



# NOVA SCOTIA SPECIES SPOTLIGHT: SNOW CRAB (*Chionocetes opillio*)

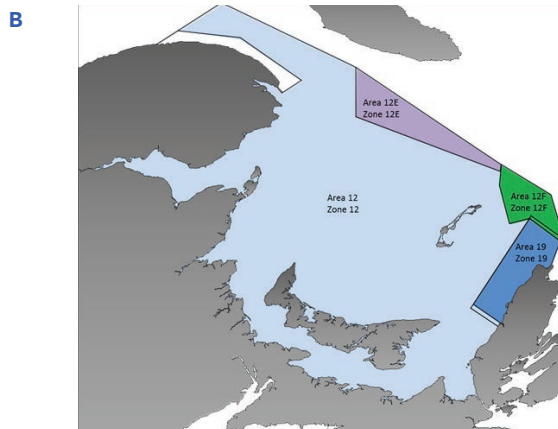
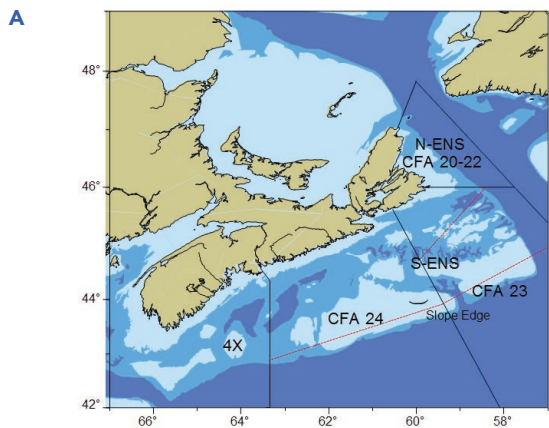
## FISHERY

The snow crab fishery in Nova Scotia takes place in crab fishing areas (CFA) 12F and 19 in the southern Gulf of Saint Lawrence, CFA 20-22 in North-Eastern Nova Scotia (N-ENS), CFA 23 and 24E in South-Eastern Nova Scotia (S-ENS), and in CFA 24W (4X) in South-Western Nova Scotia.

The spring fishery in N-ENS is open from early April until mid to late May, while the summer fishery opens in mid-July until mid-August. In S-ENS, the season lasts from March until August. The fishery in 4X opens November 1 until March 31.

Snow crab is targeted by inshore vessels using 6' or 7' conical traps.

In 2022, the total allowable catch (TAC) was 978.75 t in CFA 20-22, and 7470.08 t in CFA 23 and 24. In 2021, the landed value of snow crab was \$263M.



**Figure.** Snow crab fishing areas in (A) the eastern Scotian Shelf and (B) the Gulf regions

## BIOLOGY

Snow crab is a crustacean with a flat carapace that can grow to 15 cm in width. It has long thin legs that can reach 60 cm in length and can live up to 13 years.

Snow crab is found at depths from 50 to 500 m, temperatures from -1 to 11 °C, and prefer sandy or muddy ocean bottoms.

Snow crab must shed their shells, or moult, to grow. They increase in size by up to 20% and in weight by up to 60% with each moult.

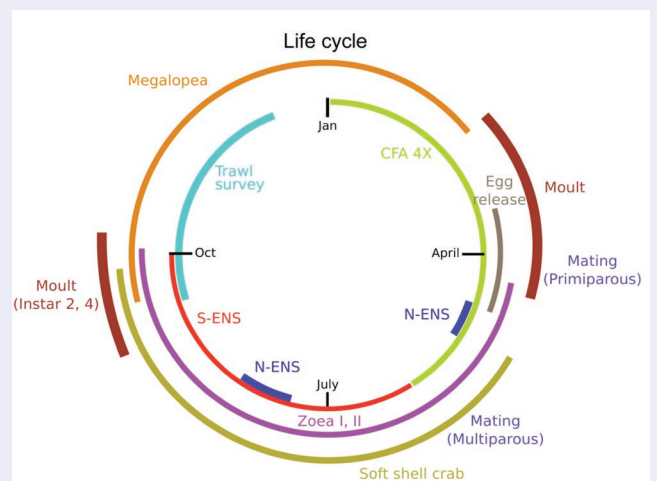
Their diets include shrimp, capelin, starfish, sea urchins, and molluscs, and are preyed on by halibut, cod, seals, squids, and other crabs. After moulting, their carapace colour starts out red but fades to a lighter brown shade.

## LIFE CYCLE

Female snow crabs produce up to 160,000 eggs in the spring, which are brooded internally for up to 2 years depending on environmental conditions. Eggs are released into pelagic waters in the spring and settle to the ocean floor after 3 to 5 months of feeding on plankton in late fall.

Crabs will moult twice per year during initial post-larval stages, after which moulting will occur yearly. All crabs reach a final or "terminal" moult that coincides with reaching sexual maturity for females, and developing full size claws in males.

Once terminally moulted, crabs can live up to 6 more years.



