MARITIME

Shipping accidents in the Baltic Sea 2018

Baltic Marine Environment Protection Commission

Shipping

helcom.fi

Table of Contents

1. Introduction

Annual reports on shipping accidents in the Baltic Sea area have been compiled by HELCOM since 2000. According to an agreed procedure all accidents are reported irrespectively if there was pollution or not. This includes accidents which involved tanker ships over 150 gross tonnage (GT) and/or other ships over 400 GT, both in territorial seas or Exclusive Economic Zone (EEZ) of the HELCOM Contracting States. Accident types cover i.e. groundings, collisions (striking or being struck by another ship), contacts with fixed or floating objects, pollution accidents (e.g. during fuel transfer) and other types of accidents like fires and explosions, machinery damage and capsizing.

A new reporting format was taken into use in 2004. Data collected before 2004 is thus not fully comparable with the data collected in 2004 and subsequent years. In 2012 the HELCOM reporting format was modified in order to harmonize with reporting formats for incidents of the International Maritime Organization (IMO) and the European Maritime Safety Agency (EMSA). Some further fine-tuning was also made to the reporting in 2013. In 2019, following the request from the Contracting Parties of the Helsinki Convention, the HELCOM Secretariat took contact with the European Maritime Safety Agency (EMSA) to obtain access to the European Marine Casualty Information Platform (EMCIP) database. The next HELCOM reports on shipping accidents will be compiled with the data collected by EMSA and stored in the EMCIP database as well as data collected by the HELCOM Secretariat for Russian waters.

This report focuses on the shipping accidents data collected for the year 2018 as well as for the longer period since 2004[1]. All Baltic Sea coastal States (Denmark, Estonia, Finland, Latvia, Lithuania, Poland, Russia and Sweden) were requested to provide information on ship accidents. The HELCOM Secretariat received national reports from all these countries and validated the data received. Attached to this report are the guidelines for the 2013 HELCOM reporting format containing additional information on the categorization used in this report (Annex 1). This report has the same structure with updated figures of the report published in 2018 on shipping accidents in the Baltic Sea Region from 2014 to 2017[2].

[1] A major revision of the shipping accidents database of Denmark, maintained by the Danish Maritime Agency, took place in 2013. Denmark has informed that the accidents data of the old database and of the new database can both be considered valid. However, due to the differences in the content and structure of the two databases, care should be taken when presenting regional information on accidents which include Danish data both from the old (before 2009) and new (after 2010) databases. For example, this is the case in the southwestern Baltic Sea, where the relative influence of data from Denmark to overall trends is higher. However, based on HELCOM Secretariat comparisons between regional datasets including either old or new Danish data for the years 2010-2012, the effect of the revision on regional trends can be considered minor Baltic wide, but also within all sub-regions.

[2] HELCOM 2018. Report on shipping accidents in the Baltic Sea from 2014 to 2017. Available at http://www.helcom.fi/Lists/Publications/Report%20on%20shipping%20accidents%20in%20the%20Baltic%20Sea%20from%202014%20to%202017.pdf

2. Ship traffic in the Baltic Sea

To get a full picture of the shipping safety in the Baltic Sea, basic information on the intensity of shipping is of importance. IMO regulations (i.e. SOLAS) require Automatic Identification System (AIS) transponders to be fitted on board all ships of 300 GT and above engaged in international voyages, cargo ships of 500 GT and above not engaged in international voyages, as well as all IMO registered passenger ships irrespective of size. The AIS enables the identification of the name, position, course, speed, draught and ship types.

In the Baltic Sea area movements of ships are gathered in the regional HELCOM AIS network and database launched in 2005. The intensity of traffic based on the HELCOM AIS data is illustrated in Figure 1.

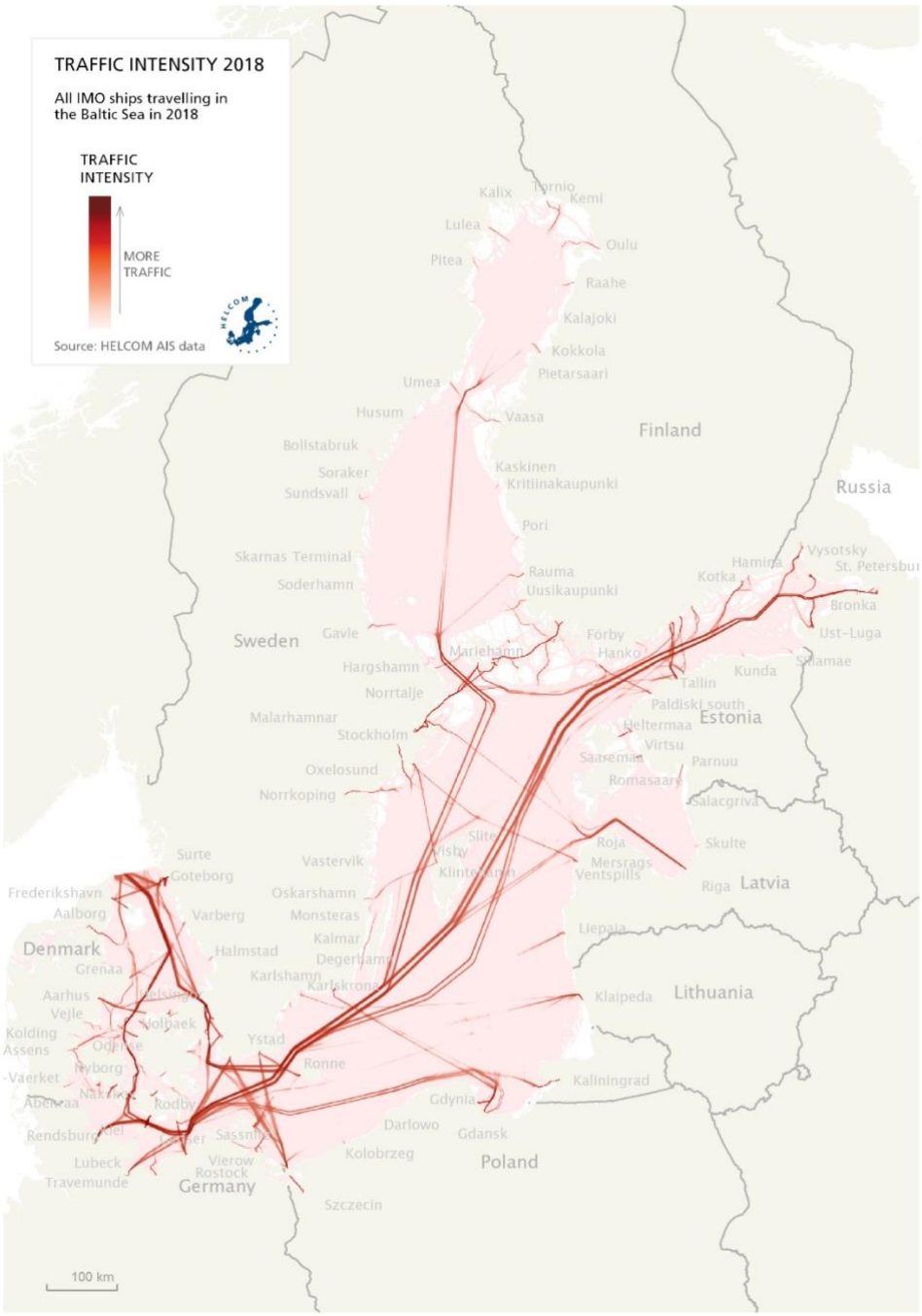

Figure 1: Traffic intensity in the Baltic Sea Region in 2018

The ship movements can also be illustrated by the number of ships crossing the pre-defined statistical lines as presented in Figure 2 (according to the ship types).

Line	Name of the location
1	Skaw
2	The Great Belt East Bridge
3	Sundet Syd
4	Langeland East
5	Kadet Fairway
6	North of Bornholm
7	South of Bornholm
8	West of Gotland
9	East of Gotland
10	Irbe Strait
11	Gulf of Finland
12	Åland West
13	Åland East
14	Bothnian Sea

Figure 2: Location of the predefined crossing lines.

In the previous HELCOM reports on shipping accidents in the Baltic Sea area, the figures regarding the number of ships crossing the lines were generated by a tool made available by the Danish Maritime Authority. The HELCOM Secretariat is now producing these figures, more information and the scripts can be found on the HELCOM GitHub page (https://github.com/helcomsecretariat). The data is available on the HELCOM Map and Data Service.

The Figures on the two next pages are illustrating the number of ships crossing each line.

Figure 3: Number of ships crossing predefined passage lines based HELCOM AIS data.

