishery	**Total Live Weight (t) 2019-2023**	**% of Live Weight included in 2019-2023 map**	**Total Live Weight (t) 2014-2018**	**% Change in Landings between 2014-2018 and 2019-2023**
Groundfish	168,407	98.3	202,676	-16.8
Groundfish Bottom Trawl	142,298	99.3	174,496	-18.5
Groundfish Gillnet	3,175	53.1	5,021	-36.8
Groundfish Bottom Longline	19,804	93.7	17,308	14.4
Atlantic Cod	5,006	96.4	6,684	-25.1
Atlantic Cod, Haddock and Pollock	85,676	98.9	106,918	-19.9
Flatfish	3,603	95.3	6,054	-40.5
Atlantic Halibut	16,585	94.2	11,701	41.7
Greenland Halibut (Turbot)	86	94.2	100	-13.8
Hagfish	2,817	97.2	5,497	-48.8
Cusk	663	93.1	833	-20.4
Dogfish	52	77.0	185	-72.0
Redfish	35,234	99.2	31,015	13.6
Red Hake	1,552	97.8	2,249	-31.0
Silver Hake	17,557	98.7	33,311	-47.3
White Hake	2,578	95.5	2,703	-4.6
Monkfish	790	97.8	439	80.1
Sculpin	523	91.1	1,343	-61.1
Skate	618	97.9	220	180.1
Atlantic Wolffish	17	81.9	16	5.8
Squid	149	90.0	175	-15.2
Herring	244,544	86.9	295,735	-17.3
Mackerel	3,478	36.4	6,720	-48.2
Herring and Mackerel Gillnet	79,803	90.5	42,720	86.8
Purse Seine	140,067	97.1	232,594	-39.8
Large pelagics	7,904	96.0	8,894	-11.1
Bluefin Tuna	1,514	92.2	1,064	42.3
Other Tuna	2,001	95.8	1,549	29.1
Swordfish	4,307	97.2	5,867	-26.6
Porbeagle, Mako and Blue Shark*	49	N/A	336	-85.5

Snow Crab	42,206	97.6	48,607	-13.2
Other Crab	2,464	42.6	2,744	-10.2
Scallop	294,908	99.0	281,640	4.7
Offshore Clam	148,195	99.2	132,482	11.9
Shrimp Trawl	10,948	99.8	16,020	-31.6
Shrimp Trap	191	92.1	852	-77.6
Offshore lobster	3,561	99.3	3,567	-0.2
Disputed Zone Area 38B Lobster	2,997	71.6	3,866	-22.5
Whelk	3,911	99.4	1,769	121.1

* There is no separate map depicting shark bycatch due to the minimal landed weights.

Data Aggregation and Map Production

Data aggregation methods were used to depict fishing intensity and distribution for a public audience. Aggregation methods group the data to illustrate spatial patterns and trends. The simplest and most common method to aggregate fisheries data involves binning spatial data into grid cells. Grids are an array of cells of equal size, with each cell containing a summary of the values of interest (live weight) of the points that land within it.

Hexagon grid cells of 10 km^2 were used for all maps in this report to ensure consistency with DFO's guidance in the Atlantic Canadian Protocol on Mapping Fishing Activity (Koropatnick and Coffen-Smout 2020). The hexagon grid was created using the Canada Albers Equal Area Conic Projection to minimize grid distortion. Square or fishnet grids are prone to edge effects, require an offset grid to capture data within cells rather than on boundary lines, and create perceived linear patterns. Hexagon grids are preferred for several reasons: (1) they reduce edge effects and sampling bias as a hexagon grid has the lowest perimeter-to-area ratio of any regular tessellation; (2) all adjacent cells share the same shared boundary length and the distance between centroids is the same for all neighbouring cells; and (3) they are a better fit to curved surfaces and along coastlines (Strimas-Mackey 2020).

The parsed points for each species, species grouping or gear type were joined with the hexagon grid using the ArcGIS Spatial Join tool. Each resulting hexagon grid included the sum of weights of all points located within each cell, as well as the number of points that overlapped each cell. There is potential for points that land on the boundary between two grid cells to be included in both cells. In order to determine whether this occurred, the number of points that overlapped each grid cell was tabulated for each layer and compared with the number of valid points (i.e., those that passed privacy screening and had no known errors) in each parsed dataset. The numbers matched for each pair of datasets, therefore none of the logbook entries were duplicated during the aggregation process.

After data aggregation of each map layer, cells with values less than 0.5 kg were excluded from the maps. Occasionally, blank log records in the Maritimes Region's MARFIS database are assigned a value of 0.001 kg by DFO's Commercial Data Division to avoid calculation errors that would result from zero values. As such, these values do not affect overall calculations or the data aggregation, except where a single hexagon grid cell has a very low binned weight value resulting in spurious map symbolization. Therefore, all hexagon grid cells with a total binned weight of < 0.5 kg were excluded, i.e., the smallest approximate weight of a single fish.

Following data aggregation, a map was created for each species, species grouping or gear type. Hexagon grid cells for each map were divided into five intervals based on their aggregated catch weight using quantile breaks, where each class has an equal number of grid cells. This means that the breaks on each map are different, and the coloured cells have different values on each map. For seasonal maps (i.e., groundfish and scallop), the same break values were selected manually for each season so that maps can be compared more easily. Therefore, seasonal maps were not divided by quantile breaks. Digital data published on the Open Data portal will only include the aggregated catch weight per hexagon grid cell.

The maps in this atlas display fishing locations that are represented at a single location. However, many fisheries occur over a larger space such as several kilometres, or as long as tens of kilometres in the case of pelagic longline. Therefore, the landed weights are attributed to a single location rather than being distributed along the full length of the fishing activity, likely underestimating the fishery footprint.

FISHERIES DESCRIPTIONS AND CATCH WEIGHT LANDINGS MAPS

Fisheries are managed using various measures, e.g., quotas, gear restrictions, seasons, area closures, size restrictions, and other characteristics of the targeted species. Management measures outlined in the following brief descriptions of species, species grouping, or gear type are not complete and may change at any time. Information in the descriptions is based on integrated fisheries management plans (IFMPs) (DFO 2023a) and input from DFO Resource Management advisors. Updated descriptions of current fisheries management measures and practices are available in the species-specific IFMPs, conservation harvesting plans (CHPs), fisheries licence conditions, and variation orders available from DFO Resource Management. Fishery openings and closures are also kept updated online (DFO 2023b). The following species descriptions include, where applicable, the status of Species at Risk Act (SARA) designations provided by Environment and Climate Change Canada (ECCC 2025), Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assessments (COSEWIC 2025), and Marine Stewardship Council (MSC) fishery sustainability certifications (MSC 2025). The following maps show catches from directed fisheries and bycatch.

DFO monitors commercial fish stocks on the Scotian Shelf and publishes stock status reports on individual species available from the Canadian Science Advisory Secretariat (CSAS) (DFO 2024). The recent State of the Atlantic Ocean Synthesis Report (Bernier et al. 2023) and the older State of the Scotian Shelf theme paper, *Fish Stock Status and Commercial Fisheries* (O'Boyle 2012), provide information on key fish stocks, harvest control rules, and current trends in commercial marine and diadromous fisheries in Atlantic Canada.

Groundfish (Figure 2)

Figure 2 shows all groundfish species landings (directed fisheries and bycatch) by all gear types, including Atlantic Cod, Atlantic Halibut, Greenland Halibut, Haddock, Pollock, flatfishes (e.g., Yellowtail, Witch, Winter and Summer Flounders, and American Plaice), Silver Hake, dogfish, Atlantic Hagfish, Atlantic Wolffish, and redfish. Lesser known species include White Hake, Red Hake, Cusk, skate spp. (Arctic, Barndoor, Winter and Little Skate), Monkfish, butterfish, tomcod, Roundnose Grenadier, tilefish, sculpin, Blackbelly Rosefish, Sea Raven and Snakeblenny/Rock Eel. Most groundfish are caught by mobile trawl gear and bottom longline vessels (DFO 2018a) which represent 84.5 percent and 11.7 percent respectively of the groundfish landings from 2019-2023. The total weight of groundfish landings declined by 16.8 percent compared to the period of 2014-2018.

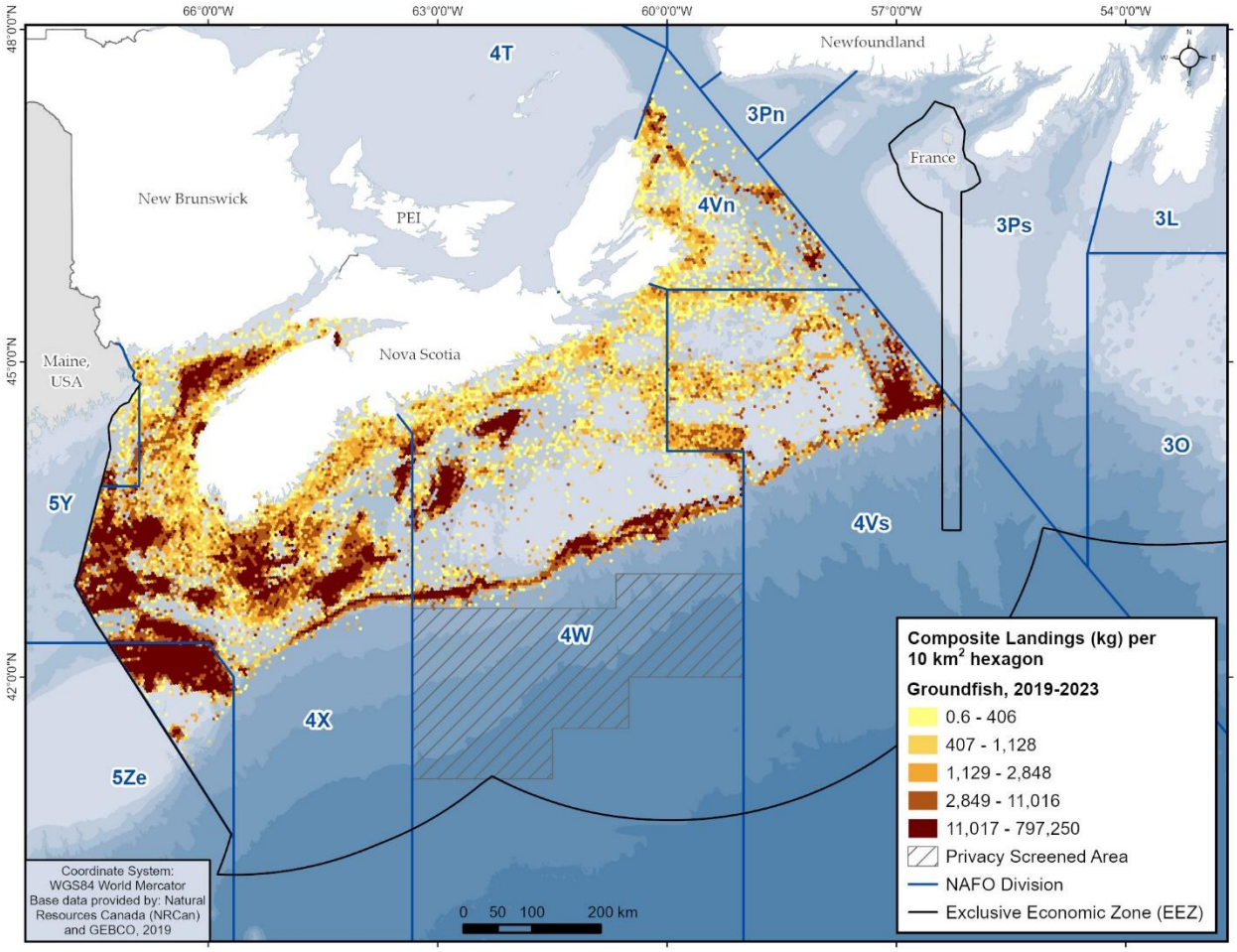

Figure 2. Groundfish Landings (All Species), 2019-2023

Groundfish Bottom Trawl (Figure 3)

Figure 3 shows groundfish landings (directed fisheries and bycatch) from otter trawl, stern and side trawl, and Danish and Scottish seine. These represent 84.5 percent of all landed groundfish. Otter trawls are used across the Scotian Shelf, with the relative lack of fishing activity on the eastern Scotian Shelf due to the 1993 Atlantic Cod and Haddock moratorium. Otter trawlers have higher landings in mid-shelf basins due to the Silver Hake fishery that uses trawl gear in that area. Groundfish trawl landings include Atlantic Cod, Haddock, Pollock, Cusk, American Plaice, Witch, Winter and Summer Flounders, Greenland Halibut (Turbot), Halibut, Monkfish, redfish, Red Hake, Silver Hake, White Hake, dogfish, butterfish, Roundnose Grenadier, sculpin, tilefish, skate spp. (i.e., Winter, Barndoor, Arctic and Little Skate), Atlantic Wolffish, Blackbelly Rosefish, Sea Raven, and Snakeblenny/Rock Eel. The total weight of groundfish bottom trawl landings declined by 18.5 percent compared to the period of 2014-2018.

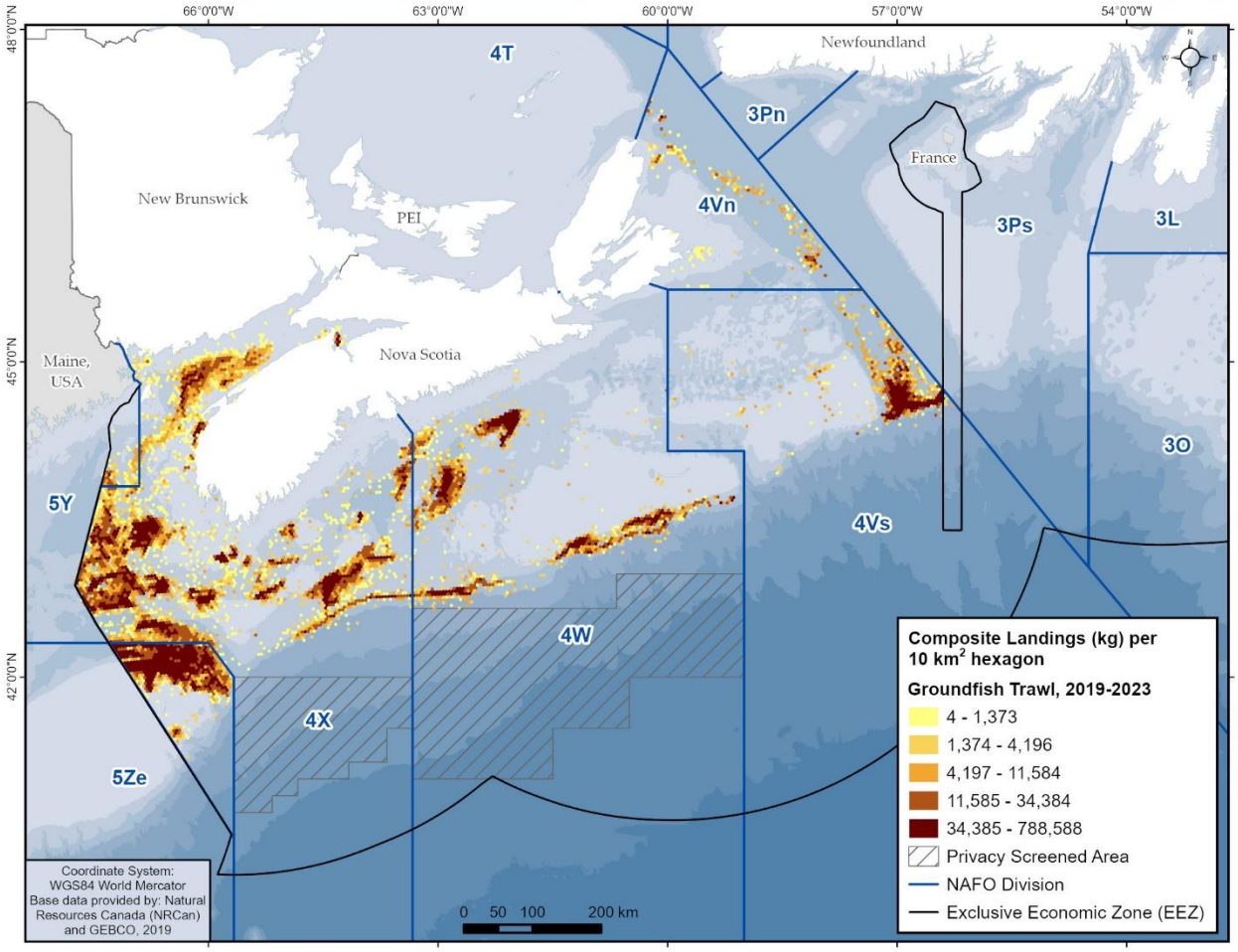

Figure 3. Groundfish Bottom Trawl Landings, 2019-2023

Groundfish Bottom Longline (Figure 4)

Figure 4 shows groundfish landings from bottom longline gear, which represents 11.7 percent of all groundfish landings. While overlap exists in the areas used by the different groundfish gears, differences are evident. Longline gear is used across the Scotian Shelf. Longliners target Atlantic Halibut along the shelf edge and deeper channels, with fewer landings from the mid-shelf basins compared to deeper waters. Additional species caught by groundfish longline include Atlantic Cod, Cusk, White Hake, Red Hake, Silver Hake, Haddock, Pollock, Monkfish, Greenland Halibut (Turbot), Winter Flounder, Atlantic Wolffish, redfish, tilefish, sculpin, skate spp. (i.e., Winter, Arctic and Little Skate), dogfish, Witch Flounder, Roundnose grenadier, Snakeblenny//Rock Eel and tomcod. The total weight of groundfish bottom longline landings increased by 14.4 percent compared to the period of 2014-2018.

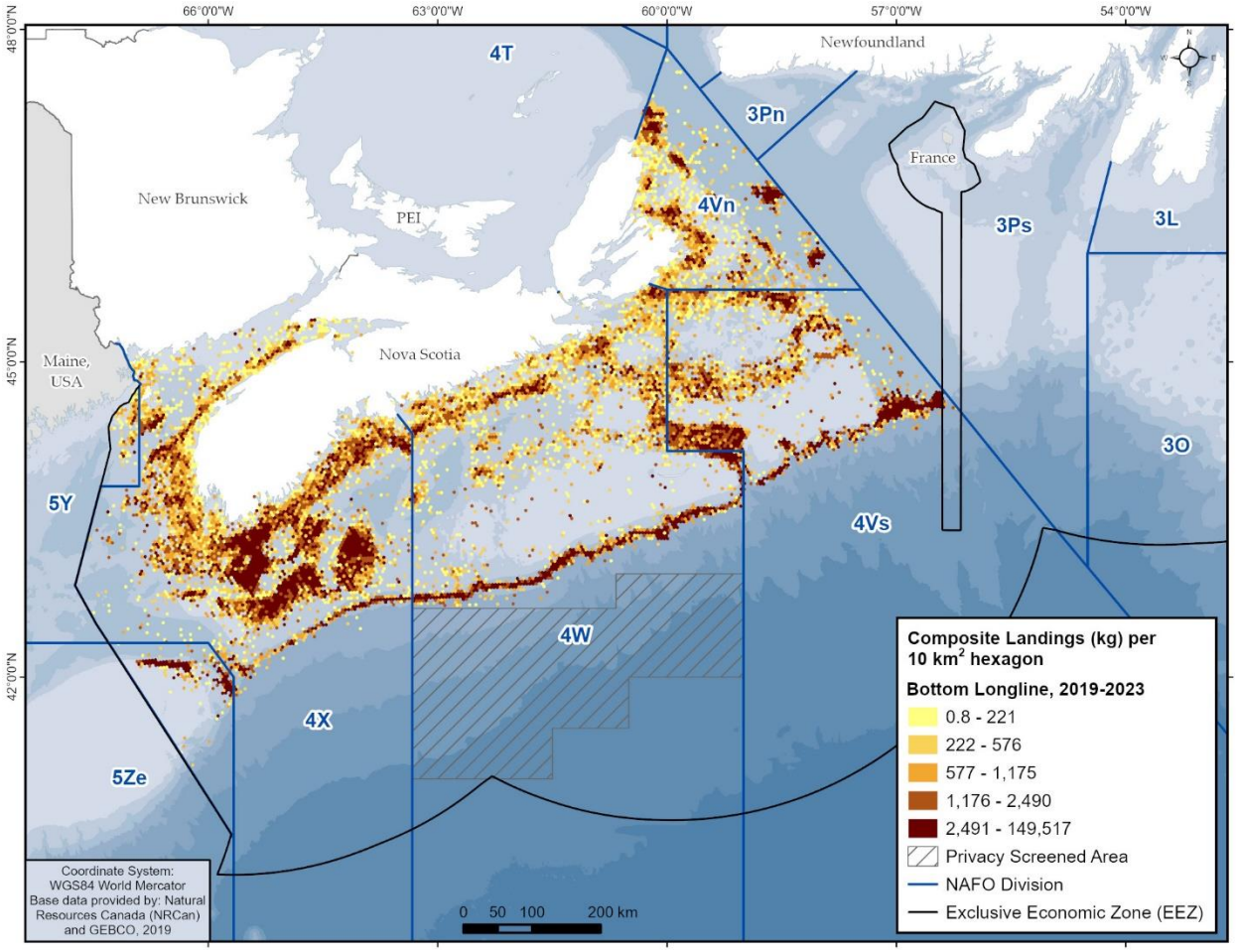

Figure 4. Groundfish Bottom Longline Landings, 2019-2023

Groundfish Gillnet (Figure 5)

Gillnet landings in Figure 5 are from the Scotian Shelf off southwestern Nova Scotia and in the Gulf of Maine. Gillnet landings are scattered, with few areas reporting landings. They represent about two percent of all groundfish landings. Catch includes Atlantic Cod, Haddock, redfish, Atlantic Halibut, Winter Flounder, skate spp., (i.e., Winter, Barndoor, Arctic and Little Skates), dogfish, Pollock, White Hake, Red Hake, Silver Hake, Cusk, Monkfish, sculpin, Witch Flounder, Greenland Halibut (Turbot), Atlantic Wolffish and tomcod. The total weight of groundfish gillnet landings declined by 36.8 percent compared to the period of 2014-2018.

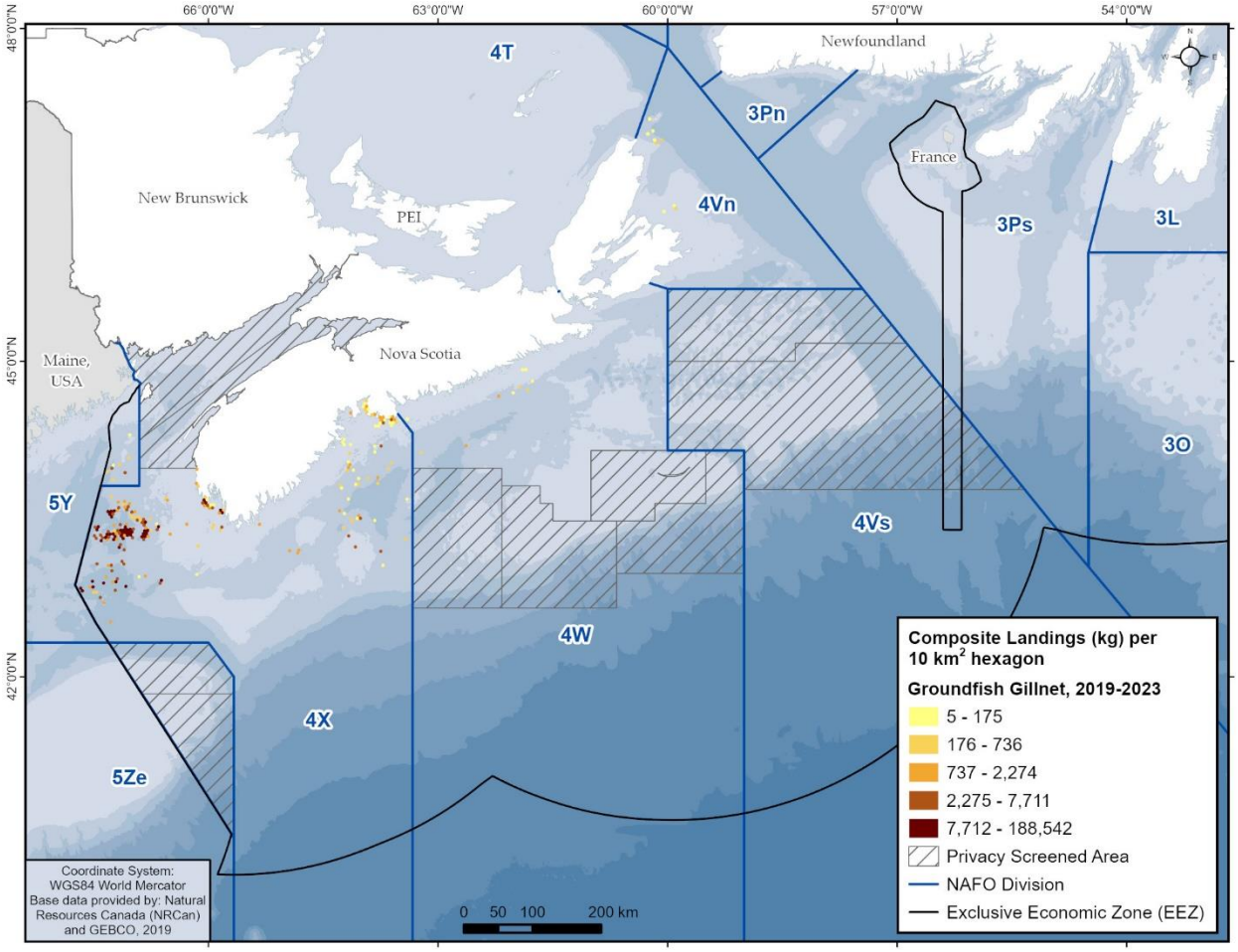

Figure 5. Groundfish Gillnet Landings, 2019-2023

Seasonal Groundfish Q1-Q4 (Figures 6 to 9)

Groundfish are caught during all seasons of the year (Figures 6 to 9), with different areas being more or less important depending on the season. The four quarterly maps represent all gear types. Seasonal patterns reflect seasonal fish migrations, management regulations, patterns of activity in other fisheries, and weather and climatic conditions. Some groundfish fisheries run year-round, with higher catches occurring at certain times of the year. From July to September, fishing activity is relatively widespread, particularly on the western Scotian Shelf and in the Bay of Fundy. Georges Bank is closed to all groundfish gears from the fifth Sunday after the January 1st opening until June 1 and an active winter fishery occurs in January. Additionally, in 2019, 2021, 2022 and 2023 a May Test Fishery took place the last two weeks of May on Georges Bank. A Browns Bank seasonal groundfish gear closure from February 1 to June 15 protects spawning 4X5Y Haddock.

