

Annual Marine Oil Pollution Report for the year 2021

- CleanSeaNet Satellite-Based Oil Spill Detection inside Icelandic Exclusive Economic Zone and Other Pollution or Potential Pollution Related Information Reported by the Icelandic Coast Guard

Executive Summary

This report summarizes marine pollution notifications and observations within the Icelandic Exclusive Economic Zone. In 2021, the total number of detections of possible oil-spills (OS) inside the Icelandic EEZ numbered to 47. No possible oil spill was assessed to originate from mineral oil; however, in one case no plausible reason for the detection could be assessed. 46 possible oil spills were assessed as lookalikes, either caused by natural conditions or fishing activity, respectively 40 and 6. In two occasions, the Icelandic Coast Guard had either aerial assets or patrol boat investigate the possible oil spill.

The Coast Guard's fixed wing aircraft performed 135 hours of patrol corresponding to an increase between years (2020/2021) of ~87%. The helicopters performed 68 hours of patrol corresponding to a decrease between years of 18%.

Apart from satellite notifications, the coast guard also received, disseminated, and responded to other notifications. Worth mentioning is that a feed barge sank, a foreign trawler stranded but no oil leak was observed, and two trawlers reported to have leaked 150 and 40 litres of hydraulic oil onto the deck and into the sea.

No joint marine environmental response exercise was conducted in year 2021; however, the coast guard exercised with the oil boom and skimmer on board the coast guard vessel THOR and the Environment Agency held a course in the use of newly acquired oil sampling equipment for several staff of the coast guard and transport authority.

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Introduction

As agreed by the Environment Agency and the Icelandic Coast Guard the latter shall annually collect, and by June 1st, disseminate to the Environment Agency statistical pollution control information for the previous year. The Environment Agency will subsequently present the information at the annual Copenhagen Agreement meeting. This report summarizes notifications and observations as relates to pollution at sea, more specifically within the Icelandic Exclusive Economic Zone. Air and sea surface surveillance assets of the Icelandic Coast Guard report any pollution observed at sea to the Coast Guard operations centre. In addition, the Coast Guard operations centre receives pollution notifications through satellite services like the EMSA CleanSeaNet service, directly from the polluter, or from other third party. The Icelandic Coast Guard subsequently informs the Environment Agency.

CleanSeaNet

CleanSeaNet (CSN) is a European satellite-based oil spill and vessel detection service. It assists participating States with following activities:

- identifying and tracing oil pollution on the sea surface
- monitoring accidental pollution during emergencies
- contributing to the identification of polluters

Iceland is a participating state through its membership of the EEA Agreement. The European Maritime Safety Agency (EMSA) is the provider of the CleanSeaNet Service and Iceland is contracting to the service through an agreement called „Conditions of use for receiving the EMSA Satellite Based Oil Spill and Vessel Detection Service CleanSeaNet“ (the conditions of use).

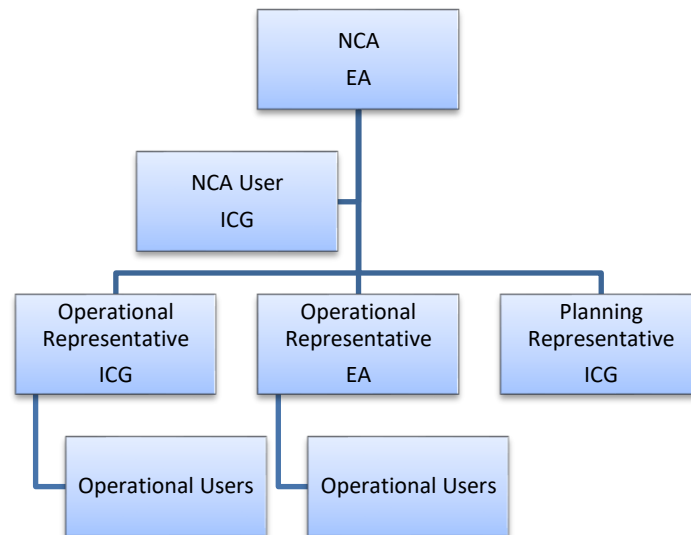
Iceland was set up for the service at the launching of the second generation of CleanSeaNet and successfully received the first Earth Observation Service (EOS) product on March 6th, 2011.

Structure in Iceland

The Environment Agency of Iceland is the National Competent Authority (NCA) of CleanSeaNet in Iceland. The NCA has the overall responsibility and by agreement,¹ the Icelandic Coast Guard carries out the daily operation of the system. A task of the Icelandic Coast Guard is to carry out surveillance of the sea around Iceland as well as to receive and disseminate notifications and information on any acute pollution of the sea.

All users shall comply with the conditions of use. The structure of users in the system is shown below; EA being the Environment Agency of Iceland; ICG being the Icelandic Coast Guard. The Icelandic Coast Guard NCA User administrates the web-based system and oversees the allocation of earth observation scenes carried out by EMSA.

¹ Samningur Umhverfisstofnunar og Landhelgisgæslu Íslands um samvinnu við eftirlit með mengun sjávar innan íslenskrar mengunarlögsögu, 29 November 2012.



Organizations with Access to the CSN-Service

Organizations with access to the CSN-service in Iceland comprise the Environment Agency of Iceland, the Icelandic Coast Guard, the Transport Authority, the Institute of Earth Sciences of the University of Iceland, Police and Customs.