Based on the HELCOM AIS Data, it is possible to know that in 2018 the IMO-registered fleet was by far represented by cargo ships with more than 4000 ships operating in the Baltic Sea (about 48.2% of the total fleet). Tanker ships represented 22,3% of fleet with more than 1800 vessels. Passenger ships were equal to 5,4% of the fleet (449 vessels) but they were involved in almost half of the port visits in the Baltic Sea Region (44,5% with 154 233 visits[3]). This is mainly due to frequent connections between cities in the region (HELCOM, 2018)[4]. The dominance of the cargo ships in the Baltic Sea Region can also be represented with the distance sailed in the Baltic Sea area (cf. Figure 4 below).

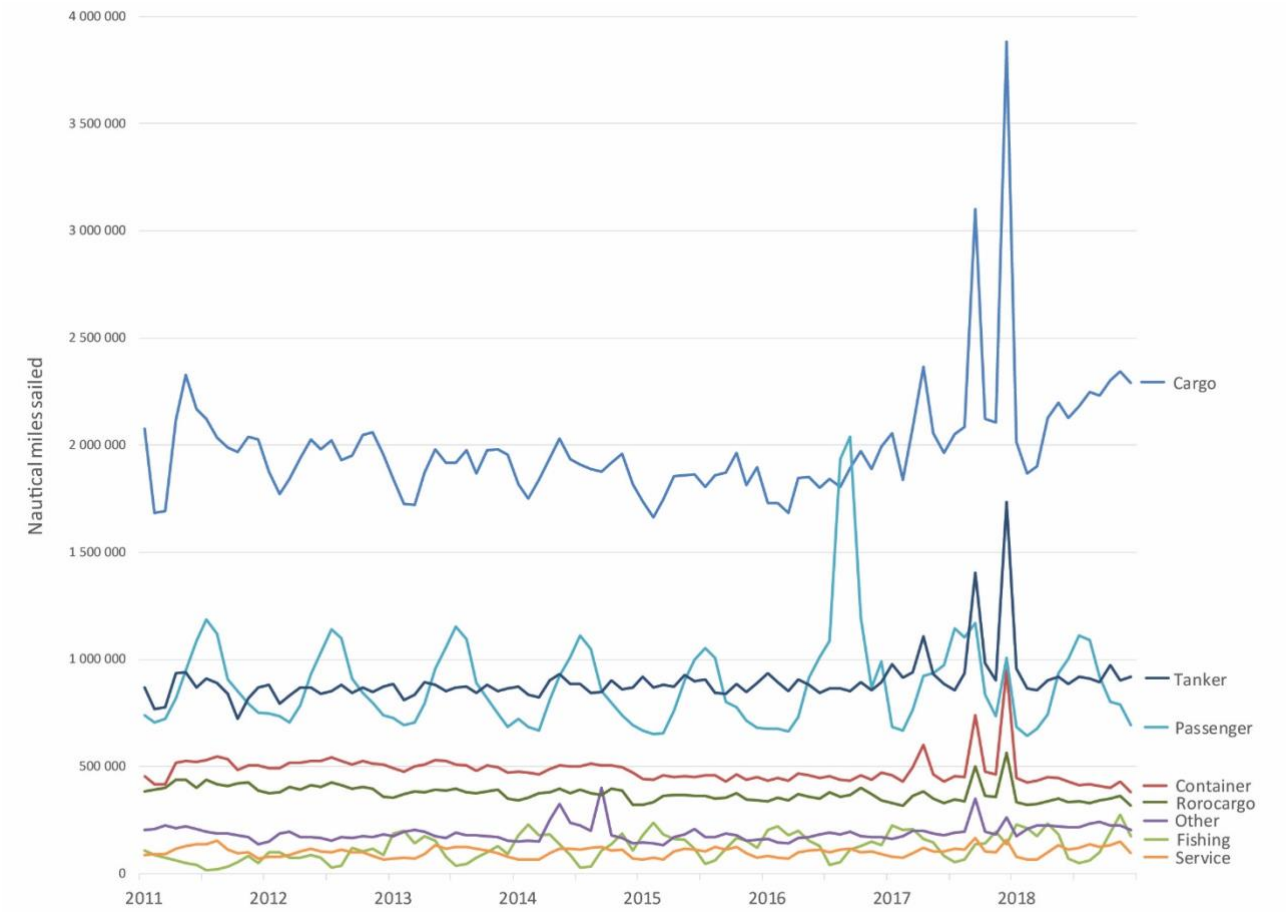

Figure 4: Distance sailed in the Baltic Sea per ship type. Monthly figures from July January 2011 to December 2018 based on HELCOM AIS data.

Shipping in the Baltic Sea based on AIS data, data on shipping accidents and other relevant data collected under the HELCOM framework has been visualized in a movie to be found on the HELCOM web page as well as in the HELCOM Assessment on maritime activities in the Baltic Sea published in 2018 (Baltic Sea Environmental Proceedings – BSEP No. 152).

[3] A visit is defined as a stop in a port for at least 10 minutes (HELCOM, 2018)

[4] HELCOM 2018. HELCOM Assessment on maritime activities in the Baltic Sea 2018. Baltic Sea Environment Proceedings No.152. Helsinki Commission, Helsinki. 253pp. Available at http://helcom.fi/Lists/Publications/BSEP152.pdf

3. Overview of accidents in the Baltic Sea

A total of 246 validated shipping accidents happening in the Baltic Sea area were reported by the Contracting Parties of the Helsinki Convention for the year 2018 (cf. Figure 5 below). This number is higher compared to the past years. It does not necessarily imply that the number of shipping accidents in the Baltic Sea area has increased, as it is not possible to establish whether all accidents were reported each year or not.

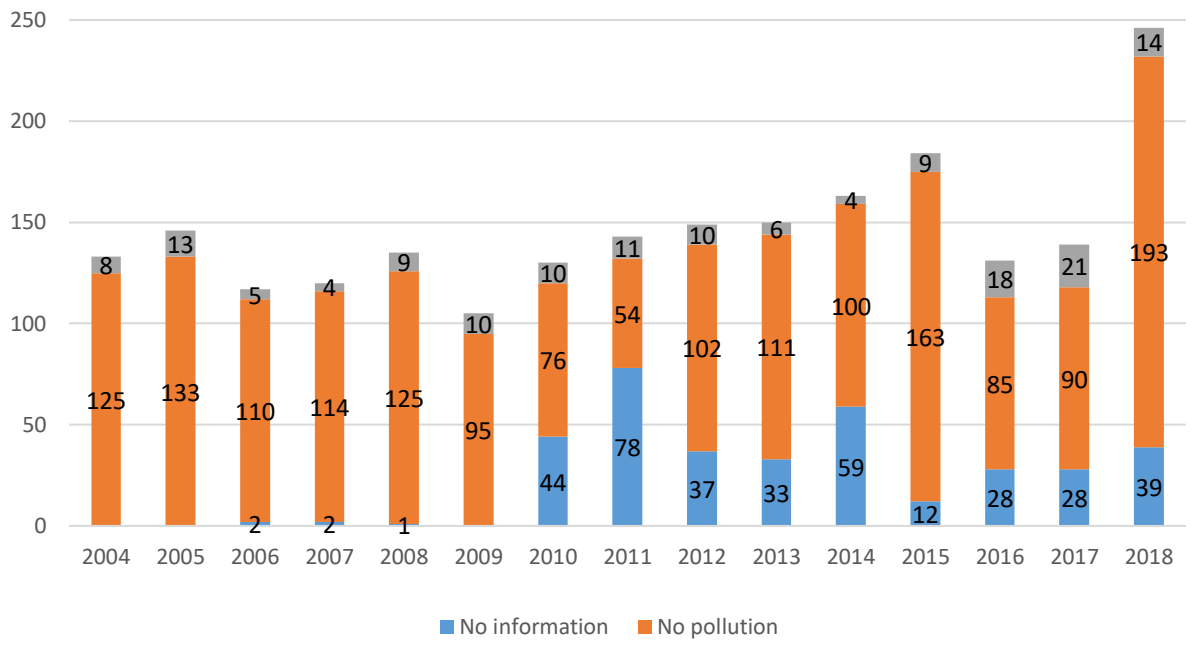

Figure 5: Number of reported accidents in the Baltic Sea

A detailed categorization of accidents location – open sea, port approach and port - was introduced for the reporting in 2012 (cf. Figure 6 below). More than half of the accidents in 2018 took place when the ships where approaching the ports or even within the port area (56.9% with 140 accidents). Since 2016, the port approach and the open sea are the two areas where the number of accidents occurring in the open sea has been increasing. In 2018, 38% of the reported accidents happened in the open sea. The spatial distribution of the reported accidents in 2014-2017 is presented in Figure 7 on the next page.