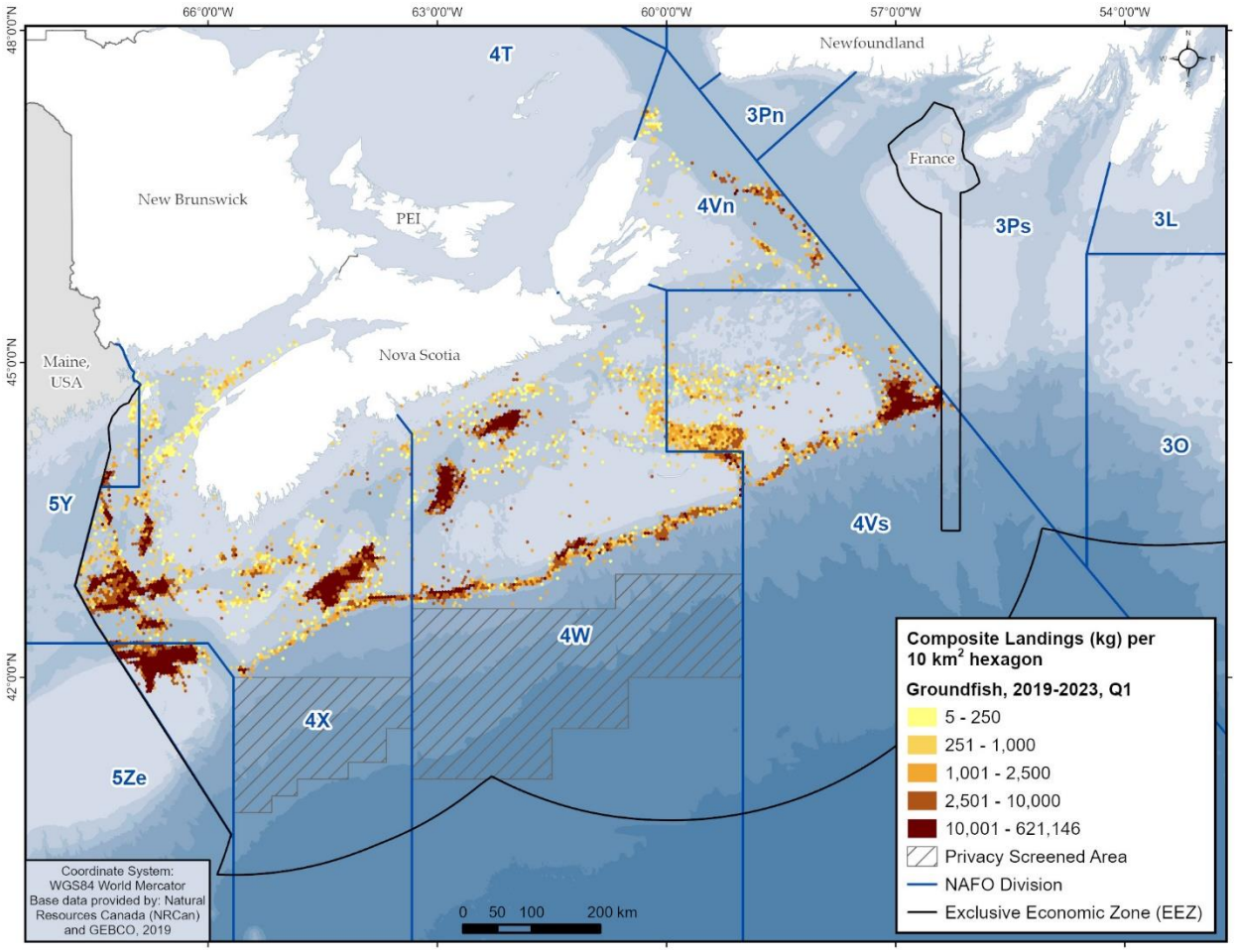

Figure 6. Seasonal Groundfish Landings, Q1, January-March, 2019-2023

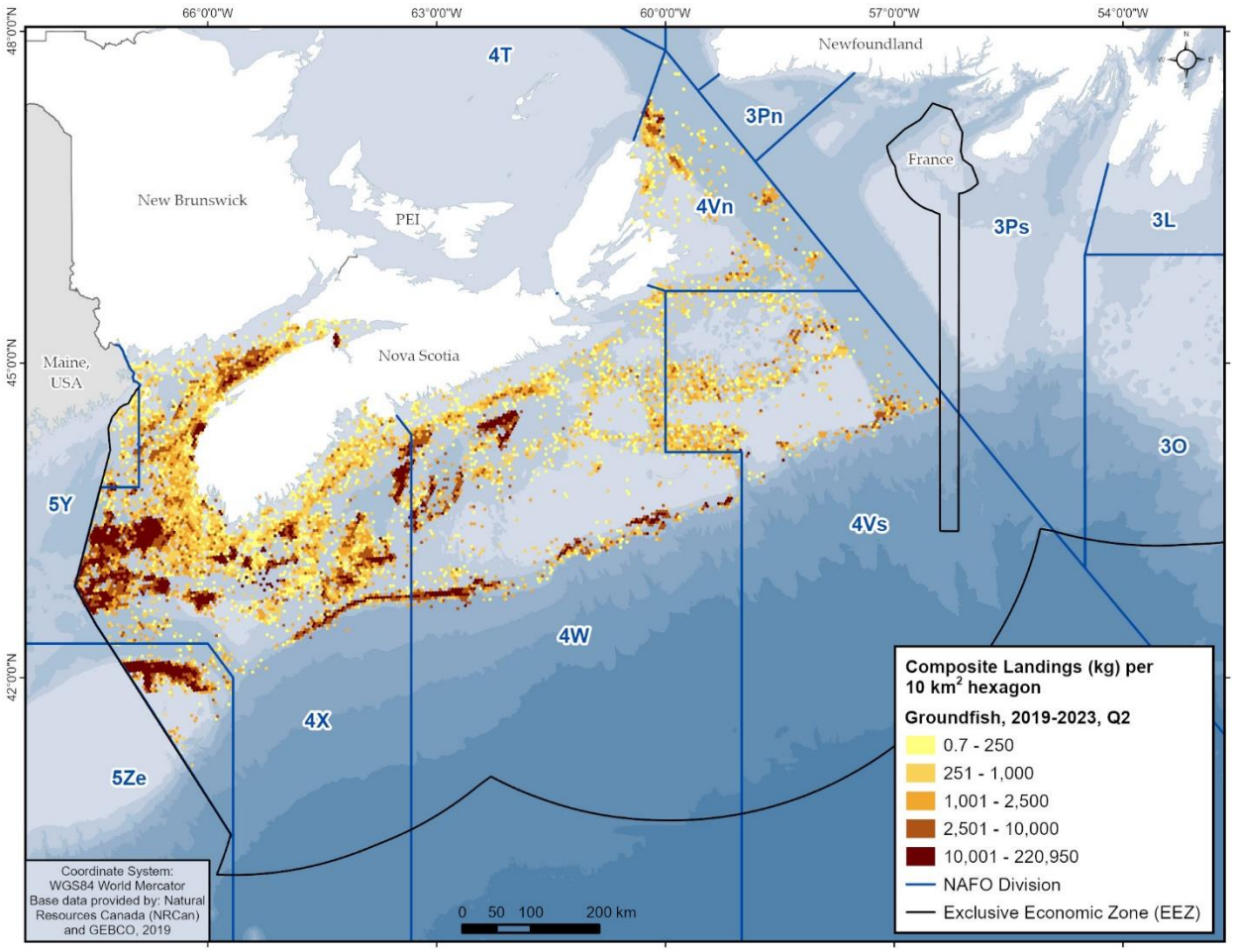

Figure 7. Seasonal Groundfish Landings, Q2, April-June, 2019-2023

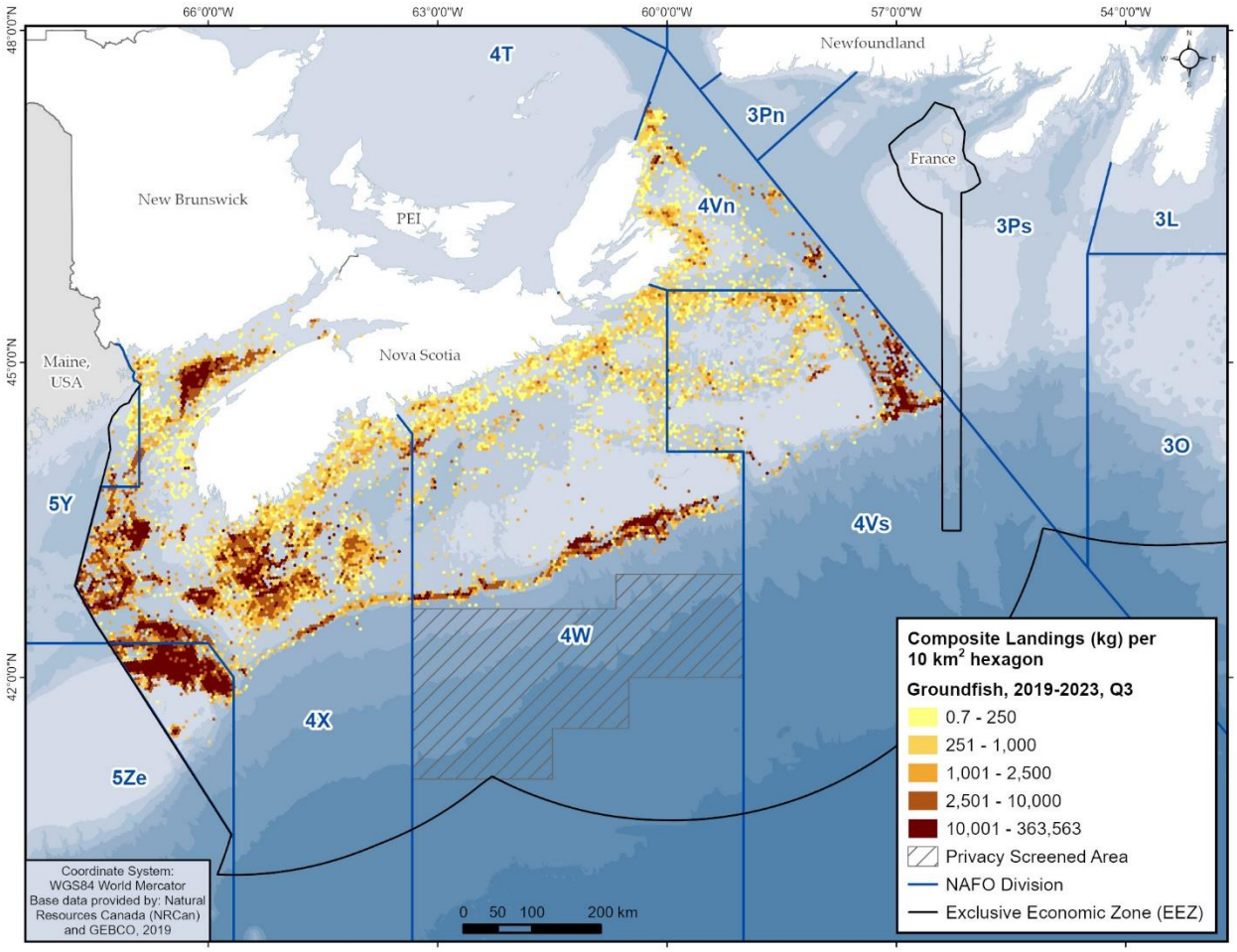

Figure 8. Seasonal Groundfish Landings, Q3, July-September, 2019-2023

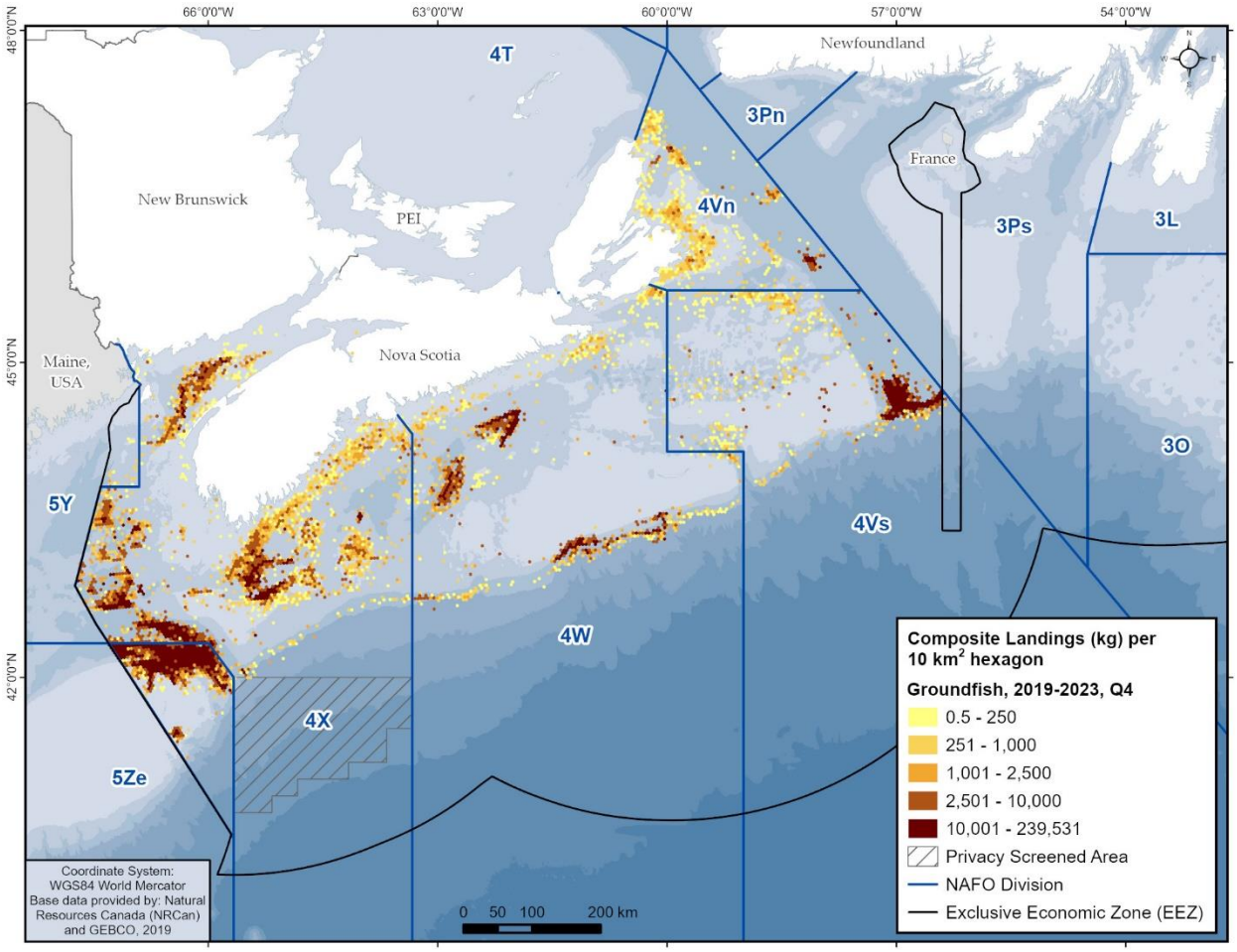

Figure 9. Seasonal Groundfish Landings, Q4, October-December, 2019-2023

Atlantic Cod (Figure 10)
SARA Status: No status. Under consideration for addition to SARA Schedule 1.
COSEWIC Status: Southern and NL Populations, Endangered.
MSC Status: Not in MSC program.

Figure 10 shows Atlantic Cod (*Gadus morhua*) catch as part of a larger multi-species groundfish fishery and includes directed and bycatch landed when using fixed and mobile gear. Landings have declined in the last three decades in areas that have experienced changes in ecosystem trophic structure. Directed fisheries for Atlantic Cod and Haddock are closed on the eastern Scotian Shelf (NAFO Divisions 4VW) and 4X5Y Cod was closed to directed fishing in 2019. 5Z Cod has been caught as bycatch only for the mobile gear fleet for the mapped time series and there is some directed Cod fishing by the fixed gear fleet. While there are fishing net mesh size and hook size restrictions in place, there are no minimum size limits for Atlantic Cod in the groundfish fishery. The total weight of Atlantic Cod landings declined by 25.1 percent compared to the period of 2014-2018, largely due to the removed ability to direct for Cod and quota reductions in 4X5Y.

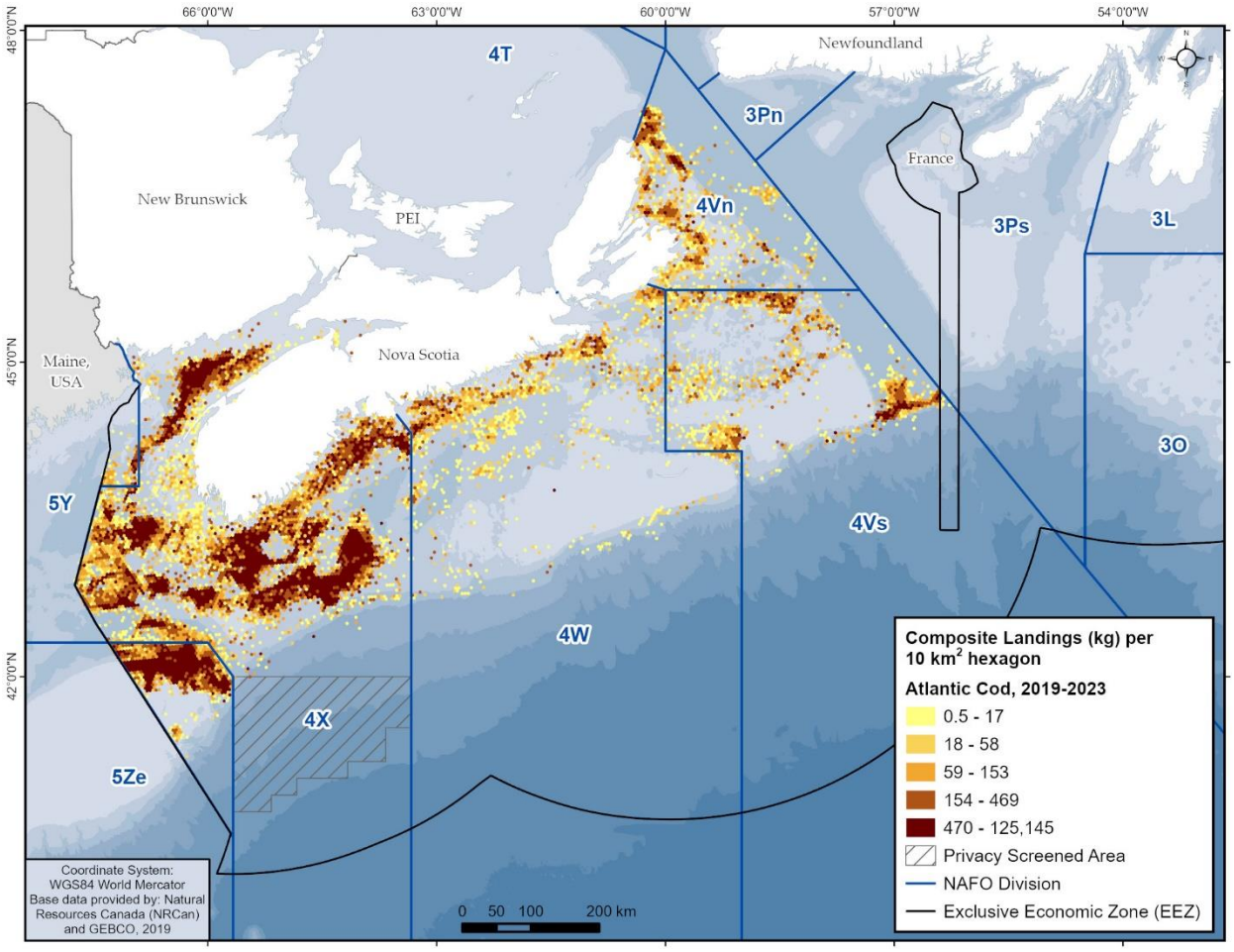

Figure 10. Atlantic Cod Landings, 2019-2023

Atlantic Cod, Haddock, and Pollock (Figure 11)
SARA Status: No Status. Atlantic Cod under consideration for addition to SARA Schedule 1.
COSEWIC Status: Atlantic Cod Southern and NL populations, Endangered.
MSC Status: Scotia-Fundy Haddock (4X5Y and 5Z) fisheries certified as sustainable in October 2010.

Atlantic Cod, Haddock (*Melanogrammus aeglefinus*) and Pollock (*Pollachius pollachius*) have historically been, and continue to be the dominant groundfish species landed off Nova Scotia. Landings of these species have declined over the last three decades as other species became abundant. With directed fisheries for Atlantic Cod and Haddock closed on the eastern Scotian Shelf (NAFO Divisions 4VW), Atlantic Cod, Haddock, and Pollock landings on the western Scotian Shelf and Georges Bank are much higher than on the eastern Scotian Shelf. The Pollock fishery on the eastern Scotian Shelf remains open; however, little effort for Pollock is made in that area due to closures for the other two species. There has been active Halibut fixed gear fishing in this area which could lead to increased bycatch of these three species. In many parts of the region, fishers catch these three species together.

Atlantic Cod, Haddock, and Pollock fisheries occur mainly on the Scotian Shelf banks and in the Bay of Fundy (Figure 11). Although the map includes landings by all gear types, the fishery for Haddock and Pollock is conducted mainly using otter trawls. While bottom longlines do have some catch of these stocks, it is predominately bycatch while directing for other stocks (i.e., Atlantic Halibut), and there is a small amount of directed fishing using gillnets or directing for Haddock using fixed gear. On Georges Bank, however, bottom longlining for Atlantic Halibut includes significant catches of Cod, Haddock and Pollock. Parts of Browns and Georges Banks are closed seasonally to protect spawning Haddock. In NAFO 4W, the Western/Emerald Banks Marine Refuge has been closed to groundfish fishing using mobile gear since 1987 and to all groundfish gear since 1993. The Western/Emerald Banks Marine Refuge protects a nursery area for spawning and juvenile Haddock and other groundfish and invertebrate species. The total weight of Atlantic Cod, Haddock and Pollock landings declined by 19.9 percent compared to the period of 2014-2018, resulting from removing the directed Cod fishery in 4X5Y in 2019 and lower quotas for Haddock on Georges Bank.

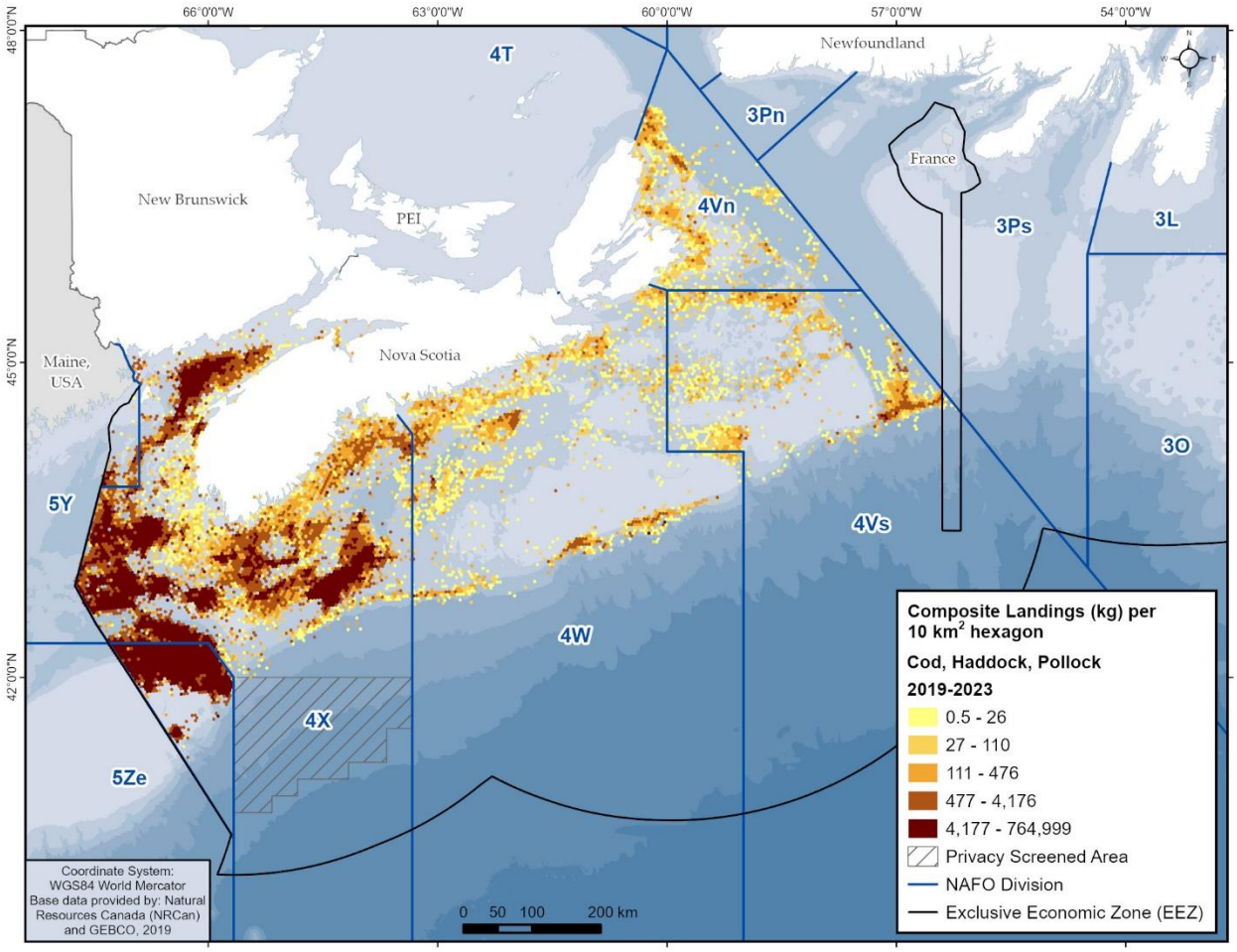

Figure 11. Atlantic Cod, Haddock and Pollock Landings, 2019-2023

Flatfish (Figure 12)
SARA Status: American Plaice, No Status. Under consideration for addition to Schedule 1.
COSEWIC Status: American Plaice, Maritime and NL Populations, Threatened.
MSC Status: Not in MSC program.

The management of the 4VWX5 mixed flounder fisheries was revised in 2015 to shift effort towards healthier stocks. In 4X5, the mixed flounder TAC was replaced by a 1,600 t 4X Winter Flounder (*Pseudopleuronectes americanus*) TAC. To manage additional flounder landings, bycatch limits were set at 10 percent for American Plaice (*Hippoglossoides platessoides*), 10 percent for Yellowtail Flounder (*Limanda ferruginea*), and 20 percent for Witch Flounder (*Glyptocephalus cynoglossus*). In 4VW, the mixed flounder TAC was set at 1,000 t, with a 500-t cap on the catch of American Plaice and a 10 percent bycatch limit for Winter Flounder. Due to very low biomass indices for 4VW American Plaice, the bycatch limit was reduced from 500 t to 350 t in 2019-2020, and to 175 t in 2021-2022.

Figure 12 shows landings from the four species mentioned above, as well as from unspecified flounder. In general, the shelf banks are important for the Yellowtail Flounder and American Plaice fisheries, while deeper areas are more important for Witch Flounder. Winter Flounder is uncommon on the eastern Scotian Shelf, and on the western Scotian Shelf it is concentrated in only a few areas. Historically, the eastern Scotian Shelf (4VW) was more important than the western Scotian Shelf (4X), not including Georges Bank, for Yellowtail Flounder and American Plaice fisheries. Flatfish are primarily caught by otter trawl, and also using Danish seine, gillnets and as bycatch in weirs in non-Groundfish fisheries. However, a general reduction in the groundfish fishery on the eastern Scotian Shelf and a declining abundance of flatfish resulted in low catches in the east (O'Boyle 2012). The total weight of Flatfish landings declined by 40.5 percent compared to the period of 2014-2018.

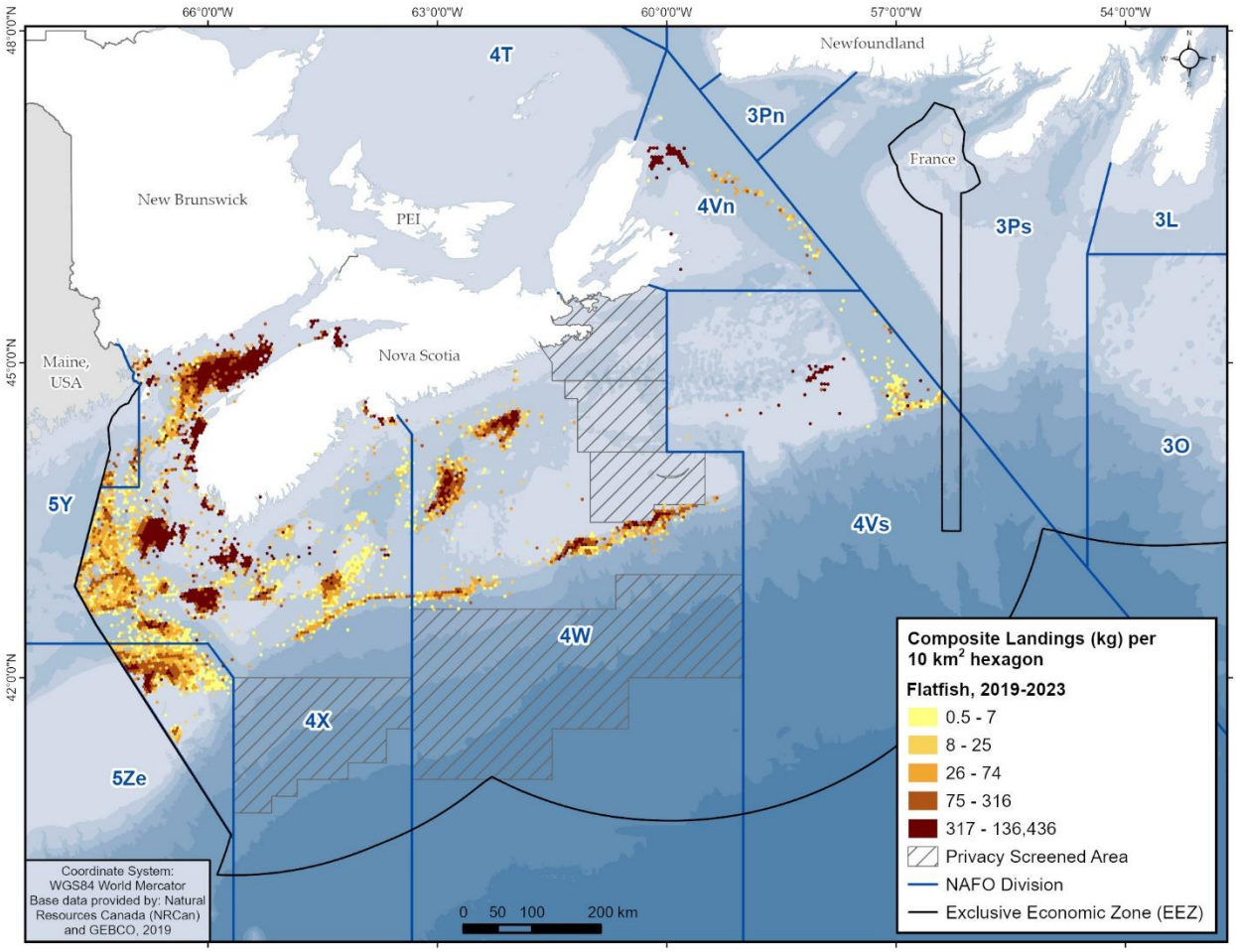

Figure 12. Flatfish Landings, 2019-2023

Atlantic Halibut (Figure 13)
SARA Status: No Status
COSEWIC Status: Not at Risk
MSC Status: Fishery certified as sustainable in May 2013.

Atlantic Halibut (*Hippoglossus hippoglossus*) is the most valuable groundfish species in Atlantic Canada. The Atlantic Halibut fishery was unregulated until 1988, at which time a TAC was implemented for the Scotian Shelf and southern Grand Banks management unit (3NOPs-4VWX5Zc). The Halibut TAC has ranged from 4,164 to 5,507 tonnes between 2019 and 2023; and in 2023 was 4,744 tonnes. In 1994, a minimum legal size limit of 81 cm was adopted. On the Scotian Shelf most landed Halibut is from a directed bottom longline fishery. Halibut is also landed by trawl, gillnet and handline fisheries, and a two percent Halibut bycatch limit is in place for mobile gear fleets. Figure 13 shows Halibut catches primarily caught in deep channels and along the shelf edge, but in southwest Nova Scotia (4X) Halibut catch is broadly distributed. The total weight of Halibut landings increased by 41.7 percent compared to the period of 2014-2018, mainly due to increased activity in 4Vn.