Clean Sea Net Statistical Information

Key Figures 2018-2021

<p>2021</p> <ul style="list-style-type: none"> • 47 (2 class A, 45 class B) possible oil spills detected. • No possible oil spill was assessed as linked to mineral oil. • 2 possible spills were investigated by coast guard assets (1 by fixed wing close to sea ice, 1 by rotary wing and patrol boat). • 46 possible oil spills were assessed as lookalikes of which 40 were linked to natural phenomena and 6 to fishing activity. • 1 possible oil spill could not be categorized (case 44).
<p>2020</p> <ul style="list-style-type: none"> • 57 (17 class A, 40 class B) possible oil spills in 42 separate cases. • 6 possible oil spills were assessed as linked to mineral oil (1, 2, 7, 9, 30, 39). Assessed causes: Bilge water and hydraulic oil. • 3 cases were investigated by ICG assets (fixed and rotary). • 46 of 57 possible oil spills were assessed as lookalikes of which 33 were linked to natural phenomena and 13 to fishing activity. • 5 possible oil spills could not be categorized².
<p>2019</p> <ul style="list-style-type: none"> • 74 (8 class A, 29 class B) possible oil spills in 37 occurrences/cases. • 2 cases assessed as linked to mineral oil of which one was caused by a malfunctioning oily water separator (case 5) and the other by a hydraulic leak (case 33). • 1 case was investigated by ICG assets (Coast guard vessel boarded the source vessel, case 5)

² "Not categorized" cases are cases where no reasonable circumstances could be articulated about the cause. These cases could be lookalikes caused by e.g., algae bloom or leaking wrecks or they could be suspect cases linked to a possible polluter.

- 33 cases assessed as lookalikes of which 13 were linked to natural phenomena, 10 to normal operation of ship (e.g., fisheries, cleaning of deck), 1 confirmed false positive, and 9 lookalikes not specified.
- The cause could not be categorized/ specified in 2 cases.

2018

- 48 (15 class A, 33 class B) possible oil spills in 32 occurrences/cases.
- 1 case assessed as linked to mineral oil (hydraulic oil).
- 3 cases investigated by ICG assets (2 by MSA, 1 by helo).
- 16 cases assessed as lookalikes/natural phenomena like sea ice and current fronts.
- 11 cases assessed as linked to fishing activity such as processing/capelin/liver + guts.
- The cause could not be categorized/ specified in 4 cases.

Overview of Possible Oil Spills 2021

The area of interest in this report is the Icelandic Exclusive Economic Zone. The area for which Iceland receives satellite imagery, analyses, and notifications for detection of possible oil-spills is somewhat larger of size but is not included in this report. In 2021, 455 satellite images intersecting the areas of interest of Iceland, and with the purpose of detecting oil pollution were delivered. Additionally, 291 images were received for the purpose of detecting vessels. In total the coast guard received 746 satellite images of relevance of various sizes.

Red notification symbolizes possible oil spills of high likelihood (class A) and green symbolizes low likelihood (class B). Likelihood is assessed by the service provider and classes (A/B) are per Icelandic configuration.

Total detections of possible oil-spills (OS) inside the Icelandic EEZ numbered to 47. No possible oil spill was assessed to originate from mineral oil; however, in one case (case 44) no plausible reason for the detections could be assessed. 46 possible oil spills were assessed as lookalikes, either caused by natural conditions or fishing activity, respectively 40 and 6. In two occasions, the Icelandic Coast Guard had either aerial assets or patrol boat investigate the possible oil spill.

There were no cases in 2021 where the receiving organisations of the service disagreed to the CSN service analysis of possible oil spills, i.e., cases where oil spills or possible oil spills should have been detected by the service provider (so called false negatives).

The numbered possible oil spills in figure 1 refer to the list of feedback.