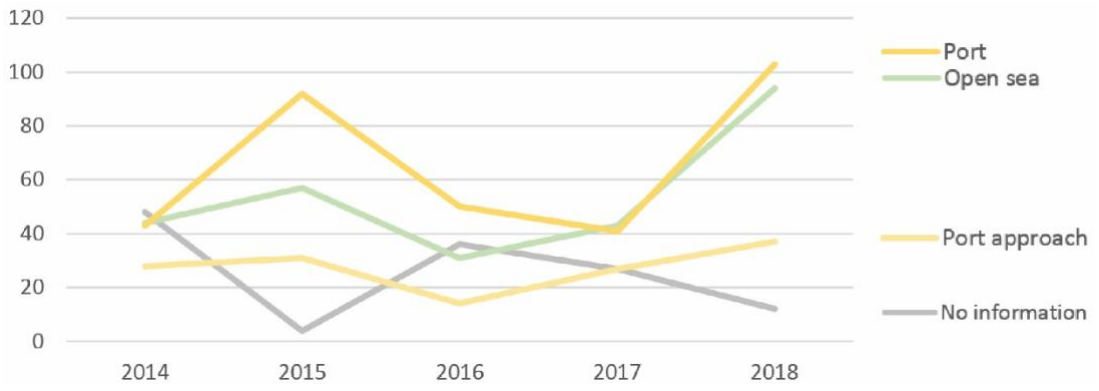

Figure 6: Location of the accidents or the period 2014 to 2018

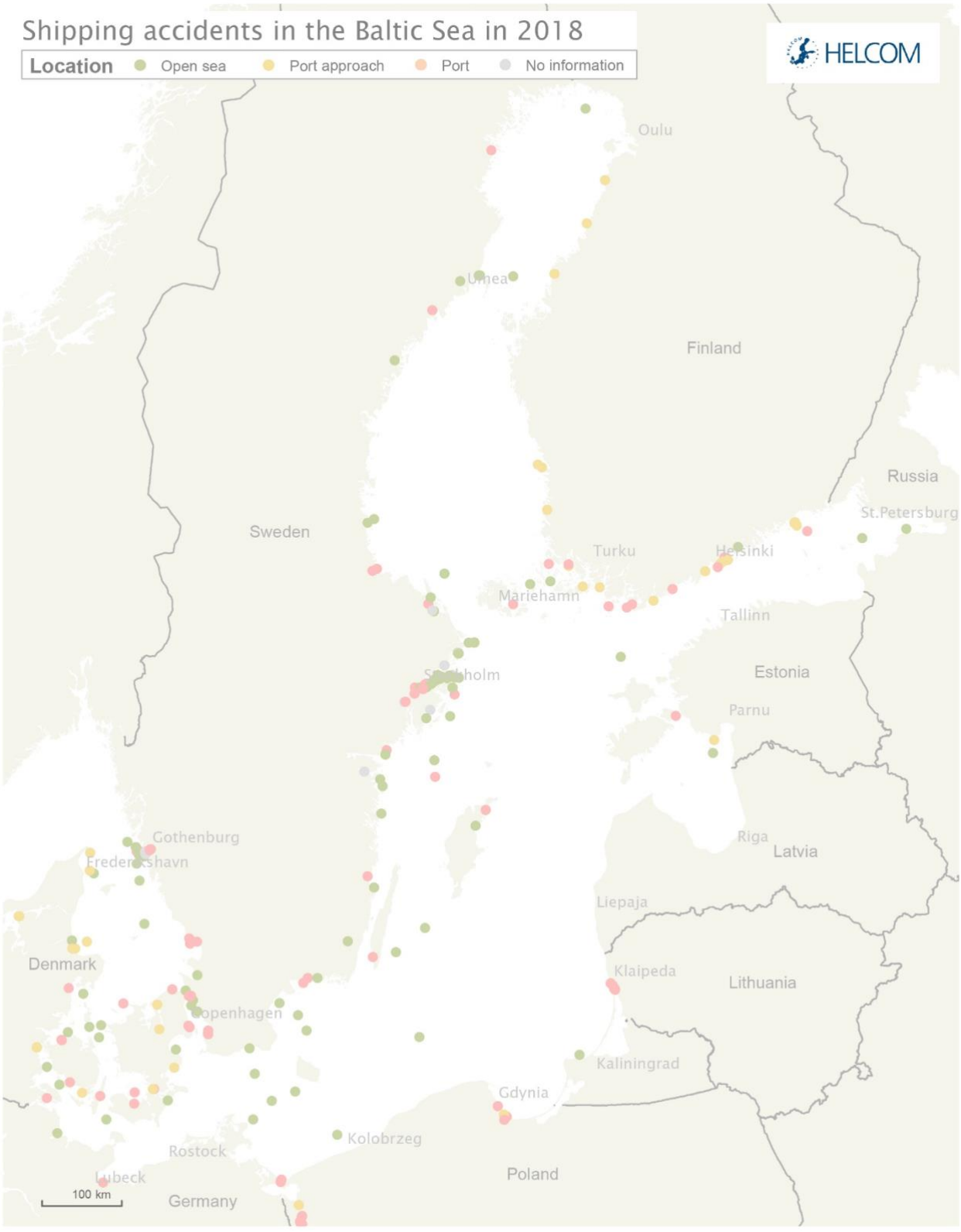

Figure 7: Location of shipping accidents in the Baltic Sea in 2018.

4. Types of accidents

Due to modification of the reporting format in 2012, the category “contact”, as a type of accident, was included in the reporting, defined as striking any fixed or floating object other than ships or underwater objects (i.e. wrecks). In previous reports “collisions” accounted for both collisions with ships and objects. In order to retain comparability both “collision” and “contact” accidents will be referred to as “collisions” in following text.

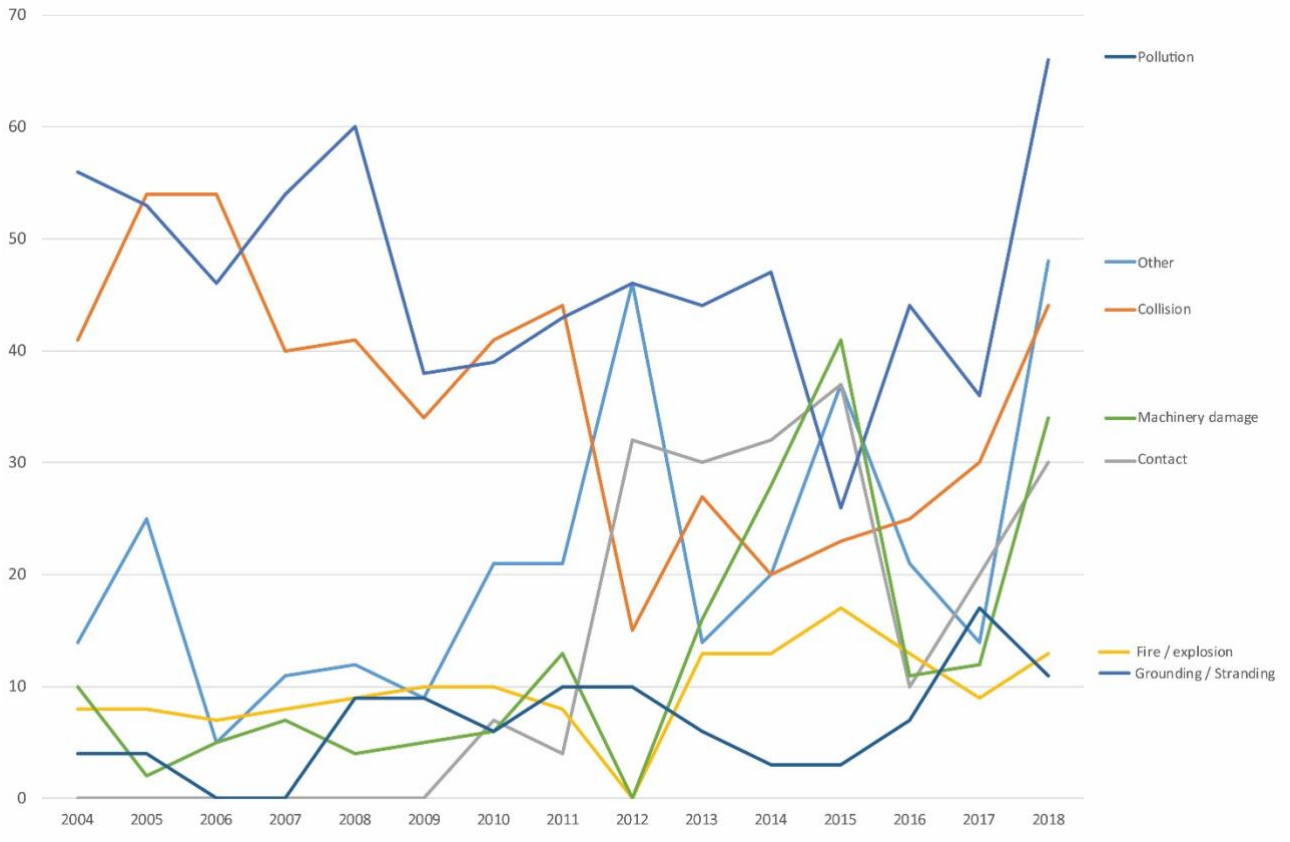

Figure 8: Types of accidents in the Baltic Sea

Groundings or strandings (hereafter referred to only as groundings) accounted for more than one fourth of all the accidents of 2018 with 66 events, it is the main type of accidents for this year. Other types of accidents such as machinery damage, fires or explosions and other made up in total about 38,7% or the accidents in 2018. It is the first time since 2015 that these other types of accidents are increasing, as well as the accidents linked with machinery damages. The type of accidents qualified as “other” can be defined following the information in Table 1 below. The spatial distribution of different types of reported accidents in the Baltic Sea area is presented in Figure 9 on the next page.

