

Aerial survey of ringed seals (*Pusa hispida botnica*) in the Gulf of Finland in 2018

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The Baltic Ringed Seal (*Pusa hispida botnica*) is listed in:

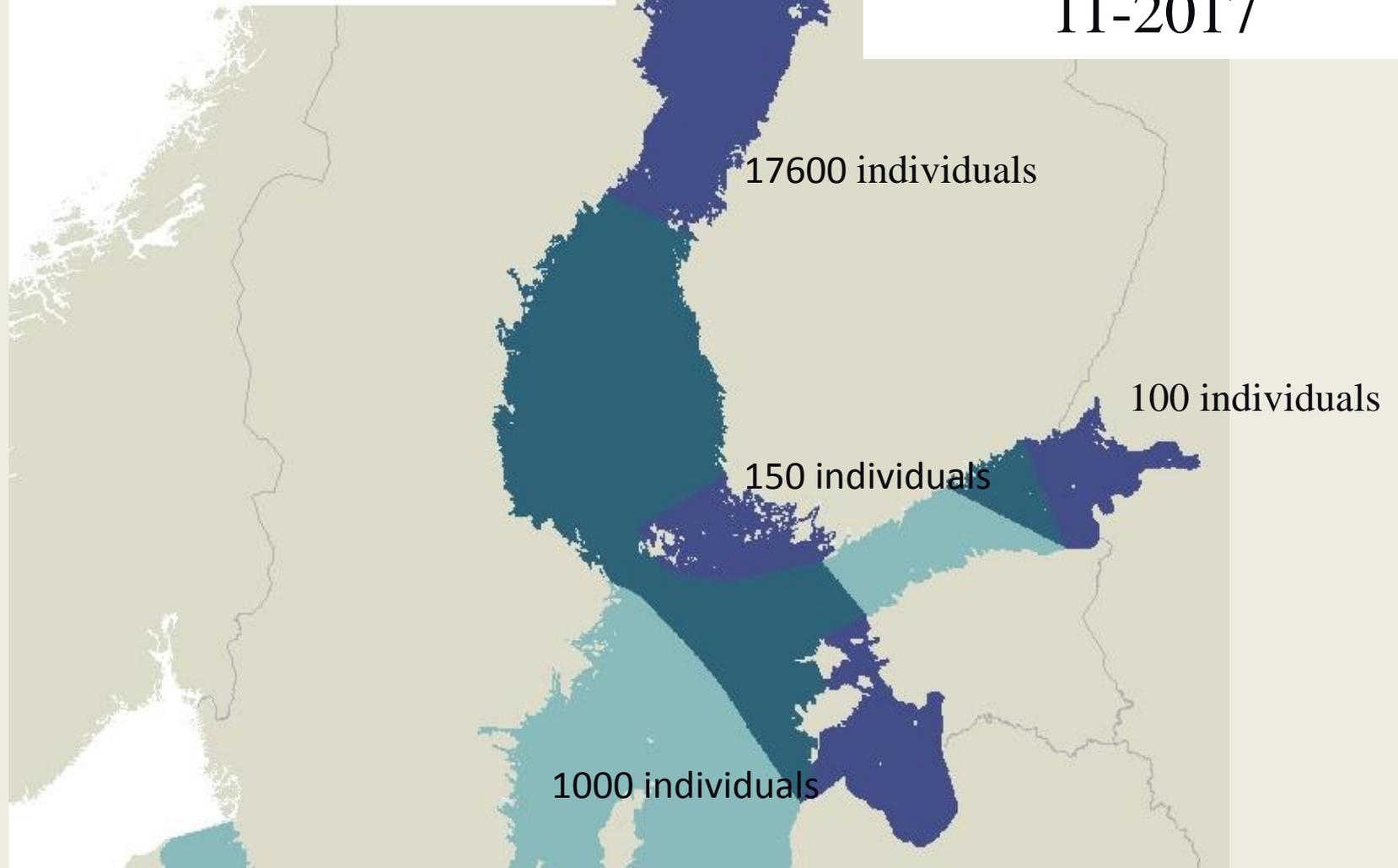
- Red Data book of the Russian Federation - Category 2
- Red Data book of the Leningrad region - Category 1 CR
- The IUCN Red List - Category LC



