APPENDIX 1

Fisheries and Oceans Canada | Pêches et Océans Canada
Ecosystems and Oceans Science | Sciences des écosystèmes et des océans

STOCK ASSESSMENT FOR STRIPED SHRIMP (*PANDALUS MONTAGUI*) IN SHRIMP FISHING AREA 4, THE EASTERN ASSESSMENT ZONE, AND WESTERN ASSESSMENT ZONE FOR THE 2025–26 FISHING SEASON

CONTEXT

Fisheries and Oceans Canada (DFO) Fisheries Resource Management has requested an assessment of Striped Shrimp (*Pandalus montagui*) stocks in Shrimp Fishing Area 4 (SFA 4), the Eastern Assessment Zone (EAZ), and Western Assessment Zone (WAZ) as the basis for harvest advice for the 2025–26 fishing season.

This Science Advisory Report is from the March 10–11, 2025 Multi-Regional Peer Review meeting on Stock Assessment for Striped Shrimp in SFA 4, the EAZ, and the WAZ for the 2025–26 fishing season. Additional publications from this meeting will be posted on the Fisheries and Oceans Canada (DFO) Science Advisory Schedule as they become available.

SCIENCE ADVICE

Status

- **SFA 4:** In 2024, Striped Shrimp fishable biomass (FB_{pop}) was estimated to be 2.8 times the LRP for SFA 4. The population-wide potential predator index is at a time-series high in 2024, but other indices of stock health showed no cause for concern. Striped Shrimp in SFA 4 is considered in a healthy state.
- **EAZ:** In 2024, Striped Shrimp was estimated to be in the Healthy Zone of the PA Framework, above the USR with a 91.5% probability.
- **WAZ:** In 2024, Striped Shrimp was estimated to be in the Healthy Zone of the PA Framework, above the USR with a 98.0% probability.

Trends

- **SFA 4:** In 2024, the SSB index increased by 6% (to 25,000 t) since 2023, and is slightly above the long-term mean (2005–23). The SFA 4-specific FB index has decreased by 26% (to 28,600 t) since 2023, and is slightly below the long-term mean (29,600 t).
- **EAZ:** The female SSB and FB indices in the EAZ have increased since 2023, by 97.5% (to 13,488 t) and 11.2% (to 15,724 t), respectively. These indices are above the long-term mean (2009–23) and reference period mean (2009–19).
- **WAZ:** The female SSB and FB indices in the WAZ have increased since 2023, by 65.3% (to 65,704 t) and 7.7% (to 72,644 t), respectively. These indices are above the long-term mean (2014–23) and reference period mean (2014–19).

Ecosystem and Climate Change Considerations

- In SFA 4, the EAZ, and WAZ, summer ocean bottom temperatures for 2024 were close to average to slightly warmer.
- The potential predator index representing the assessment area has increased in recent years to a time-series high in 2024.

Stock Advice

- **SFA 4**: The preliminary ERI for 2024/2025 was 10.4%, with 74% of the bycatch limit taken. If the full bycatch limit is taken in 2024/2025, the ERI will be 14.1%.
- **EAZ**: The preliminary ERI for 2024/2025 in the EAZ was 1.6%, with 11.1% of the TAC taken. If the full TAC is taken in 2024/2025, the ERI will be 14.1%.
- **WAZ**: The preliminary ERI for 2024/2025 in the WAZ was 6.0%, with 28% of the TAC taken. If the full TAC is taken in 2024/2025, the ERI will be 21.2%.

BASIS FOR ASSESSMENT

Assessment Details

Year Assessment Approach was Approved

The assessment for the EAZ and WAZ follows the reference points developed in 2020 for the Precautionary Approach (PA) framework for Striped Shrimp (DFO 2020). The assessment for SFA 4 follows the assessment framework developed in 2023 (Baker et al. 2024).

Assessment Type

Full Assessment

Most Recent Assessment Date

1. Last Full Assessment: 2023 (Fulton et al. 2024, Le Corre et al. 2024, DFO 2024a)
2. Last Interim-Year Update: January (SFA 4) and February (EAZ and WAZ) 2024 (DFO 2024b, DFO 2024c, DFO 2024d).

Stock Assessment Approach

1. Broad category: Index-based
2. Specific category: Index-based (including fishery-dependent and fishery-independent indices)

In the EAZ and WAZ, the assessment follows the framework established by DFO (2020); catch data from scientific surveys are spatially expanded to produce an abundance index for fishable biomass (FB) and female spawning stock biomass (SSB). Both male and female shrimp with a carapace length greater than 17 mm are considered in the calculation of the FB index, while female shrimp of any size form the basis of the SSB index.

The assessment of SFA 4 uses a spatiotemporal model to estimate fishable biomass for the Striped Shrimp population as a whole (i.e., EAZ, WAZ, and SFA 4 combined) (Baker et al. 2024). In addition, the framework for SFA 4 examines a potential predator index, total egg production, and a SFA 4-specific FB index calculated using Ogive Mapping methodology.

Ecosystem and Climate Change Assessment Approach

Ocean bottom temperature and trends were considered. Biomass of key predators is integrated into the SFA 4 assessment framework and examined for the whole assessment area.

Stock Structure Assumption

SFA 4, EAZ, and WAZ are management-based stock units. Striped Shrimp stocks in these units are biologically connected through larval dispersal (Le Corre et al. 2020).

Reference Points

Table 1. Reference points for Striped Shrimp in the Eastern Assessment Zone and Western Assessment Zone.