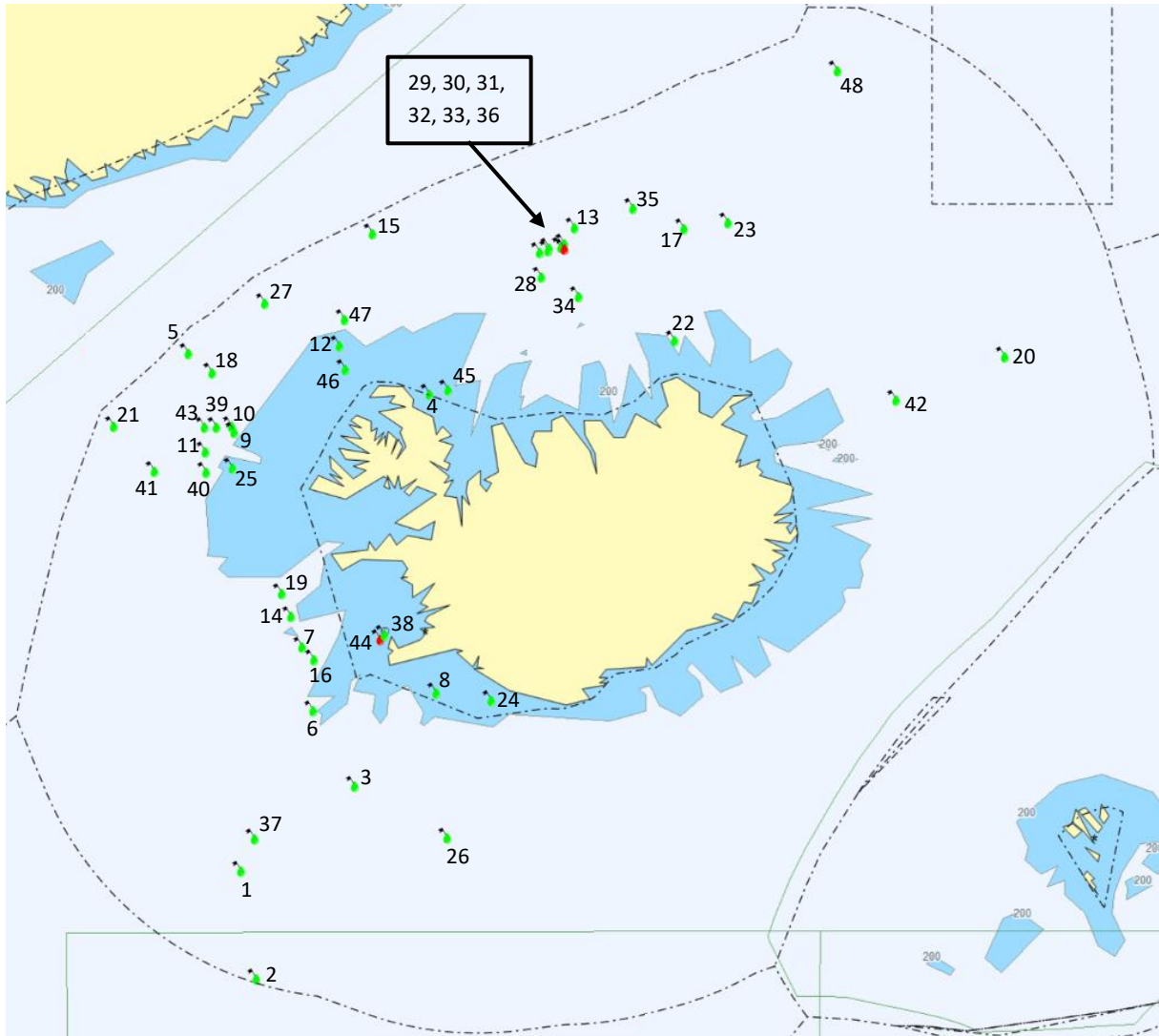
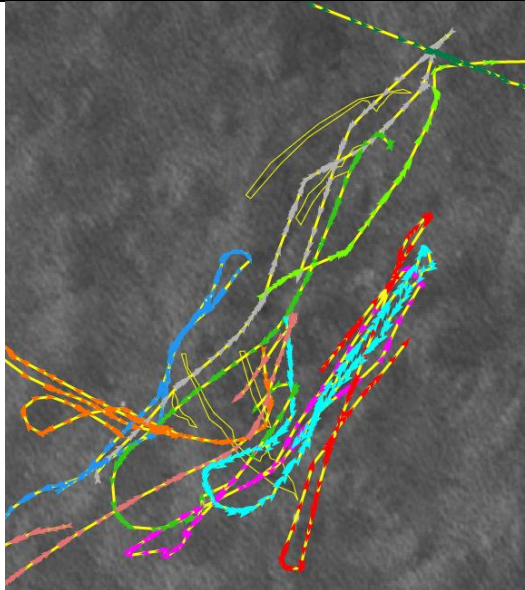

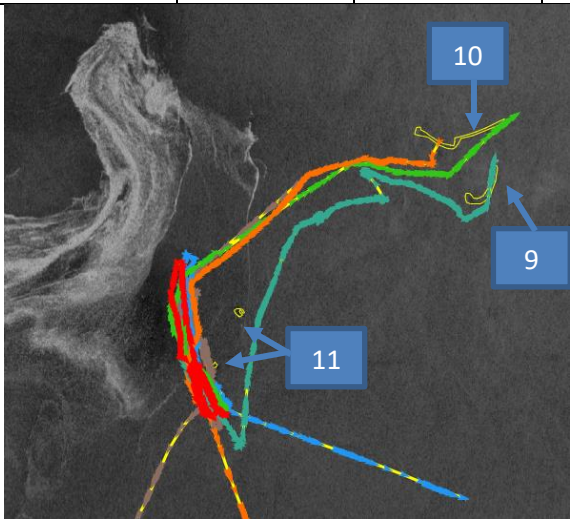


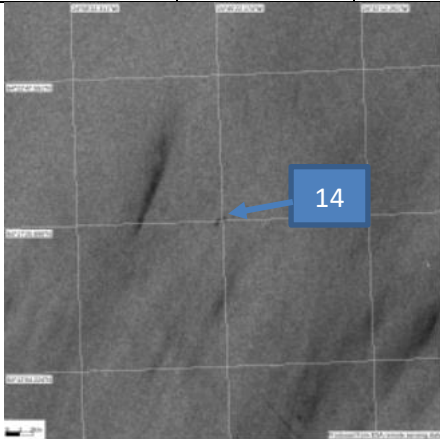

Figure 1: Overview of detected possible oil spills within the Icelandic Exclusive Economic Zone. Only detections inside the EEZ are numbered and provided feedback to in this report. EMSA (2022).