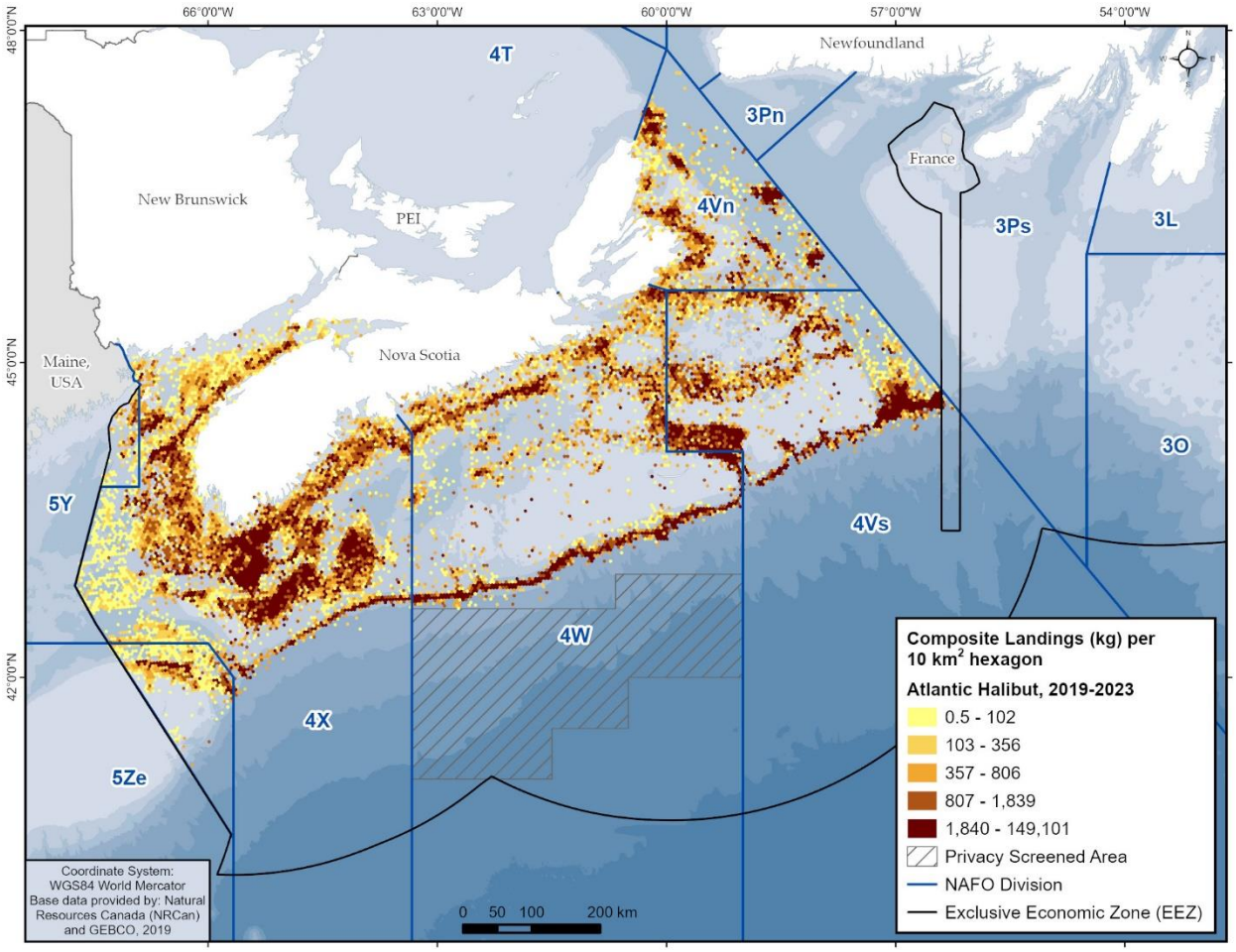

Figure 13. Atlantic Halibut Landings, 2019-2023

Greenland Halibut (Figure 14)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Not in MSC program.

Greenland Halibut (*Reinhardtius hippoglossoides*) (also called turbot) are highly migratory in the Northwest Atlantic and are generally found north of the Scotian Shelf in the Gulf of St. Lawrence, although they occur as far south as the Gulf of Maine. The occurrence of Greenland Halibut on the eastern Scotian Shelf may be an extension of the stock inhabiting the Gulf of St. Lawrence. Figure 14 shows Greenland Halibut are caught in deeper waters especially near the Stone Fence and along the Laurentian Channel and Scotian Shelf slope. There is no directed fishery for Greenland Halibut in 4VWX and 5YZ as they are only caught as bycatch, primarily in the groundfish longline fishery. The total weight of Greenland Halibut landings declined by 13.8 percent compared to the period of 2014-2018.

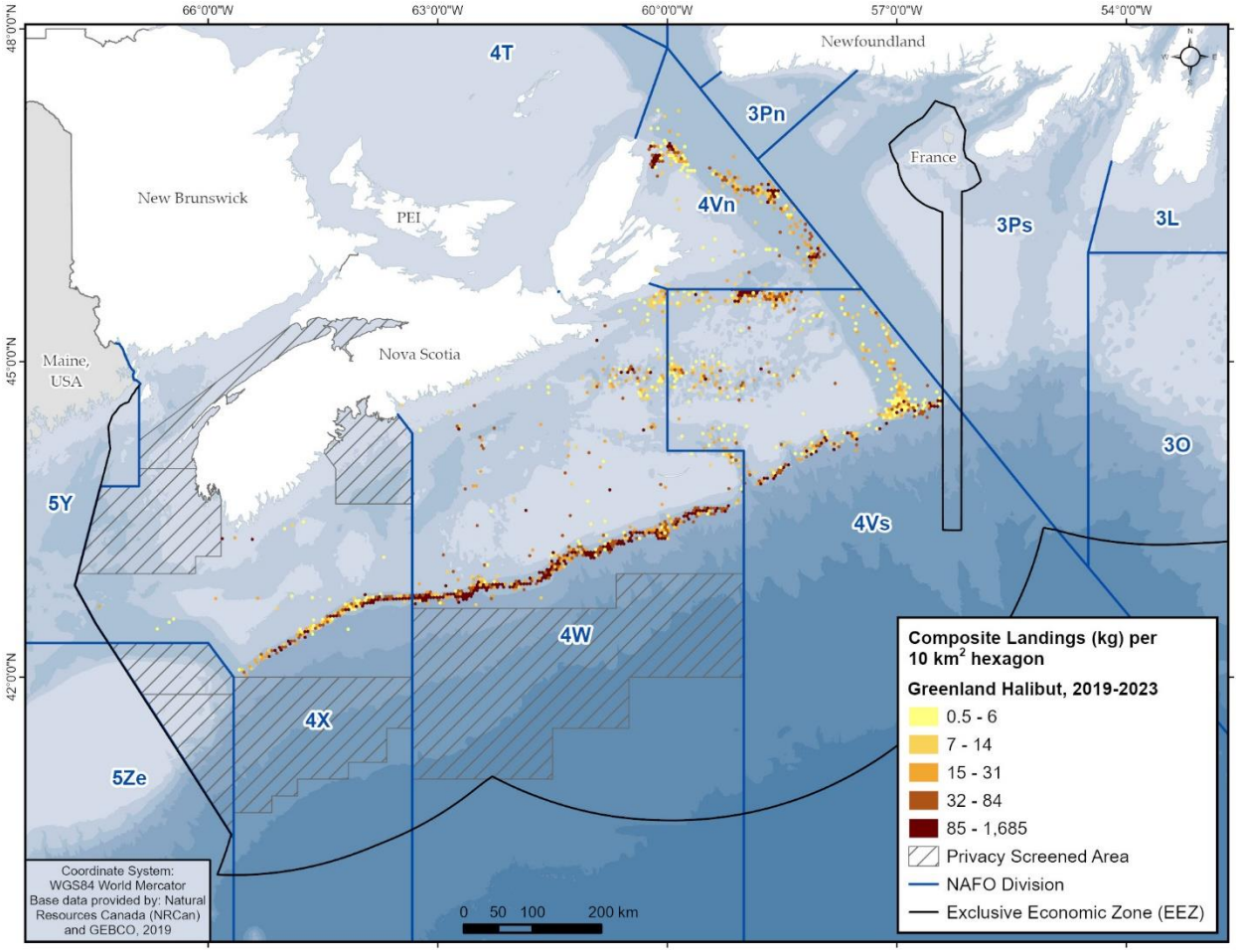

Figure 14. Greenland Halibut (Turbot) Landings, 2019-2023

Hagfish (Figure 15)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Not in MSC program.

Atlantic Hagfish (*Myxine glutinosa*) is widely distributed throughout the Northwest Atlantic. There has been a directed fishery for Hagfish off Nova Scotia since the late 1980s. The Hagfish trap fishery consists of modified plastic barrels deployed in strings of 30-35 barrels, with a maximum of 450 traps per licence. The fishing season runs from April 15 to October 15. The fishery is closed in coral and sponge marine refuges, the Gully Marine Protected Area, the Western/Emerald Banks Marine Refuge, and is subject to two seasonal groundfish closures on Georges and Browns Banks from March 1 to May 31. Figure 15 shows the landings distribution along the Scotian Shelf edge, in Roseway Basin, and north of Georges Bank. There were only four active licence holders in the Scotian Shelf fishery. Therefore, participants were contacted and each provided permission to display catch data. The total weight of Hagfish landings declined by 48.8 percent compared to the period of 2014-2018.

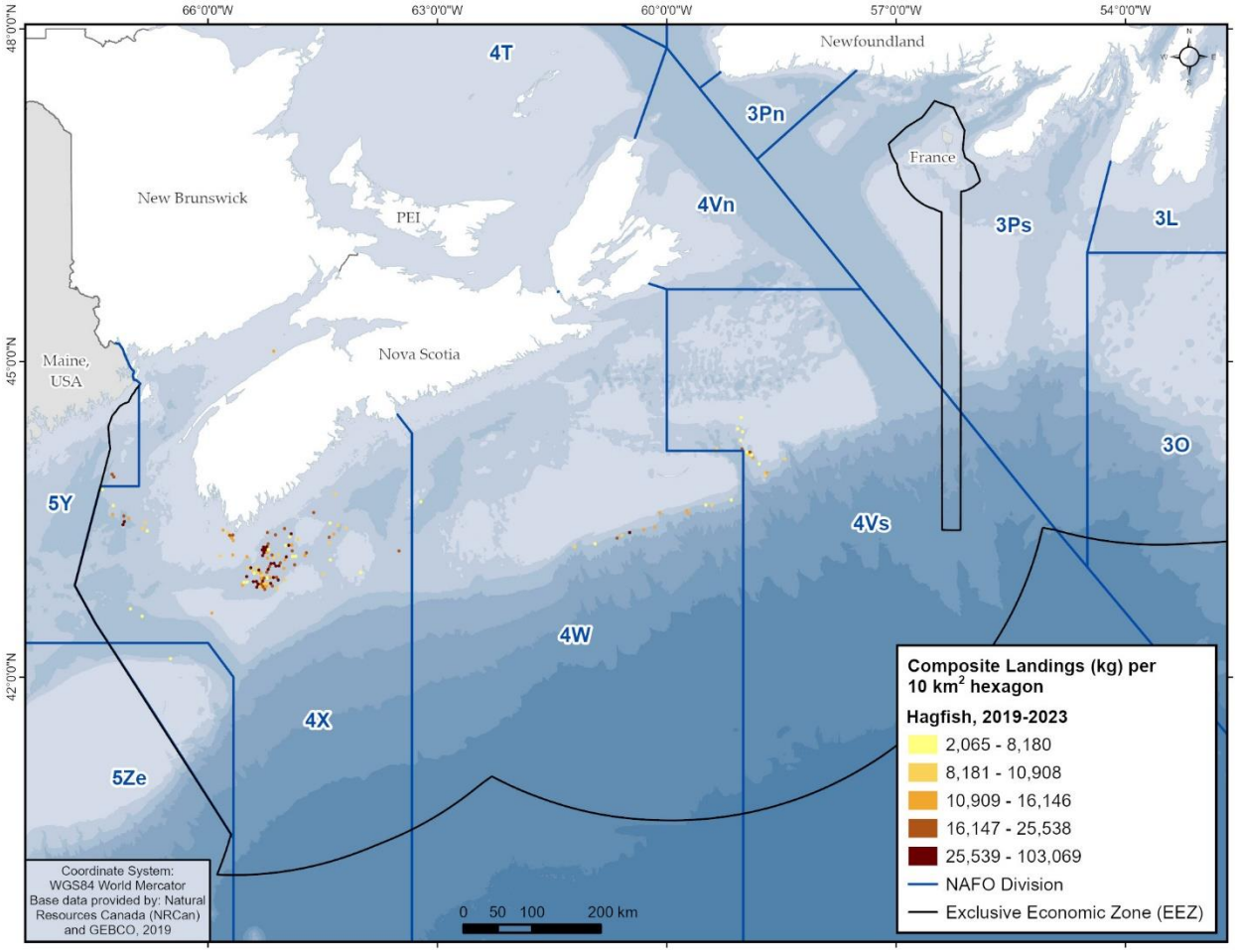

Figure 15. Hagfish Landings, 2019-2023

Cusk (Figure 16)
SARA Status: No Status. Under consideration for addition to Schedule 1.
COSEWIC Status: Endangered.
MSC Status: Not in MSC program.

Cusk (*Brosme brosme*) is a non-target bycatch species incidentally harvested in the multi-species groundfish fishery (Figure 16). Cusk are most commonly caught in the Gulf of Maine, western Scotian Shelf, and along the Scotian Shelf edge to Banquereau on bottom longline and in mobile trawl gear. Cusk range from Cape Cod to Labrador, but are rare in the Gulf of St. Lawrence and inner Bay of Fundy. Cusk may also be caught and discarded in Lobster and crab trap fisheries (DFO 2023c). Cusk do not survive capture as they evert their stomach upon surfacing. Bycatch limits are in place so that the catch of non-quota species is not to exceed 10 percent of all directed groundfish combined and a cap on the total annual catch of Cusk is also in place. Community and fleet-level caps exist for Cusk, and for fixed gear they are not permitted to discard Cusk as retention is mandatory. If Cusk levels exceed their caps, fleets or specific groups could be closed or required to carry observers. The total weight of Cusk landings declined by 20.4 percent compared to the period of 2014-2018.

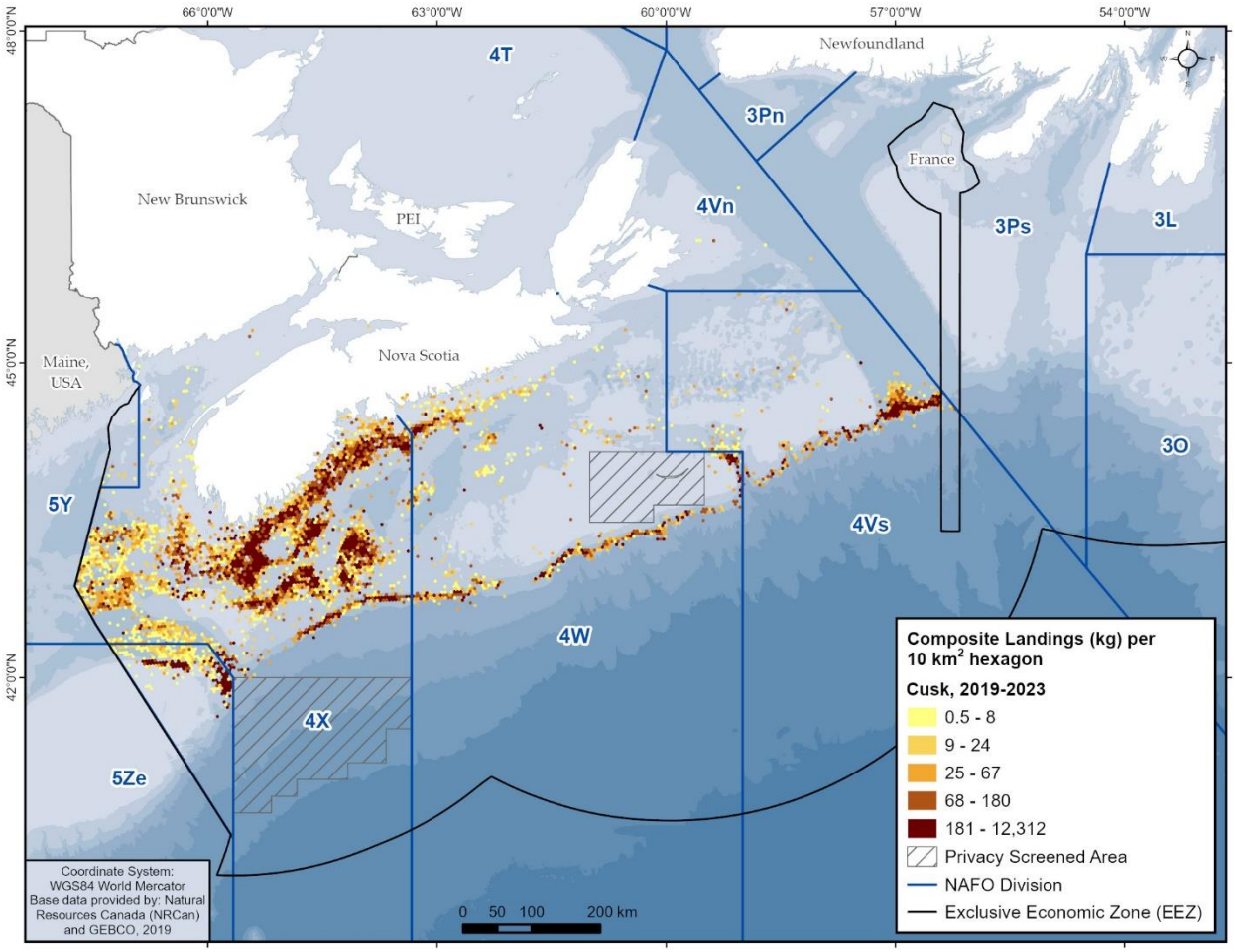

Figure 16. Cusk Landings, 2019-2023

Dogfish (Figure 17)
SARA Status: No Status. Under consideration for addition to Schedule 1.
COSEWIC Status: Spiny Dogfish *(Squalus acanthias)*, Atlantic population, Special Concern.
MSC Status: Not in MSC program.

Spiny Dogfish (*Squalus acanthias*) and Black Dogfish (*Centroscyllium fabricii*) are landed as bycatch in the multi-species groundfish fishery (Figure 17). Directing for dogfish is only permitted through fixed gear groundfish fisheries. In other groundfish fleets, the bycatch limit is no more than 10 percent. In 2023, a TAC of 2,800 tonnes (down from 4,000 tonnes in 2019) was in place for the fixed gear <50-feet fleet. During 2019-2023 another 4,000 tonnes were available to cover landings and discards in other fleets and regions. The total weight of Dogfish landings declined by 72.0 percent compared to the period of 2014-2018.

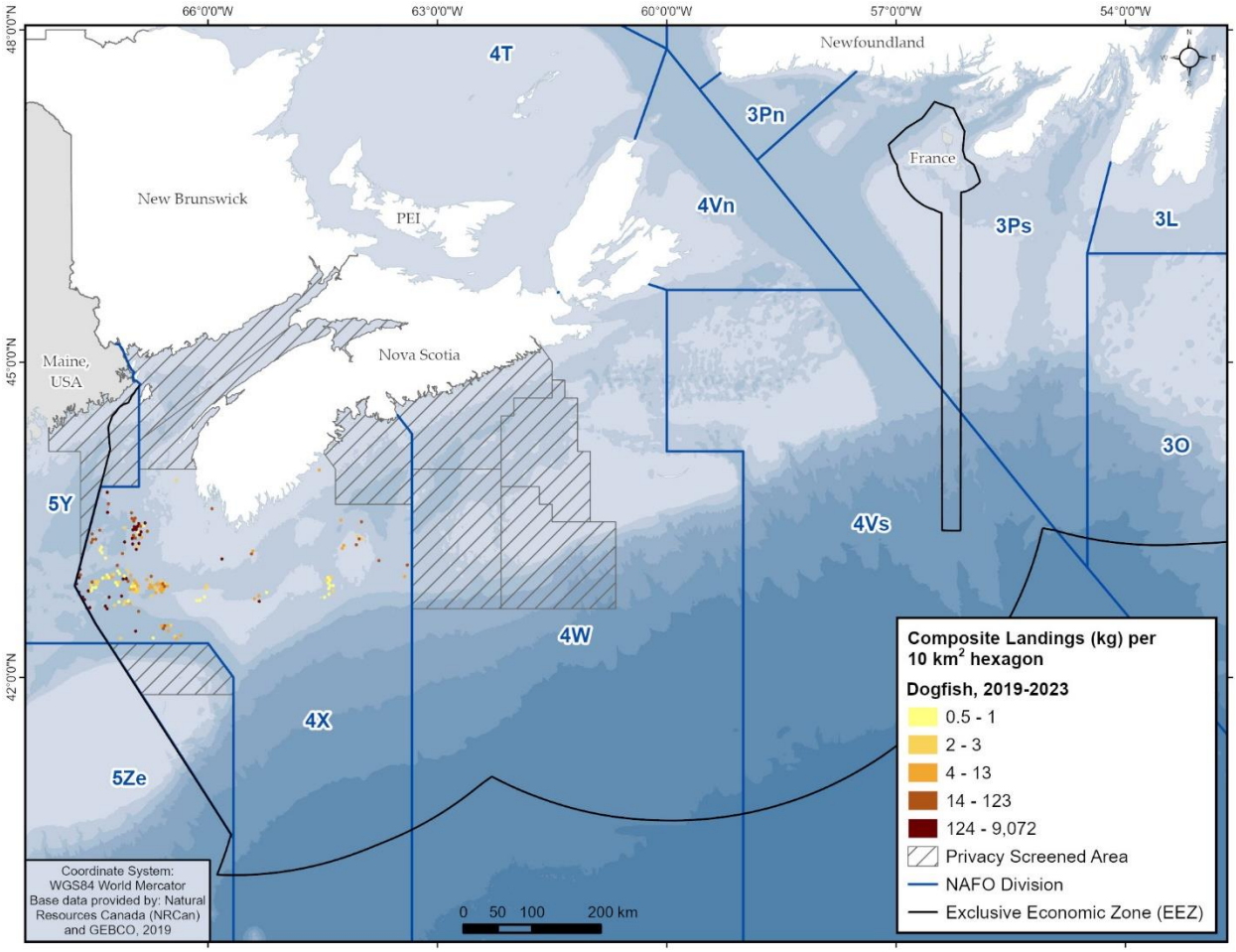

Figure 17. Dogfish Landings, 2019-2023

Redfish (Figure 18)
SARA Status: No Status. Under consideration for addition to Schedule 1.
COSEWIC Status: Acadian Redfish (Atlantic population), Threatened. Deepwater Redfish (Gulf of St. Lawrence and Laurentian Channel population), Endangered.
MSC Status: Canada 3LN redfish fishery certified as sustainable in May 2017.

Three species of redfish are found in the Northwest Atlantic, namely *Sebastes mentella* and *S. fasciatus* that are dominant in commercial fisheries, and the less abundant *S. marinus*. Redfish (*S. fasciatus* and *S. mentella*) are targeted with otter trawls along the shelf edge, in the Northeast and Laurentian Channels, and in other deep areas of the Scotian Shelf and Bay of Fundy (Figure 18). Since the 2010 stock assessment, redfish managed as Units 1 and 2 (Gulf of St. Lawrence and Laurentian Channel, respectively) are assessed as one stock for each species, i.e., one *S. mentella* stock for Units 1 and 2 combined, and one *S. fasciatus* stock for Units 1 and 2 combined. The Scotian Shelf Unit 3 redfish stock includes portions of 4WX and 5Y. The fishery uses small mesh gear (90 and 110 mm) and many management restrictions prevent bycatch of small fish. A special management area in Unit 3 is the Bowtie, which is closed to small mesh gear (110-115 mm diamond mesh) to protect small redfish. The second closure in 4Xmn was implemented in 2013 due to catches of undersized redfish. Small mesh gear is also not permitted in waters shallower than 50 fathoms (91 metres), in the Bay of Fundy north of 43°30', and in NAFO Area 5Y and 5Z. The Browns Bank Haddock spawning area has an extended redfish closure from January 1 to June 30. There may be experimental catches of the Unit 1 stock in 4Vn in January to March. The total weight of Redfish landings increased by 13.6 percent compared to the period of 2014-2018.

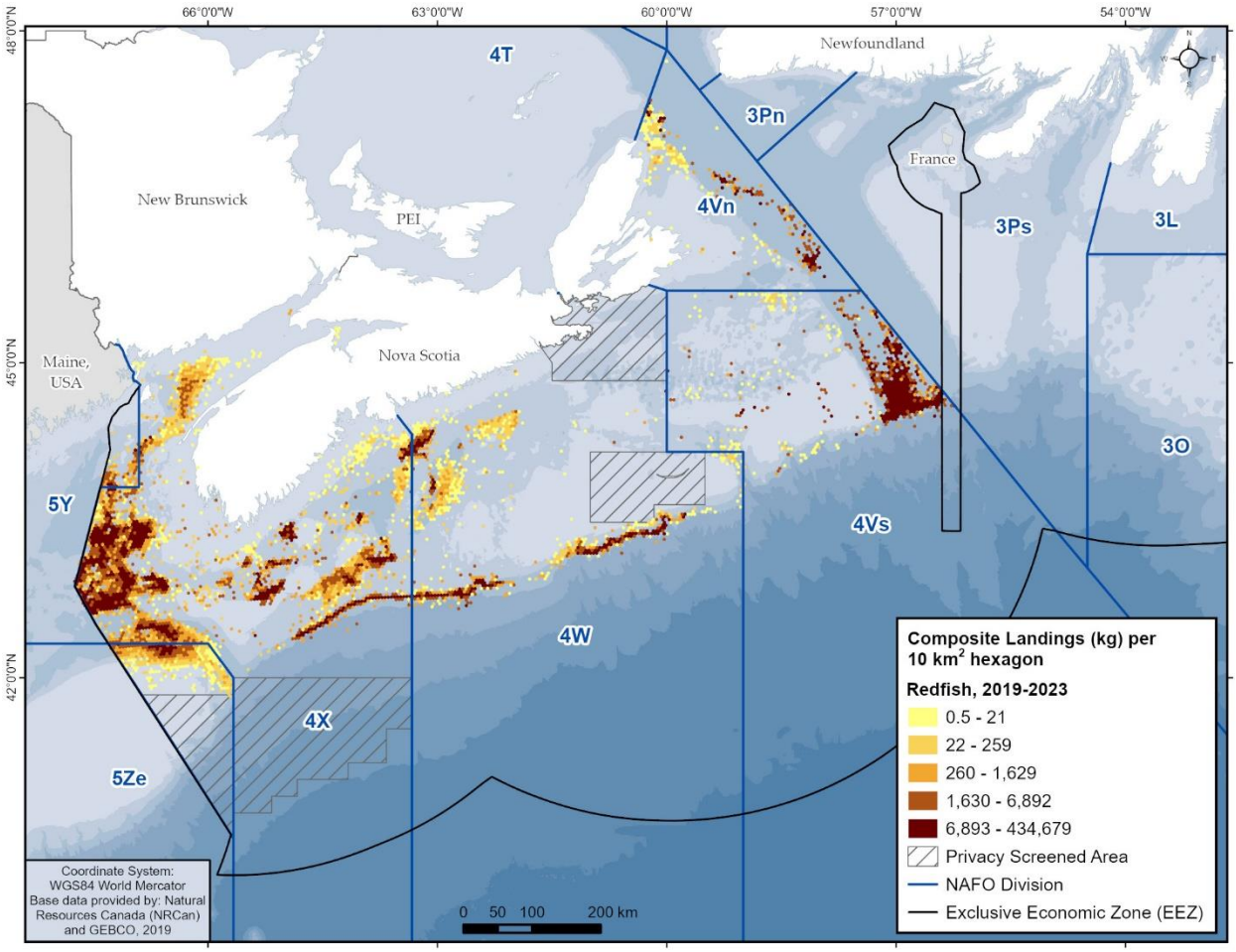

Figure 18. Redfish Landings, 2019-2023

Red Hake (Figure 19)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Not in MSC program.

Red Hake (*Urophycis chuss*) are distributed in the Northwest Atlantic from North Carolina to southern Nova Scotia, straying into the Gulf of St. Lawrence. Throughout the spring and summer, they migrate into more shallow waters to spawn. During winter, they tend to move to deeper waters offshore in the Gulf of Maine and along southern New England and Georges Bank. Red Hake are primarily landed as bycatch in the Silver Hake fishery that occurs on the central Scotian Shelf and in other bottom trawl fisheries (Figure 19). The total weight of Red Hake landings declined by 31.0 percent compared to the period of 2014-2018.

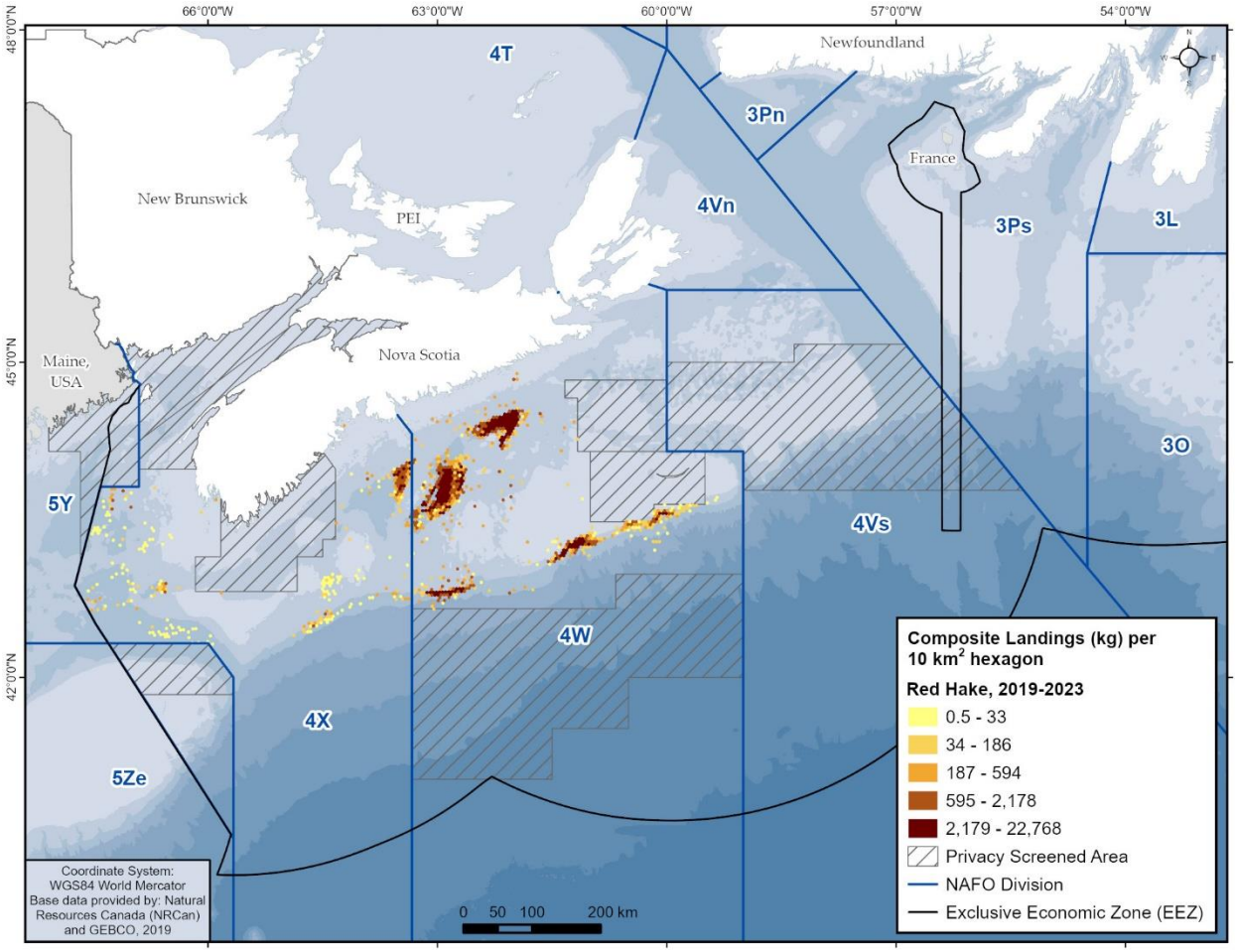

Figure 19. Red Hake Landings, 2019-2023

Silver Hake (Figure 20)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Not in MSC program.