Table 1: Definition of the accident type “other”

Other reason
Accidents with life-saving appliances
Capsizing/listing
Damage to ship or equipment
Door fault / fault in doorways
Flooding/Foundering
Physical damage
Related to the use of rescue equipment
Sunk
Technical failure
Tilt / crash
Hull failure/failure of watertight doors/ports etc.
Loss of control
Other reason

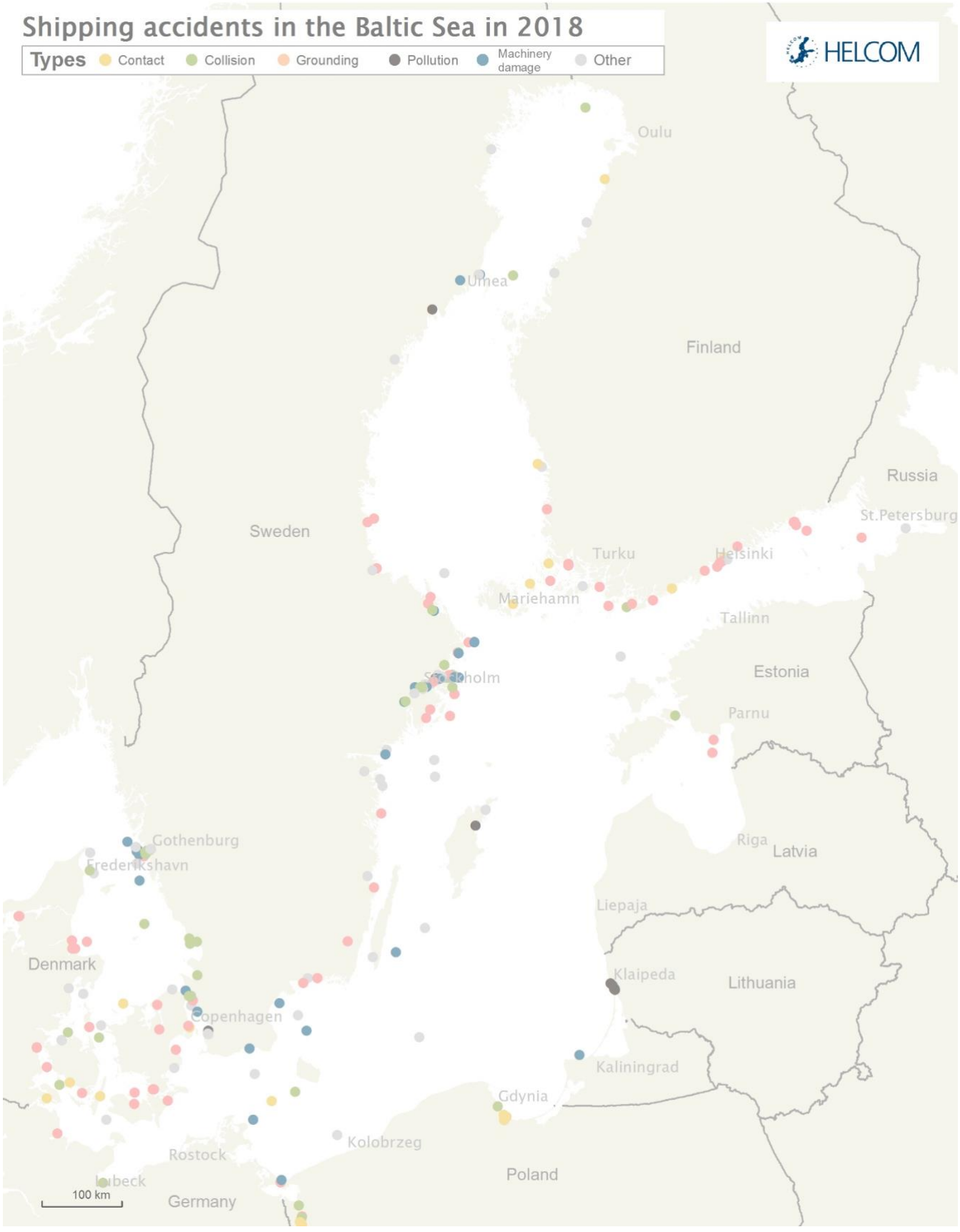

Figure 9: Types of shipping accidents in the Baltic Sea in 2018.

4.1. Collissions

In 2018, 74 collisions (collisions and contacts) were reported in the Baltic Sea area accounting for 30% of the total number of accidents. As for the past few years, most of the collisions are happening around the port areas, when ships are approaching ports or even within these ports (50 events accounting for 67% of the collisions, cf. Figure 10). However, it seems that more accidents happened in the open sea in 2018 compared to 2017.

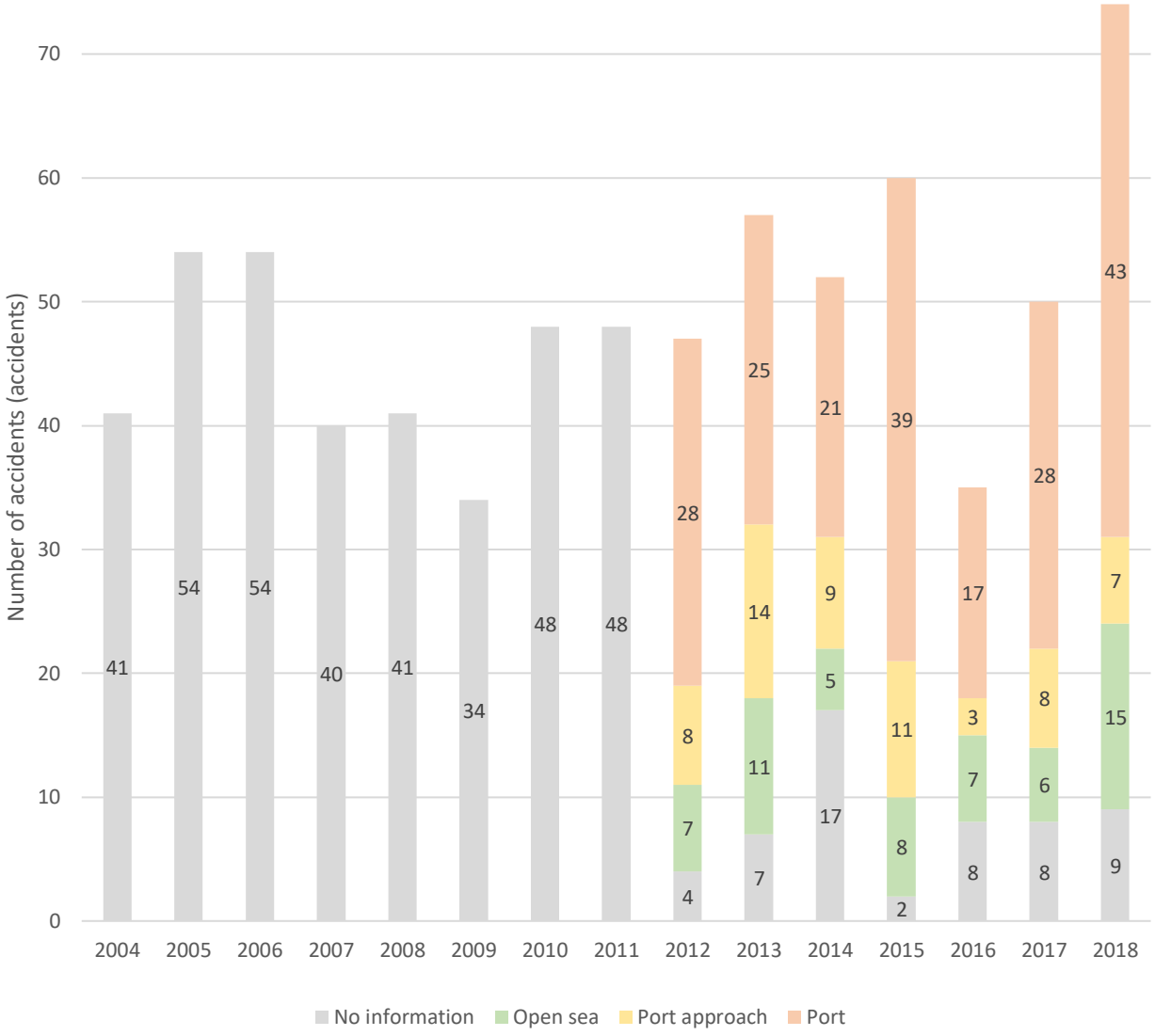

Figure 10: Location of ship collisions in the Baltic Sea between 2004 and 2018

Based on the information on shipping accidents received from the Contracting Parties of the Helsinki Convention, it is possible to divide the collisions in different types. This information is shown in the Figure 11 with numbers of collisions per different types since 2004. The merging of some types of collisions was necessary in order to produce Figure 11: the detail of the collisions with vessel, with object and other reasons are available in Table 2 next page. As for the past years, most of the collisions happened with another vessel or an object. Since 2016, the lack of information on the type of collision is still decreasing in the reported accidents sent by the Contracting Parties.