List of feedback on CleanSeaNet detections inside Icelandic Exclusive Economic Zone


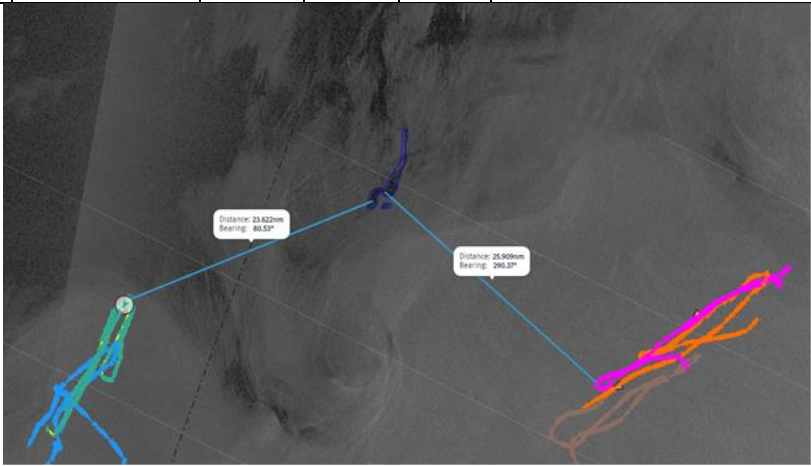
OS	Acquisition Start	Lat (Center)	Long (Center)	Area (nm2)	# of slicks	Class	Comments
1	2021-01-03 08:16:04	61°43,21'N	025°52,68'W	0,01	1	B	Possible source: No. Investigated: Surveillance assets: Possible cause: Lookalike. Natural phenomenon.
2	2021-01-03 08:16:04	60°33,64'N	025°32,35'W	0,01	1	B	Possible source: No. Investigated: Surveillance assets: Possible cause: Lookalike. Natural phenomenon.
3	2021-01-03 08:16:04	62°36,4'N	023°20,88'W	0,08	3	B	Possible source: No. Investigated: Surveillance assets: Possible cause: Lookalike.

							Natural phenomenon.
4	2021-01-09 08:21:17	66°21,05'N	021°41,42'W	0,48	2	B	Possible source: No. Investigated: Surveillance assets: Possible cause: Lookalike. Natural phenomenon.
5	2021-02-14 08:21:15	66°43,22'N	027°02,73'W	0,65	1	B	Possible source: No. Investigated: Surveillance assets: Possible cause: Lookalike. Natural phenomenon.
6	2021-03-07 07:56:55	63°22,07'N	024°16,4'W	0,38	1	B	Possible source: Several fishing vessels. Investigated: Surveillance assets: Possible cause: Lookalike. Natural phenomenon/Fishing activity.
7	2021-03-07 07:56:55	63°59,27'N	024°32,05'W	1,19	5	B	Possible source: Several fishing vessels. Investigated: Surveillance assets: Possible cause: Lookalike. Natural phenomenon/Fishing activity.
							
8	2021-03-07 07:56:55	63°32,75'N	021°34,89'W	0,46	5	B	Possible source: No. Investigated: Surveillance assets: Possible cause: Lookalike. Natural phenomenon.
9	2021-04-10 08:12:54	66°00,55'N	026°01,11'W	1,16	1	B	Possible source: Fishing vessel. Investigated: Surveillance assets: Possible cause: Natural

							phenomenon. Fishing vessels observed sea ice in position, which could be confirmed in the SENTINEL-1 imagery.
							
10	2021-04-10 08:12:54	66°03,74'N	026°06,48'W	1,18	1	B	Possible source: Fishing vessel. Investigated: Surveillance assets: Possible cause: Natural phenomenon. Fishing vessels observed sea ice in position, which could be confirmed in SENTINEL-1 imagery.
11	2021-04-10 08:12:54	65°50,13'N	026°39,99'W	0,56	4	B	Possible source: Fishing vessels. Investigated: Surveillance assets: Possible cause: Natural phenomenon. Fishing vessels observed sea ice in position, which could be confirmed in SENTINEL-1 imagery.
							
12	2021-04-12	66°46,93'N	023°40,75'W	0,07	1	B	Possible source: No.

	07:56:56						Investigated: Surveillance assets: Possible cause: Lookalike. Natural phenomenon.
13	2021-04-25 07:48:40	67°47,8'N	018°27,07'W	0,15	1	B	Possible source: No. Investigated: Surveillance assets: Possible cause: Lookalike. Natural phenomenon.
14	2021-04-27 08:21:10	64°17,39'N	024°45,44'W	0,06	2	B	Possible source: Yes. Investigated: rather small area and classified as a weak detection (class B). Surveillance assets: Possible cause: Lookalike. Natural phenomenon.
							
15	2021-05-16 08:12:54	67°50,66'N	022°37,35'W	6,24	2	B	Possible source: No. Investigated: Yes. Surveillance assets: Fixed wing a/c. Possible cause: Lookalike. Natural phenomenon. The observation is assessed to originate from natural conditions associated with the sea ice situated within 15 nm from position.
							

