

**COSEWIC**  
**Status Appraisal Summary**

on the

**Leatherback Sea Turtle**  
*Dermochelys coriacea*

Atlantic population

**in Canada**

**ENDANGERED**  
**2022**

**COSEWIC**  
Committee on the Status  
of Endangered Wildlife  
in Canada



**COSEPAC**  
Comité sur la situation  
des espèces en péril  
au Canada

COSEWIC status appraisal summaries are working documents used in assigning the status of wildlife species suspected of being at risk in Canada. This document may be cited as follows:

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Production note:

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Également disponible en français sous le titre Sommaire du statut de l'espèce du COSEPAC sur la Tortue luth (*Dermochelys coriacea*) population de l'Atlantique, au Canada.

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## COSEWIC Assessment Summary

### Assessment Summary – December 2022

**Common name**

Leatherback Sea Turtle - Atlantic population

**Scientific name**

*Dermochelys coriacea*

**Status**

Endangered

**Reason for designation**

The Atlantic population of this large, long-lived marine turtle has declined precipitously, with the number of known nesting females reduced by about 60% in a single generation (30 years) and this number is projected to decline by a further 50% within the next generation. Adult turtles nest on beaches in the Wider Caribbean Region, but a significant proportion migrate in summer to forage on jellyfish in marine waters of Atlantic Canada. This species continues to be threatened by bycatch and entanglement in fishing gear, marine pollution, coastal and offshore resource development, climate change, poaching of eggs, and nesting habitat decline.

**Occurrence**

Quebec, New Brunswick, Prince Edward Island, Nova Scotia, Newfoundland and Labrador, Atlantic Ocean

**Status history**

The species was considered a single unit and designated Endangered in April 1981. Status re-examined and confirmed in May 2001. Split into two populations in May 2012. The Atlantic population was designated Endangered in May 2012. Status re-examined and confirmed in December 2022.



## COSEWIC Status Appraisal Summary

Leatherback Sea Turtle, Atlantic population  
Tortue luth, population de l'Atlantique  
*Dermochelys coriacea*

Range of occurrence in Canada (province/territory/ocean): Quebec, New Brunswick, Prince Edward Island, Nova Scotia, Newfoundland and Labrador, Atlantic Ocean

### Evidence (indicate as applicable):

No new evidence supports a change in status. However, three newly modelled scenarios in NMFS and USFWS (2020) all resulted in an estimated overall reduction of about 50% in the number of nesting adult females within less than one generation. As a result, criterion A3 was added to the criteria applied in the last assessment. Sub-criterion 'a' was excluded because declines were based on indices rather than total population counts. Sub-criteria 'c' and 'e' were added to acknowledge the decline in quality of habitat (c) and the effects of pollutants (e).

### SAS 6

#### Wildlife species:

Change in eligibility, taxonomy or designatable units:	yes <input type="checkbox"/> no <input checked="" type="checkbox"/>
<b>Explanation:</b> No new evidence is available to support a change.	

### Range:

<b>SAS 7</b>	Change in Extent of Occurrence (EOO):	yes <input type="checkbox"/> no <input checked="" type="checkbox"/> unk <input type="checkbox"/>
<b>SAS 8</b>	Change in Index of Area of Occupancy (IAO):	yes <input type="checkbox"/> no <input checked="" type="checkbox"/> unk <input type="checkbox"/>
<b>SAS 9</b>	Change in number of known or inferred current locations <sup>1</sup> :	yes <input type="checkbox"/> no <input checked="" type="checkbox"/> unk <input type="checkbox"/>
<b>SAS 10</b>	Significant new survey information	yes <input checked="" type="checkbox"/> no <input type="checkbox"/>

#### Explanation:

##### Canadian context

The Leatherback Sea Turtle (Atlantic population) is seasonally abundant in temperate shelf and slope waters off eastern Canada. It is broadly distributed on the Scotian Shelf throughout the foraging season (June through October) and is regularly found in the southern Gulf of St. Lawrence in late summer and fall (James *et al.* 2006). DFO convened a Science Response Process in 2019 (DFO 2020b) as an update to their 2012 Zonal Advisory Process to define important habitat for Leatherback Sea Turtles in Atlantic Canada (DFO 2012). The update, which relied on satellite-tracking data, reflected a larger sample size and a longer-term dataset and is the most recent study of habitat use by Leatherback Sea Turtles in Atlantic Canadian waters. Using telemetry data from 128 individual Leatherback Sea Turtles over a period of 19 years, it confirmed the general distribution of the taxon proposed by James *et al.* in 2006 and identified two primary areas of important habitat: 1) the southeastern Gulf of St. Lawrence and waters off eastern Cape Breton Island, including Sydney Bight, the Cabot Strait and portions of the Magdalen Shallows, and adjacent portions of the

<sup>1</sup> Use the IUCN definition of "location."