Reference Point	Description	EAZ	WAZ
Limit Reference Point (LRP):	40% of the geometric mean of female spawning stock biomass (SSB) over the productive period (2009–19 for EAZ, 2014–19 for WAZ), a proxy for BMSY, DFO (2020).	3,100 t	12,300 t
Upper Stock Reference (USR):	80% of the geometric mean of female spawning stock biomass (SSB) over the productive period (2009–19 for EAZ, 2014–19 for WAZ), a proxy for BMSY, DFO (2020).	6,100 t	24,600 t
Removal Reference (RR):	N/A	-	-
Target (TRP):	N/A	-	-

In SFA 4, an LRP for Striped Shrimp based on the combined survey data time series (2005–22) of SFA 4, EAZ, and WAZ was developed from a spatiotemporal model that created a new FB index (FB_{pop}) to determine the stock status. The LRP for Striped Shrimp in SFA 4 is the average of the following metrics:

- the lowest FB_{pop} at which the stock increased and remained above the geometric mean for a period of at least three years,
- the lowest observed FB_{pop} between 2005 and 2022, and
- 40% of the geometric mean of the FB_{pop} index from 2005 to 2022.

In addition to reporting on the status of the stock in relation to the LRP, three additional indicators of stock health are reported during each assessment: potential predator index, total egg production index, and SFA 4-specific fishable biomass index. There is no USR for SFA 4.

Data

- Northern Shrimp Research Foundation (NSRF) – DFO collaborative annual trawl survey (2005–24): 2005–24 for SFA 4, 2009–24 for EAZ, 2014–24 for WAZ.

- Atlantic Quota Monitoring System (AQMS – formerly known as the Canadian Atlantic Quota Report (CAQR); 2010–2024/2025).
- Reported commercial catch data (1979–2009)
- At-sea observer program (1979–2025)

Data changes:

- Commercial catch data for 2024/2025 are considered incomplete as the season is not officially closed until March 31, 2025. AQMS data for SFA 4 were pulled on February 2, 2025. AQMS data for EAZ and WAZ were pulled on January 15, 2025.

ASSESSMENT

Historical and Recent Stock Trajectory and Trends – Shrimp Fishing Area 4

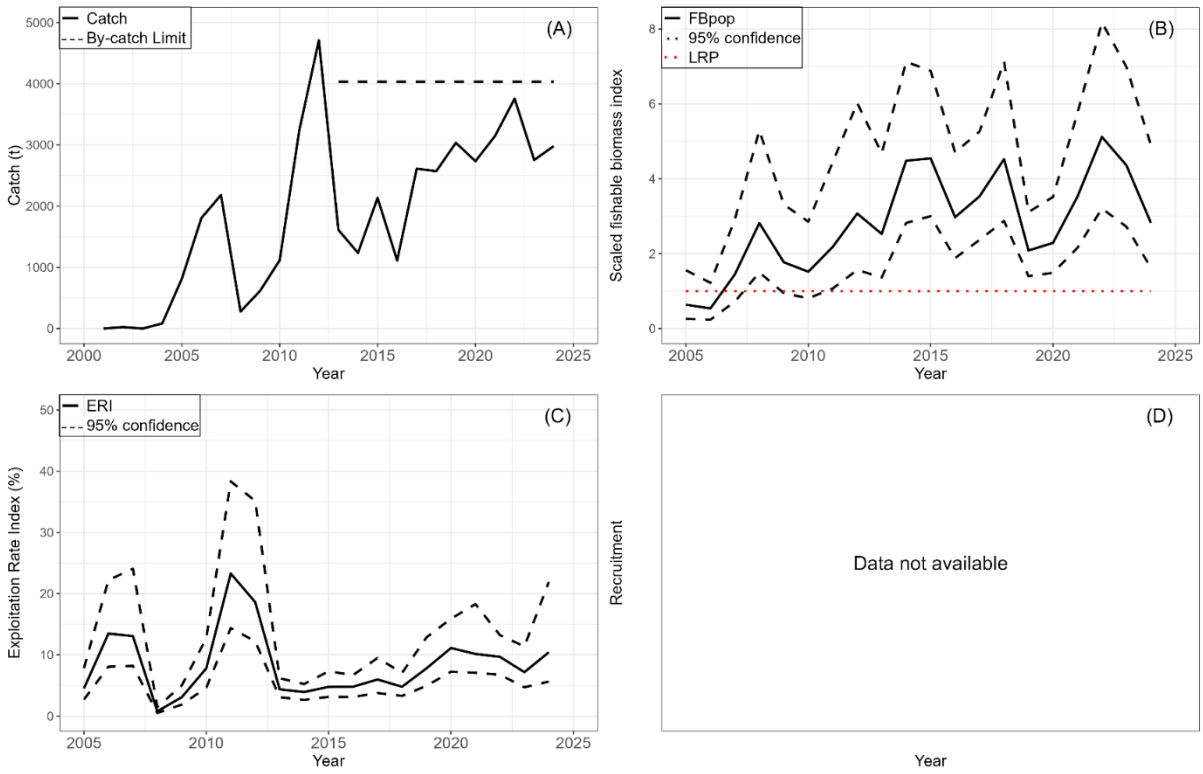

Figure 1. Shrimp Fishing Area 4 stock trends: (A) Catch and By-catch Limit, (B) FB_{pop} in relation to the Limit Reference Point, (C) Exploitation Rate Index (Fisheries catch relative to SFA 4-specific fishable biomass), D) Recruitment (data not available).