16	2021-05-19 19:07:27	63°52,24'N	024°15,48'W	0,24	1	B	<p>Possible source: Yes.</p> <p>Investigated:</p> <p>Surveillance assets:</p> <p>Possible cause: Lookalike. Fishing activity. A trawler in the area was processing it's catch resulting in a bloody effluent entering the water.</p>
17	2021-05-25 07:48:03	67°48,32'N	016°02,35'W	2,74	3	B	<p>Possible source: No.</p> <p>Investigated:</p> <p>Surveillance assets:</p> <p>Possible cause: Lookalike. Natural phenomenon. Algae.</p>
18	2021-06-02 08:21:13	66°32,31'N	026°29,02'W	5,99	9	B	<p>Possible source: No.</p> <p>Investigated:</p> <p>Surveillance assets:</p> <p>Possible cause: Lookalike. Natural phenomenon. Cold water pools in connection with sea ice present in area a few days before.</p>
19	2021-06-05 07:58:00	64°30,9'N	024°57,1'W	0,41	5	B	<p>Possible source: No.</p> <p>Investigated:</p> <p>Surveillance assets:</p> <p>Possible cause: Lookalike. Natural phenomenon.</p>
20	2021-06-05 07:07:15	66°41,32'N	008°53,96'W	2,26	1	B	<p>Possible source: No.</p> <p>Investigated:</p>

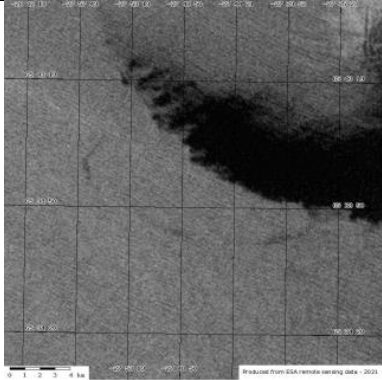

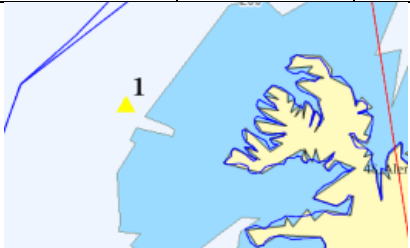
							<p>Surveillance assets: Possible cause: Lookalike. Natural phenomenon.</p>
21	2021-06-14 08:21:12	66°02,91'N	028°41,58'W	5,37	2	B	<p>Possible source: Very unlikely considering the distance and drift time. Investigated: Surveillance assets: Possible cause: Lookalike. Natural phenomenon. Institute of Earth Sciences of the University of Iceland agreed to the assessment adding that the detection was within the cold sea front area.</p>
							
22	2021-06-28 18:35:22	66°49,83'N	016°13,82'W	0,44	2	B	<p>Possible source: Yes. Investigated: The vessel was contacted: nothing observed. Surveillance assets: Possible cause: Based on the natural conditions (light breeze) and classification level B, the possible oil spill is assessed as a lookalike (natural phenomenon).</p>