Laurentian Channel, and 2) waters south and east of the Burin Peninsula, including parts of Placentia Bay. Peak occupancy occurs in summer and autumn (DFO 2020b).

**Northwestern Atlantic context**

The Atlantic Canadian and Pacific Canadian populations of Leatherback Sea Turtle are distinct (COSEWIC 2012). Recent work confirms that these two designatable units meet the criteria for discreteness and evolutionary significance recently outlined by COSEWIC (Appendix F5, Operations and Procedures Manual), including distinguishing heritable markers, natural geographic disjunction, and independent evolutionary trajectory for an evolutionarily significant period. Genetic structure reflects global radiation from a single mtDNA lineage with the most divergent haplotypes indicating separation between Atlantic and Indo-Pacific Ocean populations approximately 170,000 years BP (Duchene *et al.* 2012). Recent published and unpublished genetic evidence (National Marine Fisheries Service and U.S. Fish and Wildlife Service 2020) supports the existence of seven genetically discrete populations globally, which are congruent with the seven regional management units (RMUs) described by Wallace *et al.* (2010). These populations are separated by behaviour (males and females return to waters near natal nesting beaches to mate) and physical factors (land masses, oceanographic features, currents).

Leatherback Sea Turtles found in Atlantic Canadian waters are part of the broader northwest Atlantic Ocean (NWA) Leatherback Sea Turtle Regional Management Unit (RMU) (Wallace *et al.* 2010), which ranges throughout the northern Atlantic from nesting areas in the Wider Caribbean Region, including Latin America and the Guiana Shield, to foraging areas extending from the north into temperate latitudes (Figure 1).

In its 2019 assessment of the NWA RMU, the IUCN includes an estimated area of occupancy (IAO) of 2,000 km<sup>2</sup> and an estimated extent of occurrence (EOO) of 68,997,470 km<sup>2</sup> (NWALWG 2018, 2019). Although the method used to calculate the IAO was not specified in the IUCN document, for sea turtles it is typically based on nesting area (e.g., Tiwari *et al.* 2013). There is also specific direction from IUCN for authors preparing reports that outlines how to calculate both IAO and EOO, with the former using a 2x2 grid value (Red List Technical Working Group 2018).

Despite the declining trend in the number of NWA RMU Leatherback Sea Turtles, the IAO seems to have remained stable. The Leatherback Sea Turtle exhibits philopatry to a nesting region rather than a specific beach (Eckert *et al.* 2012; Stewart *et al.* 2013). Females can move hundreds of kilometres between nesting sites within a single season (NMFS and USFWS 2020).

**Population Information:**

<b>SAS 11</b>	Change in number of mature individuals:	yes <input checked="" type="checkbox"/> no <input type="checkbox"/> unk <input type="checkbox"/>
<b>SAS 12</b>	Change in population trend:	yes <input checked="" type="checkbox"/> no <input type="checkbox"/> unk <input type="checkbox"/>
<b>SAS 13</b>	Change in severity of population fragmentation:	yes <input type="checkbox"/> no <input checked="" type="checkbox"/> unk <input type="checkbox"/>
<b>SAS 14</b>	Change in trend in area and/or quality of habitat:	yes <input type="checkbox"/> no <input checked="" type="checkbox"/> unk <input type="checkbox"/>
<b>SAS 15</b>	Significant new survey information	yes <input checked="" type="checkbox"/> no <input type="checkbox"/>

**Explanation:**

There is one population of Leatherback Sea Turtle in Atlantic Canadian waters which comprises seasonally foraging adults and sub-adults of both sexes representing all the principal nesting stocks of Leatherback Sea Turtle throughout the western Atlantic (Stewart *et al.* 2013). Archibald and James (2016) suggest that individuals found seasonally in Atlantic Canada number in the hundreds if not thousands. The population in Atlantic Canada is female-biased (1.86 females: 1 male) (James *et al.* 2007). All other population estimates are for the entire NWA RMU and consider mature (nesting) females.