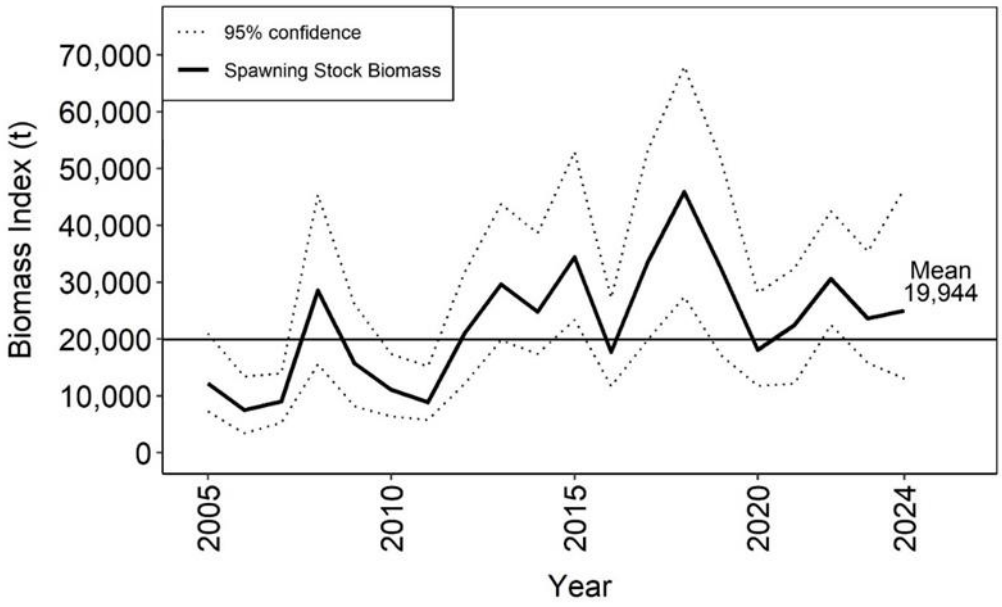

Figure 2. Shrimp Fishing Area 4 spawning stock biomass with 95% confidence interval from 2005 to 2024. The solid horizontal line represents the geometric mean from 2005 to 2023.

Biomass

FB and SSB indices varied without trend in recent years. There was a 26% decline in FB from 2023 to 2024 (2023: 38,400 t; 2024: 28,600 t), and a 6% increase in SSB (to 25,000 t) in 2024 (Figure 2). However, there was a 68% decline in male biomass (to 6,100 t), the second lowest value in the timeseries.

Fishery

Catch in SFA 4 has varied without trend around 3,000 t annually from 2017–24 (Figure 1a, Table 2). The preliminary catch in 2024/2025, as of February 2, 2025, was 2,981 t (74% of the bycatch quota of 4,033 t).

Exploitation

The exploitation rate index (ERI) ranged between 0.8% and 23.3% from 2005/06 to 2023/24 and the preliminary ERI was 10.4% in 2024/25 (Figure 1c). If the full bycatch limit is taken in 2024/25, the ERI will be 14.1%.

Current Status

The Striped Shrimp stock in SFA 4 is currently 2.8 times the established LRP. The population-wide potential predator index increased by 62% from 2023, and was at a time-series high in 2024. Other indices of stock health, including population-wide total egg production index and SFA 4-specific FB index showed no cause for concern. Although there is no USR for this stock, Striped Shrimp in SFA 4 is considered in a healthy state.