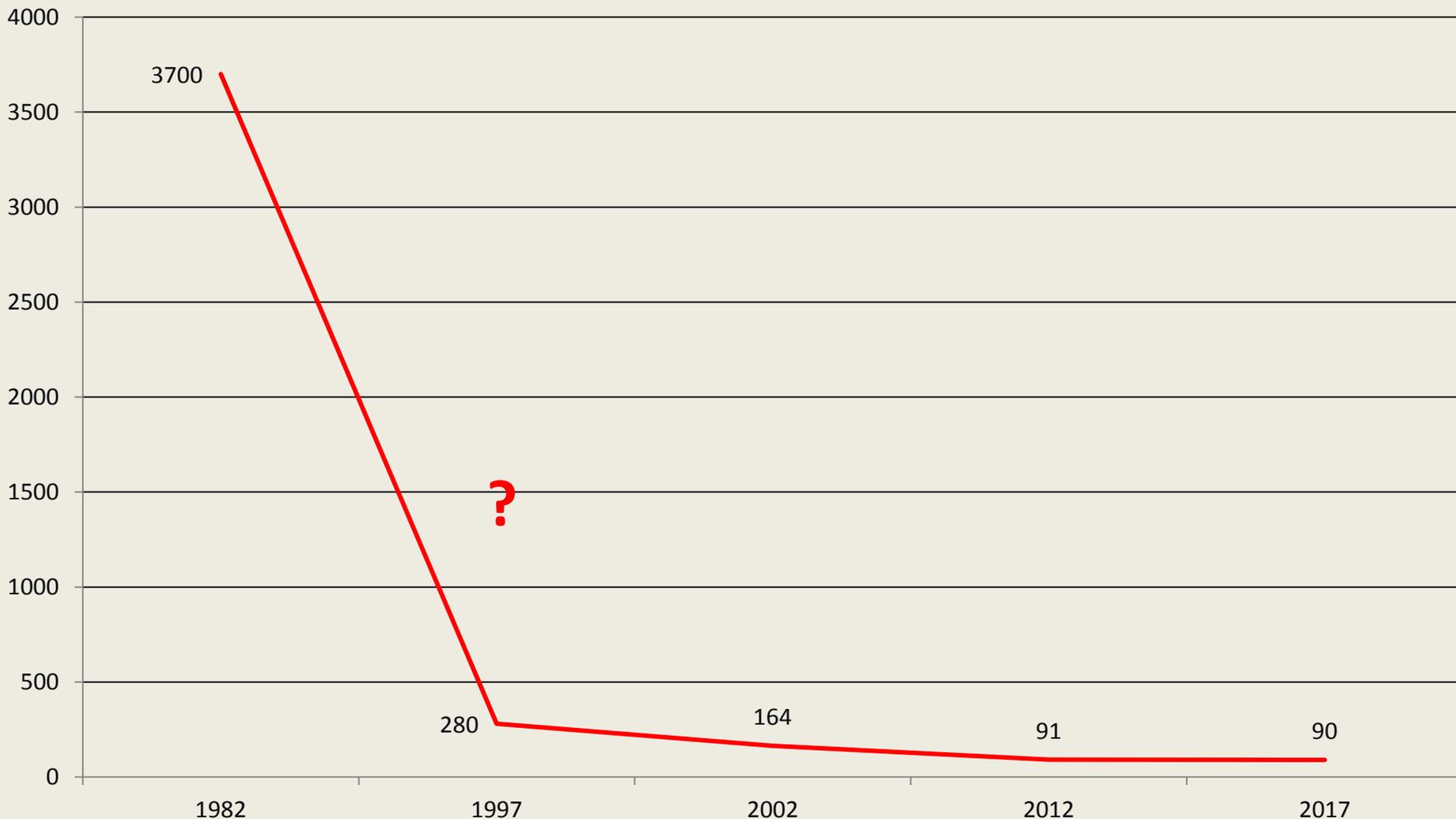
Ringed seal distribution in the Baltic sea HELCOM SEAL EG 11-2017

Ringed seal distribution

- Very rare occurrence
- Rare occurrence, no regular reproduction
- Regular occurrence, no regular reproduction
- Common occurrence and reproduction