Recent region-wide trend analyses of the NWA Leatherback Sea Turtle RMU point to its decline. The first analysis, conducted by the Northwest Atlantic Leatherback Working Group (NWALWG) (NWALWG 2018), gathered nesting data from 17 different countries and territories, representing more than 600,000 observed nests region-wide since 1990. Regional abundance-weighted trends were negative across temporal scenarios and indicated statistically measurable regional-scale declines in nest abundance, particularly since 2008, with

an overall decline of 4.2% per year (Figure 2). The NWALWG used these data to inform the 2019 Red List Assessment of the NWA Leatherback Sea Turtle RMU, establishing a “past” population estimate (averaging annual nest counts from 1986–1990) and a “present” estimate (averaging annual nest counts from 2013–2017) for all nesting sites with >10 years of data (n=23 sites across 14 countries and territories). These calculations resulted in an approximate 60% decline from past (~58,000 nests per year) to present (~23,000 nests per year) estimates, or a 7.9% decline per year.

The National Marine Fisheries Service, in collaboration with the U.S. Fish and Wildlife Service (2020), conducted a status review of Leatherback Sea Turtle under the *Endangered Species Act*. This review uses a total index of nesting female abundance for the NWA Leatherback Sea Turtle RMU of 20,659, based on data from 24 nesting aggregations in 10 countries over a three-year interval beginning in 2012 or after. Trend analyses of these data indicated a “significant decline” in nesting and decreased productivity within this subpopulation. The associated Extinction Risk Analysis notes that the Northwest Atlantic population’s “continued persistence [is] in question. Clear and present threats place this [population] at a high risk of extinction” (National Marine Fisheries Service and U.S. Fish and Wildlife Service 2020, p. 117).

It should be noted that estimating population abundance in a marine species is challenging, particularly species like sea turtles that are highly migratory on an oceanic scale. Sea turtles lay their eggs on nesting beaches, where eggs and nests are easily counted. Sea turtle nest counts are commonly used globally as an index of abundance and population trends (as above). NMFS and USFWS (2020) note many caveats when using nest trend data, including (1) adult females only account for a small percentage of the population and trends in nester abundance may not be an index for the remainder of the population; (2) calculations assume a stable age distribution; and (3) time series surveys do not always span one generation, or the multiple generations required to reach a stable age distribution. Studies investigating the biases associated with these traditional metrics suggest that they may produce estimates of adult female abundance significantly higher than reality—in some cases by a factor of ~2 (Tucker 2010; Weber *et al.* 2013; Esteban *et al.* 2017; Casale and Ceriani 2020; Ceriani *et al.* 2021).

**SAS 16**

**Threats:**

Change in nature and/or severity of threats:	yes <input checked="" type="checkbox"/> no <input type="checkbox"/> unk <input type="checkbox"/>
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Explanation:

The understanding of the nature and severity of threats has deepened since the last COSEWIC (2012) assessment. Bycatch in commercial fisheries, particularly fixed-gear fisheries, remains the primary threat to the Leatherback Sea Turtle in Atlantic Canadian waters (Hamelin *et al.* 2017; DFO 2020a,b). In fact, bycatch continues to be the primary threat to the NWA RMU, generally occurring throughout its range and affecting juveniles, subadults, and adult turtles (NWALWG 2018; DFO 2020a,b; National Marine Fisheries Service and U.S. Fish and Wildlife Service 2020). As part of their 2018 status assessment, the Northwest Atlantic Leatherback Working Group determined that the high levels of Leatherback Sea Turtle bycatch near key nesting beaches (particularly Trinidad and the Guianas; n=~3,000 turtles per year) is likely the primary driver of the current estimated declines in abundance. Additionally, the Leatherback Sea Turtle faces multiple threats at all life stages (NWALWG 2018; DFO 2020a,b; National Marine Fisheries Service and U.S. Fish and Wildlife Service 2020). The cumulative impact of these threats is large and impacts individual survival and productivity. This is corroborated by Innis *et al.* (2010), who reported that many individuals are simultaneously exposed to multiple threats.

DFO (2020b) considers additional threats to the Atlantic Canadian population of leatherbacks within Canadian waters in order of magnitude, beginning with bycatch and fisheries as the greatest threat. In order from greatest to least threatening, this is followed by: entanglement in ghost fishing gear; underwater noise; marine pollution (plastics and other debris); marine pollution (oil from large-scale oil spills); marine pollution (contaminants excluding oil); vessel strikes; and climate change (DFO 2020b).

The same document considers the threats Canadian leatherbacks face outside of Canadian waters to be the following (in decreasing order of magnitude): (1) harvesting (legal and illegal); (2) coastal development and beach use (affecting nesting habitat); and (3) artificial light (DFO 2020b).