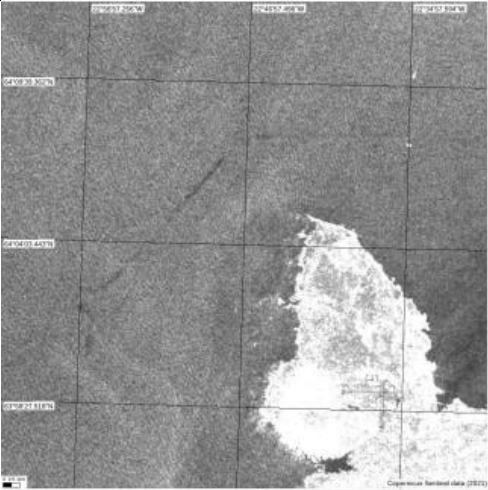

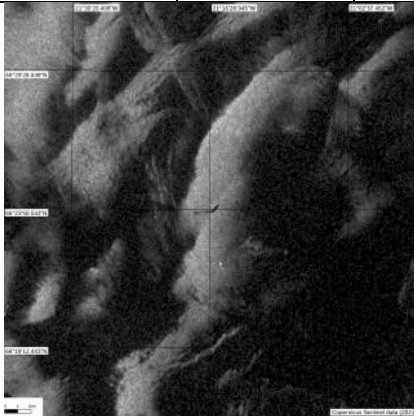

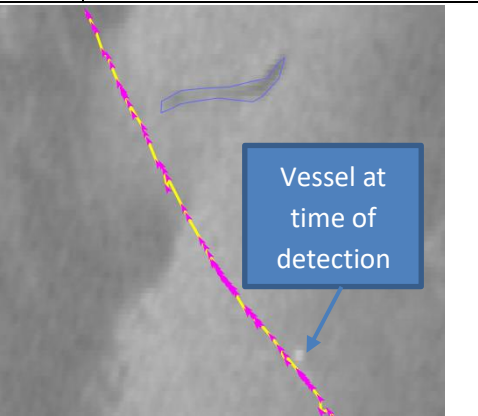
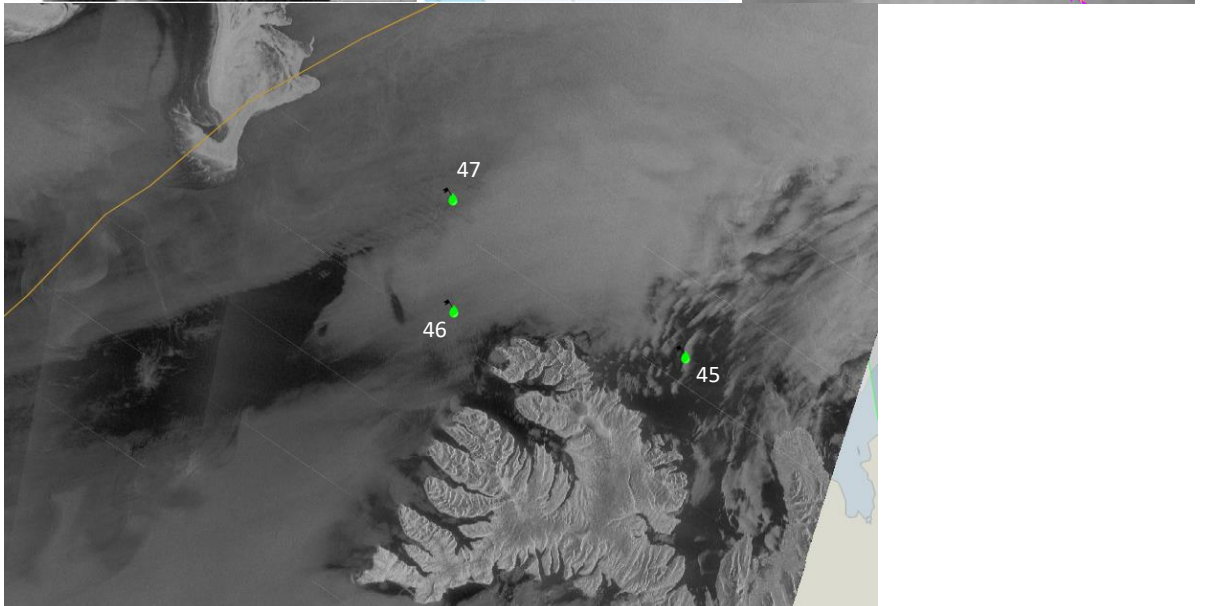
23	2021-06-28 18:35:37	67°50,61'N	015°02,31'W	0,35	1	B	Possible source: No. Investigated: Surveillance assets: Possible cause: Same as above.
24	2021-07-26 18:50:15	63°28,1'N	020°18,19'W	2,47	1	B	Possible source: No. Sources in land were considered. Investigated: The port in Westman Islands was informed: Nothing observed. Surveillance assets: Possible cause: Lookalike. Natural phenomenon e.g., lee from the island was considered a likely cause.

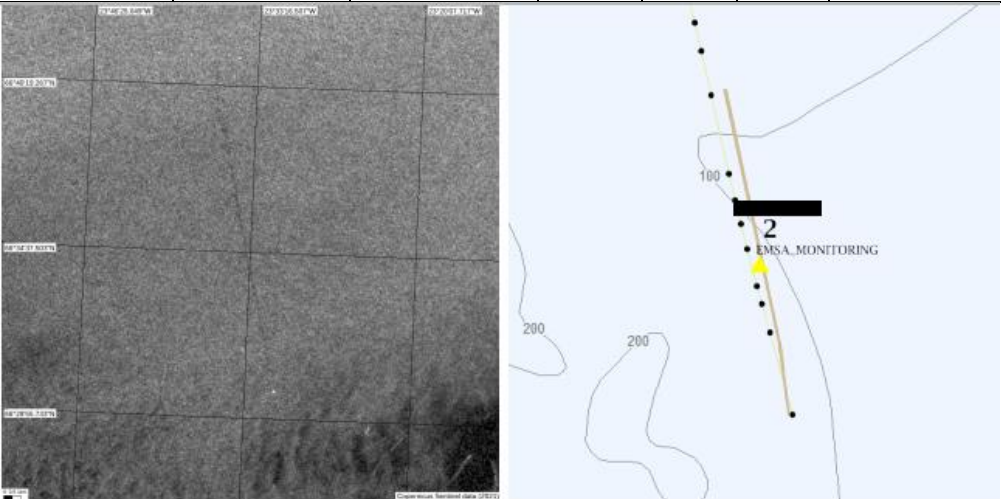
25	2021-08-01 08:21:12	65°41,15'N	026°03,5'W	0,04	1	B	Possible source: No. Investigated: Surveillance assets: Possible cause: Lookalike. Natural phenomenon.
26	2021-08-01 07:59:00	62°03,94'N	021°16,91'W	0,13	1	B	Possible source: No. Investigated: Surveillance assets: Possible cause: Lookalike. Natural phenomenon.
27	2021-08-20 08:12:52	67°09,04'N	025°21,57'W	2,26	1	B	Possible source: Yes. Investigated: The vessel was contacted: sea ice and ice bergs in area. Surveillance assets: Possible cause: Lookalike. Natural phenomenon connected to sea ice in the area.
28	2021-08-21 08:05:12	67°23,04'N	019°11,96'W	0,39	1	B	Possible source: No. Investigated: Surveillance assets:

							Possible cause:
29	2021-08-21 08:05:12	67°36,06'N	019°14,61'W	0,49	1	B	Possible source: Yes. Fishing vessel. Investigated: The vessel was contacted: light breeze and nothing observed. Surveillance assets: Possible cause: Lookalike. Normal fishing activity.
30	2021-08-21 08:05:12	67°39,76'N	018°41,83'W	0,58	1	B	Possible source: Yes. Fishing vessel. Investigated: The vessel was contacted: light breeze and nothing observed. Surveillance assets: Possible cause: Lookalike. Normal fishing activity.
31	2021-08-21 18:35:01	67°37'N	018°40,13'W	0,74	6	A	Possible source: Yes. Fishing vessel. Investigated: Vessels contacted: nothing observed, no oil residues on deck. Surveillance assets: Possible cause: Considering the many possible oil spills detected at the same time, the time of year and area, the most likely cause is assessed to be algae.
32	2021-08-21 18:35:00	67°36,25'N	019°01,51'W	3,32	1	B	Same as above
33	2021-08-21 18:35:00	67°37,88'N	018°45,81'W	0,08	2	B	Same as above
34	2021-08-21 18:34:53	67°12,89'N	018°22,11'W	0,28	4	B	Same as above
35	2021-08-21 18:35:03	67°57,8'N	017°09,18'W	0,05	1	B	Same as above
36	2021-08-21 18:35:00	67°37,56'N	019°01,2'W	0,04	2	B	Same as above

37	2021-08-22 08:16:11	62°02,01'N	025°31,7'W	0,46	3	B	<p>Possible source: No.</p> <p>Investigated: No vessels in area.</p> <p>Surveillance assets:</p> <p>Possible cause: Lookalike. Natural phenomenon.</p>
38	2021-09-16 19:07:35	64°06,48'N	022°40,93'W	1,55	1	B	<p>Possible source: Yes. Fishing vessels.</p> <p>Investigated: Vessel contacted: The vessel had been cleaning the deck while steaming to port after fishing.</p> <p>Surveillance assets:</p> <p>Possible cause: Lookalike.</p>
39	2021-09-22 19:07:30	66°03,42'N	026°25,8'W	0,76	3	B	<p>Possible source: Yes. Fishing vessel.</p> <p>Investigated: Several vessels aligned with detections. Vessels in area contacted: Nothing detected except that the sea had a dark colour.</p> <p>Surveillance assets:</p> <p>Possible cause: Lookalike. Natural phenomenon (algae).</p>
40	2021-09-22 19:07:24	65°39,25'N	026°38,9'W	0,04	1	B	<p>Same as above</p>
41	2021-09-22 19:07:27	65°38,96'N	027°48,12'W	0,96	3	B	<p>Same as above</p>

							
42	2021-11-06 07:25:53	66°18,12'N	011°18,11'W	0,13	1	B	<p>Possible source: No.</p> <p>Investigated: Light breeze in area.</p> <p>Surveillance assets:</p> <p>Possible cause: Lookalike. Natural phenomenon.</p>
43	2021-11-15 19:08:13	66°03,52'N	026°40,81'W	1,31	1	B	<p>Possible source: No.</p> <p>Investigated:</p> <p>Surveillance assets:</p> <p>Possible cause: Lookalike. Natural phenomenon.</p>
							
44	2021-12-13 08:06:37	64°03,97'N	022°52,41'W	1,90	3	A	<p>Possible source: Yes. Cargo vessel.</p> <p>Investigated: Yes. The possible oil slicks, first detected by satellite imagery, were following detected by helicopter and patrol boat, the imagery was analysed, and samples were taken by authorities and send for analysis.</p> <p>Surveillance assets: Helicopter, patrol boat, port state control.</p> <p>Possible cause: Unknown. The samples and investigation did not reveal the substance or the cause of the visible detections.</p>

							
45	2021-12-18 08:14:40	66°23,78'N	021°16,68'W	0,11	1	B	<p>Possible source: No.</p> <p>Investigated: Vessel contacted: Had just put out the trawl. Nothing discharged. The detection was about 2,1 nm in front of the vessel.</p> <p>Surveillance assets:</p> <p>Possible cause: Lookalike. Natural phenomenon.</p>
							
							


46	2021-12-18 08:14:40	66°32,72'N	023°32,4'W	0,90	1	B	<p>Possible source: Yes, connected to detection. Investigated: The vessel was contacted: fish processing ongoing. No discharge of oil. Surveillance assets: Possible cause: Lookalike. Processing of fish combined with natural detectable conditions.</p>
							
47	2021-12-18 08:14:40	67°02,86'N	023°33,89'W	13,64	6	B	<p>Possible source: Yes. Several fishing vessels. Investigated: Surveillance assets: Possible cause: Lookalike. Natural phenomenon. The Institute of Earth Sciences of the University of Iceland assess likely causes to be sea water from lower levels mixing with surface water. Such lower levels can have less algae bloom or colder water with different characteristics, which will show on radar imagery.</p>

					48	2021-12-19 07:17:41	69°05,01'N	012°37,05'W	0,11	1	B	<p>Possible source: No.</p> <p>Investigated: Weather: light breeze.</p> <p>Surveillance assets:</p> <p>Possible cause: Lookalike. Natural phenomenon.</p>
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Incidents and Notifications other than CSN Related to Pollution or Potential Pollution

Maritime Incidents, Stranded or Sunk Ships	
Date	Event
9 Jan	A feeding barge servicing the fish farm in Reydarfjordur sank. The local fire department is called for assistance.
13 Apr	A small fishing boat stranded at Reykjanes. The boat returned safely to port.
26 Apr	Boat sank in port of Reykjavik.
8 Jun	A small boat stranded at Akranes. The boat returned safely to port.
25 Jun	Sailing boat stranded at Isafjordur. The boat returned to port.
29 Jun	Small fishing boat (7 BT) stranded. The boat was loosened and returned to fishing.
6 Jul	Small fishing boat stranded at Skagastromd. Towed to harbour.
17 Jul	Small boat stranded and towed to harbour.
15 Aug	Small boat stranded at Patreksfjordur towed to pier.
30 Aug	Small boat stranded at Engey, returned to port with help from ICESAR rescue boat.