Trend of ringed seals number in the Gulf of Finland



1980г - Тормосов, Есипенко

2000 - Веревкин, Сагитов 2004

1990- Harkonen et. al 1998

2010 - Веревкин и др. 2012

2017- Веревкин, Войта 2017

Results of the ringed seal censuses in the Russian part of the Gulf of Finland in 2010-2018

Year	Survey length (km)	Area of survey sq.km	Ice area sq.km	%% of ice surveyed	Ringed seals	
					Seen	Estimated number
2010	347,5	278	1193	23,3	6	16–34
2012	642,2	517	3916	13,2	12	72–94
2017	361,2	289	1640	17,7	9	44–57
	490,2	392	2451	16	13	71–90
2018	365,9	293	2081	14	10	64–76
	200	160	1191	13	13	89–101

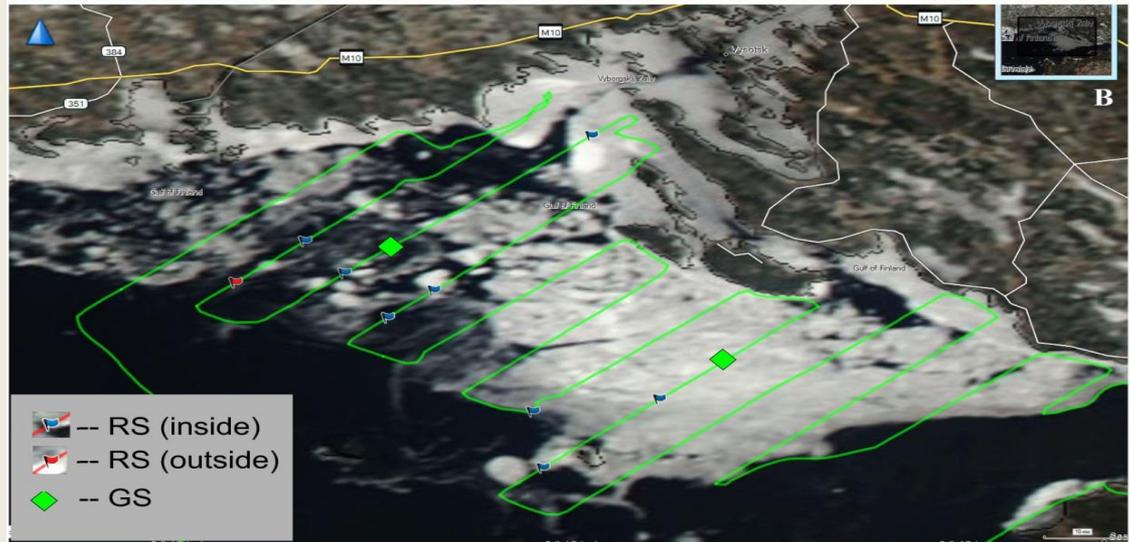
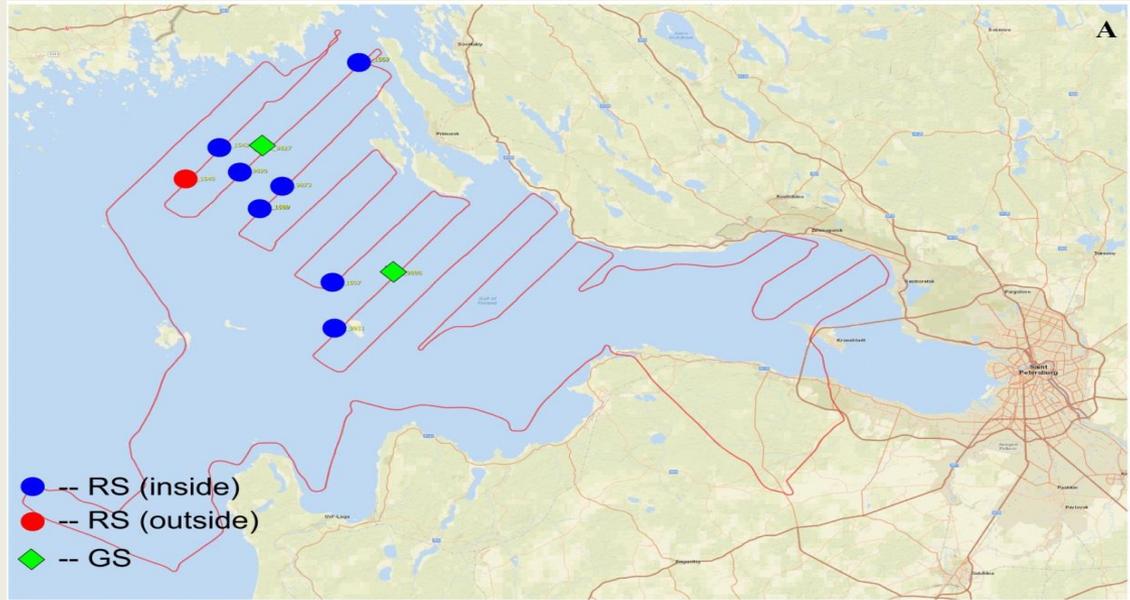
In the Russian part of the Gulf of Finland the survey of ringed seals have been done on 14 and 18 of April 2018 using aircraft Cessna 182. The red arrows indicate the observation sector, which at a flight altitude of 90 m corresponds to the 400 m band. Orange arrows indicate the position of visual marks on the wing's frame.