It is worth noting that the IUCN (NWALWG 2019) ranks Take (direct utilization of turtles or eggs for human use, i.e., consumption and commercial products) as a threat of greater magnitude than coastal development for the broader NWA RMU. Although climate change also appears last on the list of threats in the IUCN document (NWALWG 2019), there is growing concern about sea turtles' capacity to persist in a warming world. For example, projected climate warming, which notably affects egg incubation (i.e., warmer temperatures cause female-biased sex ratios and higher embryo mortality), may have sublethal effects across all life stages, ultimately affecting population viability (Maurer *et al.* 2021).

**SAS 17  
Protection:**

Change in effective protection:	yes <input type="checkbox"/> no <input checked="" type="checkbox"/> unk <input type="checkbox"/>
Explanation: No change since last assessment.	

**SAS 18  
Rescue Effect:**

Change in evidence of rescue effect:	yes <input type="checkbox"/> no <input checked="" type="checkbox"/>
Explanation: No change since last assessment. Only the Southwest Atlantic Ocean population (Critically Endangered – IUCN 2022) and Southeast Atlantic Ocean population (Data Deficient – IUCN 2022) have the potential to provide immigrants.	

**SAS 19  
Quantitative Analysis:**

Change in estimated probability of extirpation:	yes <input checked="" type="checkbox"/> no <input type="checkbox"/> unk <input type="checkbox"/>
Explanation: Because significant study of the Leatherback Sea Turtle population in Atlantic Canada has only occurred over the last ~20 years, the most recent available data on abundance and threats (Archibald and James 2016; Hamelin <i>et al.</i> 2017; DFO 2020b) do not compare how these factors have changed over time. However, because the seasonally resident population in Atlantic Canadian waters is part of the broader NWA RMU, the sharp decline in the nesting population described in SAS 11–14 is relevant here (NWALWG 2018; DFO 2020a, b; National Marine Fisheries Service and U.S. Fish and Wildlife Service 2020), particularly the Extinction Risk Analysis in the National Marine Fisheries Service and U.S. Fish and Wildlife Service (2020) document cited above.	

**Summary and Additional Considerations [e.g., recovery efforts; summarize exactly what has changed since the previous assessment]**

Research and conservation activities related to the Leatherback Sea Turtle in Atlantic Canada have continued in earnest since the 2012 COSEWIC assessment. These efforts have largely been guided by both the Atlantic Leatherback Recovery Strategy (Atlantic Leatherback Turtle Recovery Team 2006) and the Atlantic Leatherback Action Plan (DFO 2020a). Efforts have focused on identifying and understanding anthropogenic threats in Atlantic Canadian waters; understanding life history characteristics through research and monitoring; identifying important habitat in Atlantic Canada; minimizing harm from anthropogenic activities under Canadian jurisdiction, particularly commercial fishing activities; developing and implementing educational programming for commercial fishermen, coastal communities, and other Canadians; and

promoting international initiatives that contribute to Leatherback Sea Turtle recovery in the Atlantic. (See Table 1 of the *Action Plan for the Leatherback Sea Turtle, Atlantic Population* (DFO 2020a) for details on the status of individual activities. See DFO 2022 for an update on the progress of Recovery Strategy implementation from 2013 to 2019.)

Key findings since the 2012 COSEWIC assessment include knowledge that Atlantic Canadian waters host an annual, seasonal foraging population of adults and sub-adults of both sexes representing all the principal nesting stocks of the Leatherback Sea Turtle throughout the western Atlantic (Stewart *et al.* 2013; Archibald and James 2016). In addition, off Atlantic Canada, a Leatherback Sea Turtle can consume conservatively more than 200 kg (more than 220 jellyfish per day) or approximately 50% of its body mass in gelatinous zooplankton daily (Wallace *et al.* 2018). This means a single foraging season (off Atlantic Canada) could support 59% of a non-breeding Leatherback Sea Turtle's annual energy budget and 29% of the energetic requirements for a female on a two-year breeding cycle (Wallace *et al.* 2018). The concomitant importance of conserving Leatherback Sea Turtles in Atlantic Canadian waters is evident (Wallace *et al.* 2018).

The most notable change to our understanding of population dynamics is the recently quantified long-term negative trend in annual nest abundance described in more detail in SAS 11-16 of the Status Appraisal Summary.

## **ACKNOWLEDGEMENTS**

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Figure 1. Distribution of NWA Leatherback Sea Turtle RMU. Source: Wallace *et al.* 2010.