Historical and Recent Stock Trajectory and Trends – Eastern Assessment Zone

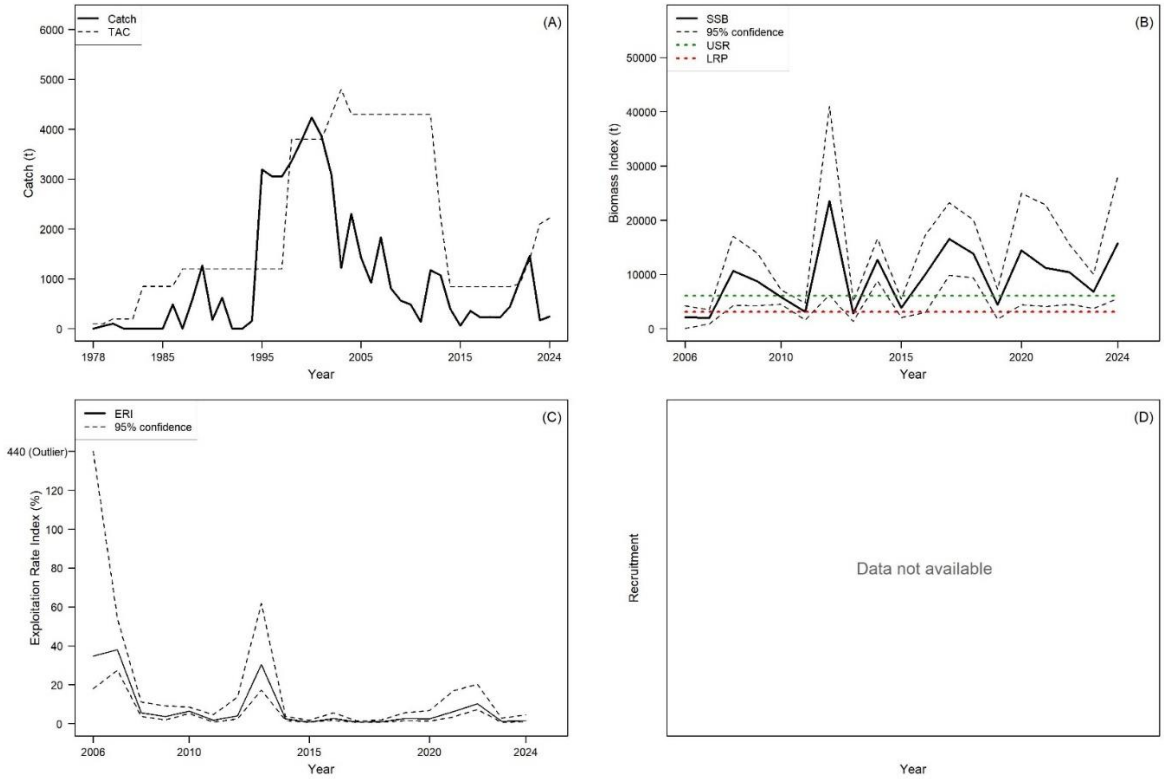

Figure 3. Eastern Assessment Zone stock trends: (A) Catch and Total Allowable Catch (TAC), (B) Spawning Stock Biomass (SSB) in relation to the Limit Reference Point (LRP; 3,100 t) and Upper Stock Reference (USR; 6,100 t), (C) Exploitation Rate Index (Fisheries catch relative to fishable biomass), D) Recruitment (data not available).

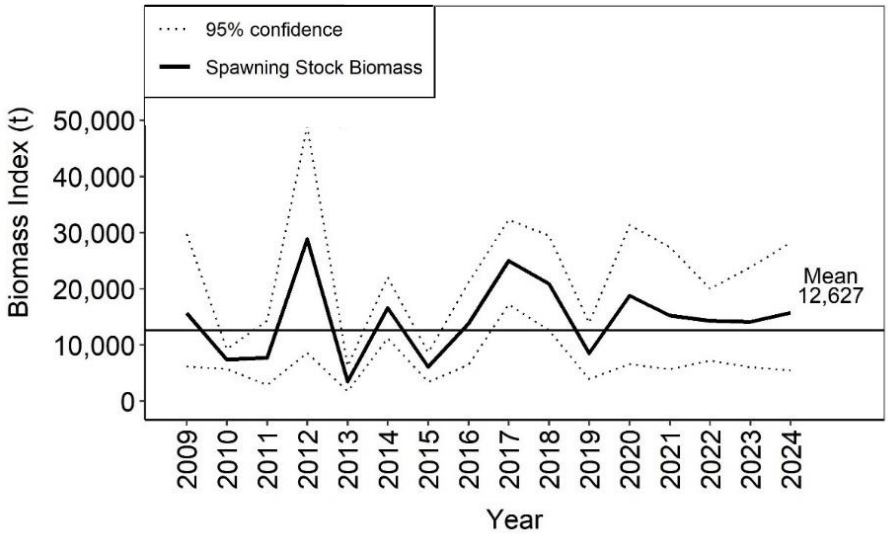

Figure 4: Eastern Assessment Zone fishable biomass index with 95% confidence interval from 2009 to 2024. The displayed mean is the geometric mean from 2009 to 2023.

Biomass

Both the FB and SSB indices varied without trend in recent years. The FB in 2024 (15,724 t) was above the long term geometric mean and increased 11.2% from 2023 (Figure 4). The SSB in 2024 (13,488 t) increased 97.5% from 2023 (Figure 3b).

Biological Indicators

Mean female and male carapace length have demonstrated high variability in recent years and declined steeply in 2024 compared to 2023 to some of the lowest values in the time-series. Similarly, in 2024, the length at 50% male-to-female transition declined to below the previous time-series low. If these trends continue this could have negative impacts on stock productivity.

Fishery

Catch in the EAZ has varied without trend, but has remained under 1,000 t most years since the beginning of the current time series of 2009–24 (Figure 3a, Table 2). The preliminary catch in 2024/2025, as of January 15, 2025, was 247 t (11.1% of the TAC of 2,216 t).

Exploitation

The preliminary exploitation rate index in 2024/25 was 1.6% (Figure 3c), with a potential exploitation rate of 14.1% should the entire 2024/25 TAC of 2,216 t be taken.

Current Status

The Striped Shrimp stock in the EAZ is currently above the USR with 91.5% probability. The stock is in the Healthy Zone of the PA Framework.