Silver Hake (*Merluccius bilinearis*) is a demersal-pelagic gadid fish found in shallow waters to 400 m depth from Cape Hatteras to the southern Grand Banks and Gulf of St. Lawrence. The distribution of Silver Hake juveniles and adults is associated with warm bottom temperatures of 5-12 °C and 7-10 °C, respectively (DFO 2023d). A population of Silver Hake occurs on the Scotian Shelf in NAFO Divisions 4VWX and 5Ze and is considered to be a self-reproducing stock. This population aggregates in the deep-water depressions of the Scotian Shelf in Emerald and LaHave Basins, and in the warm slope water, except during the spawning period from July to September when large numbers occur on the shelf in shallow waters around Sable Island Bank. From 1995 to present, a commercial fishery has been conducted by mobile gear groundfish fleets in Emerald and LaHave Basins (Figure 20). The fishery is restricted to areas with depths greater than 190 m and uses small-mesh trawl gear that also captures other bycatch species. The fishery uses bottom trawls with 55-60 mm square mesh cod ends and trawls equipped with Nordmore grates to reduce bycatch. The TAC for Silver Hake has been 15,000 tonnes during 2019-2023. The total weight of Silver Hake landings declined by 47.3 percent compared to the period of 2014-2018.

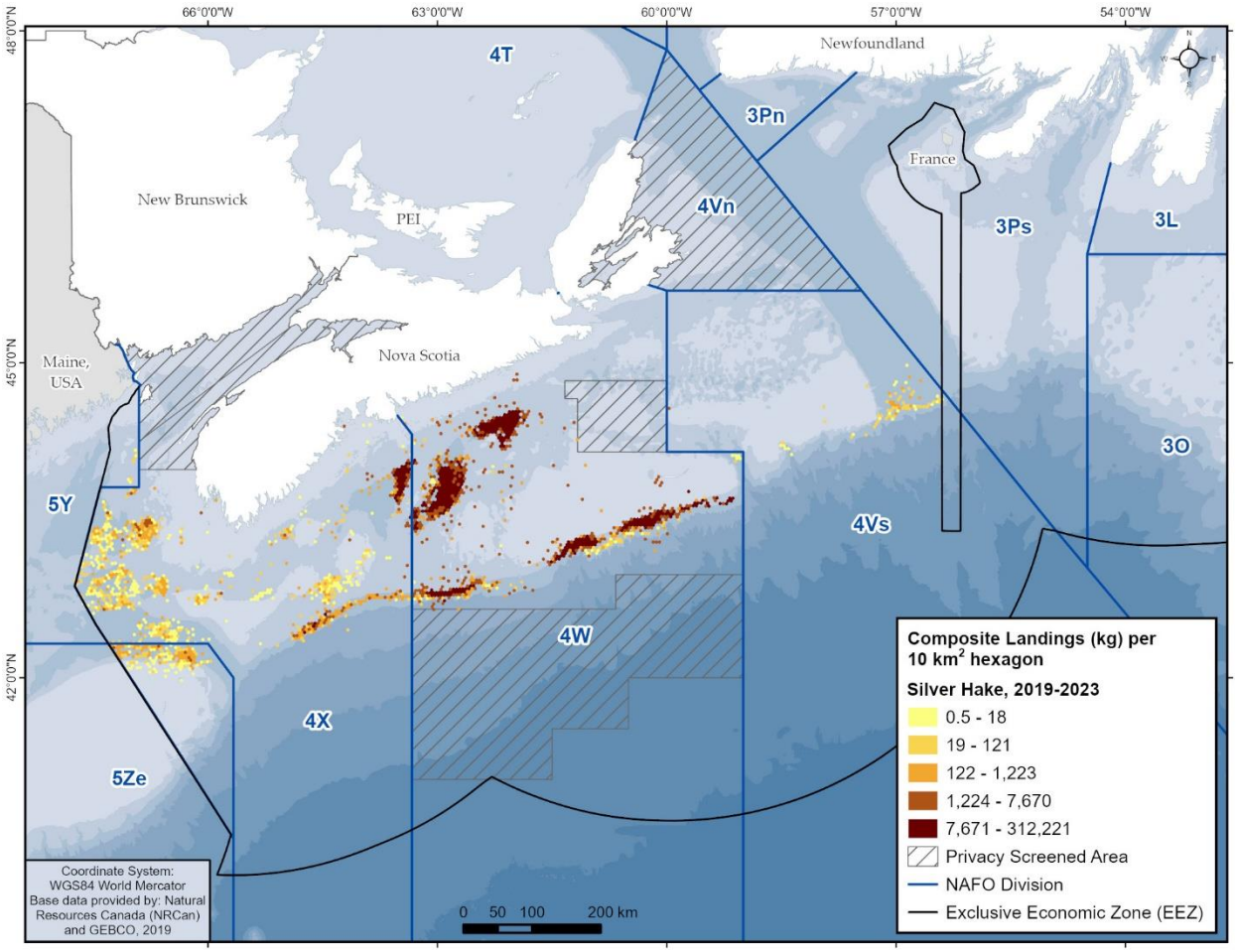

Figure 20. Silver Hake Landings, 2019-2023

White Hake (Figure 21)
SARA Status: No status. Atlantic and Northern Gulf of St. Lawrence population, and Southern Gulf of St. Lawrence population, Under consideration for addition to Schedule 1.
COSEWIC Status: Atlantic and Northern Gulf of St. Lawrence population, Threatened. Southern Gulf of St. Lawrence population, Endangered.
MSC Status: Not in MSC program.

White Hake (*Urophycis tenuis*) is a groundfish bycatch species only in DFO Maritimes Region, with fleets operating within bycatch caps. White Hake landings are broadly distributed across the Scotian Shelf and into the Bay of Fundy, with a number of concentrated areas: the Gulf of Maine, Georges Bank, the edge of the Scotian Shelf, and parts of Laurentian Channel (Figure 21). The total weight of White Hake landings declined by 4.6 percent compared to the period of 2014-2018.

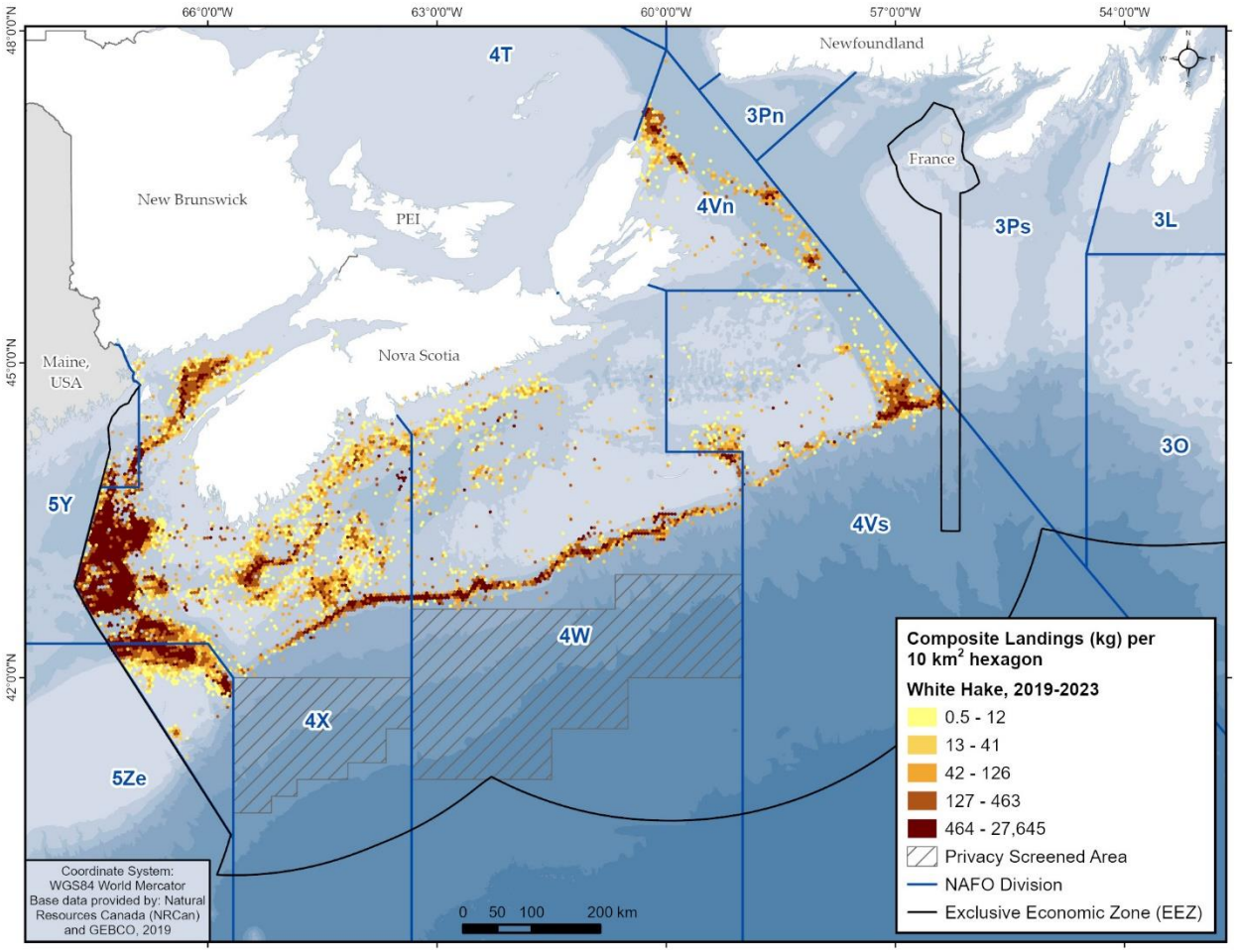

Figure 21. White Hake Landings, 2019-2023

Monkfish (Figure 22)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Not in MSC program.

Monkfish (*Lophius americanus*), also called goosefish or anglerfish, is a benthic fish distributed from the northern Gulf of St. Lawrence to Cape Hatteras. Monkfish are typically a bycatch in groundfish and scallop fisheries on the Scotian Shelf and Georges Bank. Figure 22 shows that Monkfish are mainly caught along the edge of the Laurentian Channel, in the Bay of Fundy and its approaches, and on the Scotian Shelf, particularly along the edges of banks. The total weight of Monkfish landings increased by 80.1 percent compared to the period of 2014-2018.

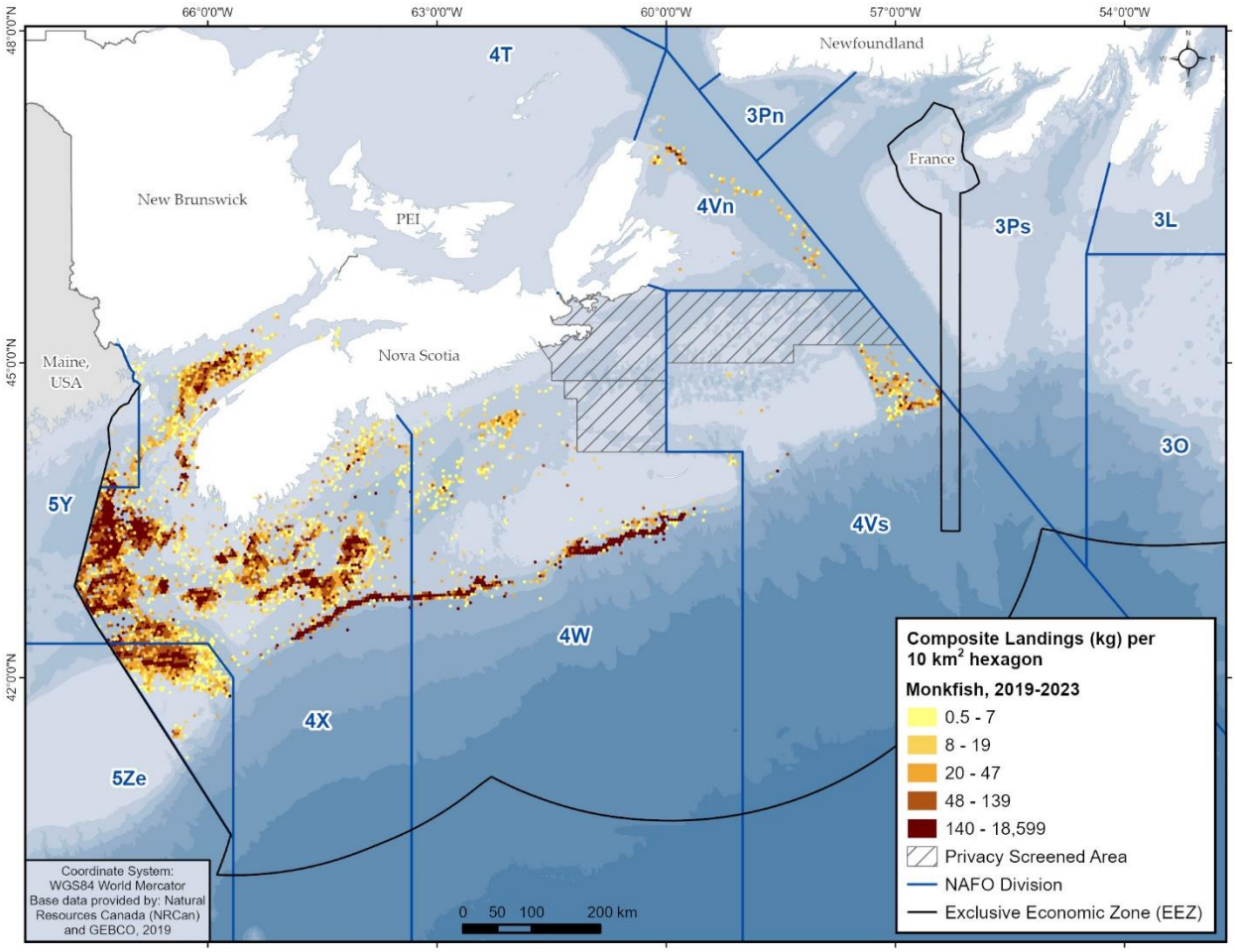

Figure 22. Monkfish Landings, 2019-2023

Sculpin (Figure 23)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Not in MSC program.

Sculpins are bottom dwelling, opportunistic feeders distributed throughout coastal shelf seas of the Northwest Atlantic. Common sculpin species in the Maritimes Region include Longhorn Sculpin (*Myoxocephalus octodecemspinosus*), Moustache Sculpin (*Triglops murrayi*), and Sea Raven/Sea Sculpin (*Hemitripterus americanus*). A directed fishery for Longhorn Sculpin began in 1999 in St. Mary's Bay in southwest Nova Scotia using otter trawl, bottom longline and handline. The St. Mary's Bay sculpin fishery closed in 2020. Most other sculpin landings in Figure 23 are bottom longline, trawl and gillnet bycatches. Sculpin bycatches in the inshore Lobster fishery are not displayed in the map due to lack of geographic coordinates. The total weight of Sculpin landings declined by 61.1 percent compared to the period of 2014-2018.

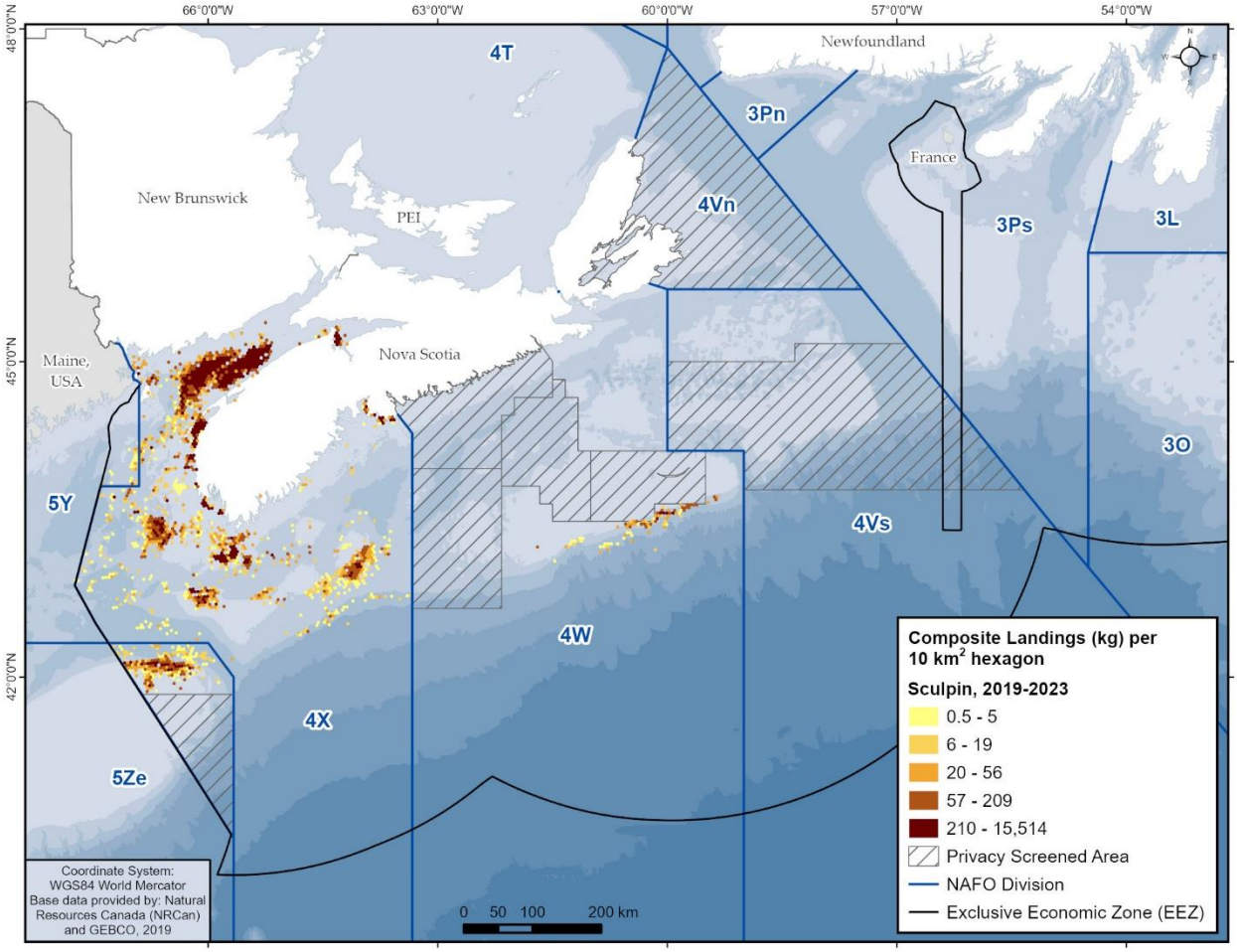

Figure 23. Sculpin Landings, 2019-2023

Skate (Figure 24)
SARA Status: No status. Smooth Skate, Laurentian-Scotian population, Thorny Skate, Atlantic Ocean, and Winter Skate, Eastern Scotian Shelf - Newfoundland population and Gulf of St. Lawrence population, Under consideration for addition to Schedule 1.
COSEWIC Status: Winter Skate (*Leucoraja ocellata*), Georges Bank-Western Scotian Shelf-Bay of Fundy population, Not at Risk; Eastern Scotian Shelf-Newfoundland population, Endangered. Gulf of St. Lawrence population, Endangered. Smooth Skate (*Malacoraja senta*), Laurentian-Scotian population, Special Concern. Thorny Skate (*Amblyraja radiata*), Atlantic Ocean, Special Concern.
MSC Status: Not in MSC program.

There is no directed skate fishery in the Maritimes Region. All 4VW skates, except Barndoor Skates, must be returned to the water. Although there are Winter Skate records in 4W in the data, misidentification of skates is common. Thorny Skate (*Amblyraja radiata*) must be returned to the water throughout the region. Other skates in 4X5 can be retained or discarded. There are no quotas or bycatch caps on skates, but a general bycatch provision applies for the inshore fleets (fixed gear <45', fixed gear 45-65', and mobile gear <65') in which no more than 10 percent of the catch at the fleet level should comprise skates. If catches exceed 10 percent, fleet closures or other measures to reduce skate capture are considered. This does not apply to the mid-shore and offshore fleets (fixed gear 65-100', mobile gear 65-100', and >100'). A voluntary move-away protocol exists for Thorny Skates. Figure 24 depicts the distribution of landed skates primarily on the Western Scotian Shelf in 4X and on Georges Bank in 5Ze. The total weight of Skate landings increased by 180.1 percent compared to the period of 2014-2018.

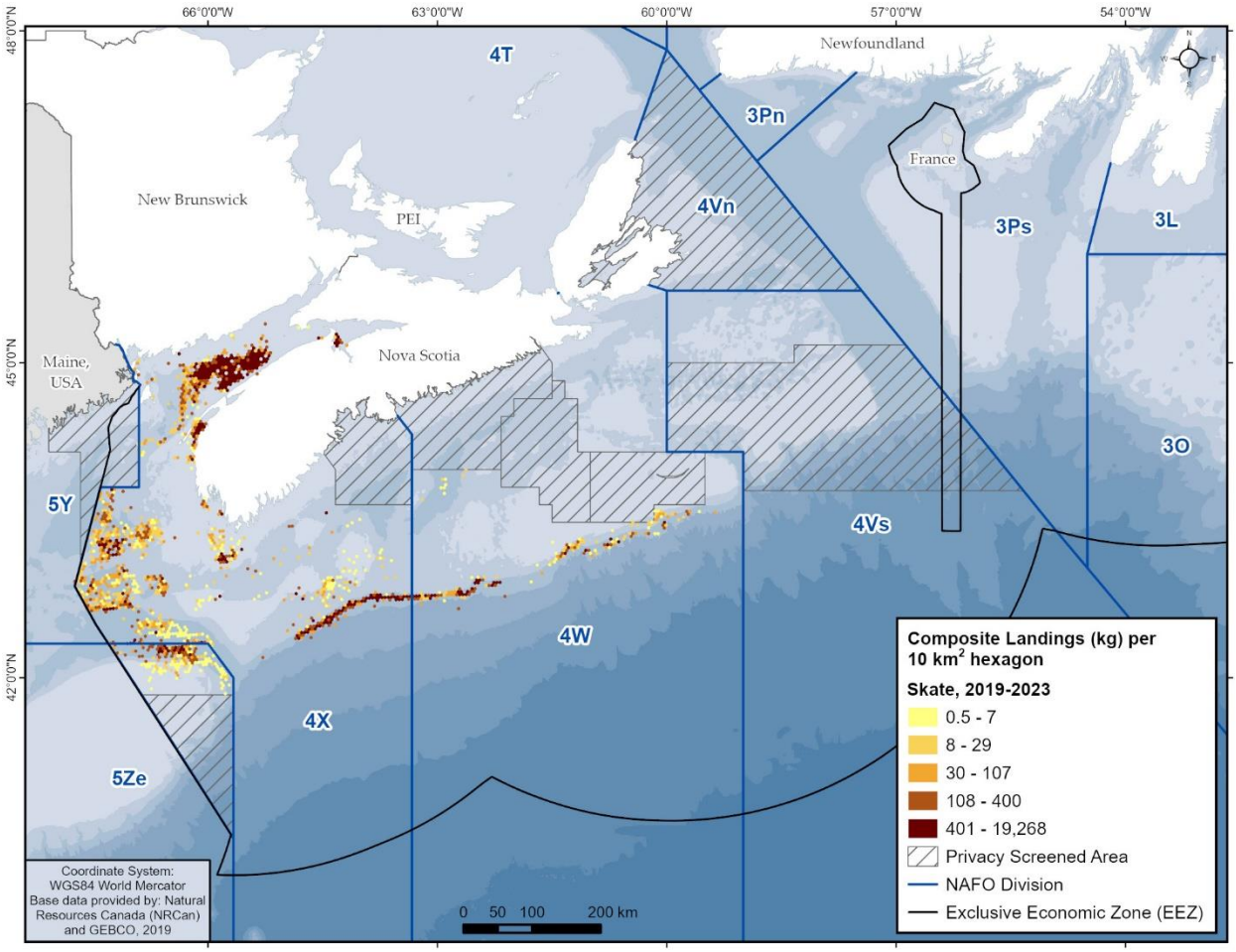

Figure 24. Skate Landings, 2019-2023

Wolffish (Figure 25)
SARA Status: Atlantic Wolffish (*Anarhichas lupus*), Special Concern. Northern Wolffish (*Anarhichas denticulatus*), Threatened. Spotted Wolffish (*Anarhichas minor*), Threatened.
COSEWIC Status: Atlantic Wolffish (*Anarhichas lupus*), Special Concern. Northern Wolffish (*Anarhichas denticulatus*), Threatened. Spotted Wolffish (*Anarhichas minor*), Threatened.
MSC Status: Not in MSC program.

The Atlantic Wolffish is a large bottom-dwelling, predatory marine fish widely distributed across the North Atlantic. It occurs off the west coast of Greenland and southern Labrador, in the Strait of Belle Isle, and the Gulf of St. Lawrence. It is also found off the east and west coasts of Newfoundland, on the Grand Banks, and from the Scotian Shelf to the Gulf of Maine. The Atlantic Wolffish is found in commercial catches, at one time as a target species but now only as bycatch. The Northern Wolffish is found across the North Atlantic from Norway to southern Newfoundland, primarily off northeast Newfoundland. The Spotted Wolffish is found across the North Atlantic from Scotland to Cape Breton and in the Arctic Ocean. Northern and Spotted Wolffish cannot be retained and must be returned to the water in a manner that causes the least harm. In the Northwest Atlantic it occurs primarily off northeast Newfoundland. Wolffish are not targeted by the fishing industry, but are occasionally caught incidentally. Figure 25 shows catch weight landings for Atlantic Wolffish. The total weight of Wolffish landings increased by 5.8 percent compared to the period of 2014-2018.

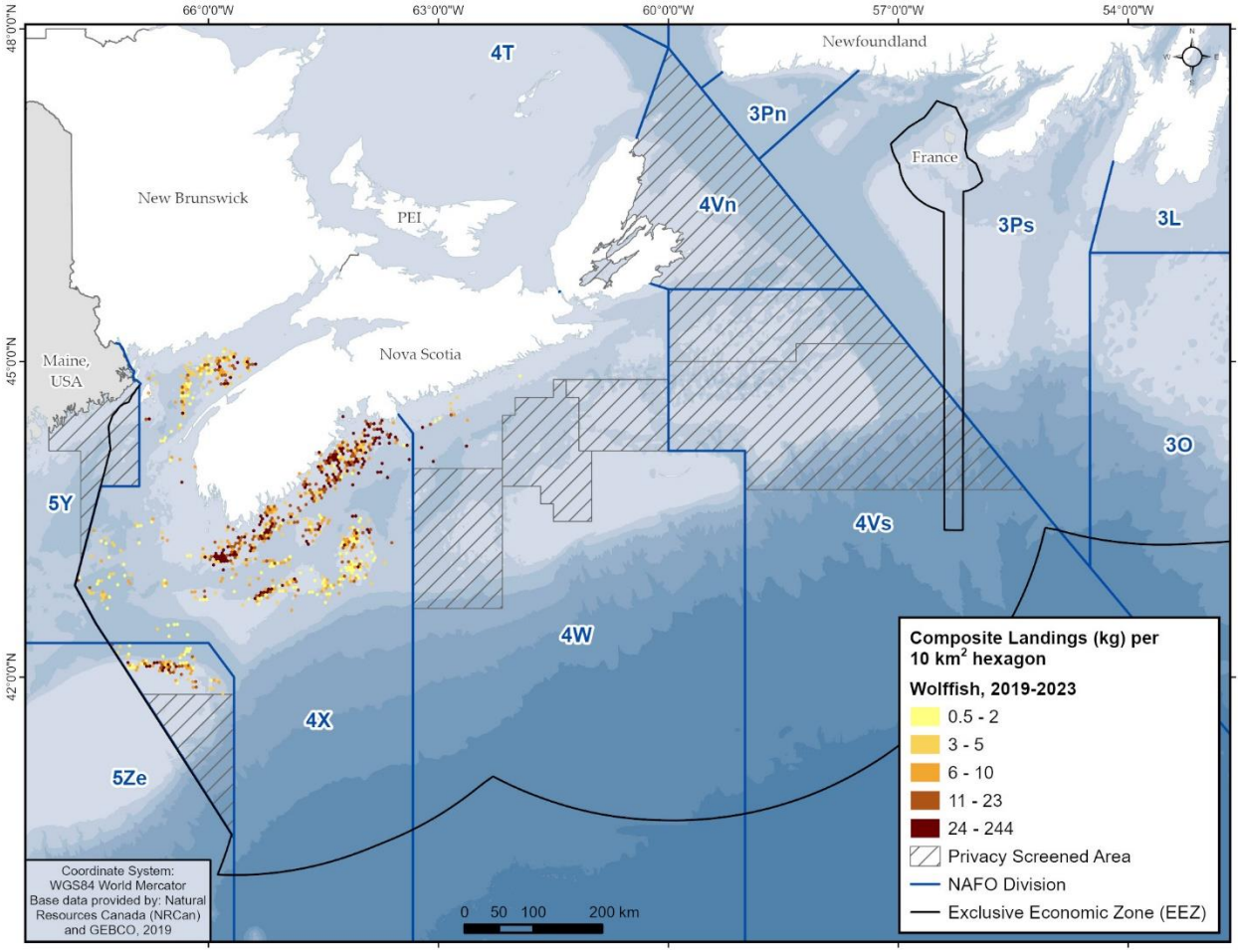

Figure 25. Wolffish Landings, 2019-2023

Squid (Figure 26)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Not in MSC program.