**Figure.** Snow crab life cycle



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## MANAGEMENT AND CONSERVATION

The Nova Scotia snow crab fishery is managed by Fisheries and Oceans Canada. All snow crab fisheries adopt management measures to protect the sustainability including setting a TAC, defining max mesh and trap size, 100% independent dockside monitoring, at sea observer coverage representing 20% of fishing trips, mandatory release of females and by-catch, minimum size limits for males (95 mm carapace), and complying with soft-shell crab protocols.

The fishery makes efforts to prevent interactions with marine mammals through gear removal and grid closures upon sightings and pioneering the adoption of “Whalesafe” fishing gear that is targeting to be implemented throughout the fishery by 2023.

The industry, when possible, also makes the commitment to be certified to the Marine Stewardship Council standard, first achieving certification in 2012.

## SEAFOOD LABELLING

|                          | Terminology   | Description   |
|--------------------------|---|---|
| <b>Common Name</b>       | <b>English:</b> Snow Crab, Atlantic Snow Crab, Queen Crab; Crab; Opilio,<br><b>French:</b> Crabe Des Neiges De L’atlantique, Crabe Des Neige; Crabe | Accepted common name for <i>Chionoectes opilio</i>  |
| <b>Production Method</b> | Wild  | Harvested from Crab Fishing Areas   |
| <b>Catch Method</b>      | Pots  | 6’ or 7’ Conical pots   |
| <b>Certifications</b>    | Marine Steward Council (MSC)  | Certifies that fish products come from wild fisheries that meet environmental standards for sustainable fishing |
| <b>Product Forms</b>     | Clusters  | Shoulder with 3 walking legs and 1 arm attached   |
| <b>Size Grading</b>      | 3-5 oz  | Cluster weight  |
|                          | 5-8 oz  |   |
|                          | 8-10 oz   |   |
|                          | 10 oz +   |   |
|                          | 12 oz +   |   |

## PROCESSING/HANDLING

### Process Yield

Meat yield of whole snow crab = **17 %**

Meat yield of snow crab legs = **22 % - 58 %**

### Primary Products

Clusters (Frozen)

### Secondary Products

Live, Legs, Claws, Meat (Frozen)

### Post-Harvest Primary Processing

Harvest » Vessel Stowage »  
Unloading » Transport to Processor  
Receiving » Grading » Cooking »  
Cooling » Freezing » Packaging »  
Storage » Transportation

### By-Products

Carapace, offal

### Post-Harvest Processes Impacting Quality

- Care in Handling
- Stowage Technique
- Use of Ice
- Stowage Conditions
- Unloading Speed
- Cooking/Cooling Parameters
- Freezing
- Cold Storage



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## CHEMICAL COMPOSITION

| Proportion (g / 100 g) |       |        |
|------------------------|-------|--------|
|                        | Raw   | Cooked |
| Moisture               | 80.60 | 75.10  |
| Protein                | 18.50 | 23.70  |
| Fat                    | 1.18  | 1.51   |
| Carbohydrate           | 0.00  | 0.00   |
| Ash                    | 2.00  | 2.56   |

\*USDA Nutritional Database ID, 15144 (Raw) and 15227 (Cooked)

## STORAGE

Maintaining a cool (1 – 3 °C), humid (> 95 %), and well-oxygenated (> 80% for RSW) environment is necessary for the post-harvest survival of snow crab stored either on ice or in recirculating seawater systems.

These conditions are required to be maintained during unloading, throughout ground transport, and when transferred into chill rooms at the processor. The addition of ice to the top of stacked tote pans or fish boxes is necessary to provide sufficient melt water throughout the intended storage period to maintain these conditions and prevent mortalities prior to processing.

Once cooked and frozen, snow crab held in cold storage will degrade over time.

**When stored at -18 °C, snow crab clusters remain an acceptable quality for up to 6 months.**

**When stored at -30 °C, snow crab clusters remain an acceptable quality for up to 12 months.**

## KEY FOOD SAFETY AND QUALITY CONCERNS

Physical shock, temperature shock, and air exposure will stress live the animals and contribute either to limb losses and/or snow crab mortality.

All cooked snow crab products are ready-to-eat (RTE), meaning that additional cooking is not necessary to consume the product safely. To produce and export RTE foods in Canada, all producers comply with sanitation and food handling requirements outlined by the Safe Food for Canadians Regulations. These regulations provide assurances that RTE snow crab products are not re-contaminated after the cooking step and before packaging by potentially pathogenic bacteria, such as *L. monocytogenes*, *E. coli*, and *Salmonella* spp.

After moulting, snow crab shells are soft, and have a low meat content with a watery texture. Soft shell crab must be avoided and coordination between harvesters and processors should take place to prevent landing animals with these characteristics.

The shells of snow crabs are susceptible to the growth of barnacles, tube worms and leach worms. Although these growths may be unappealing to look at, they pose no food safety risks to consumers.

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