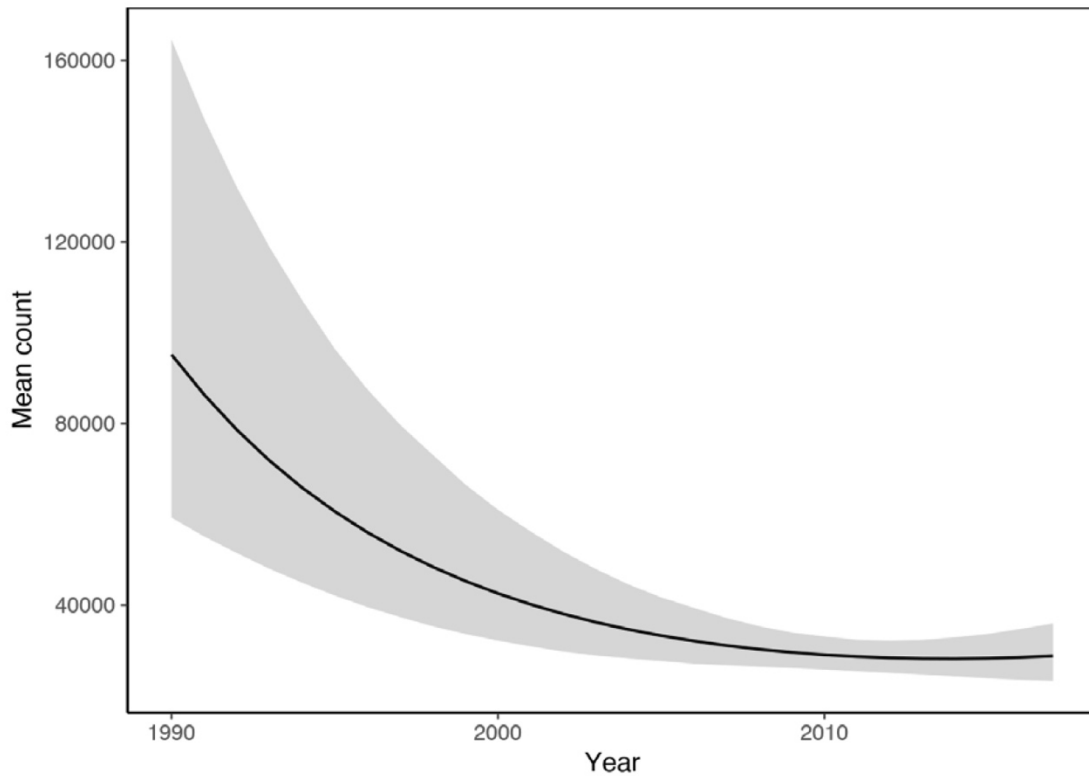


Figure 2. Regional-level trends in Leatherback Sea Turtle Northwest Atlantic Ocean population for 1990–2017. Line is geometric annual mean trend, weighted by relative site-level abundance, across a total of 23 sites in Suriname, French Guiana, Guyana, Trinidad and Tobago, Grenada, Venezuela, Costa Rica, Panama, Colombia, St. Croix, Puerto Rico, St. Kitts, Guadeloupe, British Virgin Islands, and Florida; shaded area is 95% credible intervals (Trend: -4.2%/yr; 95% CIs: -6.7%/yr to -2.2%/yr). Trends estimated using Bayesian regression analysis approach. Figure adapted from NWALWG 2018 and 2019.

## TECHNICAL SUMMARY

### *Dermochelys coriacea*

Leatherback Sea Turtle, Atlantic population

Tortue luth, population de l'Atlantique

Range of occurrence in Canada (province/territory/ocean): Quebec, New Brunswick, Prince Edward Island, Nova Scotia, Newfoundland and Labrador, Atlantic Ocean

[NOTE: As specific Canadian information is not available, data used here are based on the northwest Atlantic Ocean Leatherback Sea Turtle Regional Management Unit, which is inclusive of all Canadian Leatherback Sea Turtles in the Atlantic.]