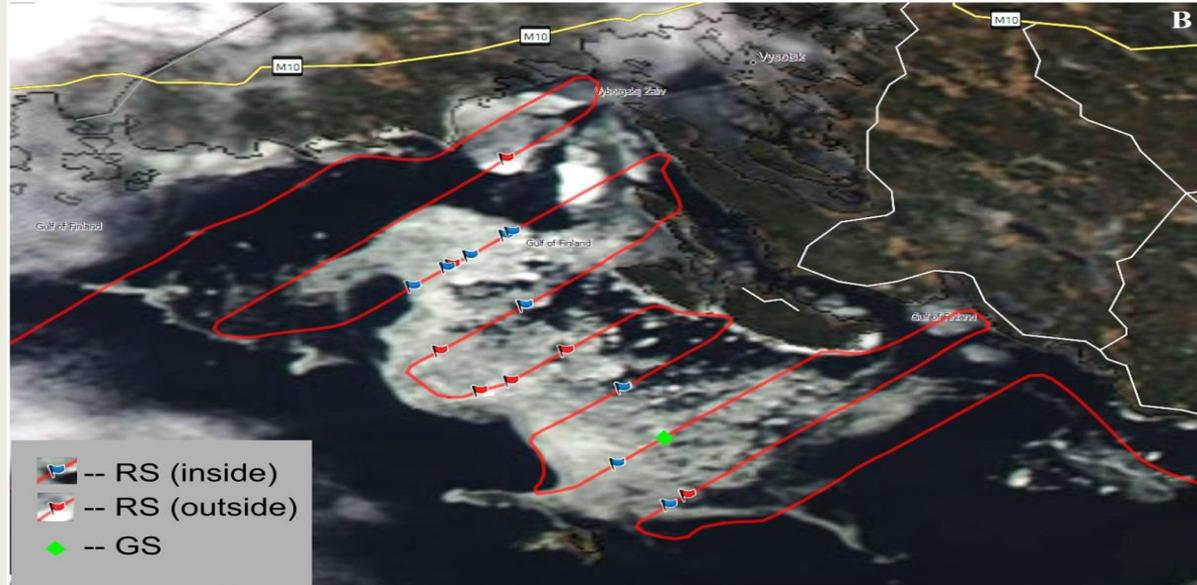
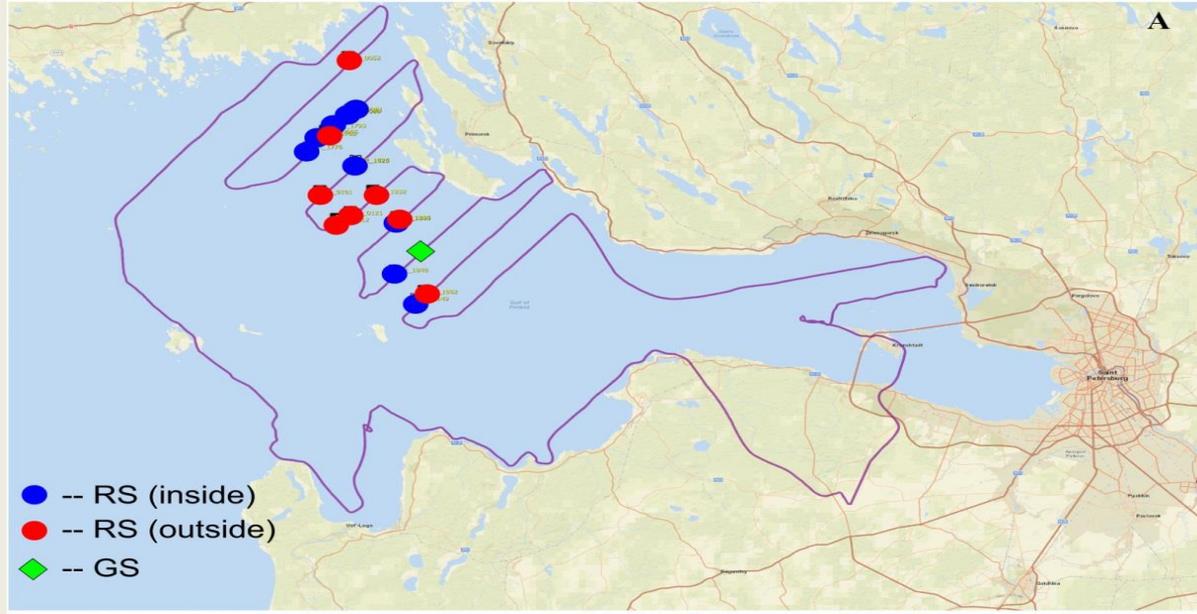
Ice conditions in the Gulf of Finland, NASA satellite image from 14th of April 2018.