Historical and Recent Stock Trajectory and Trends – Western Assessment Zone

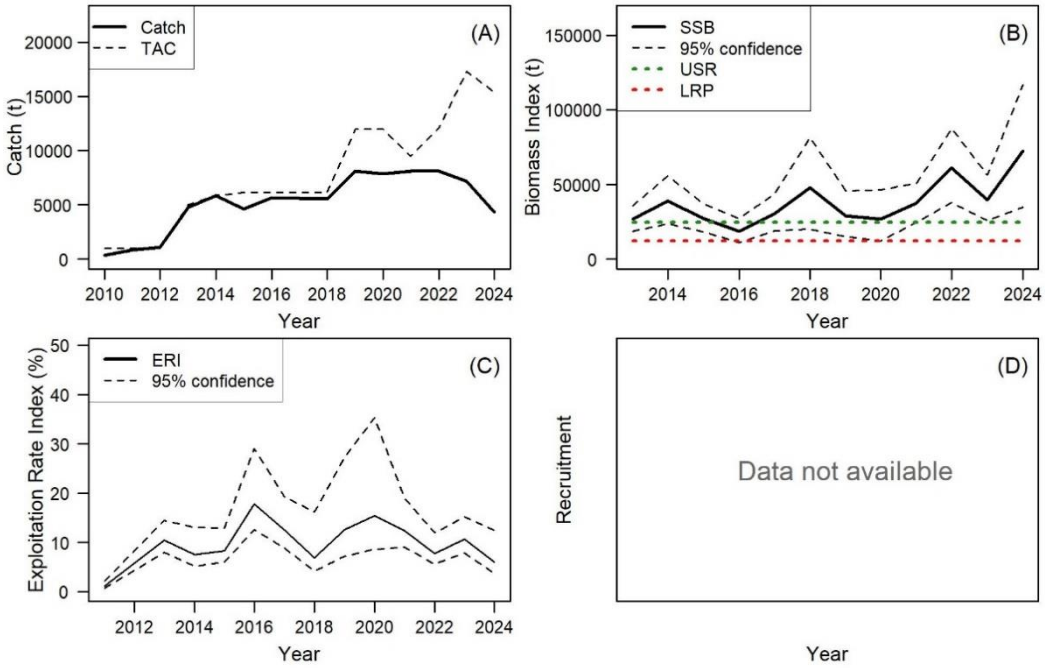

Figure 5. Western Assessment Zone stock trends: (A) Catch and Total Allowable Catch, (B) Spawning Stock Biomass (SSB) in relation to the Limit Reference Point (LRP; 12,300 t) and Upper Stock Reference (USR; 24,600 t), (C) Exploitation Rate Index (Fisheries catch relative to fishable biomass), D) Recruitment (data not available).

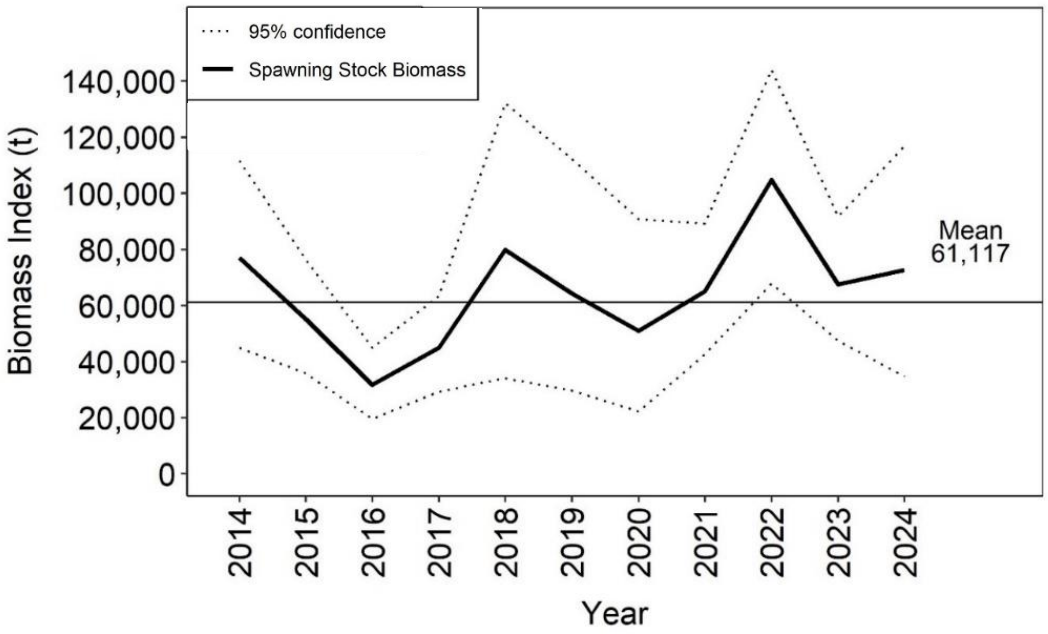

Figure 6. Western Assessment Zone fishable biomass index with 95% confidence interval from 2009 to 2024. The displayed mean is the geometric mean from 2014 to 2023.

Biomass

Both the FB and SSB indices were on a slight upward growth trend in recent years. The FB in 2024 (72,644 t) was above the long-term geometric mean and increased 7.7% from 2023 (Figure 6). The SSB in 2024 (65,704 t) increased 65.3% from 2023 (Figure 5b).

Biological Indicators

Mean female and male carapace length have demonstrated high variability in recent years and declined steeply in 2024 compared to 2023 to some of the lowest values in the time-series. Similarly, in 2024, the length at 50% male-to-female transition declined substantially to below the previous time-series low. If these trends continue this could have negative impacts on stock productivity.

Fishery

Catch in the WAZ has varied over time. From 2015 to 2018, catch varied without trend around 5,000 t. From 2019 to 2023, catch increased to around 8,000 t per year (Figure 5a, Table 2). The preliminary catch in 2024/2025, as of January 15, 2025, was 4,353 t (28.3% of the TAC of 15,384 t).

Exploitation

The preliminary exploitation rate index in 2024/25 was 6.0% (Figure 5c), with a potential exploitation rate of 21.2% should the entire 2024/25 TAC of 15,384 t be taken.

Current Status

The Striped Shrimp stock in the WAZ is currently above the USR with 98.0% probability. The stock is in the Healthy Zone of the PA Framework.

History of Landings

*Table 2. Nominal reported catches and quotas (in tonnes) for the Eastern Assessment Zone, Western Assessment Zone, and Shrimp Fishing Area 4 for Striped Shrimp from the 2014/2015 fishing season to the 2024/2025 fishing season. *Catch based on AQMS as of January 15, 2025 for EAZ and WAZ, and February 2, 2025 for SFA 4. Since the fishery is still open the catch is preliminary for 2024/2025.*

Fishery Year	EAZ		WAZ		SFA 4	
	Catch (t)	TAC (t)	Catch (t)	TAC (t)	Catch (t)	Quota (t)
2024/2025*	247	2,216	4,353	15,384	2,981	4,033
2023/2024	173	2,100	7,194	17,282	2,753	4,033
2022/2023	1,460	1,400	8,128	12,096	3,755	4,033
2021/2022	965	902	8,106	9,470	3,146	4,033
2020/2021	447	840	7,841	11,975	2,734	4,033
2019/2020	225	840	8,114	11,975	3,034	4,033
2018/2019	234	840	5,531	6,138	2,571	4,033
2017/2018	233	840	5,609	6,138	2,611	4,033
2016/2017	358	840	5,660	6,138	1,112	4,033
2015/2016	59	840	4,616	6,138	2,134	4,033
2014/2015	401	840	5,836	5,860	1,235	4,033