### Demographic Information

<p>Generation time (usually average age of parents in the population; indicate if another method of estimating generation time indicated in the IUCN guidelines (2011) is being used)</p> <p><i>Few age and growth data have been reported for Leatherback Turtle and estimates range widely (Avens et al. 2009; Wallace and Jones 2015). Generation time used here is based on that used by IUCN (NWALWG 2018), NMFS and USFWS (2020), and the work of Avens et al. (2020).</i></p>	<p>~30 years</p>
<p>Is there an [observed, inferred, or projected] continuing decline in number of mature individuals?</p> <p>See SAS 11-15.</p>	<p>Yes, estimated, inferred and projected</p>
<p>Estimated percent of continuing decline in total number of mature individuals within [5 years or 2 generations, whichever is longer up to a maximum of 100 years]</p> <p><i>See SAS 11, 12 and 15. This projection based on NMFS and USFWS (2020), which tested three scenarios to determine how long it would take for nester abundance to be reduced by 50%. All scenarios resulted in a 50% nester reduction in less than one generation (8 to 17 years to decline by 50%). Trend analyses by NWALWG (2018, 2019) did not include projections.</i></p>	<p>Inferred 50% reduction in abundance of mature nesting females in less than one generation (~30 years)</p>
<p>[Observed, estimated, inferred, or suspected] percent [reduction or increase] in total number of mature individuals over the last [10 years, or 3 generations, whichever is longer up to a maximum of 100 years].</p> <p><i>See SAS 11, 12 and 15. Based on data from approximately one generation; there are insufficient data to do a 3-generation (90 year) analysis (NWALWG 2018, 2019; NMFS and USFWS 2020).</i></p>	<p>Estimated and inferred past decline of approximately 60% in total number of mature individuals in less than 3 generations</p>

<p>[Projected or suspected] percent [reduction or increase] in total number of mature individuals over the next [10 years, or 3 generations, whichever is longer up to a maximum of 100 years].</p> <p><i>See SAS 11, 12 and 15. This projection based on NMFS and USFWS (2020), which tested three scenarios to determine how long it would take for nester abundance to be reduced by 50%. All scenarios resulted in a 50% nester reduction in less than one generation (8 to 17 years to decline by 50%). Trend analyses by NWALWG (2018, 2019) did not include projections.</i></p>	<p>Projected 50% reduction in abundance of mature nesting females in less than one generation (~30 years). Decline at a similarly high rate into the future is suspected.</p>
<p>[Observed, estimated, inferred, or suspected] percent [reduction or increase] in total number of mature individuals over any period [10 years, or 3 generations, whichever is longer up to a maximum of 100 years], including both the past and the future.</p> <p>As per #3-5 above, sufficient data do not exist to assess 3 generations of this population (NWALWG 2018, 2019; NMFS and USFWS 2020).</p>	<p>Inferred and projected reduction of much greater than 50%, based on past declines of nesting females over one generation and continuing threats, particularly bycatch.</p>
<p>Are the causes of the decline a. clearly reversible and b. understood and c. ceased?</p> <p><i>See SAS 16.</i></p>	<p>a) partially reversible, b) partially understood, and c) not ceased.</p>
<p>Are there extreme fluctuations in number of mature individuals?</p>	<p>No</p>

### Extent and Occupancy Information

<p>Estimated extent of occurrence (EOO)</p> <p><i>As determined for the NWA Leatherback Sea Turtle RMU throughout its range by NWALWG (2019) for the IUCN Assessment</i></p>	<p>68,997,470 km<sup>2</sup> (global range including Canadian)</p>
<p>Index of area of occupancy (IAO) (Always report 2x2 grid value).</p> <p><i>See SAS 8.</i></p>	<p>2,000 km<sup>2</sup> (based on nesting sites)</p>
<p>Is the population “severely fragmented” i.e., is &gt;50% of its total area of occupancy in habitat patches that are (a) smaller than would be required to support a viable population, and (b) separated from other habitat patches by a distance larger than the species can be expected to disperse?</p>	<p>a. No b. No</p>
<p>Number of “locations”* (use plausible range to reflect uncertainty if appropriate)</p>	<p>1-10 (based on international bycatch)</p>
<p>Is there an [observed, inferred, or projected] decline in extent of occurrence?</p>	<p>No</p>

\* See Definitions and Abbreviations on [COSEWIC website](#) for more information on this term.