Map of the flight track (violet and red lines in A and B respectively) with ringed seal (RS) and grey seal (GS) observations during the 14th April survey. A -schematic view, B - overlay of data on NASA satellite image.



Map of the flight track (violet and red lines in A and B respectively) with ringed seal (RS) and grey seal (GS) observations during the 18th April survey. A -schematic view, B - overlay of data on NASA satellite image.



Results of the survey on the 14 and 18 of April in Russia

	14 April	18 April
Time (UTC)	05:25 - 10:26	11:57 - 16:06
Area	2`018 sq. km 366 km 16 transects	1`191 sq. km 200 km 11 transects
Number of seals seen	11	23
Calculations: Expected number	70	95
Number of seals on ice	64 to 76	89 to 101

On the Estonian part of the Gulf of Finland the survey of ringed seals have been done on 14 of April 2018



The result of the survey on the 14 of April in Estonia

- In Estonia the survey flight was carried out in 14th of April 2018 between 12.00 and 15.00 UTC in good weather conditions with sunshine and light wind (4 m/s SE). During the flight, starting from the Sillamäe longitude and moving West. The Northern limit for transects was national border minus 2.5 kilometres or open water. Cessna 182 was used. No seals were seen during the flight.

The result of the survey on the 12-13 of April in Finland

- The Finnish survey was carried out in the ice area adjacent to Russian border waters. The flights by Cessna 172 were done on 12th and 13th of April 2018 in good sunny and calm weather conditions. Line transect surveys were done according to the Helcom guidelines. Surveys in Finnish side covered almost whole potential remaining sea ice area and results represent more total census rather than calculated estimate for ringed seal densities. All observed seals were photographed for verifying the seal species. The results of the first census (12 April) was 12 ringed seals and 4 ringed seals for the next day. A total result of two censuses was 13 different ringed seal individuals in the Finnish part of the Gulf of Finland.

Conclusions:

- The number of Baltic ringed seals in the Russian part of the Gulf of Finland from 2012 to 2018 stably remains low, and amounts to approximately 100 individuals (maximum up to 113 individuals on ice in 2018).
- The supplementary surveys in Russia, Finland and Estonia show that the core distribution of the ringed seals is in Russian waters of the Gulf of Finland in years of limited ice cover.
- Observations of 100 seals in Russia, 13 seals in Finland and no seals in Estonia confirm the findings from telemetry studies that seals leave southern shores to breed on ice on the northern coasts of the Gulf of Finland where suitable ice forms annually.



Nord Stream 2

The Aerial survey of ringed seals in the Gulf of Finland Russian part in 2017, and Estonian and Russian in 2018 was supported by the company Nord Stream 2 AG.

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Thank You!