The Short-finned Squid (*Illex illecebrosus*) fishery is conducted from April 1 to December 31. Catches from otter trawls account for 92 percent of squid landings. Gillnets, longlines, trap nets and weirs may land squid as bycatch. Section 74 of the *Atlantic Fishery Regulations* on squid states that no person shall fish for squid with an otter trawl with a mesh size less than 60 mm and that closure times may be set (DOJ 1985). Fishing for squid with otter trawl may only be carried out in Division 4WX in specific fishing areas outlined in licence conditions (i.e., Silver Hake trawl fishing areas). Figure 26 shows the majority of squid landings on the Scotian Shelf and includes bycatch in the Silver Hake trawl fishery in Emerald and LaHave Basins. Red Squid, *Loligo*, as well as unspecified squid are also included in the map. The total weight of Squid landings declined by 15.2 percent compared to the period of 2014-2018.

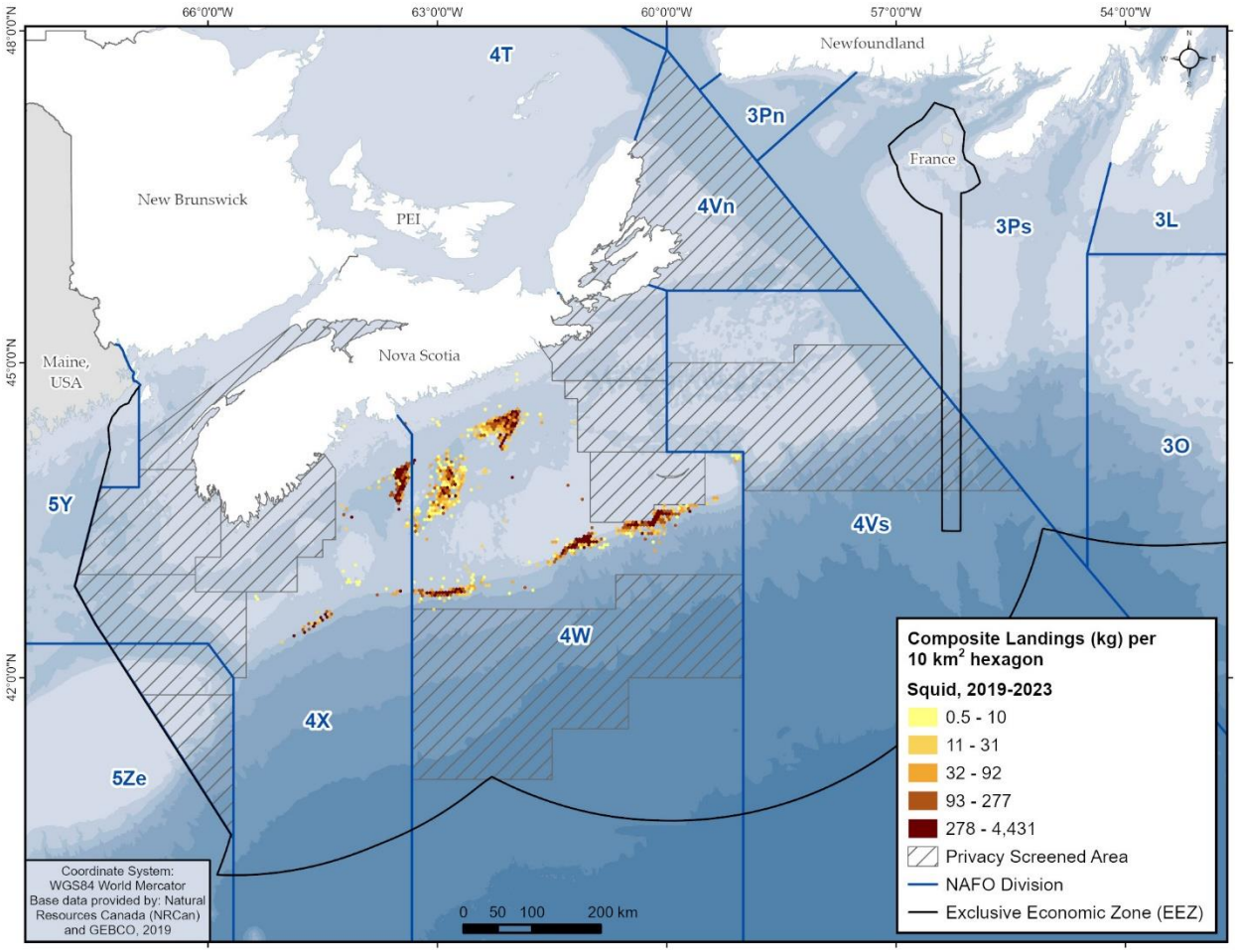

Figure 26. Squid Landings, 2019-2023

Herring (Figure 27)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: The 4VWX purse seine Herring fishery was certified in November 2016; however, voluntarily withdrew from MSC certification in April 2019.

The 4VWX5 Atlantic Herring (*Clupea harengus*) fishery is comprised of five spawning components: 1) Southwest Nova Scotia/Bay of Fundy; 2) Offshore Scotian Shelf Banks; 3) Coastal Nova Scotia; 4) Georges Bank; and 5) Southwest New Brunswick migrant juveniles. Each component has several spawning areas and a mixing of fish among the spawning components. Some parts of the 4VWX5 Herring fishery are open year-round, with the majority of the landings (57 percent) occurring in the summer purse seine fishery from May to October in the Bay of Fundy area. An IFMP for Atlantic Herring is published with more details on the management of the fishery (DFO 2021a). Herring is also caught by gillnet (32 percent), weir (seven percent) and beach/bar seine. Weir logbook records do not include geographic coordinates and are therefore not displayed. Figure 27 shows Herring landings for all gear types off Minas Basin (Upper Bay of Fundy), German Bank, Trinity Ledge, Port Mouton, Eastern Shore, and Herring bycatch in the Silver Hake trawl fishing areas in Emerald and LaHave Basins. The total weight of Herring landings declined by 17.3 percent compared to the period of 2014-2018.

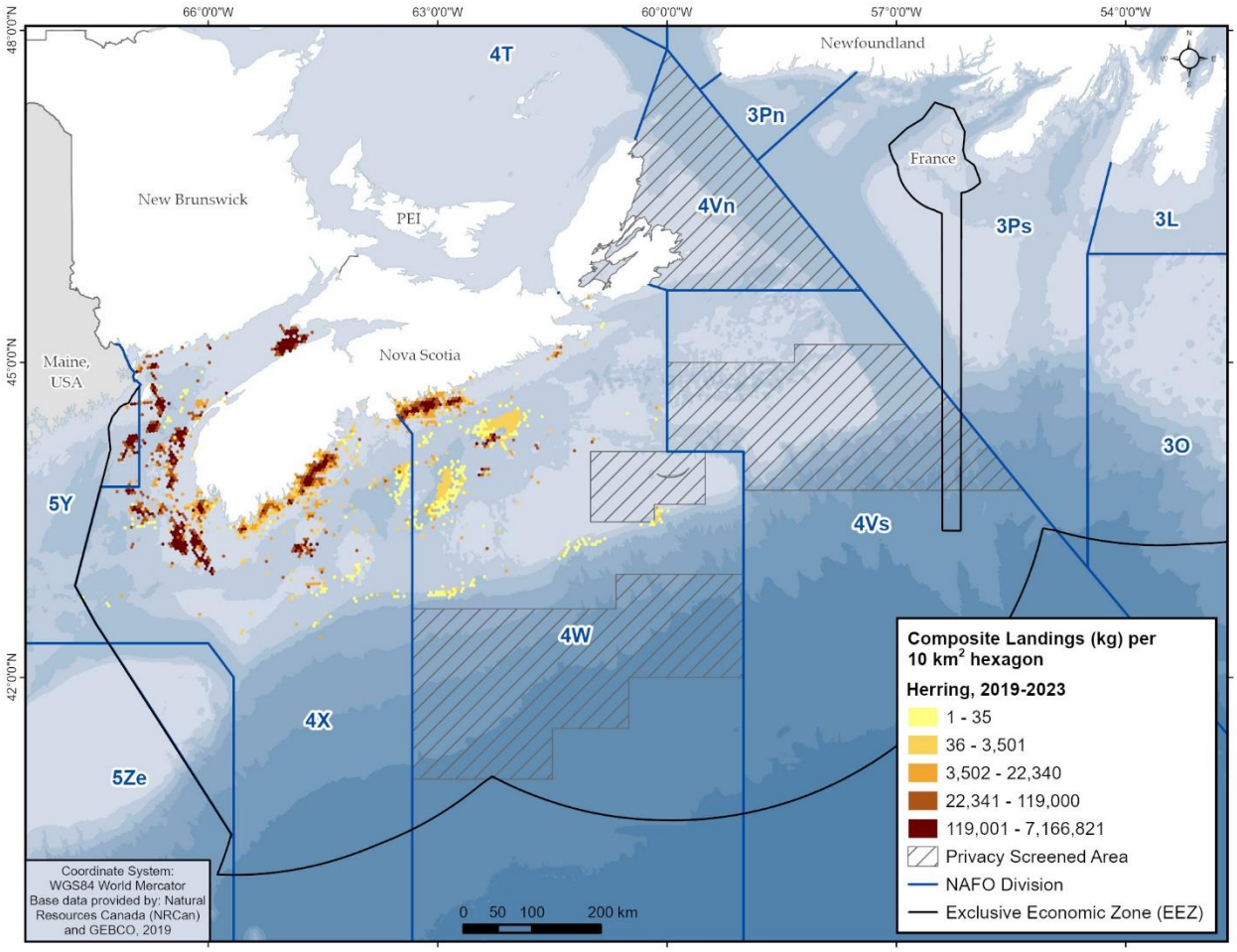

Figure 27. Herring Landings, 2019-2023

Mackerel (Figure 28)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Not in MSC program.

The commercial Mackerel fisheries in the Maritimes Region were closed for the entirety of the 2022 and 2023 seasons. A small Mackerel bait fishery (gillnet and handline) reopened starting in 2024, but the commercial fisheries remain closed through 2026. When the fishery was open, inshore gillnet and trap net fisheries for Atlantic Mackerel (*Scomber scombrus*) took place primarily in June and July in Nova Scotia (Figure 28). In late summer and fall, a Mackerel handline fishery operated and herring purse seine and weir fisheries also landed Mackerel. Mackerel is a bycatch of the Silver Hake trawl fishery in Emerald and LaHave Basins and is also a bycatch in small quantities on longline gear. Figure 28 shows mackerel landings by all gear types. However, only 36.4 percent of landed mackerel weight is included in the map because of lack of reported coordinates, especially in the bait and trap net fisheries. Over 30 percent of mackerel landings are from the bait fishery (gillnet and handline) and most bait fisheries have no coordinates. An IFMP for Mackerel is published with more details on the management of the fishery (DFO 2022a). In recent years, significant Mackerel closures resulted in landings declining from about 1,000 tonnes in 2021 to about 50 tonnes in 2022-2023. The total weight of Mackerel landings declined by 48.2 percent compared to the period of 2014-2018.

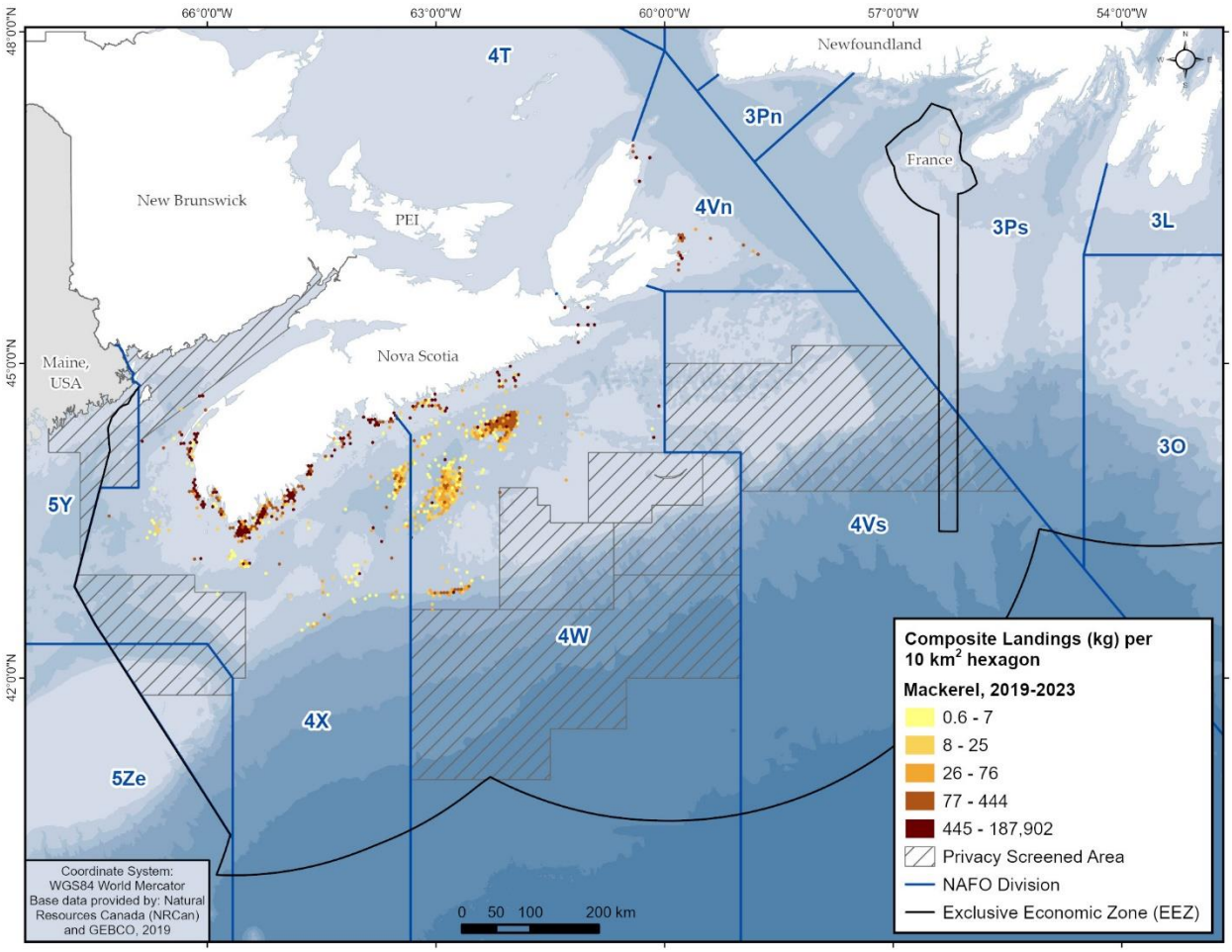

Figure 28. Mackerel Landings, 2019-2023

Herring and Mackerel Gillnet (Figure 29)

The herring and mackerel gillnet fisheries are vessel-based using set or fixed and drift gillnet gear and are primarily active from April to November. Gillnets are also used in recreational and bait fisheries for herring and mackerel. Gillnets operate mainly in coastal Nova Scotia. The inshore herring gillnet fisheries east of Halifax and off Port Mouton have become well established since 1996 (DFO 2021a).

The Eastern Shore herring gillnet fishery occurs from September 15 to December 31 in the spawning areas off Eastern Nova Scotia with a 2023 TAC of 4,969.4 tonnes, an increase from a TAC of 4,600 tonnes in 2019. The Little Hope herring gillnet fishery operates from August 15 to October 31 in the spawning areas off Port Mouton with a 2023 allocation of 8,392 tonnes, down from 9,700 tonnes in 2019. The 4WX herring fishery operates from January 1 to December 31 in the spawning areas off Southwest Nova Scotia, including the Bay of Fundy, under a 2023 TAC for 21,000 tonnes, with fixed gear allocated 4,166.4 tonnes. The 4WX herring fishery TAC has decreased since 2019, when it was 35,000 tonnes, with fixed gear allocated 6,944 tonnes. Since 2023, the herring gillnet fishery has been subjected to 100 percent dockside monitoring coverage.

Landings by inshore, limited entry, fixed gear (trap and gillnet) fisheries are subject to quotas or allocations except as noted with respect to a directed Eastern Shore and Port Mouton fishery. In Maritimes Region, there are 1,557 set or fixed herring gillnet licences, 398 herring drift gillnet licences, 1,585 set or fixed mackerel gillnet licences, and 45 mackerel drift gillnet licences.

The mackerel TAC of 4,000 tonnes that existed in 2021 for NAFO subareas 3 and 4 was subsequently reduced to 500 tonnes, and the commercial fishery was closed entirely beginning in 2022. The Atlantic mackerel stock remains in the Critical Zone. The total weight of herring and mackerel gillnet landings increased by 86.8 percent compared to the period of 2014-2018.

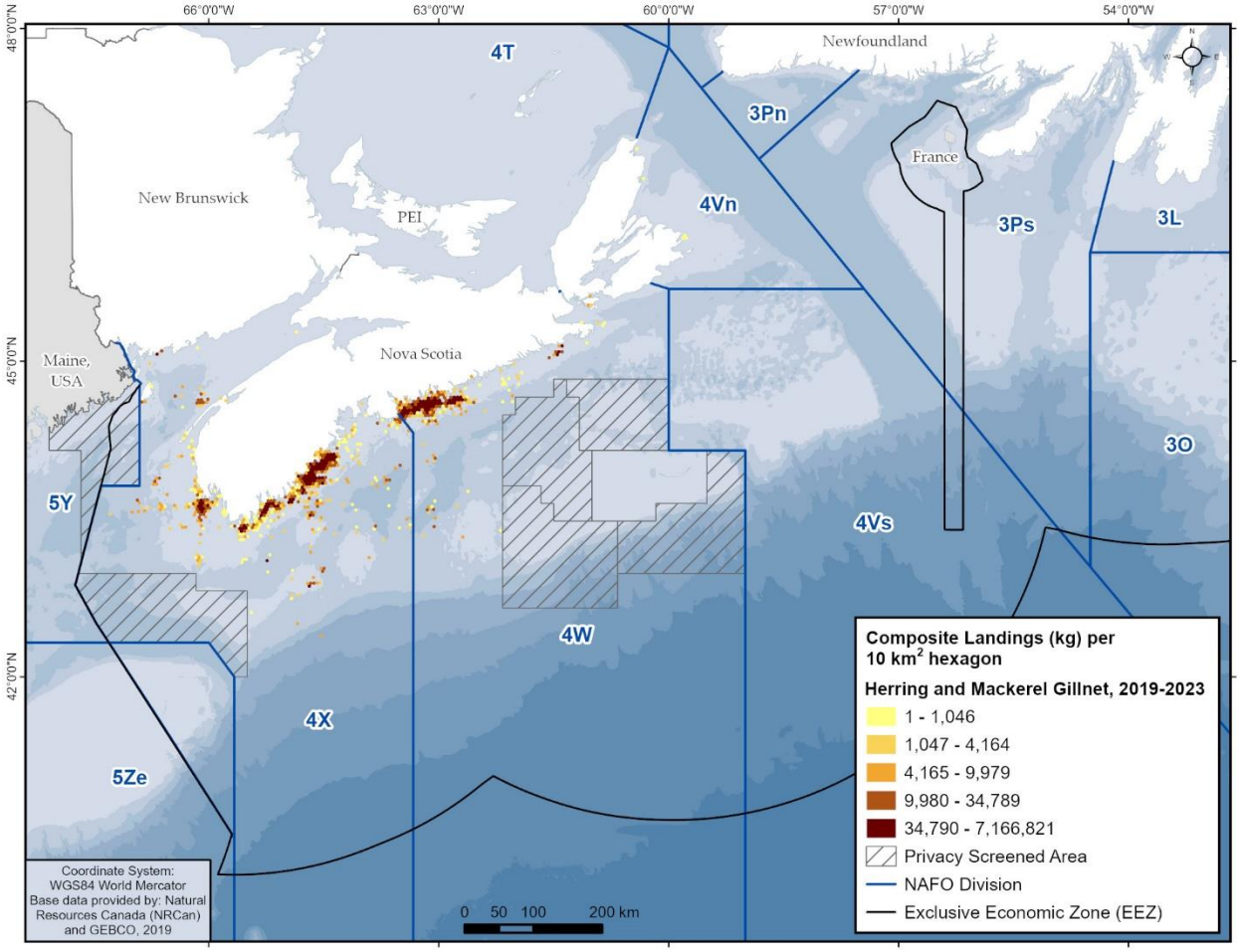

Figure 29. Herring and Mackerel Gillnet Landings, 2019-2023

Purse Seine (Figure 30)

The 4WX purse seine herring fishery occurs in the spawning areas off Southwest Nova Scotia, including the Bay of Fundy. The 4WX herring fishery operates from January 1 to December 31 and had a 2023 TAC of 21,000 tonnes, of which purse seine gear had 16,665.6 tonnes. The 4WX herring fishery TAC has decreased since 2019, when it was 35,000 tonnes, of which purse seine gear had 27,776 tonnes. The Georges Bank herring fishery occurs in the offshore portion of Herring Fishing Area 20, located within NAFO subarea 5Z and operates from January 1 to December 31 with a 2023 allocation of 1,000 tonnes. There are currently 33 vessel-based purse seine licences in Maritimes Region. Purse seines have the largest volume of reported landings by gear type in the herring fishery. Landings by the purse seine fleet accounted for 57.3 percent of all herring landings. The largest proportion of the purse seine catches come from the spawning grounds and juvenile mixing areas. The purse seine fleet has 100 percent dockside monitoring coverage throughout the region. The total weight of purse seine landings (mostly herring) declined by 39.8 percent compared to the period of 2014-2018, following reductions in the TAC.

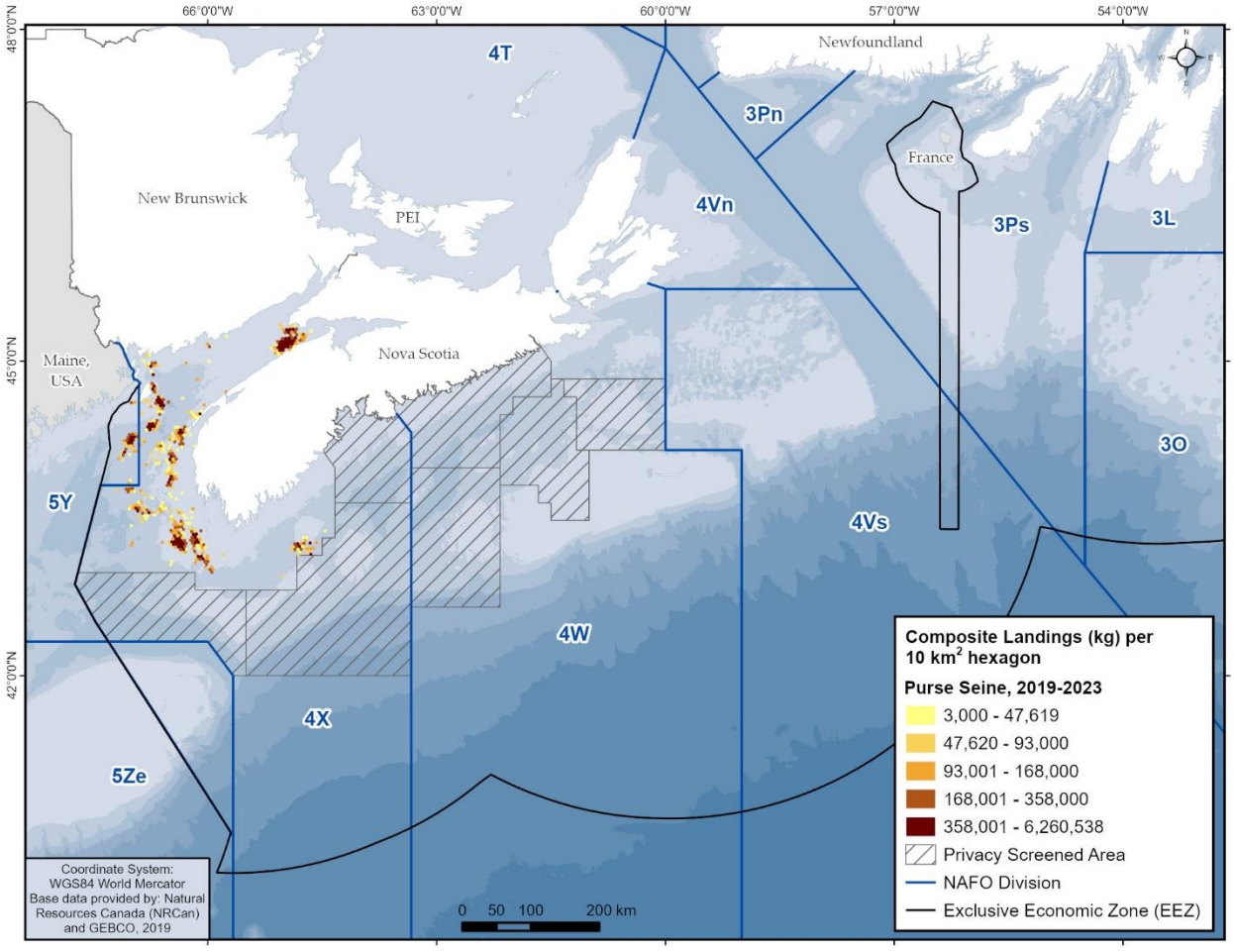

Figure 30. Purse Seine Landings, 2019-2023

Large Pelagics (Figure 31)

The large pelagics species grouping shown in Figure 31 includes Swordfish (*Xiphias gladius*), Albacore Tuna (*Thunnus alalunga*), Bigeye Tuna (*Thunnus obesus*), Bluefin Tuna (*Thunnus thynnus*), Yellowfin Tuna (*Thunnus albacares*), as well as Skipjack Tuna, Mahi-mahi, Blue and White Marlin, and sharks (Blue, Mako, and Porbeagle). Pelagic longlines and harpoon gear may be used on the same trip and are permitted to operate from Georges Bank to Flemish Cap east of Newfoundland when Swordfish migrate inside and beyond Canada's exclusive economic zone (EEZ). The pelagic longline fishery is a multi-species fishery as Swordfish longline licence conditions are used in conjunction with licence conditions for the other tunas (e.g., Albacore, Bigeye, and Yellowfin) and together identify authorized directed species, as well as permitted bycatch species (e.g., shark and marlin). The Canadian large pelagic longline fisheries that direct for, or incidentally catch, Swordfish operate from April to December.

Pelagic longlines can be tens of kilometres long. However, only a single coordinate for each gear deployment is mapped. Therefore, the landed weights for each catch are attributed to a single location rather than distributed along the length of the longline, likely underestimating the pelagic longline fishery footprint. Pelagic longline fishing footprints have been mapped using Vessel Monitoring System (VMS) data (Butler et al. 2019).

Swordfish harpooning occurs from June to late August primarily along the edge of Georges and Browns Banks, targeting large females basking in surface waters during daylight. As the fishing season progresses, longline fishing effort generally moves from west to east and back again, and from the offshore to the inshore along the edge of the continental shelf. This pattern occurs as a result of following Swordfish movements associated with seasonal surface water warming trends, and a northward flow of the Gulf Stream.

A directed Porbeagle Shark (*Lamna nasus*) fishery no longer exists, but a 185-tonne TAC is applied to all incidental bycatch landings from all gear types (Bowlby et al. 2024). Porbeagle Sharks are assessed as Endangered by COSEWIC. These sharks are primarily landed from groundfish fisheries. Fishers must promptly release all live Porbeagle Sharks in the manner that causes the least harm to the shark and are only authorized to retain dead Porbeagle Sharks.

Blue Sharks (*Prionace glauca*) are currently almost always discarded. These sharks are assessed as Endangered by COSEWIC. Through the International Commission for the Conservation of Atlantic Tunas (ICCAT), Canada has agreed to not increase current levels of mortality on Blue Sharks. When retained, there is a precautionary allocation of 250 tonnes.

Fisheries with a bycatch of Shortfin Mako Shark (*Isurus oxyrinchus*) include pelagic longline, groundfish gillnet, and groundfish longline, with bycatch in groundfish occurring mostly in areas south of shelf waters off Nova Scotia near the Gulf Stream. In 2019, fishers were only authorized to retain dead Shortfin Mako Sharks. As of 2020, the Swordfish longline fleet was prohibited from retaining all Shortfin Mako Sharks. In 2021, all fisheries in Maritimes Region prohibited the retention of Shortfin Mako Sharks, which continues for all fisheries in 2025. In addition, all landings are 100 percent dockside monitored at the time of offloading. Most landed weights for sharks in 2019-2023 were of Shortfin Mako Sharks in 2019 only.

The total weight of Porbeagle, Mako and Blue Shark landings declined by 85.5 percent compared to the period of 2014-2018, due to the measures noted above, rather than decreased catch rates. There is no separate map depicting shark bycatch due to the minimal landed weights.

The Bluefin Tuna fishery directs using the following gear: angling, tended line, electric harpoon and trap net. Additional information is provided in subsequent descriptions and figures

for Bluefin Tuna (Figure 32), Other Tuna (Figure 33), and Swordfish (Figure 34). The total weight of large pelagics landings declined by 11.1 percent compared to the period of 2014-2018.

