

# **Addendum to COSEWIC 2015 Status Report**

for the

## **Winter Skate** *Leucoraje ocellata.*

**2017**

Fisheries and Oceans Canada (DFO) has requested that COSEWIC reconsider the designatable unit (DU) structure for Winter Skate which was last reassessed in April, 2015. In that assessment, COSEWIC included individuals found in the northern Gulf of St. Lawrence with individuals in the southern Gulf of St. Lawrence to form the Gulf of St. Lawrence DU. There were 58 reported catches of Winter Skate in the northern Gulf research vessel surveys and these fish had a length distribution comparable to the Winter Skate in the Southern Gulf. Winter Skate in the Southern Gulf mature earlier, at a shorter length, and have a smaller length distribution than Winter Skate outside the Gulf. DFO did a Recovery Potential Assessment following the COSEWIC assessment. At that time the available data on Winter Skate catches in the Northern Gulf of St. Lawrence were reviewed. During this review, it was discovered that all but one of the 58 reported catches of Winter Skate from the northern Gulf had been misidentified and these fish were probably a mixture of Thorny Skate (*Amblyraja radiata*), Smooth Skate (*Malacoraja senta*) and Round Skate (*Raja fyllae*). Winter Skate have been reported occasionally from Bonne Bay in western Newfoundland and Labrador and these are likely of the late maturing type. There also have been four Winter Skate specimens reported from the St. Lawrence Estuary which is within NAFO Division 4T but outside the spatial coverage of the research vessel survey.

Based on this information, DFO concluded that the northern Gulf of St. Lawrence and the St. Lawrence Estuary are outside the normal species range and these areas should not be included in the Gulf of St. Lawrence DU. A background document prepared by Dr. Doug Swain is attached (Appendix 1). The Marine Fishes SSC reviewed this information and agreed with the DFO conclusions. Therefore it is proposed that the original Southern Gulf of St. Lawrence DU be re-established and that the remainder of the Gulf of St. Lawrence be declared outside the normal range of Winter Skate. This change in DU definition would not affect the recommended status of any Winter Skate DUs. COSEWIC accepted the SSC recommendation.

A map of the revised DU distribution is given in Figure 1. The Extent of Occurrence for the Gulf of St. Lawrence DU is 96,535 km<sup>2</sup>.

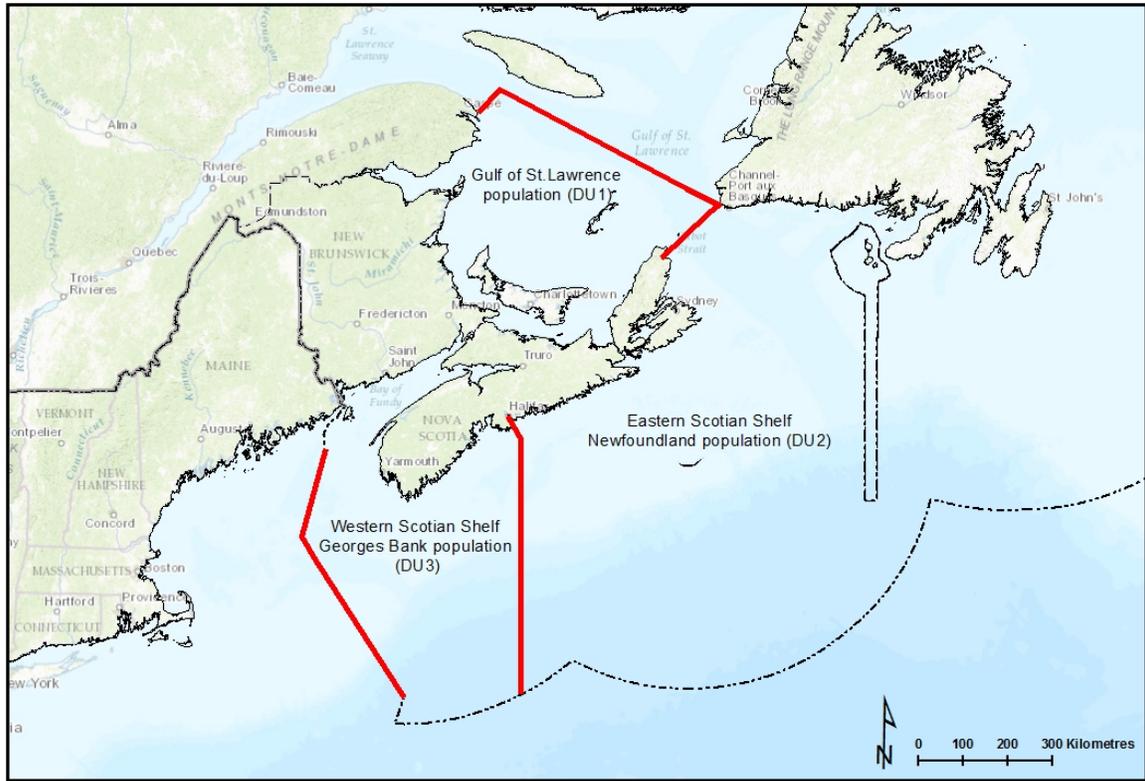


Figure 1: Map showing the revised boundaries of Winter Skate DUs in Canada.