Ecosystem and Climate Change Considerations

Ocean bottom temperatures across the assessment area in 2024 were close to average to slightly warmer. Pandalid shrimp are known to be important prey for a variety of fishes, e.g., Greenland Halibut (*Reinhardtius hippoglossoides*), Roughhead Grenadier (*Macrourus berglax*), skates (*Rajidae* spp.) and redfish (*Sebastes* spp.). Such predators can be significant drivers of biomass and population dynamics in their prey. The amount of shrimp consumed by these predators varies in response to predator stock size, spatial overlap, and alternative prey options. The predator index across the assessment area has increased in recent years.

Stock Advice

Projections or simulations have not been developed for this assessment as it is index-based and data driven.

PROCEDURE FOR INTERIM-YEAR UPDATES

These stocks are assessed every two years, with an interim-year update in the alternating years.

SOURCES OF UNCERTAINTY

Hudson Strait is a highly dynamic system with strong tidal currents and mixing. With speeds up to five knots, the strong currents could result in quick shifts in shrimp distribution and catchability. Shrimp could be transported great distances in a relatively short period of time in and out of the WAZ, EAZ, and SFA 4 to the south. This is most likely the cause of the wide fluctuations in biomass observed within and among assessment areas, even within the same year. Assessing only a subset of a larger population is a source of uncertainty in determining the true status of a resource.

The relative catchabilities for the four research vessels (*Cape Ballard*, *Aqviq*, *Kinguk*, and *Katsheshuk II*) that have been used throughout the time series of the NSRF-DFO collaborative survey and the relative catchability between the vessels is unknown.

Research Recommendations

Given the recognition that SFA 4, EAZ, and WAZ likely do not represent separate populations, assessment units for these stocks should be reevaluated.

LIST OF MEETING PARTICIPANTS

NAME	AFFILIATION
Bruce Chapman	Canadian Association of Prawn Producers
Joclyn Paulic	DFO Arctic - CSAS
Christi Friesen	DFO Arctic - Resource Management
Kevin Hedges	DFO Arctic - Science
Daniel Enright	DFO Arctic - Science
Wojciech Walkusz	DFO Arctic - Science

NAME	AFFILIATION
Robert Deering	DFO CSAS-IA
Karen Dwyer	DFO NCR - CSAS
Dirk Algera	DFO NCR - Resource Management
Brian Lester	DFO NCR - Resource Management
Jorge Negrin Dastis	DFO NCR - Resource Management
Nicholas Duprey	DFO NCR - Science
Susan Thompson	DFO NCR - Science
Hilary Rockwood	DFO NL - CSAS
Aaron Adamack	DFO NL - Science
Nicolas Le Corre	DFO NL - Science
Krista Baker	DFO NL - Science
David Belanger	DFO NL - Science
Kaitlyn Charmley	DFO NL - Science
William Coffey	DFO NL - Science
Elizabeth Coughlan	DFO NL - Science
Jonathan Coyne	DFO NL - Science
Charmain Hamilton	DFO NL - Science
Michael Hurley	DFO NL - Science
Kyle Lefort	DFO NL - Science
Chelsea Malayny	DFO NL - Science
Rachel Morrison	DFO NL - Science
Darrell Mullowney	DFO NL - Science
Hannah Munro	DFO NL - Science
Julia Pantin	DFO NL - Science
Erika Parrill	DFO NL - Science
Kathleen Ryan	DFO NL - Science
Nancy Soontiens	DFO NL - Science
Darren Sullivan	DFO NL - Science
Bruce Wells	DFO NL - Science
Erin Carruthers	Fish, Food, and Allied Workers Union
Heather Starkes	Fish, Food, and Allied Workers Union
Chris Rose	Fish, Food, and Allied Workers Union

NAME	AFFILIATION
Taylor Sheppard	Government of Newfoundland and Labrador
Sean Cox	Landmark Fisheries
Tony Wright	Makivvik Corporation
Natalie Perrin	Marine Institute
Brian McNamara	Newfoundland Resources ltd.
Alastair O'Rielly	Northern Coalition
Todd Broomfield	Nunatsiavut Government
Rob Coombs	Nunatukavut Community Council
Frankie Jean-Gagnon	Nunavik Marine Region Wildlife Board
Derek Butler	Nunavut Fisheries Association
Brynn Devine	Oceans North
Ron Johnson	Torngat Fisheries Co-op
Tanya Prystay	Torngat Wildlife, Plants & Fisheries Secretariat
Piero Calosi	Université du Québec à Rimouski

SOURCES OF INFORMATION

Baker, K.D., Anderson, S.C., Coffey, W., Walkusz, W., Mullowney, D.R.J., and Skanes, K.R. 2024. Identifying a Limit Reference Point for Striped Shrimp (*Pandalus montagui*) in Shrimp Fishing Area 4. DFO Can. Sci. Advis. Sec. Res. Doc. 2024/067. iv + 27 p

DFO. 2020. Science Advice on Limit Reference Points for Northern Shrimp (*Pandalus borealis*) and Striped Shrimp (*Pandalus montagui*) in the Eastern and Western Assessment Zones. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2020/053.

DFO. 2024a. Assessment of Northern Shrimp (Pandalus borealis) and Striped Shrimp (Pandalus montagui) in Shrimp Fishing Area (SFA) 4 in 2022 and Evaluation of a Proposed Limit Reference Point (LRP) for Striped Shrimp in SFA 4. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2024/014.