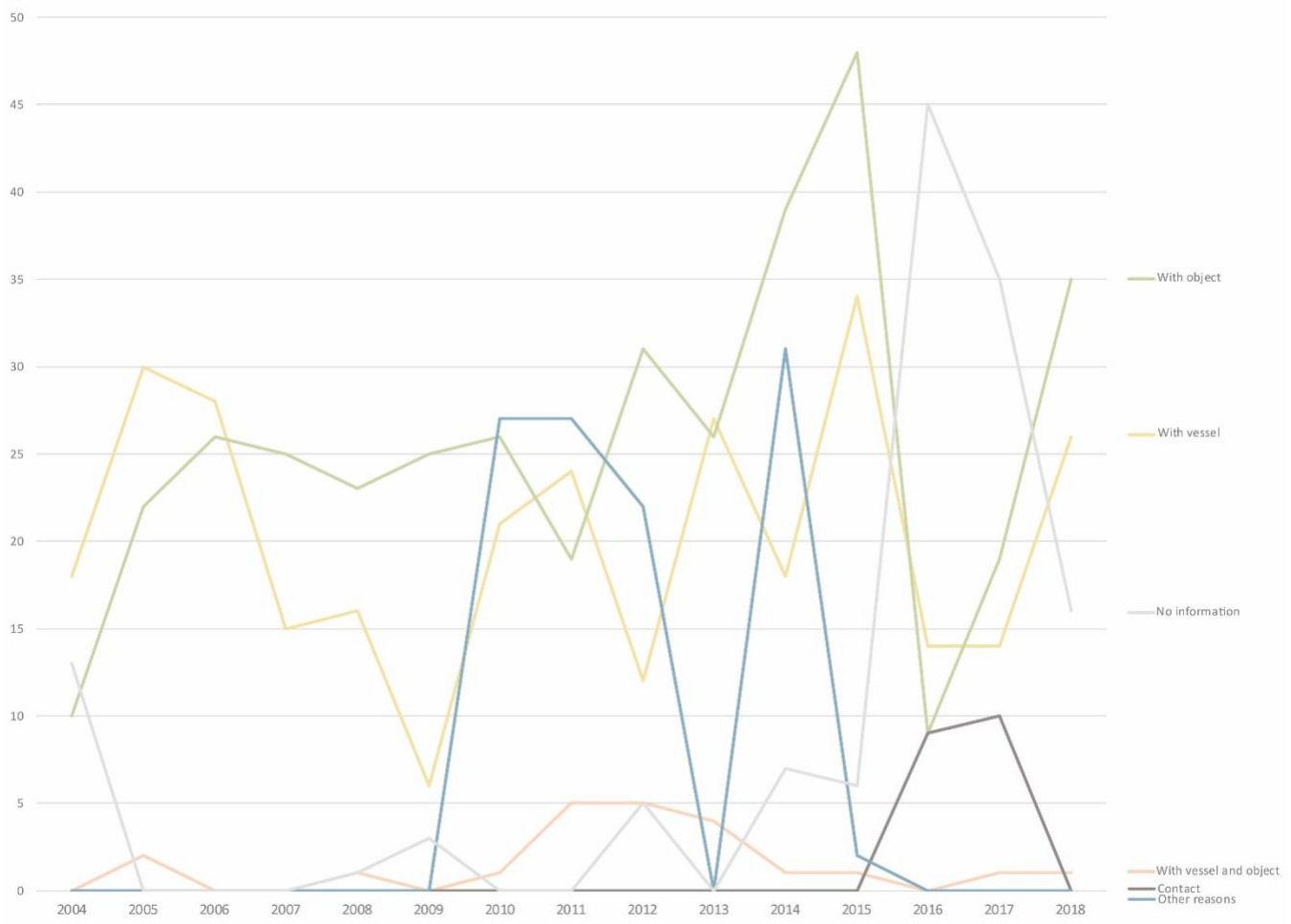

Figure 11: Types of collisions since 2004 reported in the Baltic Sea area

Table 2: Definition of the types of collisions

With vessel	With object	Other reasons
With another vessel	Buoy	Loss of containment
With multiple vessels	Dry dock	Loss of directional control
	Fixed object	On the fairway slope
	Object	other (unsealing the vessel's hull)
	Bridge	Ship not underway
	Pier, quay	Drift
	Sluice	Explosion
	Breakwater	Fire
	Berth	Flooding
		Loss of electrical power
		Loss of propulsion power
		Power

It is important to note that almost one fourth of the reported collisions in 2018 did not include information about the type of collision (23% for 12 events, cf. Figure 12). The spatial distribution of the reported collision and contact accidents in the Baltic Sea area is presented in the Figure 13 (next page).

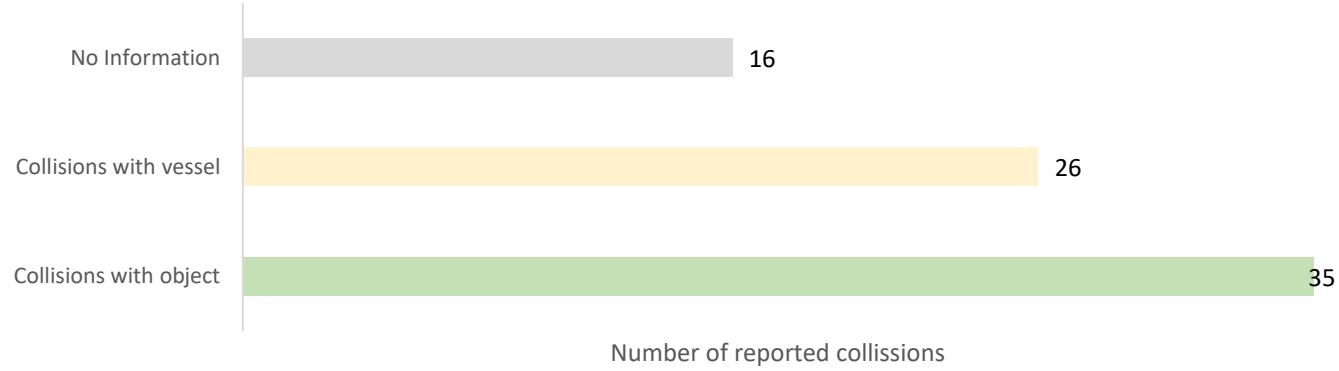

Figure 12: Types of collisions reported in 2018

Figure 13: Collision and contact accidents in the Baltic Sea in 2018 (if no accidents are displayed in certain national waters, the reason can be either no accident occurrence during 2018, or lack of data).

4.2. Groundings

It is the first time since 2008 that many groundings or stranding accidents (hereafter referred to as groundings) were reported. A total of 66 groundings happened in 2018, almost 60% of those happened when the ships are approaching the port or operating in the open sea with 39 events (cf. Fig. 14).

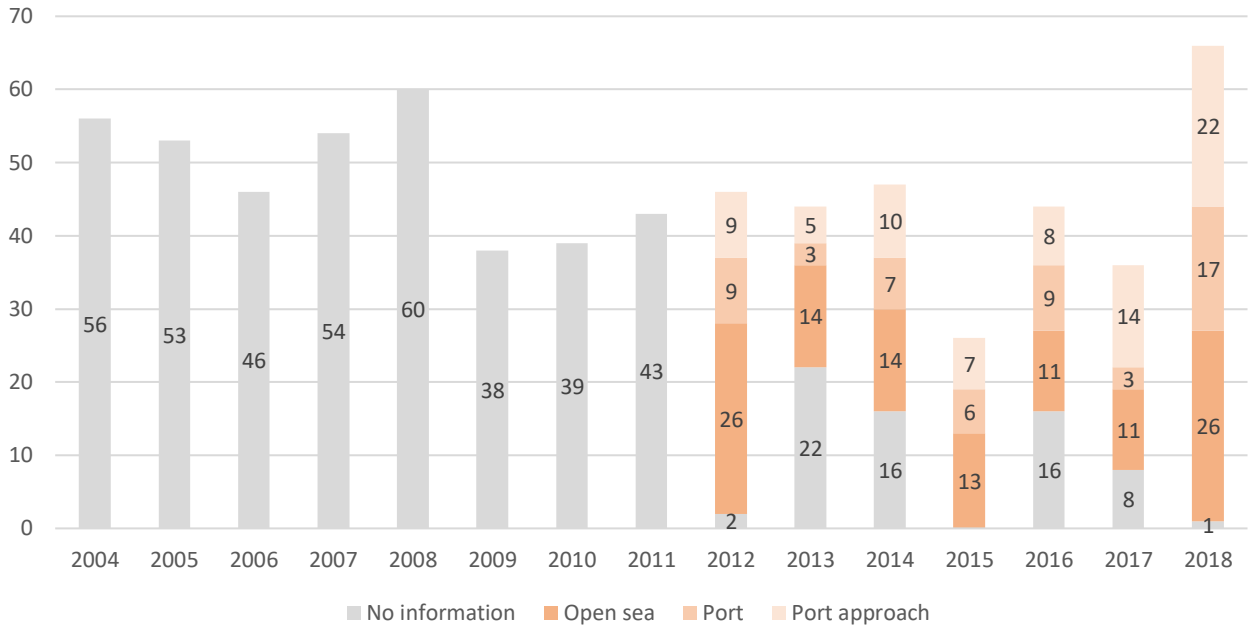

Figure 14: Location of the grounding accidents in the Baltic Sea between 2004 and 2018

For only one reported grounding the information regarding its location was not mentioned. Figure 15 below helps to compare the different location of grounding accidents in 2018.