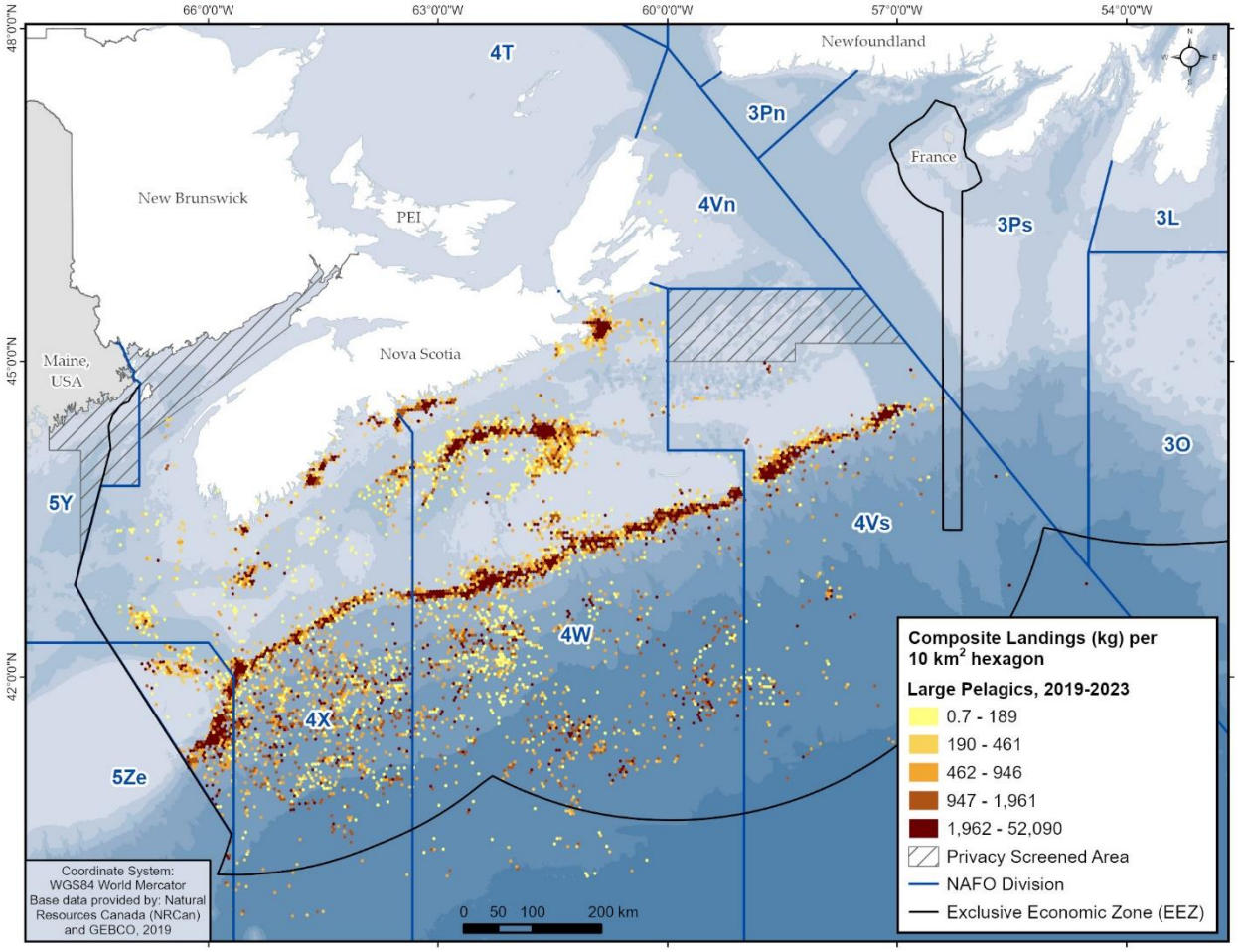

Figure 31. Large Pelagics Landings, 2019-2023

Bluefin Tuna (Figure 32)
SARA Status: No status.
COSEWIC Status: Endangered.
MSC Status: Not in MSC program.

The Atlantic Bluefin Tuna (*Thunnus thynnus*) fishery is conducted inter-regionally in the following areas: the Hell Hole between Browns and Georges Banks off southwest Nova Scotia; off Grand Manan, NB; St. Margaret's Bay, NS; south of the Canso Causeway, NS; off Cape George in the eastern part of the Northumberland Strait; off North Cape and East Point, PEI; in St. Georges Bay north of the Canso Causeway; and off the southern coast of Newfoundland. Figure 32 shows landed Bluefin Tuna catch in Maritimes Region. Since 1996, Bluefin Tuna have been caught off the coast of Nova Scotia between the Hell Hole and Canso fisheries, particularly off Halifax. Bluefin are also caught along the Scotian Shelf edge as a bycatch of the pelagic longline fleet directing for Swordfish and tuna species other than Bluefin Tuna. NAFO area 4Vn (east of Cape Breton) is closed to Bluefin Tuna harvests, with the exception of two licences.

Bluefin Tuna gears include: angling gear (most fishers use rod and reel with single line and hook); tended line (line with one hook attached at all times to a fishing vessel); trap nets (only used in St. Margaret's Bay, Nova Scotia); electric harpoon (barbed lance or spear connected to an onboard electrical device); and pelagic longline (3.5 mm line suspended by floats, with a series of baited hooks attached at regular intervals fishing the upper water column). Pelagic longlines are 30 to 50 miles long, have 600-1,500 baited hooks per set, and are used by offshore tuna licence and Swordfish and other tuna licence holders. There is no directed Bluefin Tuna fishery using longline, as it is only caught as bycatch

Canadian catch limits for Bluefin Tuna are set by the International Commission for the Conservation of Atlantic Tunas. The Bluefin Tuna fishing season runs from June 24 to June 23 annually, with the main directed fishery running from late July until mid-to-late November. A catch and release charter fishery is also permitted during the commercial catch and retain season for existing Bluefin Tuna licence holders. The charter fishery takes place during September and October off Nova Scotia, July to October in the Gulf of St. Lawrence, and July 15 to December 31 in Newfoundland and Labrador (DFO 2017). The Bluefin Exclusion Zone along coastal Nova Scotia is closed from August 1 until the end of the season to prevent Bluefin Tuna bycatch. The total weight of Bluefin Tuna landings increased by 42.3 percent compared to the period of 2014-2018.

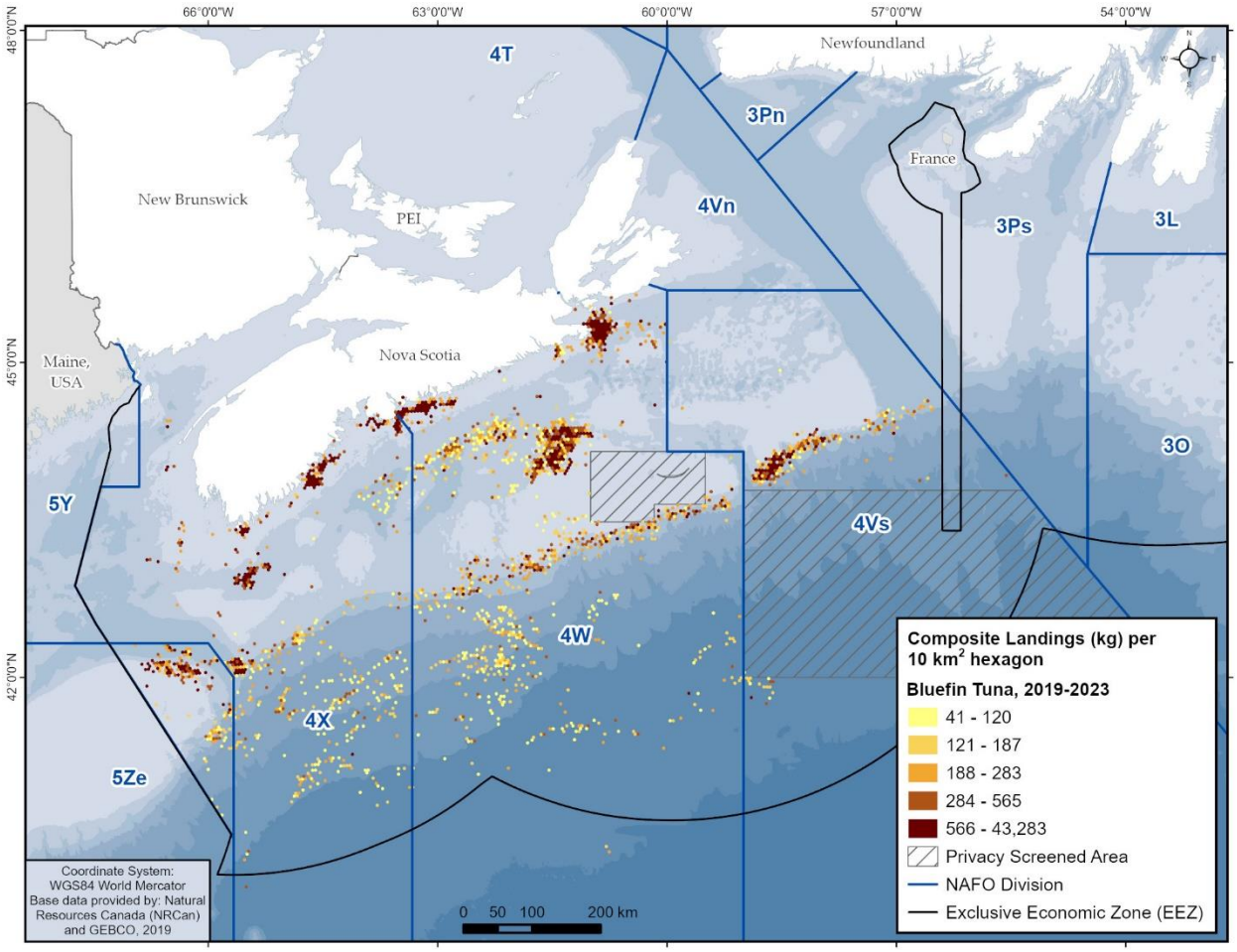

Figure 32. Bluefin Tuna Landings, 2019-2023

Other Tuna (Figure 33)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Albacore tuna (*Thunnus alalunga*) and Yellowfin tuna (*Thunnus albacares*) fisheries certified as sustainable in January 2024.

The Albacore, Bigeye, Skipjack and Yellowfin Tuna fishery is known as the "Other Tuna" fishery. The fishery occurs from June to late November. Tunas are highly migratory and catch limits are set by the International Commission for the Conservation of Atlantic Tunas. The directed Other Tuna fishery began in the mid-1990s, as these species were previously bycatch in the Swordfish fishery. In addition to longline, trolling gear is used where multiple lines with hooks are towed behind a vessel. Pelagic longlines can be tens of kilometres long. However, only a single coordinate for each gear deployment is mapped. Therefore, the landed weights for each catch are all attributed to a single location rather than distributed along the length of the longline, likely underestimating the pelagic longline fishery footprint. Pelagic longline fishing footprints have been mapped using Vessel Monitoring System (VMS) data (Butler et al. 2019).

The fishery occurs along the shelf edge and slope and in the area known as the Hell Hole. The slope of the western Scotian Shelf is more important for this fishery than the eastern Scotian Shelf slope (Figure 33). The same management areas are in place as for the Swordfish longline fishery. Fishing Zone 1 (Gulf of St. Lawrence) and Fishing Zone 2 (Bay of Fundy) are closed to the fishery. Fishing with longline gear is not permitted in the Hell Hole (Northeast Channel) from July to November to reduce Bluefin Tuna bycatch; however, trolling for other tunas is permitted year-round in the Hell Hole. The Bluefin Exclusion Zone along coastal Nova Scotia is closed from August 1 until the end of the season to prevent Bluefin Tuna bycatch (DFO 2016). The total weight of Other Tuna landings increased by 29.1 percent compared to the period of 2014-2018.

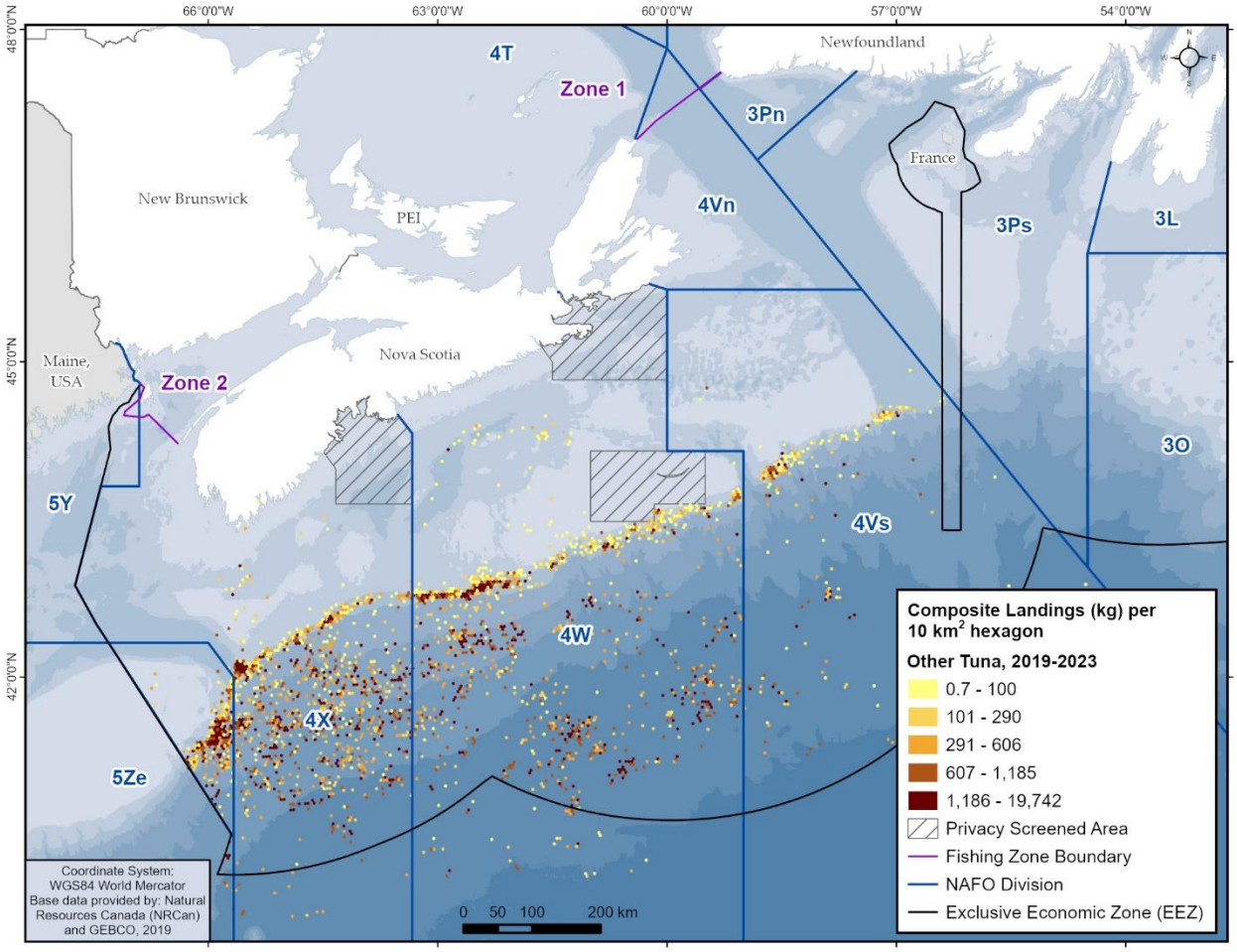

Figure 33. Other Tuna Landings, 2019-2023

Swordfish (Figure 34)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Swordfish harpoon fishery initially certified as sustainable in 2010, and swordfish longline fishery initially certified as sustainable in 2012. Both fisheries were re-certified in January 2024 with the addition of several gears (trolling, rod and reel, and buoy), in addition to longline and harpoon.

North Atlantic Swordfish and tuna stocks are under the management of the International Commission for the Conservation of Atlantic Tunas. Pelagic longlines and harpoon gear are permitted in this fishery off Nova Scotia and Newfoundland. Pelagic longline is the primary gear used in the directed Swordfish fishery. Swordfish longline licence conditions are used in conjunction with licence conditions for the Other Tunas (e.g., Albacore, Bigeye, and Yellowfin) and together identify the authorized directed species as well as permitted bycatch species (e.g., shark and marlin). The longline fishery extends from Georges Bank to the Flemish Cap east of Newfoundland when Swordfish, the main species targeted, migrate inside and beyond Canada's EEZ (Figure 34). Canadian large pelagic longline fisheries that direct for Swordfish operate from April to December.

Swordfish longline licences were permitted the use of longline gear and harpoon gear. In 2021, the additional gears of angling, handline, and buoy gear were introduced. Pelagic longlines can be tens of kilometres long. However, only a single coordinate for each gear deployment is mapped. Therefore, the landed weights for each catch are all attributed to a single location rather than distributed along the length of the longline, likely underestimating the pelagic longline fishery footprint. Pelagic longline fishing footprints have been mapped using Vessel Monitoring System (VMS) data (Butler et al. 2019).

The harpoon fishery occurs from June to late August, along the edges of Georges and Browns Banks, targeting large female Swordfish basking in surface waters during daylight (DFO 2016). As the fishing season progresses, longline fishing effort generally moves from west to east and back again and from offshore to inshore along the edge of the continental shelf. This pattern occurs as a result of following Swordfish migrations associated with seasonal warming trends of surface water temperature, and the northward flow of the edge of the Gulf Stream. The total weight of Swordfish landings declined by 26.6 percent compared to the period of 2014-2018. This decline has occurred in recent years, when many Maritimes-licenced vessels have been travelling to the Newfoundland and Labrador region, where Swordfish have become more numerous.

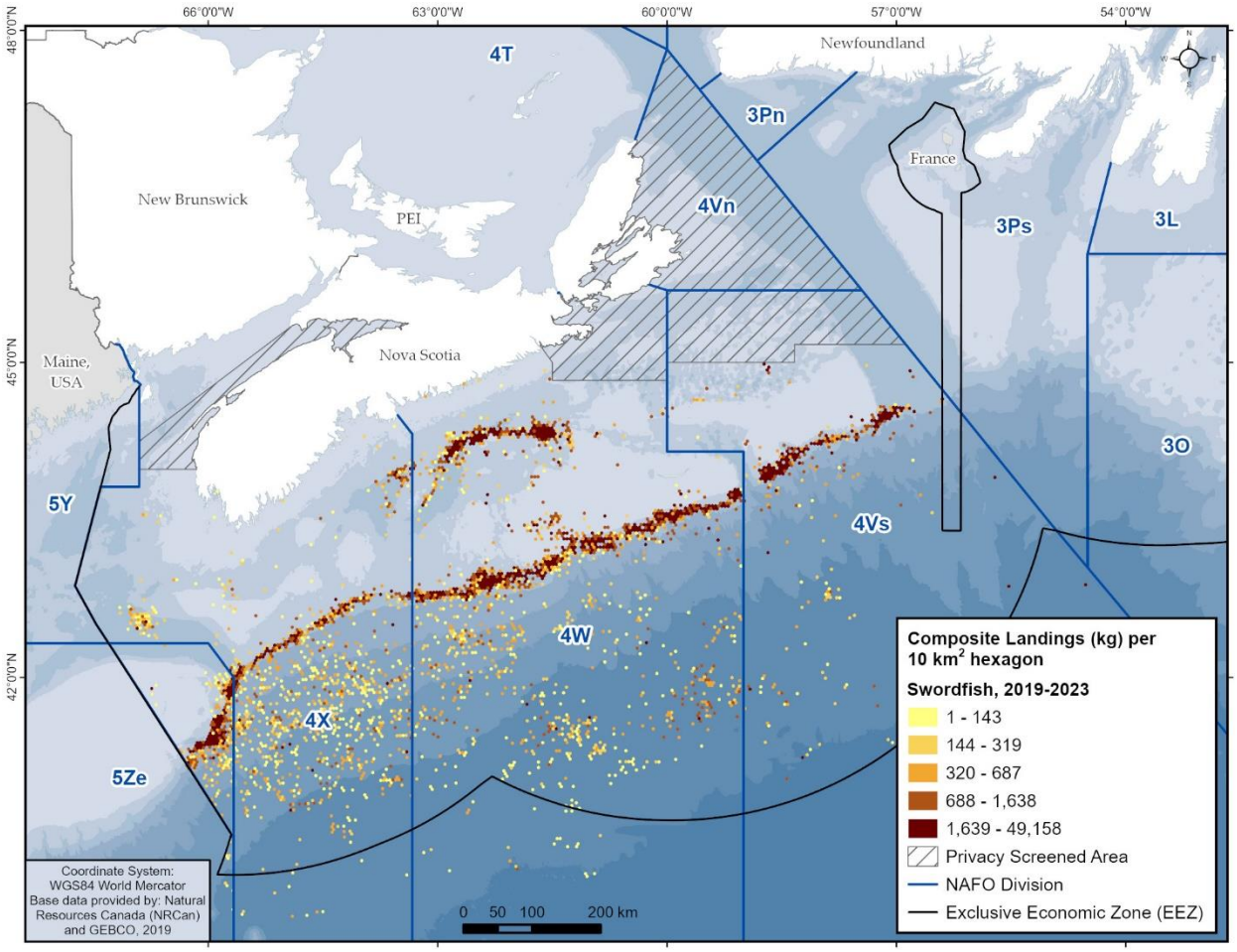

Figure 34. Swordfish Landings, 2019-2023

Snow Crab (Figure 35)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Scotian Shelf snow crab trap fishery certified as sustainable in July 2012.

The Snow Crab (*Chionoecetes opillio*) fishery operates in NAFO Divisions 4VW in Crab Fishing Areas (CFAs) known as North-Eastern Nova Scotia (N-ENS – CFA 20-22), S-ENS (CFA 23, CFA 24 East) and NAFO 4X (CFA 24 West) (Figure 35). Snow Crab fishable bottom can be patchy within areas, with depth preferences for basins in the range of 160 to 300 m and temperatures < 4 °C (J. Choi, pers. comm.). In southern areas of N-ENS (CFA 20-22) and S-ENS (CFAs 23-24) the fishable bottom is not evenly distributed and extends further offshore. The Snow Crab fishery uses baited conical traps. In N-ENS the fishery historically operated with a spring season from early April to mid-to-late May and a summer season from mid-July to mid-August, but since 2019 has operated with a continuous early April to mid-August season. In S-ENS the season used to run from early April until the end of August, but since 2024 the season extends from mid-March to the end of August. The NAFO 4X (CFA 24 West) season typically opens November 1 and closes March 31 (DFO 2013). The 4X (CFA 24 West) Snow Crab fishery was closed for the 2018-2019 season. The TAC in this fishing area was 55 tonnes in 2023, and varied from 55 to 125 tonnes between 2019 and 2023. The combined TAC for remaining Crab Fishing Areas was 8,323.83 tonnes in 2023, and varied from 7,290 to 9050.97 tonnes between 2019 and 2023. A portion of the TAC for each year includes an allocation to contribute funds for the annual Snow Crab survey. The total weight of Snow Crab landings declined by 13.2 percent compared to the period of 2014-2018.

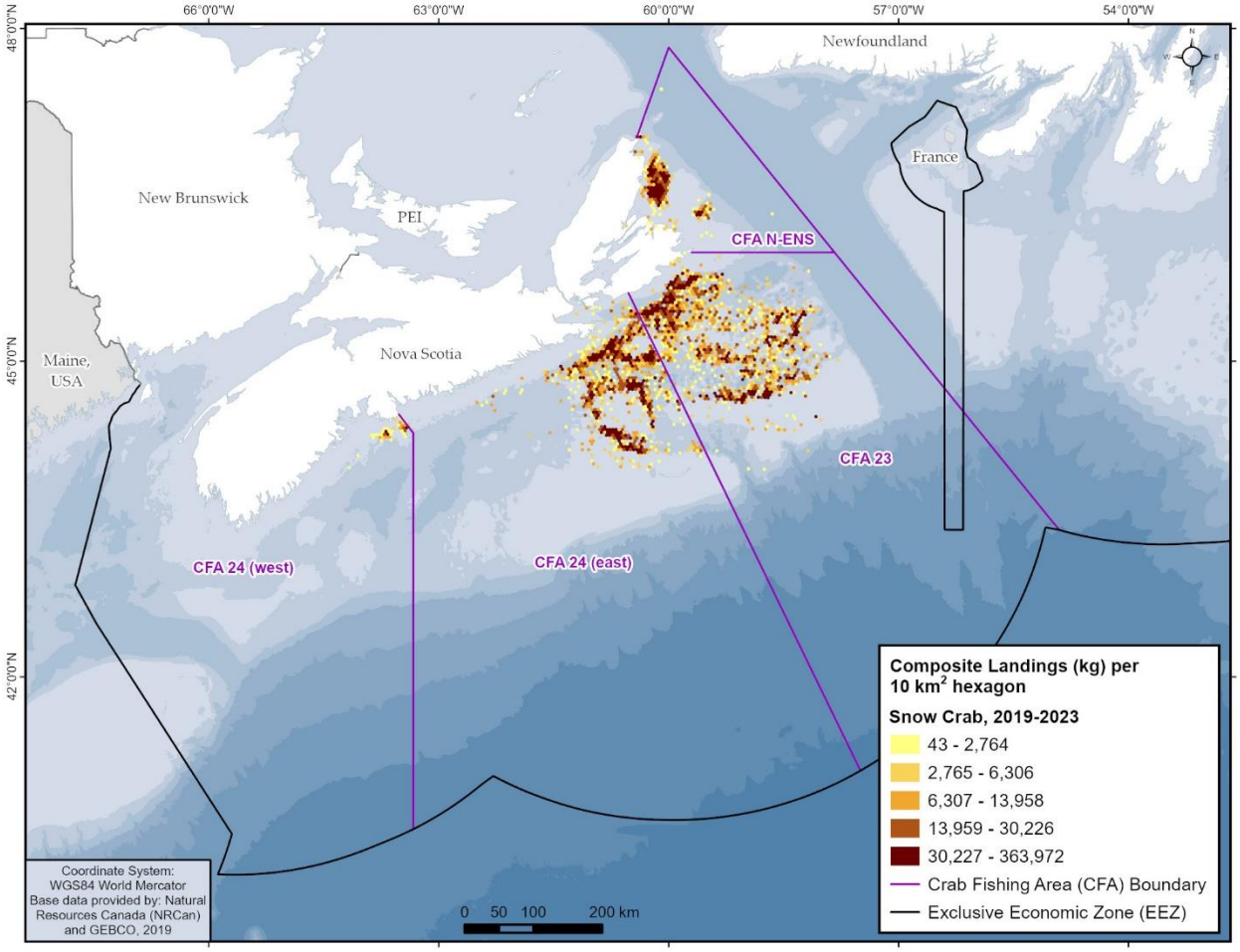

Figure 35. Snow Crab Landings, 2019-2023

Other Crab (Figure 36)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Not in MSC program.

Fisheries for Red Crab, Jonah Crab, and Rock Crab are smaller in scale than the Snow Crab fishery. There are few licence holders in each fishery and a variety of management units are used, which are different in each crab fishery, including Crab Fishing Areas (CFAs), Lobster Fishing Areas (LFAs), and NAFO divisions. Most Jonah Crab landings are from the Disputed Zone Lobster (Area 38B) fishery and surrounding areas, near Roseway Bank, and northeast of Jordan Basin (Figure 36). A Red Crab fishery exists in deep waters along the shelf edge (fishing occurs in NAFO Divisions 4WX and 5Z at more than 200 fathoms depth), with an annual TAC of 300 tonnes. There are only two active Red Crab licence holders. Since this fishery does not occur in the same areas as Jonah and Rock Crab fisheries, all Red Crab records were removed due to privacy screening requirements. Rock crab is primarily caught in Passamaquoddy Bay and in the Disputed Zone. Crab caught in the inshore Lobster fishery are not displayed in the map due to lack of geographic coordinates. A commercial Green Crab fishery exists in the region (Southwest Nova Scotia and Eastern Nova Scotia) with reported landings of 379 tonnes during this time period. Geographic coordinates were not recorded by Green Crab fishers; therefore, those landings are not displayed on Figure 36. No experimental crab fisheries are currently operating. Figure 36 includes bycatch landings of Other Crab species. The total weight of Other Crab landings declined by 10.2 percent compared to the period of 2014-2018.