Is there an [observed, inferred, or projected] decline in index of area of occupancy?  See SAS 8.	No
Is there an [observed, inferred, or projected] decline in number of subpopulations?	No
Is there an [observed, inferred, or projected] decline in number of "locations"*?	No
Is there an [observed, inferred, or projected] decline in [area, extent and/or quality] of habitat?  <i>This is detailed in the threats analyses included in DFO 2020b; NWALWG 2018, 2019; and NMFS and USFWS 2020. Particularly noteworthy are threats to nesting beach habitat. See also SAS 16.</i>	Yes, observed, inferred and projected decline in area and quality of habitat
Are there extreme fluctuations in number of subpopulations?	No
Are there extreme fluctuations in number of "locations"*?	No
Are there extreme fluctuations in extent of occurrence?	No
Are there extreme fluctuations in index of area of occupancy?	No

**Number of Mature Individuals (in each subpopulation)**

<b>Subpopulations (give plausible ranges)</b>	<b>N Mature Individuals</b>
<i>One population in Atlantic Canadian waters consisting of individuals from several nesting sites (Stewart et al. 2013). Archibald and James (2016) suggest that leatherbacks found seasonally in Atlantic Canada number in the hundreds if not thousands. Population in Atlantic Canada is female-biased (1.86 females: 1 male) (James et al. 2007). All other population estimates are for the entire NWA RMU and consider mature (nesting) females. These range from 20,659 (NMFS and USFWS 2020) to ~23,000 (NWALWG 2019). Data on number of adult males in the NWA Leatherback Sea Turtle RMU are not available. Note: See SAS 15 re: accuracy of estimates.</i>	20,659 to ~23,000 nesting females in Northwest Atlantic RMU. Numbers in Canadian waters unknown.
Total	20,659 to ~23,000 nesting females

\* See Definitions and Abbreviations on [COSEWIC website](#) for more information on this term.



### Quantitative Analysis

<p>Is the probability of extinction in the wild at least [20% within 20 years or 5 generations whichever is longer up to a maximum of 100 years, or 10% within 100 years]?</p> <p><i>Projection of 50% reduction in abundance of mature nesting females in less than one generation, based on NMFS and USFWS (2020), but probability of extinction not calculated. See SAS 11, 12, and 15 and notes on #3 above for details.</i></p>	<p>Analysis not conducted.</p>
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### Threats (direct, from highest impact to least, as per IUCN Threats Calculator)

<p>Was a threats calculator completed for this species? No.</p> <p>See SAS 16. No independent threats calculator was completed; however, IUCN (2019) assessed threats to the NWA RMU, and DFO (2020b) to the Atlantic Canadian (AC) population as well as NWA RMU (NWA) of Leatherback Sea Turtle. Threats compiled by DFO (2020b) include:</p> <ul style="list-style-type: none"> <li>i. Fisheries bycatch – High (NWA), Low (AC)</li> <li>ii. Entanglement in ghost fishing gear – Low (NWA), Unknown (AC)</li> <li>iii. Marine pollution: plastics and other debris – Med (NWA), Low (AC)</li> <li>iv. Marine pollution: oil (large-scale oil spills) – Low (NWA), Low (AC)</li> <li>v. Marine pollution: contaminants (excluding oil) – Low (NWA), Unknown (AC)</li> <li>vi. Vessel strikes – Low (NWA), Unknown (AC)</li> <li>vii. Climate change – Low (NWA), Unknown (AC)</li> </ul> <p>Additional threats - NWA only:</p> <ul style="list-style-type: none"> <li>i. Harvesting (legal and illegal) – Medium (NWA)</li> <li>ii. Coastal development and beach use – Medium (NWA)</li> <li>iii. Artificial light – Low (NWA)</li> </ul> <p>What additional limiting factors are relevant? <i>Late maturation and long generation time limit resilience to population perturbations, and long-distance migrations increase exposure to fisheries bycatch risk and pollution.</i></p>
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### Rescue Effect (immigration from outside Canada)

<p>Status of outside population(s) most likely to provide immigrants to Canada. <i>Canadian turtles are part of the wider ranging Northwest Atlantic population. The Southeast Atlantic population (data deficient - IUCN 2022) and Southwest Atlantic population (Critically Endangered – IUCN 2022) are the only potential source of immigrants.</i></p>	<p>Endangered</p>
<p>Is immigration known or possible?</p>	<p>Possible</p>
<p>Would immigrants be adapted to survive in Canada?</p>	<p>Yes</p>
<p>Is there sufficient habitat for immigrants in Canada?</p>	<p>Yes</p>

Are conditions deteriorating in Canada?+  <i>See SAS 19. Because significant study of this population in the Canadian context has only occurred over the last ~20 years, the most recent available data on threats (Archibald and James 2016; Hamelin et al. 2017; DFO 2020b) do not compare how these have changed over time.</i>	Unknown in Canadian waters, but deteriorating on nesting beaches and migration routes
Are conditions for the source (i.e., outside) population deteriorating?+  <i>See SAS 14 and 16.</i>	Yes
Is the Canadian population considered to be a sink?+	No
Is rescue from outside populations likely?	No

### Data Sensitive Species

Is this a data sensitive species?	No
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### Status History

#### COSEWIC Status History

The species was considered a single unit and designated Endangered in April 1981. Status re-examined and confirmed in May 2001. Split into two populations in May 2012. The Atlantic population was designated Endangered in May 2012. Status re-examined and confirmed in December 2022.