## **Appendix 1: Population Structure of Winter Skate in the Gulf of St. Lawrence**

**Prepared by Dr. Doug Swain, Fisheries and Oceans Canada, Gulf Fisheries Centre, Moncton, NB  
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Winter Skate (*Leucoraja ocellata*) in the southern Gulf of St. Lawrence (sGSL) are distinct from Winter Skate elsewhere (McEachran and Martin 1977, Swain et al. 2006, Kelly and Hanson 2013a,b). Compared to Winter Skate in other areas, those in the sGSL mature at a much smaller size and earlier age (i.e., length and age at 50% maturity: 42 cm and 5 years versus 75 cm and 11-13 years). Winter Skate in the sGSL also have a much shorter maximum length (McEachran and Martin 1977, Kelly and Hanson 2013a), occur in shallower and warmer water in summer (Kelly and Hanson 2013b), and differ in morphological characters related to feeding (McEachran and Martin 1977) compared to Winter Skate elsewhere. Given these striking differences, Kelly and Hanson (2013a) proposed that Winter Skate from the shallow waters of the sGSL may represent an undescribed endemic species distinct from *L. ocellata* elsewhere.

COSEWIC first assessed the status of Winter Skate in Canada in 2005 (COSEWIC 2005). The Designatable Units (DUs) identified in that assessment included a Southern Gulf of St. Lawrence DU, assessed as Endangered, and a Northern Gulf-Newfoundland DU, assessed as Data Deficient. DU structure was revised in the 2015 re-assessment of Winter Skate (COSEWIC 2015). A new Gulf of St. Lawrence DU was identified, composed of the former Southern Gulf of St. Lawrence DU and the Northern Gulf component of the former Northern Gulf – Newfoundland DU. This new DU was assessed as Endangered. During the DFO Recovery Potential Assessment, held in January 2016, the available data in the nGSL was revisited to confirm records of Winter Skate and to determine whether individuals occurring in the nGSL exhibit characteristics similar to the sGSL type, i.e. early-maturing, found in warm and shallow waters in summer (Gauthier and Nozères 2016).

Winter Skate are rarely caught in surveys of the nGSL (58 individuals reported in 38 out of a total of 7148 fishing tows in the August surveys of the nGSL, compared to 3000 individuals caught in 574 out of 6242 tows in the September surveys of the sGSL). Furthermore, many of the Winter Skate reported from the nGSL surveys may have been misidentified as Thorny Skate and Round Skate (Dutil et al. 2006, Nozères et al. 2015). This was determined based on examination of survey photos, the depths and geographic locations of catches, and individual length-weight data.

Photographs occasionally taken on the DFO surveys revealed three misidentified individuals, a Round Skate and a Thorny Skate misreported as Winter Skate and a Winter Skate originally identified as a Round Skate. Also, a Round Skate originally misidentified as a Winter Skate in Nozères et al. (2010) had been corrected before this exercise.

Winter Skate is reported to be most frequently captured in water shallower than 111 m (Bigelow and Schroeder 1953). Winter Skate in the sGSL occur in very shallow waters in summer, at a median depth of 30 m. Most skate (55 of 58) recorded as Winter Skate during the summer nGSL survey were from greater depths, usually 200-400 m, with a mean depth of capture of 302 m. This suggests that they were likely Thorny, Smooth or Round Skates, the species found in these deeper waters.

Length-weight relationships differ between Thorny, Smooth and Winter Skates (though there is some overlap between the relationships), and the differences are consistent between regions. With very few exceptions, individuals from the nGSL survey identified as Winter Skate fell along the predicted length-weight curve for Thorny Skate or Smooth Skate.

The evidence above suggests that most reports of Winter Skate from the August nGSL survey are misidentified Thorny, Smooth or Round Skate. However, there is one confirmed capture of a Winter Skate by the nGSL survey. This individual was a large female (69.5 cm in total length) captured in 2008 at a depth of 88 m. Given its large size, this specimen likely belongs to the typical late-maturing type of Winter Skate. An individual of this size has not been reported from the sGSL since 1972.