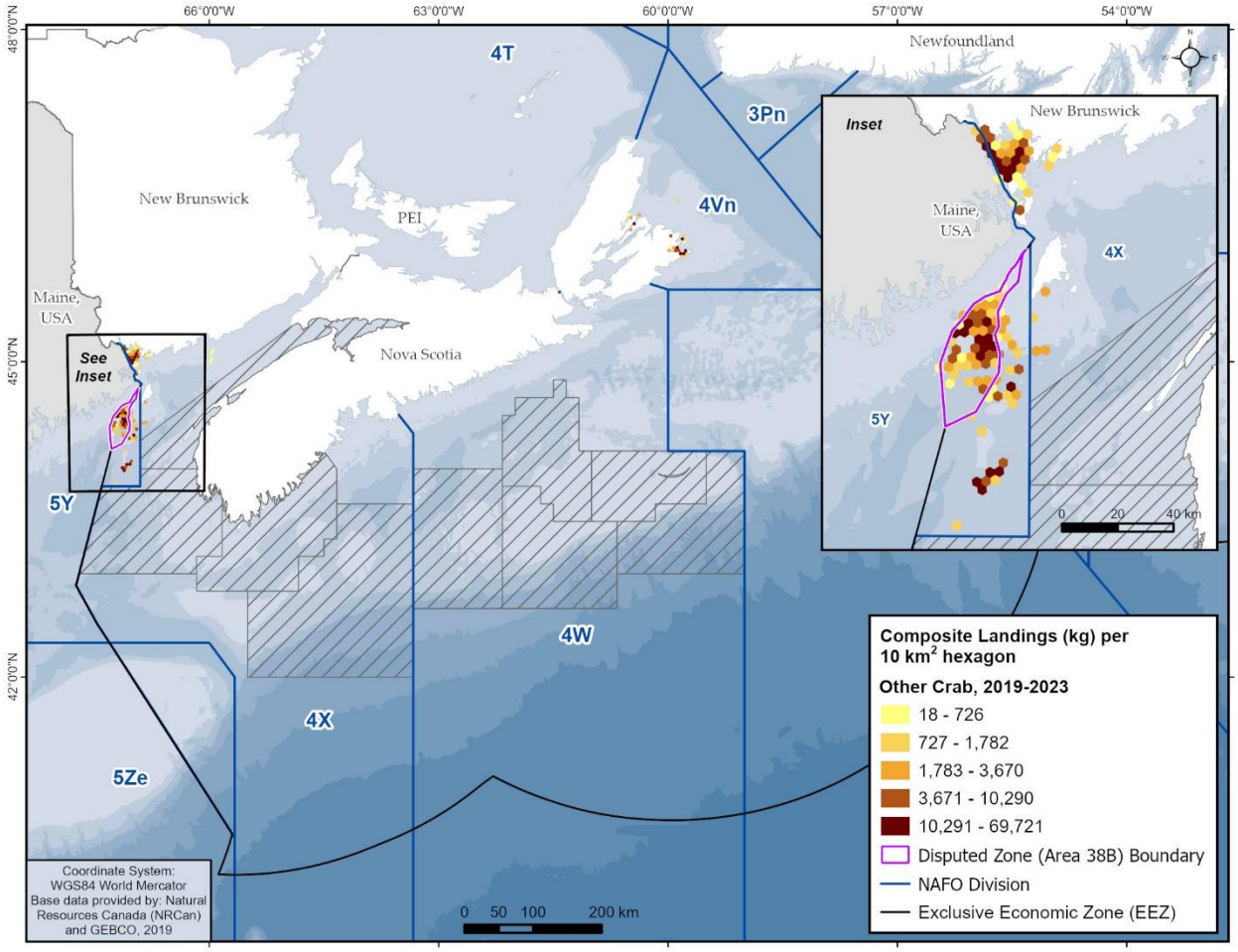

Figure 36. Other Crab Landings, 2019-2023

Scallop (Figure 37)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: The Bay of Fundy and Scallop Fishing Area 29 West of 65° 30’ W longitude certified as sustainable in July 2013 (Full Bay Fleet only). The Offshore Scallop fishery was certified in March 2010.

All scallop dredge fishing in the Bay of Fundy takes place in Scallop Fishing Areas (SFA) 28A, 28B, 28C, and 28D as described in the *Atlantic Fishery Regulations, 1985* (DOJ 1985). The various fleet sectors are eligible by licence condition to fish one or more areas as follows: Full Bay: SFA 28A, 28B, 28C and 28D; Mid Bay: SFA 28B and 28C only; and Upper Bay: SFA 28C and 28D only.

These areas can be further sub-divided into areas that are closed by either regulation or variation orders that restrict fishing during all or part of the year. In addition, specific management measures are applied to broader Scallop Production Areas (SPA) that are designed to incorporate one or more scallop biological production areas and may fall within the boundaries of one or more of the regulated SFAs. SPA boundaries are described in variation orders and/or licence conditions whereas SFA boundaries are described in the *Atlantic Fishery Regulations, 1985*. Inshore scallop fishing also takes place in SFA 29 as described in the *Atlantic Fishery Regulations, 1985*. SFA 29 is divided into SFA 29 West of 65°30’ W longitude west to the 43°40’ Line and SFA 29 East of 65°30’ W longitude, east to Cape North and within the 12-nautical mile territorial sea. Two of the fleet sectors are eligible by licence condition to fish one or more areas as follows: Full Bay: SFA 29 West; Inshore: SFA 29 East, 64 licences eligible for SFA 29 West (DFO 2015).

The offshore scallop dredge fishery in Maritimes Region operates primarily on Georges and Browns Banks, German Bank, Western and Sable Banks, and Banquereau (Figure 37) and includes sea scallop (*Placopecten magellanicus*) and minimal landed catches of Iceland scallop (*Chlamys islandica*) that are only landed on Banquereau. Seasonal landings maps are displayed in Figures 38-41, and all maps display round weights rather than meat weights. There are five scallop licence holders operating east of Halifax and therefore the unit areas are privacy screened. To reduce data errors, the Scallop logbook data has been processed by the Scallop and Benthic Habitat Unit in DFO Science. The offshore scallop fishery occurs year-round in the Maritimes Region; however, not all areas are open year-round. German Bank is open from June 1 to November 15. The closure from the late fall to the spring is to avoid conflicts with the Lobster fishery that takes place in the area from late November until May 31. In addition, there were two specific closures on Georges Bank from 2019 to 2021: one to protect spawning Atlantic Cod (early February to March 31) and one to protect Yellowtail Flounder (June), which were discontinued in 2022 (DFO 2018b). The total weight of Scallop landings increased by 4.7 percent compared to the period of 2014-2018.

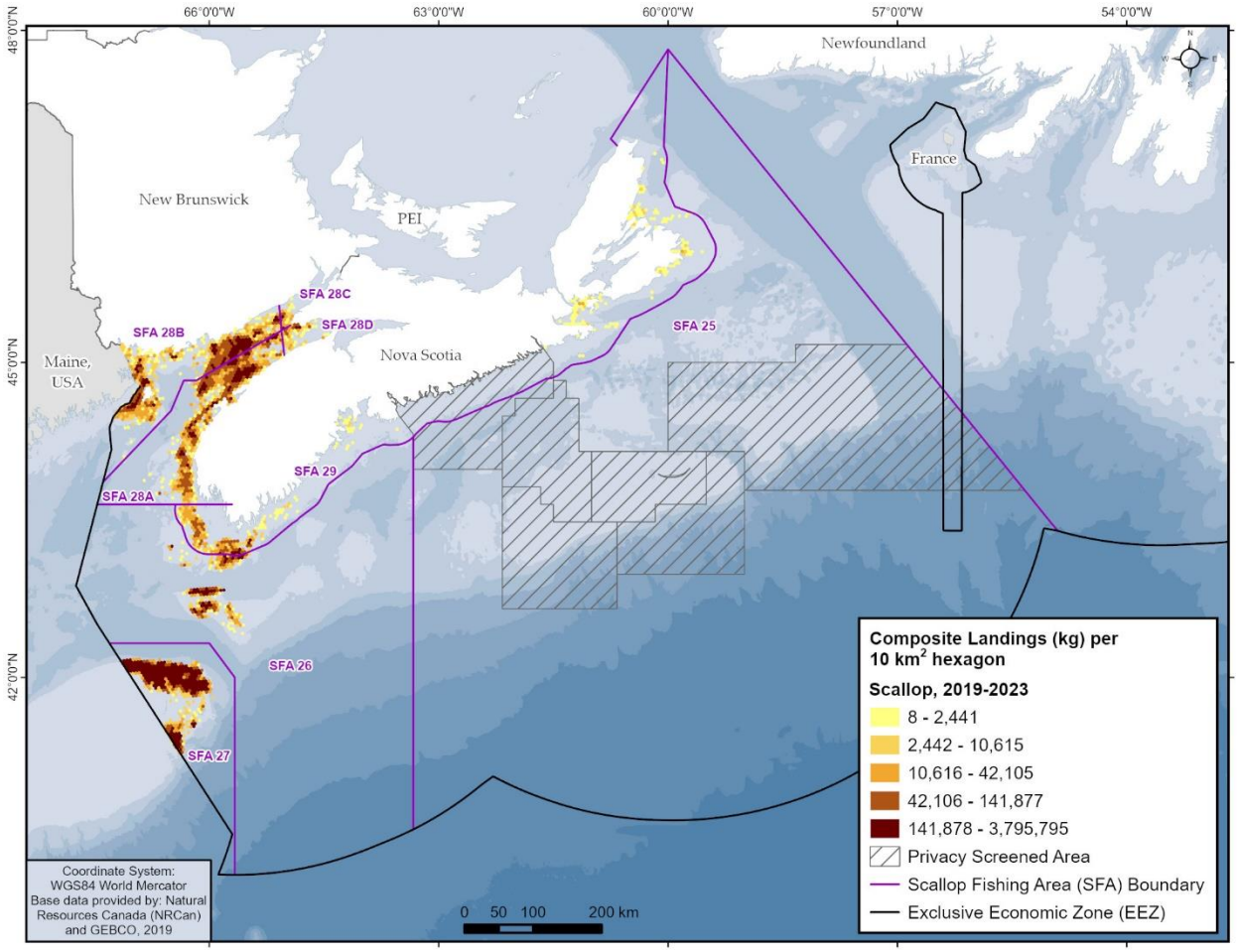

Figure 37. Scallop Landings, 2019-2023

Scallop Q1-Q4 (Figures 38 to 41)

Quarterly scallop maps are shown in Figures 38-41. Much of Georges Bank shows high landings year-round, reflecting the area's importance to the offshore fishery. There is little activity on the eastern Scotian Shelf during the winter. There are high landings in the area off Digby in the Bay of Fundy for much of the year, reflecting the importance of this area to the inshore fishery. A winter scallop fishery exists around Grand Manan and in the Passamaquoddy Bay area off southwest New Brunswick.

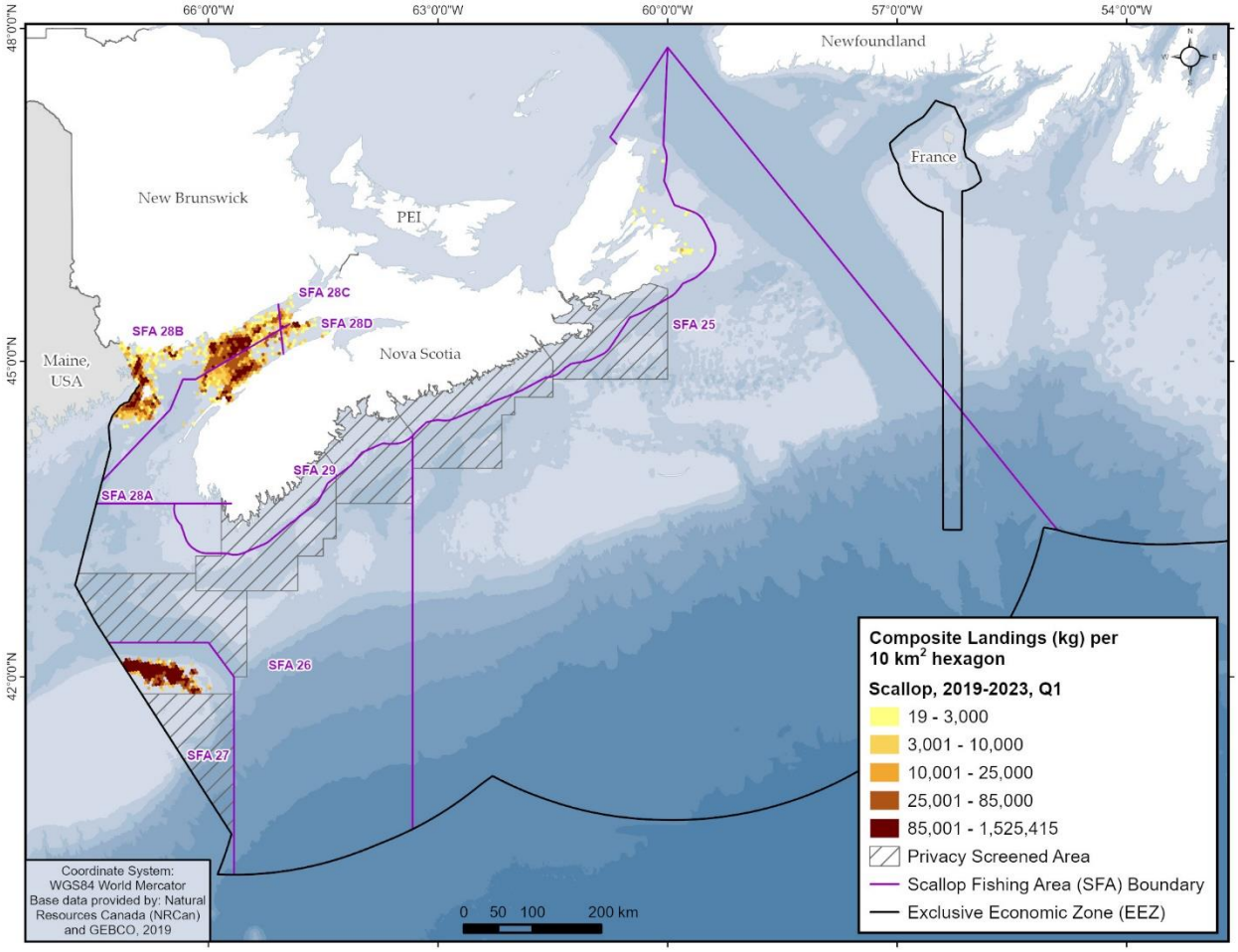

Figure 38. Seasonal Scallop Landings, Q1, January-March, 2019-2023

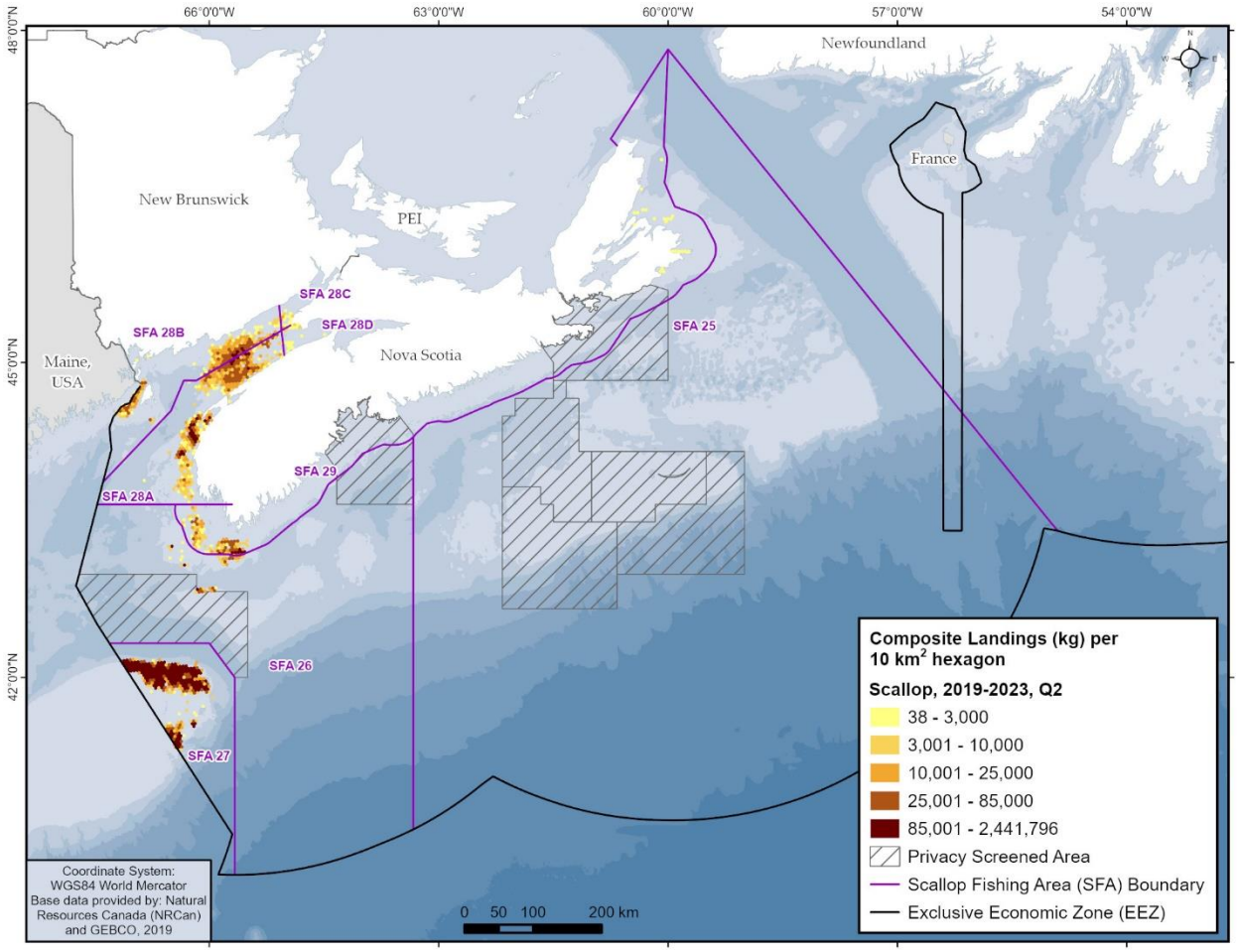

Figure 39. Seasonal Scallop Landings, Q2, April-June, 2019-2023

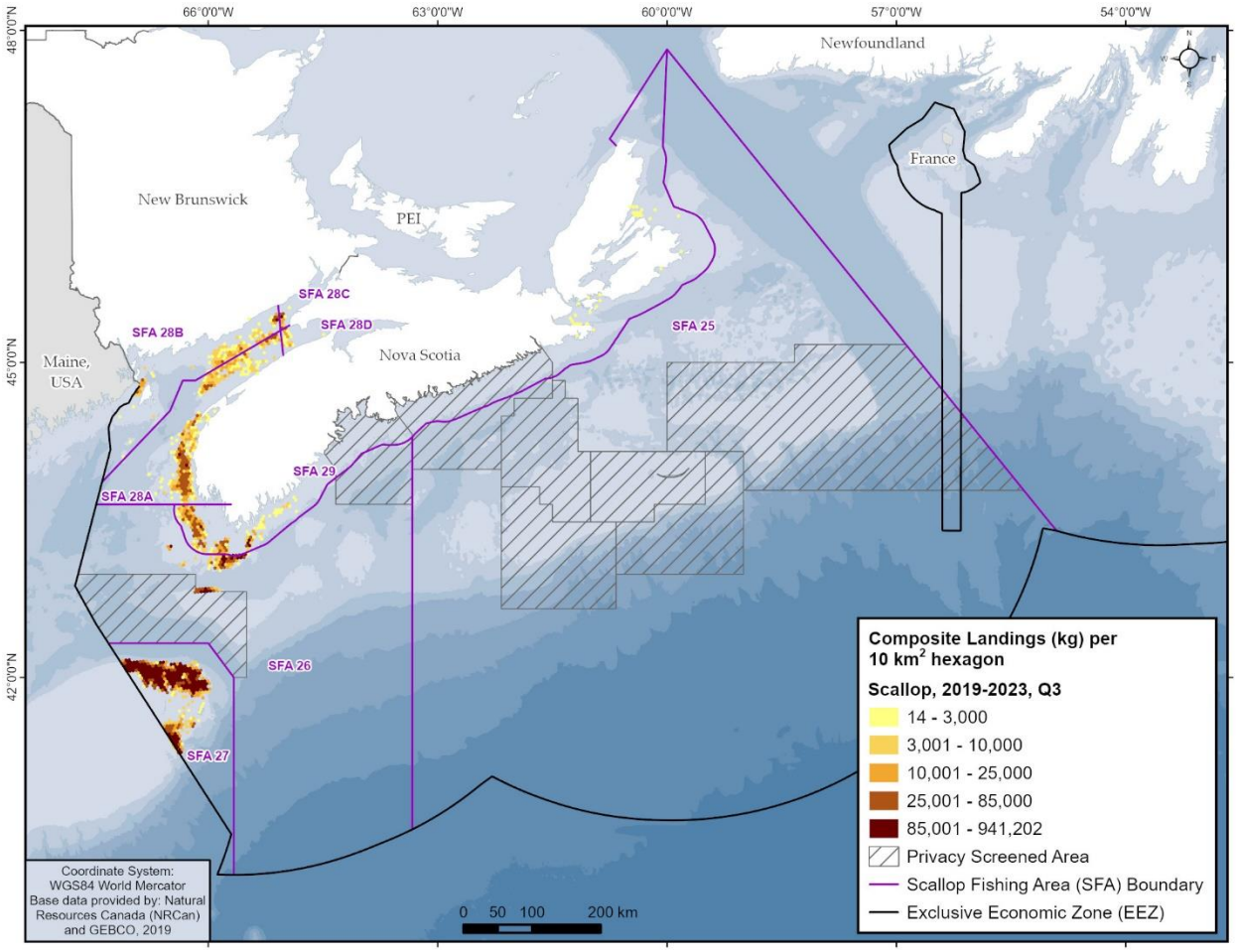

Figure 40. Seasonal Scallop Landings, Q3, July-September, 2019-2023

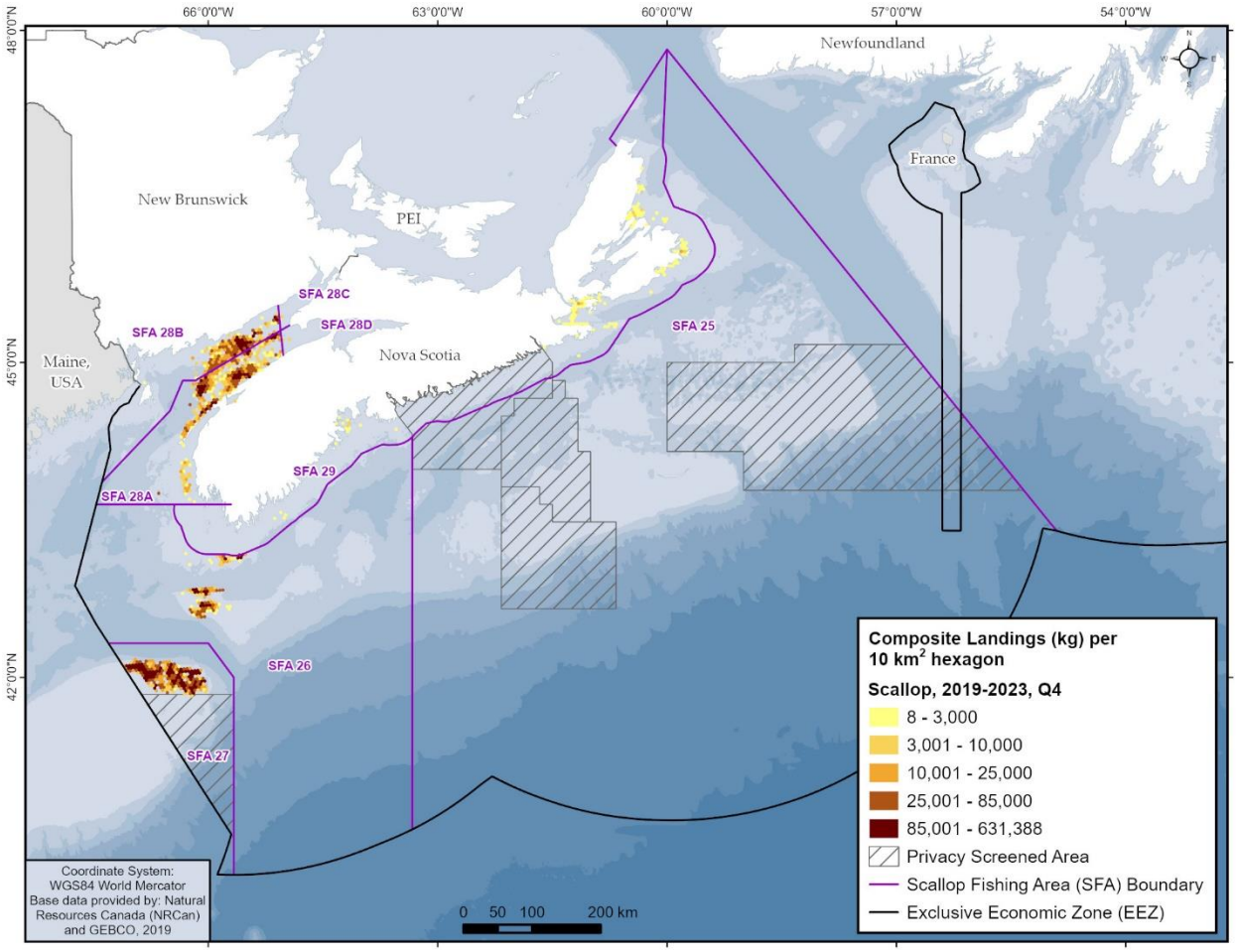

Figure 41. Seasonal Scallop Landings, Q4, October-December, 2019-2023

Offshore Clam (Figure 42)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Certified as sustainable in July 2012.

The offshore clam fishery is concentrated on offshore clam beds on Sable Island Bank and Banquereau (Figure 42), as well as on Grand Bank in NL Region. The fishery is conducted on a year-round basis commencing January 1, targeting Arctic Surf Clam (*Mactromeris polynyma*) on Banquereau and Ocean Quahog (*Arctica islandica*) on Sable Island Bank. Permission was obtained from licence holders to display landed weights. Specialized factory-freezer clam vessels operate year-round using hydraulic dredge gear. The three licences have equal allocations for Sable Island Bank/Banquereau and Grand Bank. The TAC between 2019 and 2023 was 20,943 tonnes on Banquereau and 14,756 tonnes on Grand Bank, for a total of 35,699 tonnes (DFO 2023e). Data entry errors in the database were corrected using two polygons provided by the licence holder that approximated the 100-m bathymetric contour around Sable Island Bank and Banquereau. The offshore clam fishery retains the following bycatch species that are also included in Figure 42: Northern Propeller Clams (*Cyrtodaria siliqua*) and Greenland Cockles (*Serripes groenlandicus*). The total weight of Offshore Clam landings increased by 11.9 percent compared to the period of 2014-2018.

A very small inshore Quahog (*Arctica islandica*) fishery exists off southwest NS and NB, but the data are excluded due to privacy policy.

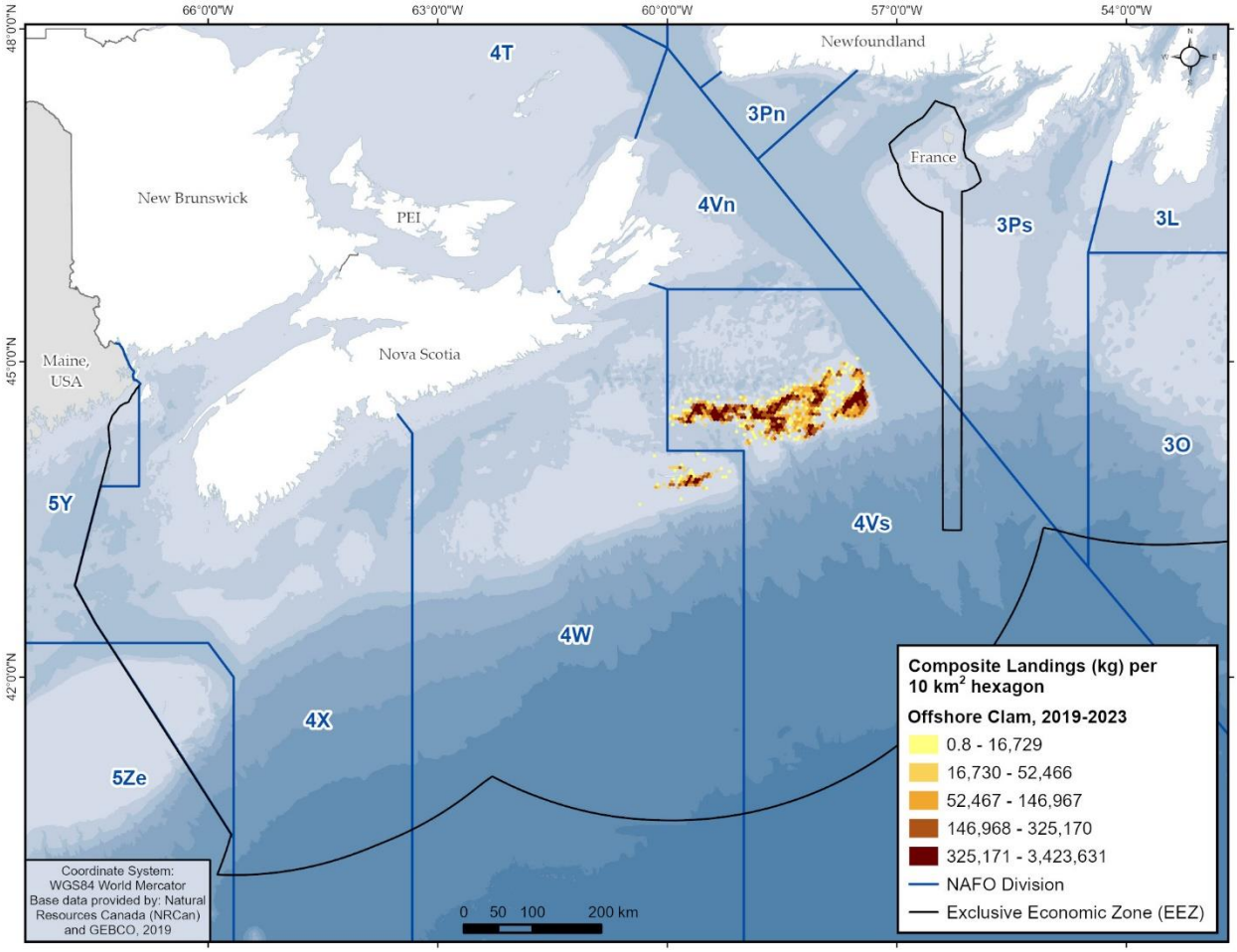

Figure 42. Offshore Clam Landings, 2019-2023

Shrimp (Figures 43 and 44)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Initially certified as sustainable in 2008; however, voluntarily withdrew from MSC certification in November 2024.

Two species of shrimp are harvested in the Canadian Northwest Atlantic. Northern Shrimp (*Pandalus borealis*) is most abundant and widespread in commercial quantities in 'holes' on the Scotian Shelf (Figure 43), and the Striped Shrimp (*Pandalus montagui*) is widely distributed from Davis Strait to the Grand Banks and is more abundant in northerly areas at shallower depths. Northern Shrimp is the only shrimp species of commercial importance in the Maritimes Region. The mobile shrimp fishery uses bottom otter trawls with a minimum mesh size of 40 mm. Shrimp trawl nets are equipped with a mandatory Nordmore separator grate to allow other fish to escape through the upper panel of the trawl. Shrimp in Shrimp Fishing Areas 13-15 are managed as one stock, with a TAC of 1,728 tonnes in 2023, down from 2,600 tonnes in 2019. The trawl fishery is open year-round and operates from late winter to early fall. In Shrimp Fishing Areas 13-15, the mobile fleet with 21 unique active shrimp trawl licences during 2019-2023 holds 92 percent of the TAC (1,589.76 tonnes in 2023, down from 2,392 tonnes in 2019). The Eastern Scotian Shelf Northern Shrimp fishery consists of DFO Maritimes Region-based mobile licences (mostly less than 65 ft length overall) and DFO Gulf Region-based mobile licences (65-100 ft length overall). All mobile sector licences have been under Individual Transferable Quotas (ITQs) since 1998. Shrimp in Shrimp Fishing Area 16 is part of the Gulf of Maine stock, which is fished competitively as there is no TAC available in this area currently. No shrimp have been harvested by trawl in SFA 16 since 2012.