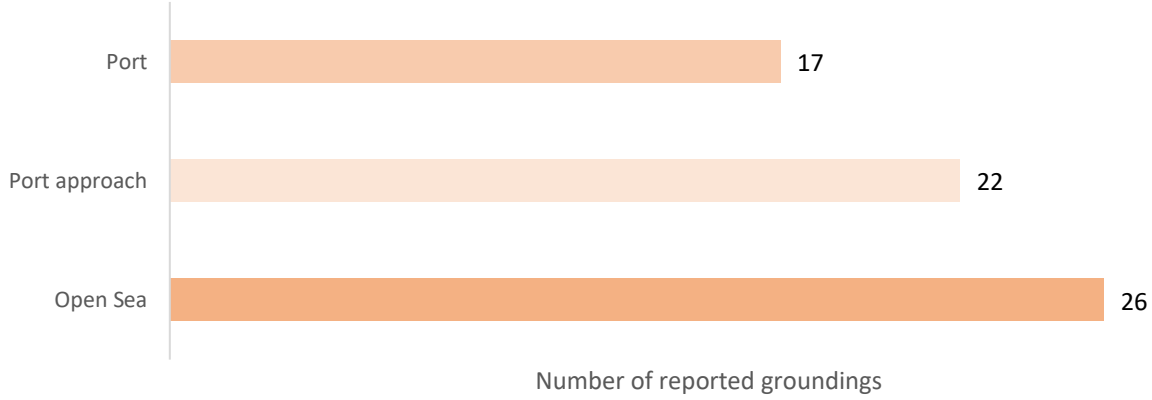

Figure 15: Location of the grounding accidents in 2018

Figure 16 illustrates the presence or absence of a pilot on board vessels in cases of grounding accidents from 2014 to 2018. More than half of the grounding accidents occurred when no pilot was on board and without an exemption certificate.

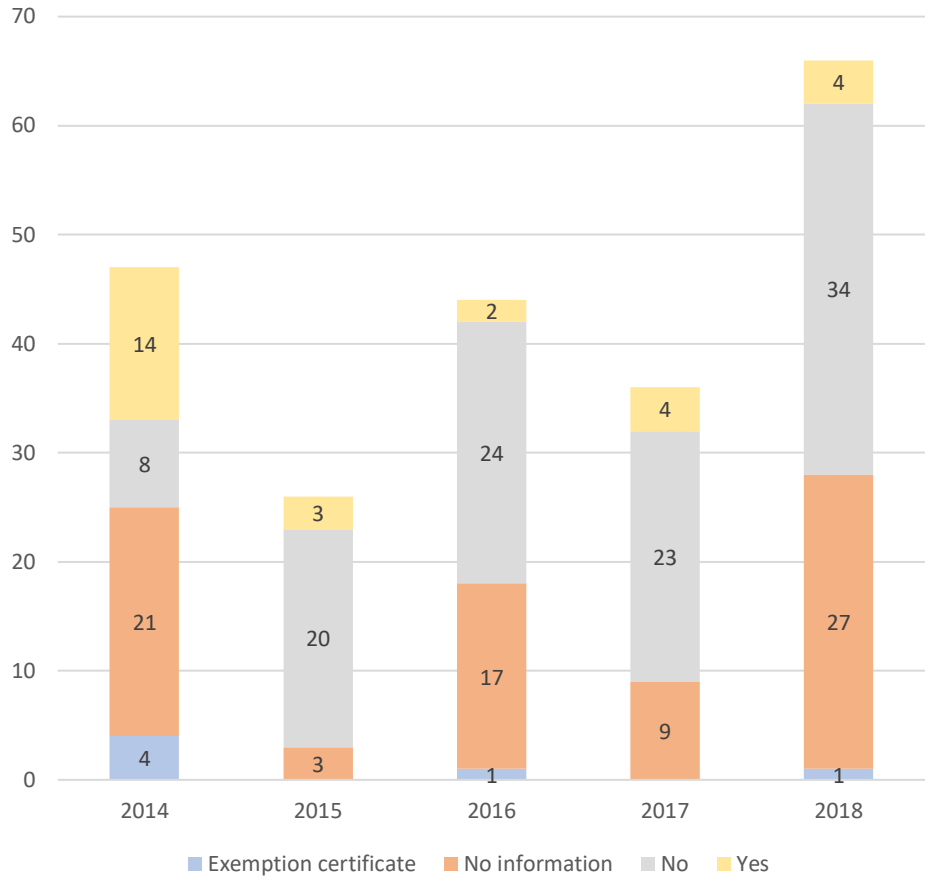

Figure 16: Presence, absence or exemption of pilots during groundings

As for the period 2014 – 2017, most of the reported groundings in 2018 occurred with vessels with a draught of less than 7 metres (cf. Figure 17). It is important to note that small vessels are not covered by the IMO´s recommendations on the use of pilotage.

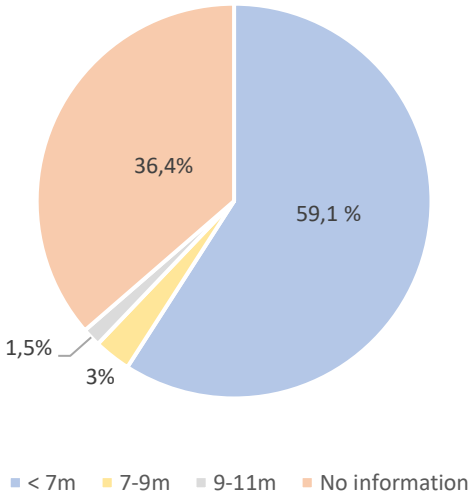

Figure 17: Percentage of grounding accidents in 2018 per draught categories

The spatial distribution of the reported collisions and contact accidents in the Baltic Sea area is presented in Figure 18 below.