DFO. 2024b. Stock Status Update of Shrimp Fishing Area 4 Striped Shrimp (*Pandalus montagui*) in 2023. DFO Can. Sci. Advis. Sec. Sci. Resp. 2024/028.

DFO. 2024c. Update of Stock Status Indicators for Northern Shrimp, *Pandalus borealis*, and Striped Shrimp, *Pandalus montagui*, in the Eastern Assessment Zone, February 2024. DFO Can. Sci. Advis. Sec. Sci. Resp. 2024/017.

DFO. 2024d. Update of Stock Status Indicators for Northern Shrimp, *Pandalus borealis*, and Striped Shrimp, *Pandalus montagui*, in the Western Assessment Zone, February 2024. DFO Can. Sci. Advis. Sec. Sci. Resp. 2024/016.

Fulton, S., Walkusz, W. Atchison, S., and Cyr, F. 2024. Information to support the assessment of northern shrimp, *Pandalus borealis* and striped shrimp, *Pandalus montagui*, in the Eastern and Western Assessment Zones, February 2023. DFO Can. Sci. Advis. Sec. Res. Doc. 2024/016.

Le Corre, N., Pepin, P., Burmeister, A., Walkusz, W., Skanes, K., Wang, Z., Brickman, D., and Snelgrove, P.V.R. 2020. Larval connectivity of northern shrimp (*Pandalus borealis*) in the Northwest Atlantic. Can. J. Fish. Aquat. Sci. 77(8): 1332–1347.

Le Corre, N., Skanes, K.R., Baker, K.D., Sullivan, D., Coffey, W., Cyr, F., Belanger, D., Morrissey, K., and Malayny, C. 2024. Assessment of Northern Shrimp (*Pandalus borealis*) and Striped Shrimp (*Pandalus montagui*) in Shrimp Fishing Area 4 in 2022. DFO Can. Sci. Advis. Sec. Res. Doc. 2024/036. v + 82 p.

THIS REPORT IS AVAILABLE FROM THE:

Center for Science Advice (CSA)
Newfoundland and Labrador Region
Fisheries and Oceans Canada
P.O. Box 5667
St. John's, NL
A1C 5X1

E-Mail: DFONLCentreforScienceAdvice@dfo-mpo.gc.ca
Internet address: www.dfo-mpo.gc.ca/csas-sccs/

ISSN 1919-5087
ISBN 978-0-660-xxxxx-x Cat. No. Fs70-6/2025-nnnE-PDF

Correct Citation for this Publication:

DFO. 2025. Stock Assessment for Striped Shrimp (*Pandalus montagui*) in Shrimp Fishing Area 4, the Eastern Assessment Zone, and Western Assessment Zone for the 2025–26 Fishing Season. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2025/nnn. Approved Pre-Publication:

Aussi disponible en français :

MPO. 2025. << insérez le titre ici – il doit correspondre exactement à celui de la page couverture, mais en lettres minuscules >>. Secr. can. des avis sci. du MPO. Avis sci. 2025/nnn.

APPENDIX 2

Summary of Discussion: Northern Shrimp Advisory Committee Meeting and Indigenous Meeting (March 25-26, 2025)

A meeting of the Northern Shrimp Advisory Committee (NSAC) took place on March 25-26, 2025. The Fisheries and Oceans Canada (DFO) held a meeting with Indigenous participants on the afternoon of March 26, 2025. Both meetings were well attended:

- Nunavut Wildlife Management Board (NWMB)
- Nunavut Fisheries Association (NFA)
- Torngat Fish Producers Co-Op
- Qikiqtaaluk Corporation (QC)
- Northern Coalition (NC)
- Canadian Association of Prawn Producers (CAPP)
- NunatuKavut Community Council (NCC)
- Innu Nation
- Torngat Wildlife Plants and Fisheries Secretariat
- Nunatsiavut Government (NG)
- Nunatsiavut Group of Companies (NGC)
- Baffin Fisheries Coalition (BFC)
- Arctic Fisheries Alliance (AFA)
- Cumberland Sound Fisheries Ltd (CSFL)
- Makivvik Corporation
- Labrador Fishermen's Union Shrimp Company (LFUSC)
- Government of Nunavut
- Pikalujak Fisheries
- Newfound Resources Ltd (NRL)
- Nunavut Tunngavik Inc. (NTI)

Other participants at the general NSAC meeting included representatives of the offshore and inshore fleet, individual licence holders, provincial government representatives, and Oceans North (an environmental non-government organization).

The perspectives on science and management of P. borealis and P. montagui in the EAZ in this Summary of Discussion encompass views expressed by all NSAC members at the NSAC table as well as those of Indigenous members at the Indigenous meeting. Perspectives on science and management of P. borealis and P. montagui in the WAZ encompass only the views expressed by Indigenous members at the Indigenous meeting.

Perspectives on Northern and Striped Shrimp Science

DFO Science presented overviews of the stock assessments for *Pandalus borealis* and *P. montagui* in the EAZ and WAZ at the main NSAC table and provided a recap at the Indigenous NSAC meeting.