There is also a competitive trap fishery with seven active licences active in 2019-2023, which are largely restricted to Chedabucto Bay, Nova Scotia (Shrimp Fishing Area 15, Figure 44). The trap sector licences operate under a Competitive Quota (CQ), with an allocation of 100 traps per licence. The trap fleet is active primarily from late fall through winter. This fleet holds 8 percent of the TAC (138.24 tonnes in 2023, down from 208 tonnes in 2019) and trappers fish their share competitively (DFO 2023f).

The total weight of Shrimp trawl and Shrimp trap landings declined by 31.6 percent and 77.6 percent respectively, compared to the period of 2014-2018, due to a decrease in TAC.

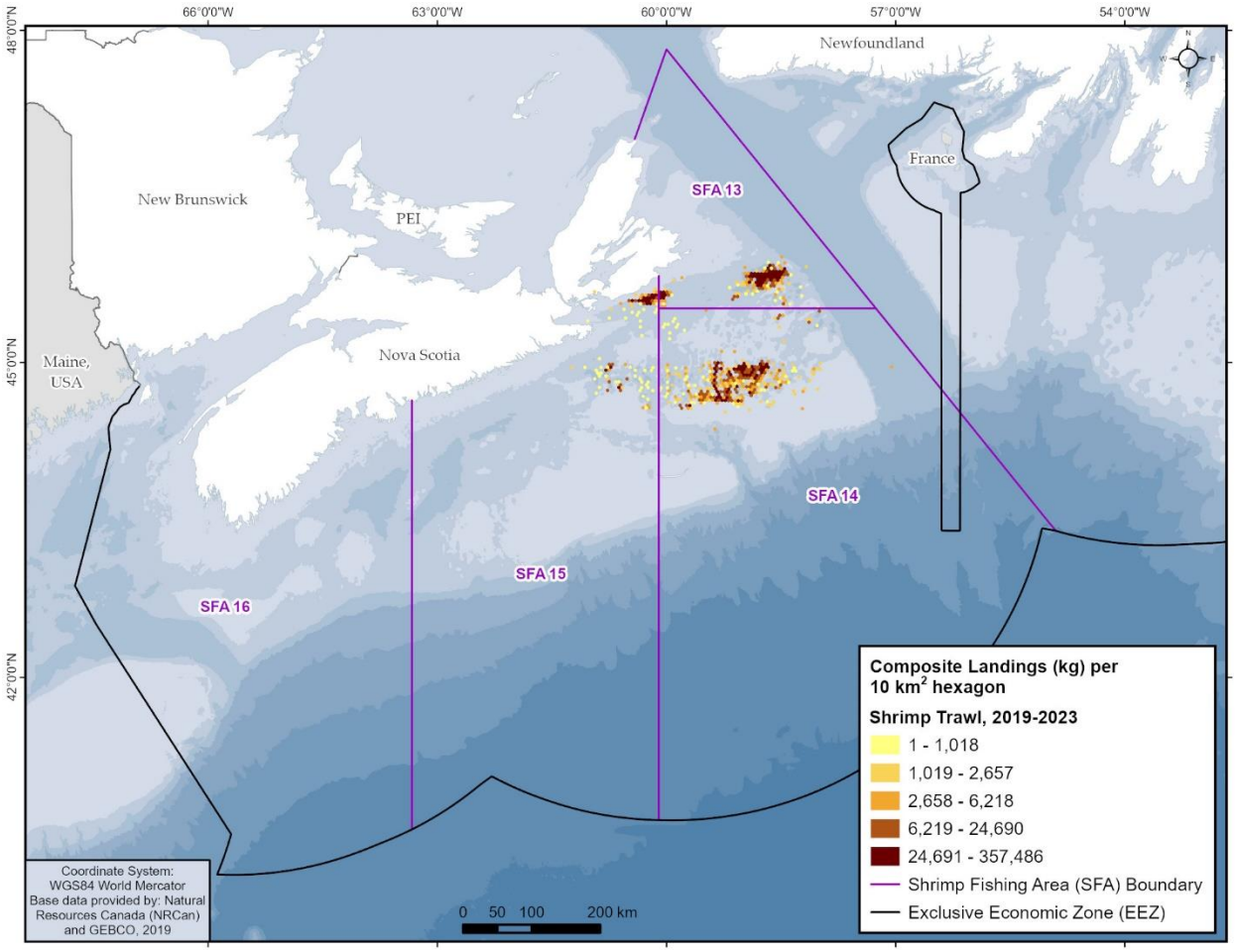

Figure 43. Shrimp Trawl Landings, 2019-2023

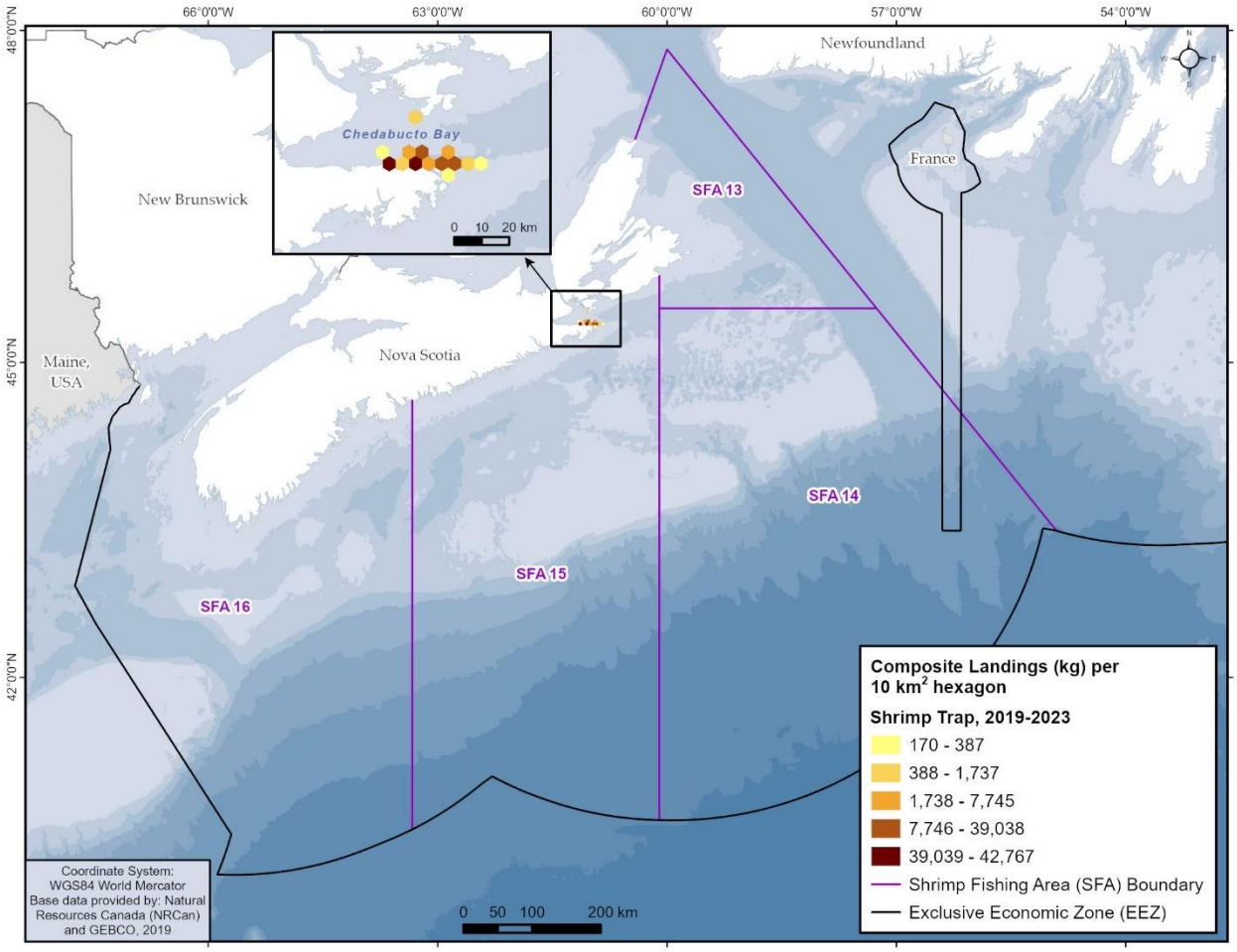

Figure 44. Shrimp Trap Landings, 2019-2023

Offshore Lobster (Figure 45)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Eastern Canada offshore Lobster trap fishery was certified sustainable in June 2010; however, voluntarily withdrew from MSC certification in December 2020.

Most Lobster fisheries in the region report landings by inshore Lobster Fishing Area and statistical grid fished, not by latitude and longitude coordinates. However, the offshore Lobster fishery is required to report coordinates. The fishery for offshore American Lobster (*Homarus americanus*) occurs within the boundaries of Lobster Fishing Area (LFA) 41, as described in the *Atlantic Fishery Regulations* (DOJ 1985). LFA 41 extends from the Hague Line on Georges Bank to the Laurentian Channel off Cape Breton; however, all traditional offshore Lobster commercial fishing occurs on five major grounds, namely Georges Bank (outer shelf and upper slope), Georges Basin, Crowell Basin, Southeast Browns Bank (outer shelf and upper slope east of Northeast Channel) and west Browns Bank, all within NAFO divisions 4X and 5Ze (Figure 45). The TAC for LFA 41 was established at 720 tonnes in 1985 based on landings history and has remained unchanged (DFO 2023g). Outlier coordinates north of the LFA 41 line were considered data entry errors and were removed. Data from the statistical grid-based inshore Lobster fishery are not included in this report but are analyzed and published in separate reports (Cook et al. 2024; Serdynska et al. 2022, Serdynska and Coffen-Smout, 2017). Permissions were obtained from licence holders to map catch weight. The total weight of Offshore Lobster landings declined by 0.2 percent (c. 6 tonnes) compared to the period of 2014-2018.

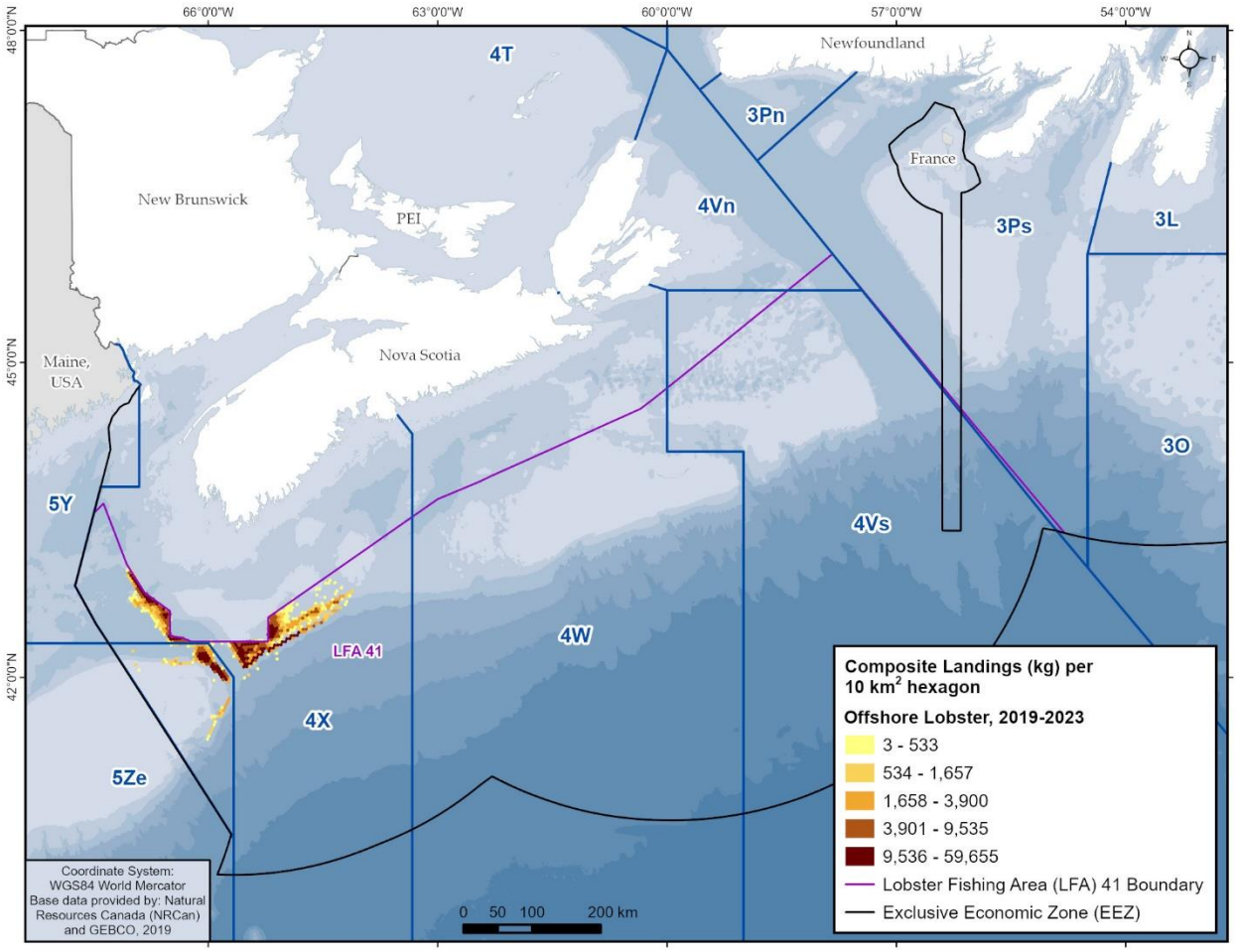

Figure 45. Offshore Lobster Landings, 2019-2023

Disputed Zone Area 38B Lobster (Figure 46)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Nova Scotia and New Brunswick inshore lobster fishery was initially certified as sustainable in May 2015. In February 2021, it was combined with the Prince Edward Island lobster fishery (certified since November 2014), and re-certified as the Maritime Canada inshore lobster trap fishery.

Most Lobster fisheries in the region report landings by inshore Lobster Fishing Area and statistical grid, not latitude and longitude coordinates; however, the Disputed Zone Lobster fishery is required to report coordinates. The Disputed Zone Lobster (*Homarus americanus*) fishery occurs in a disputed zone known as Area 38B (see Figure 46), an area in Grand Manan Channel disputed between Canada and the U.S.A. Figure 46 shows landings from Canadian fish harvesters. Landings reported outside the Disputed Zone are considered to have errors and were removed from the map. The fishing season begins June 30 and ends on the Friday preceding the opening of the regular LFA 38 Lobster season on the second Tuesday in November. Only licence holders with a valid Lobster licence for LFA 38 are permitted to fish in Area 38B. Access to the disputed zone is limited by the number of Lobster licences in LFA 38. Single Lobster licences are limited to 375 traps, while partnership Lobster licences are limited to 563 traps. Licence holders and operators are required to have a DFO-approved Vessel Monitoring System (VMS) on vessels authorized to fish any Disputed Zone fishing licence. U.S.-based fishers from Maine also target Lobster in the Disputed Zone (See section 4.12.4, DFO 2022b), however, their landings are not presented here. Data from the statistical grid-based inshore Lobster fishery are not included in this report, but are analyzed and published in separate reports (Cook et al. 2024, Serdynska et al. 2022 and Serdynska and Coffen-Smout, 2017). The total weight of Disputed Zone Lobster landings declined by 22.5 percent compared to the period of 2014-2018.

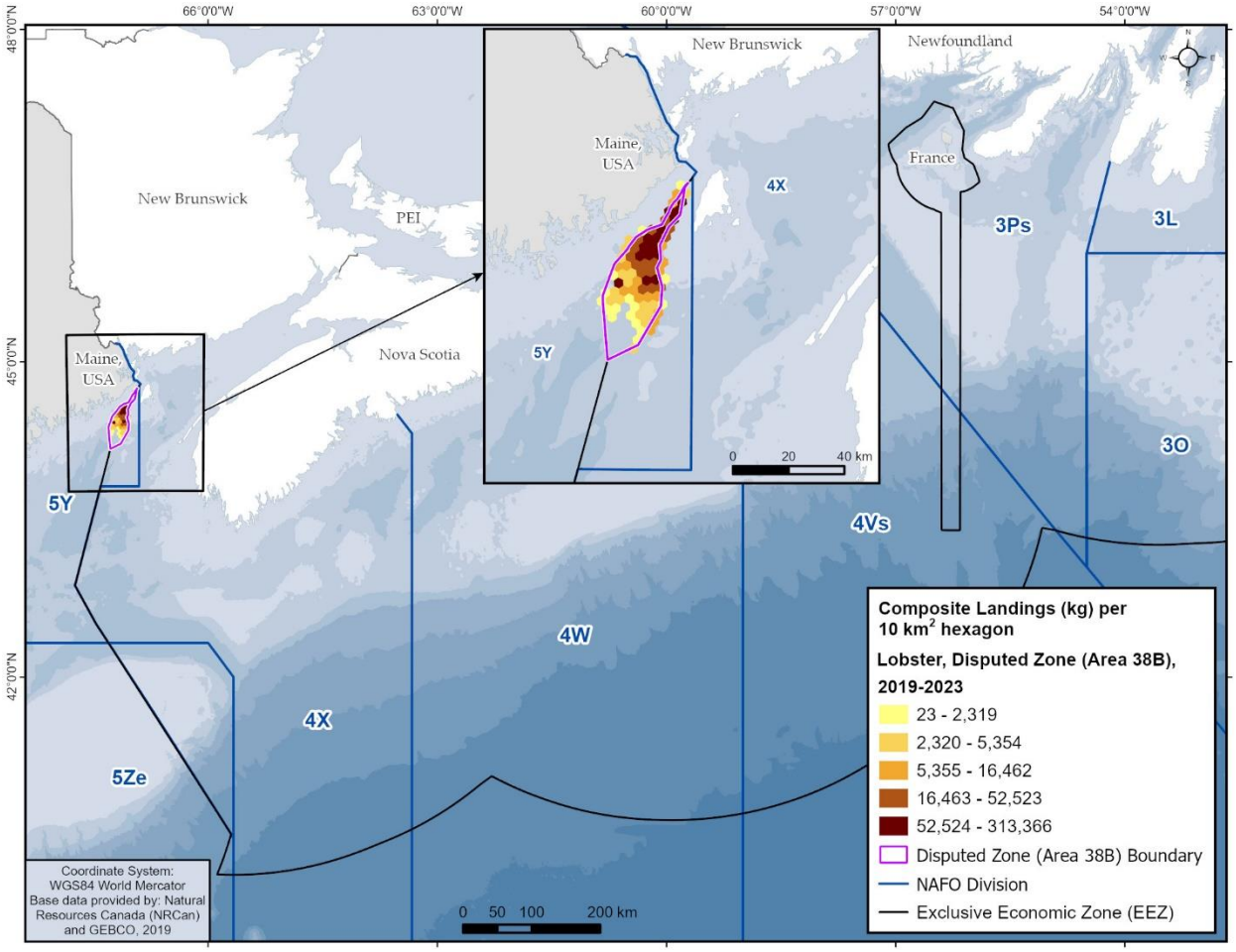

Figure 46. Disputed Zone Area 38B Lobster Landings, 2019-2023

Whelk (Figure 47)
SARA Status: No Status.
COSEWIC Status: No Status.
MSC Status: Not in MSC program.

Waved Whelk (*Buccinum undatum*) is a common marine snail native to the Northwest Atlantic and distributed from Newfoundland and Labrador to New Jersey, USA. A small exploratory fishery for Whelk using conical traps exists off Canada's east coast. Three offshore exploratory enterprise allocation licences are operated on the Scotian Shelf by two licence holders, both with access to NAFO areas 4W and only one with access to 4Vs. Each offshore licence holder in 4W is restricted to a maximum annual catch of 250 tonnes in 4W. The licence holder in 4Vs is restricted to a maximum annual catch of 700 tonnes. The licence conditions for Whelk state that "acceptance of these licence conditions acknowledges that the data collected about this fishery from the licence may be made public." Therefore, Whelk licence holder consents were not required for this fishery up to 2023. In 2024, one Whelk licence holder in 4Vs transitioned to a commercial enterprise allocation licence. Maritimes Region Whelk landings are shown in Figure 47. The total weight of Whelk landings increased by 121.1 percent compared to the period of 2014-2018.

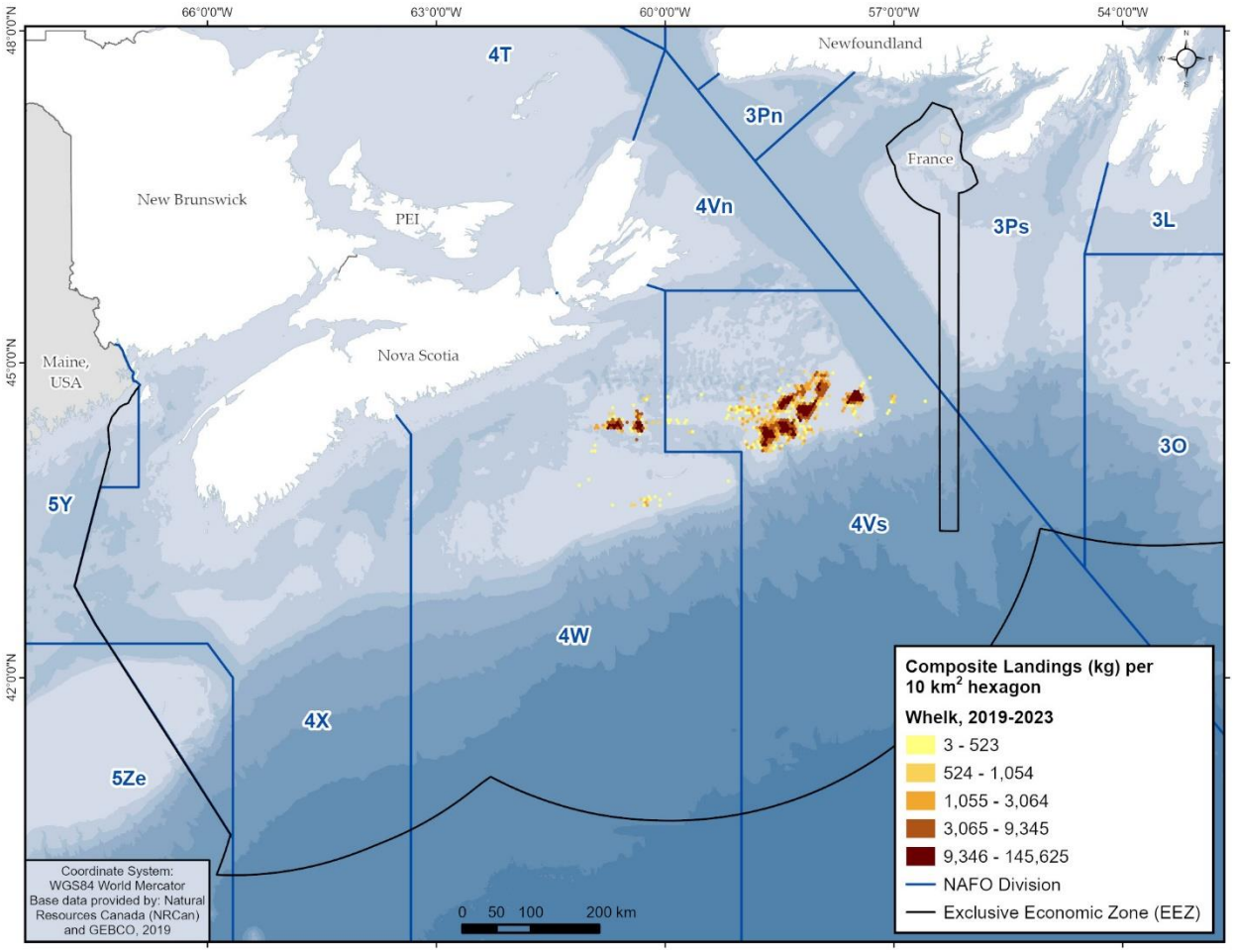

Figure 47. Whelk Landings, 2019-2023

Sea Cucumber Fishing Zones (Figure 48)

The Maritimes Region mobile drag sea cucumber fishery occurs on the Scotian Shelf in NAFO divisions 4Vs, 4W, and 4X, and off southwest New Brunswick in 4X. The Scotian Shelf sea cucumber fishery operates from May 1 to March 31, while the Southwest New Brunswick fishery operates from the second Tuesday in January to March 31. There are four commercial licence holders in the Scotian Shelf fishery, with each licence holder having sole access to assigned fishing zones shown in Figure 48. There are two commercial licence holders in the Southwest New Brunswick fishery, both with access to Zone 1 and Zone 2. Licence holder consents were not provided, thereby excluding a gridded catch weight map. There have been historic declines in sea cucumber catches in the Maritimes Region. The TACs as of 2023 were as follows:

- 4X Inshore Zones 1-5: 100 tonnes;
- 4W Offshore: 600 tonnes (400 tonnes in Zone 1 and 200 tonnes in Zone 2);
- 4Vs Offshore Areas of Access 1-8: 800 tonnes (600 tonnes in Area 2);
- 4W Mid-shore Zones A-J: 800 tonnes;
- 4X Southwest New Brunswick Zone 1 (The Passages): 400 tonnes;
- 4X Southwest New Brunswick Zone 2 (Outside the Passages including the Campobello Conservation Zone): 180 tonnes.

Tongue Shoal in Passamaquoddy Bay, New Brunswick, was closed to sea cucumber fishing since 2006, and the Pendleton-Little Letete closure was introduced for the 2025 season. In 2018-2019, nine 4Vs Offshore biomass reserves were co-developed on Banquereau to protect breeding populations from overfishing a low mobility species such as sea cucumber. Sea cucumber stock indicators have been derived by DFO Science and are published in CSAS reports (DFO 2021b and Martin et al. 2023).

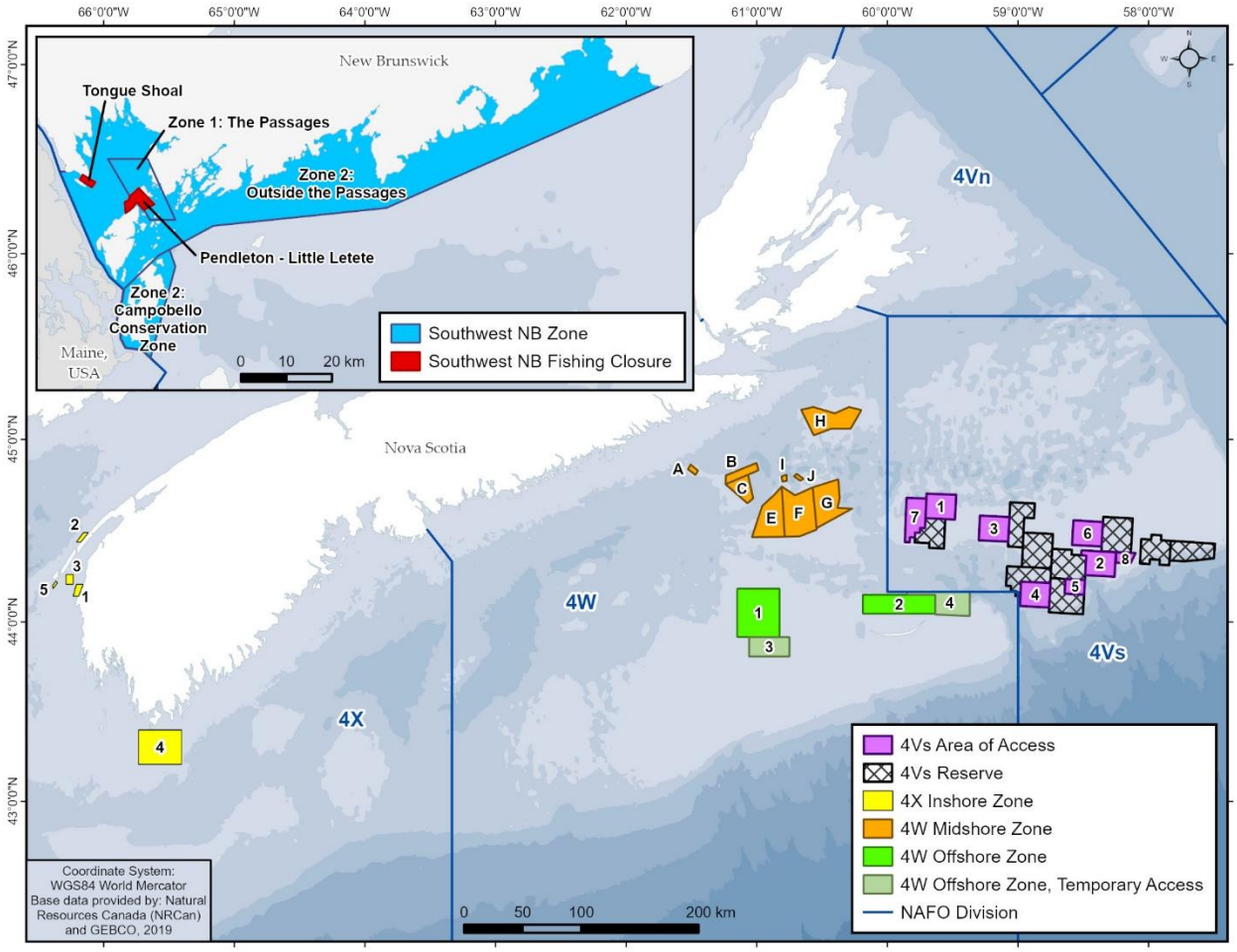

Figure 48. Sea Cucumber Fishing Zones

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