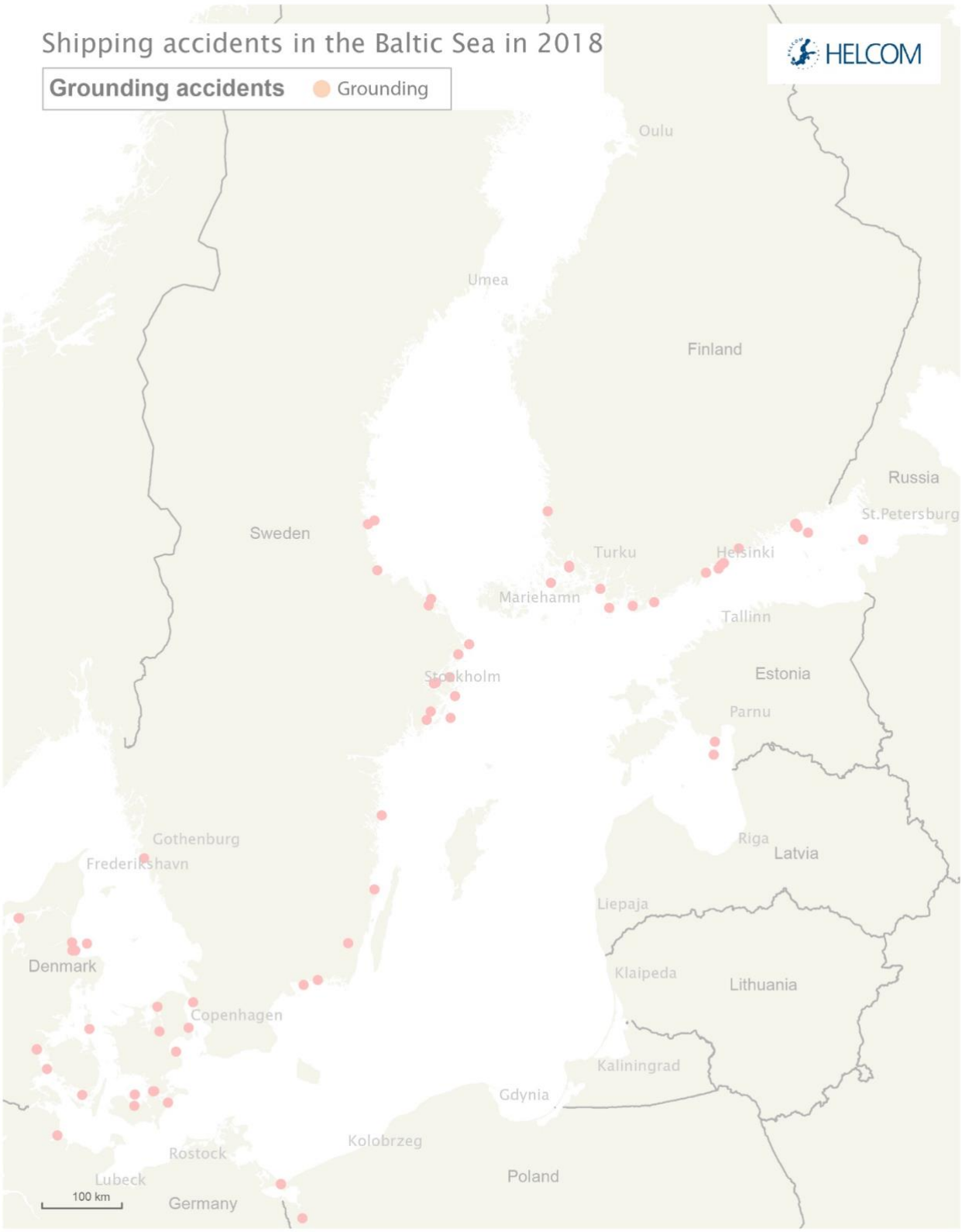

Figure 18: Grounding accidents in the Baltic Sea area in 2018 (if no accidents are displayed in certain national waters, the reason can be either no accident occurrence during 2018, or lack of data).

5. Types of vessels involved

Passenger vessels were the most common type of ships involved in accidents in 2018 accounting for 37,3% of all vessels with a total of 98 reports (cf. Figure 19). Cargo ships were involved in 28,1% of all the reported accidents with 74 reports. As was previously mentioned in this report (cf. Section 2 on ship traffic in the Baltic Sea), passenger and cargo vessels are known to be the ship types operating the most in the Baltic Sea area. The category ”other” including dredger and tug boats is accounting for more than 22% of the accidents. The rest of ship types such as tanker, service, container, roro cargo and fishing vessls are accounting for 12,1% of all the accidents reported for the year 2018.

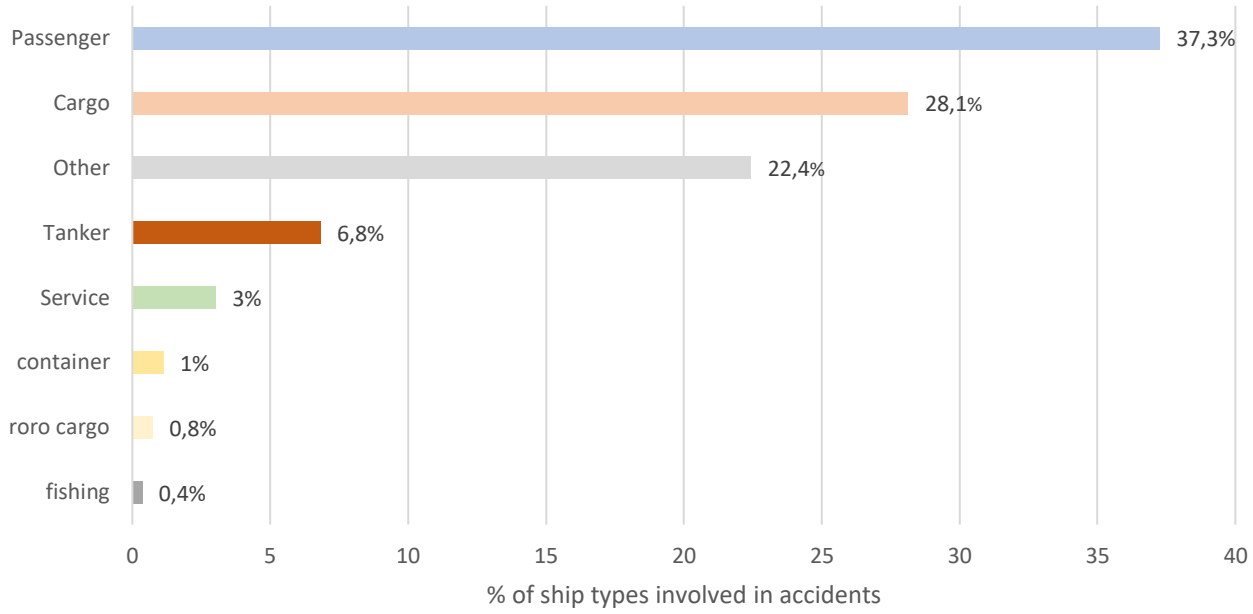

Figure 19: Proportion of ship types involved in accidents in 2018. The Figure taking into account all the types of accidents as well as the accidents involving several ships. In 2018, 17 accidents involved two or more ships.

The spatial distribution of these accidents by ship types is presented on the figure 20 next page.

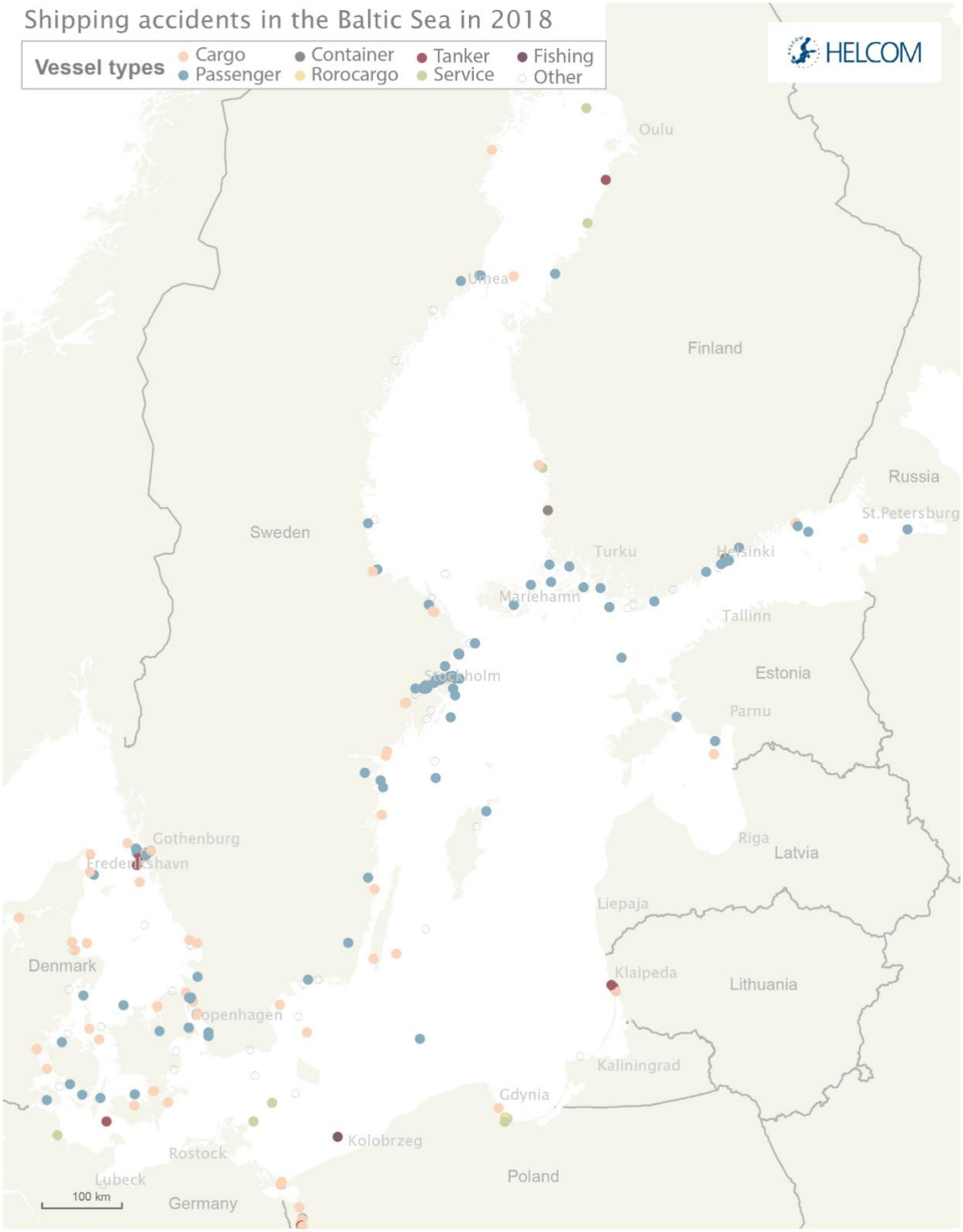

Figure 20: Reported shipping accidents by ship types in 2018.