There are additional confirmed captures of Winter Skate from Bonne Bay, a fjord on the west coast of Newfoundland opening into the nGSL. A specimen captured in 1978 is in the Canadian Museum of Nature collection. Ten additional specimens were captured between 2002 and 2010 during an annual field course conducted by Memorial University. Although the course is ongoing, no additional specimens have been obtained. Maturity status was not assessed, but a photograph indicates that a 54 cm male was immature and thus was of the late-maturing type.

In summary, the occurrence of Winter Skate in the nGSL appears to be much rarer than previously thought. The few confirmed specimens (one along the west coast of Newfoundland and 11 in Bonne Bay) are of the late-maturing type. We suggest that the early-maturing DU of Winter Skate should be restricted to the sGSL. The nGSL appears to be outside of the normal range of winter skate, with the few winter skate occurring in this area largely restricted to Bonne Bay.

## The Geographic Extent of the Southern Gulf of St. Lawrence DU of Winter Skate

The sGSL DU of Winter Skate has been delineated by NAFO Division 4T. However, information on Winter Skate in this DU has been restricted to the sGSL proper (i.e., the areas covered by the annual September survey and the August Northumberland Strait survey). NAFO Division 4T also includes the St. Lawrence Estuary. Confirmed occurrences of Winter Skate in the Estuary are restricted to 4 specimens collected from the Upper Estuary, three reported in Bigelow and Schroeder (1953) and an additional individual collected in 1988, a mature 49.5 cm male of the early-maturing type. The paucity of specimens from the Estuary suggests that it may be outside of the normal range of Winter Skate.

### Literature Cited

- Bigelow, H.B. and Schroeder, W.C. 1953. Fishes of the Western North Atlantic. Sawfishes, guitarfishes, skate and rays, chimaeroides. Memoir Sears Foundation Marine Research, No.1.
- COSEWIC 2005. COSEWIC assessment and status report on the winter skate *Leucoraja ocellata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 41 pp. ([www.sararegistry.gc.ca/status/status\\_e.cfm](http://www.sararegistry.gc.ca/status/status_e.cfm)).
- COSEWIC 2015. COSEWIC assessment and status report on the winter skate *Leucoraja ocellata*, Gulf of St. Lawrence population, Eastern Scotian Shelf - Newfoundland population and Western Scotian Shelf -Georges Bank population in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xviii + 46 pp.
- Dutil, J.-D., Miller, R., Nozères, C., Bernier, B., Bernier, D. et Gascon, D. 2006. Révision des identifications de poissons faites lors des relevés scientifiques annuels d'évaluation de l'abondance des poissons de fond et de la crevette nordique dans l'estuaire et le nord du golfe du Saint-Laurent. Rapp. manus. can. sci. halieut. aquat. 2760 : x + 87 p.
- Gauthier, J., and Nozères, C. 2016. Review of Winter Skate (*Leucoraja ocellata*) in the Northern Gulf of St. Lawrence in Support of a Recovery Potential Assessment. DFO Can. Sci. Advis. Sec. Res. Doc. 2016/075. v + 22 p
- Kelly, J. T. and Hanson, J. M. 2013a. Abundance, distribution and habitat characteristics of winter skate *Leucoraja ocellata* in the southern Gulf of St Lawrence: a population on the brink of extirpation? *Journal of Fish Biology* 82, 877–892.
- Kelly, J. T. and Hanson, J. M. 2013b. Maturity, size-at-age and predator–prey relationships of winter skate *Leucoraja ocellata* in the southern Gulf of St Lawrence: potentially an undescribed endemic facing extirpation. *Journal of Fish Biology* 82, 959–978.

- McEachran, J.D. and Martin, C.O. 1977. Possible occurrence of character displacement in the sympatric skate *Raja erinacea* and *Raja ocellata* (Pisces: Rajidae). *Environment and Biology of Fishes* 2:121-130.
- Nozères, C., Archambault, D., Chouinard, P.-M., Gauthier, J., Miller, R., Parent, E., Schwab, P., Savard, L., and Dutil, J.-D. 2010. Identification guide for marine fishes of the estuary and northern Gulf of St. Lawrence and sampling protocols used during trawl surveys between 2004 and 2008. *Can. Tech. Rep. Fish. Aquat. Sci.* 2866: xi + 243 p.
- Nozères, C., Bourassa, M.-N., Gendron, M.-H., Plourde, S., Savenkoff, C., Bourdages, H., Benoît, H., and Bolduc, F. 2015. Using annual ecosystemic surveys to assess biodiversity in the Gulf of St. Lawrence. *Can. Tech. Rep. Fish. Aquat. Sci.* 3149: vii+126 p.
- Swain, D.P., Simon, J.E., Harris, L.E., and Benoît, H.P. 2006. Recovery potential assessment of 4T and 4VW winter skate (*Leucoraja ocellata*): biology, current status and threats. *DFO Can. Sci. Advis. Sec. Res. Doc.* 2006/003. v + 63 pp