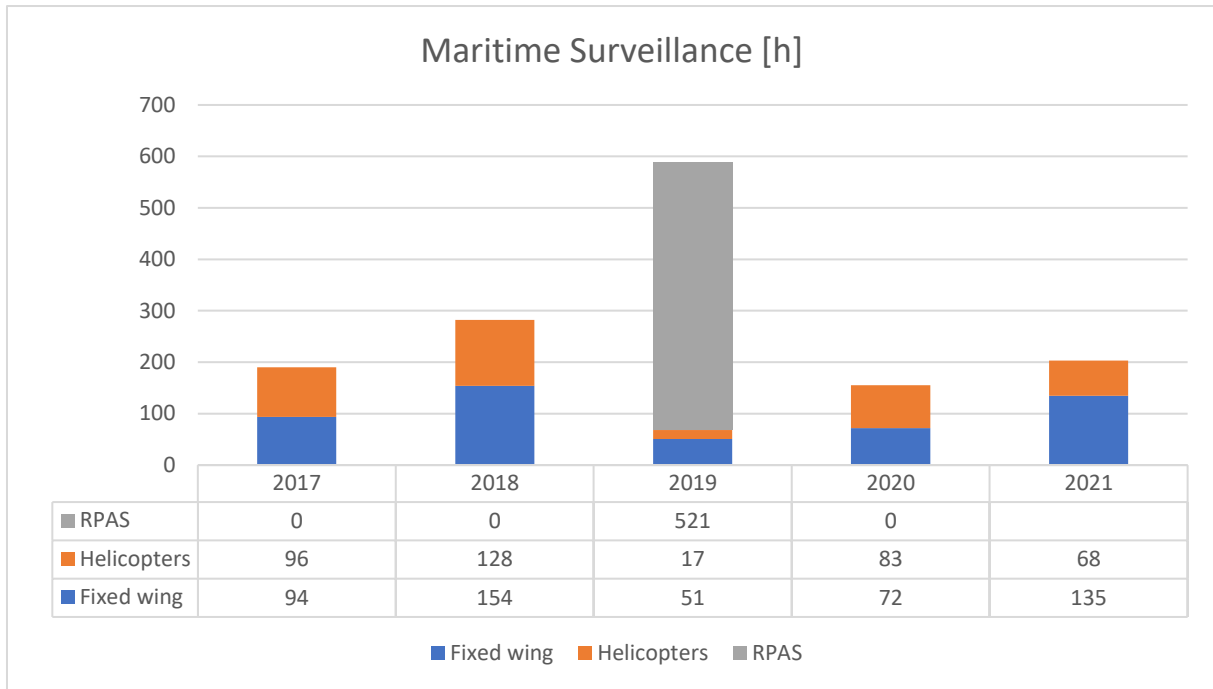
19 Sep	Small boat stranded at Akurey, returned to port with help from ICESAR rescue boat.
2 Oct	Boat sinks in port of Seydisfjordur.
5 Oct	Sailing boat stranded in Isafjardardjup.
21 Nov	Boat (36 BT) stranded close to Stykkisholmur. Returned to port.
16 Dec	Foreign trawler (1424 BT) stranded at Gerdistangi. No oil leak observed. The trawler was towed to port by coast guard vessel.

Reported Pollution (Only cases not included above)	
Date	Event
10 Apr	Police informed of oil pollution at Dynjandavogur in Arnarfjordur. Hydraulic oil from excavator leaked onto the beach.
27 May	Trawler informed about a hydraulic leak. About 150 litres deep off West Fiords.
12 Jul	Trawler informs that about 40 litres of hydraulic oil leaked into the sea.
4 Aug	Cargo vessel informs about possible oil spill from foreign trawler.
21 Aug	Vessel captain reports apparent oil slick in approximate position 66°09N – 018°31V. Many possible sources in area were contacted but the cause neither source could be identified.
17 Sep	Possible oil slick reported in Hvalfjordur. The harbour authorities and the police investigated but didn't detect any oil. The detection was assessed as a lookalike. 

Aerial Surveillance


Icelandic Coast Guard maritime surveillance aircraft (MSA) and helicopters perform aerial surveillance inside of the Icelandic Exclusive Economic Zone. The MSA is of type “Dash 8, Q-300” and surveillance means include SLAR, search radar, EO/IR, and AIS receiver.

Surveillance is dedicated to pollution patrols but as well other law enforcement tasks and sea ice patrols. Below table and graph show the surveillance flight hours performed during the years 2017 to 2021. In total 203 hours of surveillance was performed in 2021.



Marine Environmental Response Exercises

As per directive on marine and coastal acute pollution response no. 1010/2012, the Environment Agency, the Icelandic Coast Guard, and Icelandic Transport Authority have made a contingency plan also addressing exercises. At least once a year an exercise between the agencies should be conducted.

3 May	<p>The Icelandic Coast Guard exercised deployment of its oil boom and skimmer, which is stored on board of the ICGV THOR.</p> 
26 Oct	<p>The Environment Agency held a course in oil sampling equipment on board the coast guard vessel THOR. The equipment had recently been acquired.</p>



Annexes

None