### Status and Reasons for Designation:

<b>Status:</b> Endangered	<b>Alpha-numeric codes:</b> A2bcde+3bcde+4bcde
<b>Reasons for designation:</b> The Atlantic population of this large, long-lived marine turtle has declined precipitously, with the number of known nesting females reduced by about 60% in a single generation (30 years) and this number is projected to decline by a further 50% within the next generation. Adult turtles nest on beaches in the Wider Caribbean Region, but a significant proportion migrate in summer to forage on jellyfish in marine waters of Atlantic Canada. This species continues to be threatened by bycatch and entanglement in fishing gear, marine pollution, coastal and offshore resource development, climate change, poaching of eggs, and nesting habitat decline.	

### Applicability of Criteria

#### Criterion A (Decline in Total Number of Mature Individuals):

Meets Endangered, A2bcde+3bcde+4bcde. Observed approximate 60% decline in total number of mature individuals in one generation; Projected 50% reduction in abundance of mature nesting females in less than one generation; Inferred reduction of much greater than 50%, based on past declines of nesting females and continuing threats, particularly harvesting and bycatch.

#### Criterion B (Small Distribution Range and Decline or Fluctuation):

May meet Threatened, B2ab(iii,v). IAO < or = 2,000 km<sup>2</sup>; population may occur at < or = 10 locations, and there is an observed, inferred and projected decline in habitat.

+ See [Table 3](#) (Guidelines for modifying status assessment based on rescue effect).

Criterion C (Small and Declining Number of Mature Individuals):  
Not applicable. Number of mature individuals exceeds the threshold for Threatened.

Criterion D (Very Small or Restricted Population):  
Not applicable. The population is neither very small nor restricted.

Criterion E (Quantitative Analysis):  
Not applicable. Analysis not conducted.



### COSEWIC HISTORY

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was created in 1977 as a result of a recommendation at the Federal-Provincial Wildlife Conference held in 1976. It arose from the need for a single, official, scientifically sound, national listing of wildlife species at risk. In 1978, COSEWIC designated its first species and produced its first list of Canadian species at risk. Species designated at meetings of the full committee are added to the list. On June 5, 2003, the *Species at Risk Act* (SARA) was proclaimed. SARA establishes COSEWIC as an advisory body ensuring that species will continue to be assessed under a rigorous and independent scientific process.

### COSEWIC MANDATE

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of wild species, subspecies, varieties, or other designatable units that are considered to be at risk in Canada. Designations are made on native species for the following taxonomic groups: mammals, birds, reptiles, amphibians, fishes, arthropods, molluscs, vascular plants, mosses, and lichens.

### COSEWIC MEMBERSHIP

COSEWIC comprises members from each provincial and territorial government wildlife agency, four federal entities (Canadian Wildlife Service, Parks Canada Agency, Department of Fisheries and Oceans, and the Federal Biodiversity Information Partnership, chaired by the Canadian Museum of Nature), three non-government science members and the co-chairs of the species specialist subcommittees and the Aboriginal Traditional Knowledge subcommittee. The Committee meets to consider status reports on candidate species.

### DEFINITIONS (2022)

Wildlife Species	A species, subspecies, variety, or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature and is either native to Canada or has extended its range into Canada without human intervention and has been present in Canada for at least 50 years.
Extinct (X)	A wildlife species that no longer exists.
Extirpated (XT)	A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A wildlife species facing imminent extirpation or extinction.
Threatened (T)	A wildlife species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)*	A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
Not at Risk (NAR)**	A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.
Data Deficient (DD)***	A category that applies when the available information is insufficient (a) to resolve a species' eligibility for assessment or (b) to permit an assessment of the species' risk of extinction.

\* Formerly described as "Vulnerable" from 1990 to 1999, or "Rare" prior to 1990.  
 \*\* Formerly described as "Not In Any Category", or "No Designation Required."  
 \*\*\* Formerly described as "Indeterminate" from 1994 to 1999 or "ISIBD" (insufficient scientific information on which to base a designation) prior to 1994. Definition of the (DD) category revised in 2006.

The Canadian Wildlife Service, Environment and Climate Change Canada, provides full administrative and financial support to the COSEWIC Secretariat.