- At the NSAC table, NFA noted that although combined Total Allowable Catches (TACs) set in the North Stock Assessment Region (NSAR) would result in a potential exploitation rate (ER) of 21.2 per cent, the actual (realized) ER would be lower because the full TACs in the traditional stock areas that make up the NSAR are not fully taken.
- At the NSAC table, NC requested clarification if the increased predation pressure occurring in SFA 4 and EAZ was also present in the WAZ.
- DFO Science indicated that the predation pressure was present in all areas, but is primarily in SFA 4 and EAZ, with relatively reduced pressure occurring in the WAZ. The cod predation index was higher in the southern areas but may increase in the northern areas in the future.
- At the NSAC table, an industry member (Ocean Choice International) asked what the survey results suggest about redfish size and predation on shrimp in the northern versus southern areas.
- DFO Science indicated that the survey started picking up juvenile redfish in 2020. There was recent evidence that juvenile redfish in SFA 4 were comprised of multiple cohorts, which produces different size classes of juvenile redfish, and that they are likely migrants. It was noted that juvenile redfish can have a major impact on an ecosystem, even though they are not a direct predator of shrimp (until they are older and larger), through competing with juvenile shrimp for resources.
- CAPP followed up on this, noting that oceanographic currents suggest that juvenile redfish migration occurs from East Greenland.
    - It was requested that DFO Science provide the results of redfish DNA profiling/analysis. DFO Science committed to fulfilling this request.
- At the NSAC table, an industry member (Ocean Choice International) requested biomass abundance and size estimates of redfish in the northern areas.
    - DFO Science indicated that larger redfish are not commonly caught in northern areas (such as NAFO Division 0B).
- At the Indigenous meeting, NRL noted that they have seen big changes in Striped shrimp distribution in EAZ and WAZ, suggesting that NU/NK-E quota is now outside of Ungava Bay area, and asked if the science surveys have also found this.
    - DFO Science noted that the survey is limited in picking up changes in movement or distribution because the survey only provides a snapshot in time. There are year-to-year changes in shrimp distribution relative to the management boundary between EAZ and WAZ, but this movement is considered minimal from an ecological perspective.
- At the Indigenous meeting, NCC commented that under the new Northern shrimp assessment method, the area between the LRP (defined as Bmsy at 50%) and proposed USR is very narrow, meaning the stock may never fall below 50% Bmsy.
    - DFO Science indicated that they will follow up with NCC directly on further explanations and clarification on this matter.

Resource Management: New Assessment Model for Northern Shrimp *(P. borealis)*

At the NSAC table, DFO Resource Management (RM) presented an overview of the 2025-26 management approach for *P. borealis* considering the new Northern shrimp assessment model:

- 2025-26 will be treated as a transition year and the fishery will be managed using the existing SFA approach.
- For 2025-26, the SFA-level Precautionary Approach stock status will be determined from the 2025 assessment and the SFA-level fishable biomass values from the 2024 assessments (i.e., 2023 value) will be used for TAC recommendations.
- Traditional allocations (e.g., stable shares allocated by traditional SFA management units) and existing season bridging approaches will be used for 2025-26.

Illustrative 2025-26 Total Allowable Catches

DFO RM provided the following 2025-26 TACs in EAZ and WAZ for illustrative purposes:

- ***EAZ - P. borealis:*** maintaining the TAC at 2024-25 levels (8,513 t), or applying the 2-Step HDR, resulting in a 13.3 per cent increase to 9,643 t.
- ***EAZ - P. montagui:*** applying the 2-Step HDR, resulting in a 20.9 per cent increase in TAC to 2,680 t.
- ***WAZ - P. borealis:*** maintaining the TAC at 2024-25 levels (4,186t), or applying the 2-Step HDR, resulting in a 14.4 per cent decrease to 3,584 t.
- ***WAZ - P. montagui:*** applying the 2-Step HDR, resulting in a 2.7 per cent decrease in TAC to 14,956 t.

Perspectives – Access and Allocations, TACs, and Management Measures

DFO RM sought views on TACs and management measures for *Pandalus borealis* and *P. montagui* in the EAZ at the main NSAC table, with discussions on WAZ TACs reserved for the Indigenous meeting. DFO reminded NSAC participants of the NWMB and NMRWB's (the Boards') decision-making role in WAZ, and decision and recommendation role in the EAZ.

- At the NSAC table and Indigenous meeting, there was broad support for using the 2-Step HDR to establish the 2025-26 *P. borealis* and *P. montagui* TACs in EAZ and WAZ.
- At the NSAC table, the NG and the Torngat Joint Fisheries Board expressed that as co-management partners, they need to be involved in the management of the *P. borealis* and *P. montagui* fisheries in the EAZ.
- At the NSAC table, CAPP requested clarification on why the 2-Step HDR, as supported by NSAC, was not followed for the EAZ Striped shrimp TAC decision last year (2024-25).
    - DFO RM indicated that the TAC decision followed the required co-management process which included considerations from co-management partners. The decision was taken to deviate from following the 2-Step HDR based on conservation concerns from co-management partners.
    - DFO committed to providing a more detailed rationale on the 2024 decision.
- At the Indigenous meeting, NRL, Makivvik Corporation, NFA, and QC expressed concerns regarding the decision timing for EAZ and WAZ TAC announcements affecting their fishing operations. They requested that allowable interims in the settlement areas be increased from 50% to 75% to allow for fishing once ice clears.

    - DFO RM committed to exploring this change with co-management partners.
- To improve the efficacy of future NSAC Indigenous meetings, DFO RM requested input and feedback on the format of these meetings moving forward.
    - In response, Indigenous Members requested that DFO provide advance notice of NSAC Indigenous meeting topics that will be raised, and for the Department to seek input on discussion topics from participants.
    - DFO indicated that there will be follow-up where groups and their representatives will be contacted to solicit more detailed input.
- Stock management of Northern shrimp in WAZ was raised at the Indigenous meeting.
    - DFO RM indicated that TAC decisions and recommendations in the WAZ will be sought from co-management partners as per the normal process.

DFO RM will work with co-management partners on next steps for the fishery in light of the new assessment approach.