6. Cause of accidents

Causes of accidents are part of the information reported by the Contracting Parties to the Helsinki Convention. As for the previous years, the accidents reported in 2018 were mainly caused by human element with 94 events (38,2%). Unknown reason and technical failure onboard the ships are two causes with almost the same proportion and are together responsible of more than 40% of the total number of accidents. External causes, structural failure and other factors are minor causes of accidents with only 16,7% of the total reported accidents (cf. Figure 21). External causes are related to factors that is not directly linked to the ship or its crew, for example environmental conditions and the surroundings of the ship.

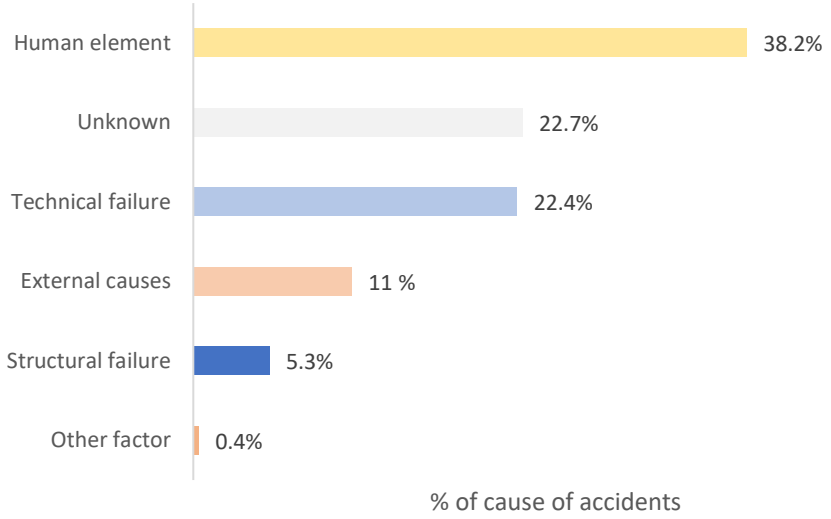

Figure 21: Proportion of cause of accidents reported in 2018

The spatial distribution of accidents with indication of the cause of the accidents for the period is presented in Figure 22.

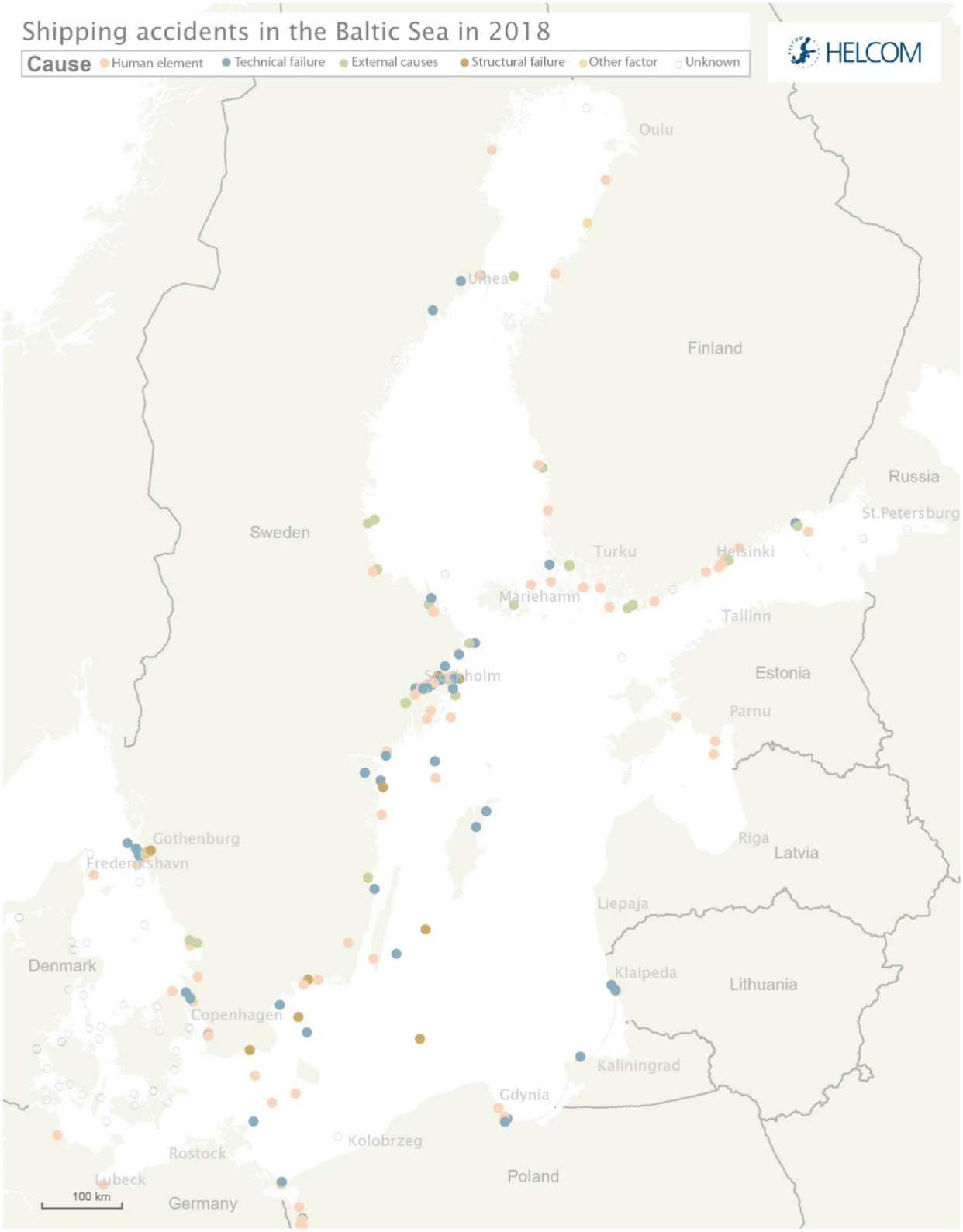

Figure 22: Cause of accidents in the Baltic Sea area in 2018.

7. Acccidents with pollution and response activities

7.1. Accidents with pollution

For each accident reported, the Contracting Parties were asked to define if some the events generated pollution or not. According to the reported data, 5,6% (14 events) of the accidents ended up with some kind of pollution while almost 16% were reported without information. Most of the accidents (193 events or 78,5%) did not cause pollution. Only 4 categories of ship types were involved in polluting accidents (cf. Figure 23).

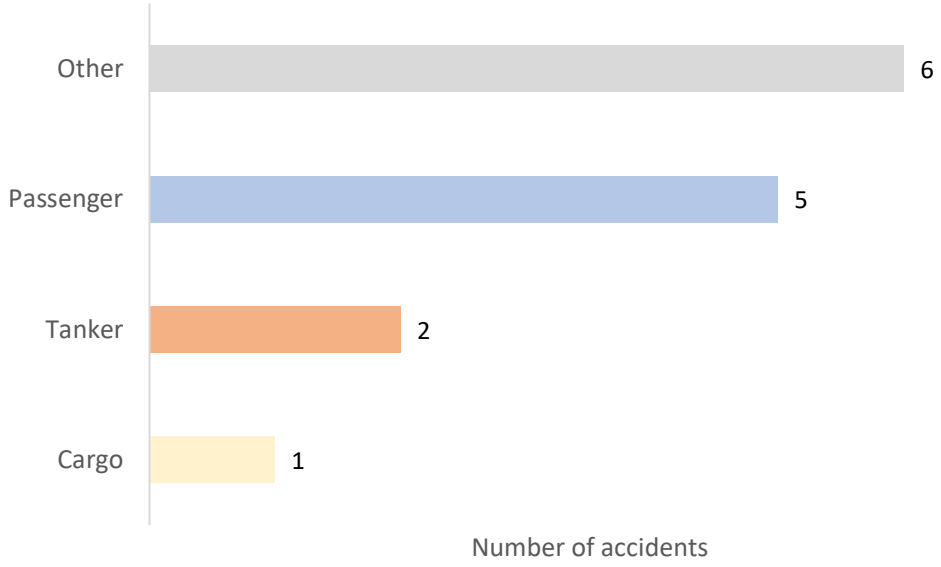

Figure 23: Ship types involved in pollution accidents in the Baltic Sea area in 2018.

Out of these 14 events generating pollution, 6 accidents were caused by human reasons. Technical and structural failure are also responsible for polluting accidents. Only one of these events has an unknown reason as cause of the accident (cf. Figure 24).

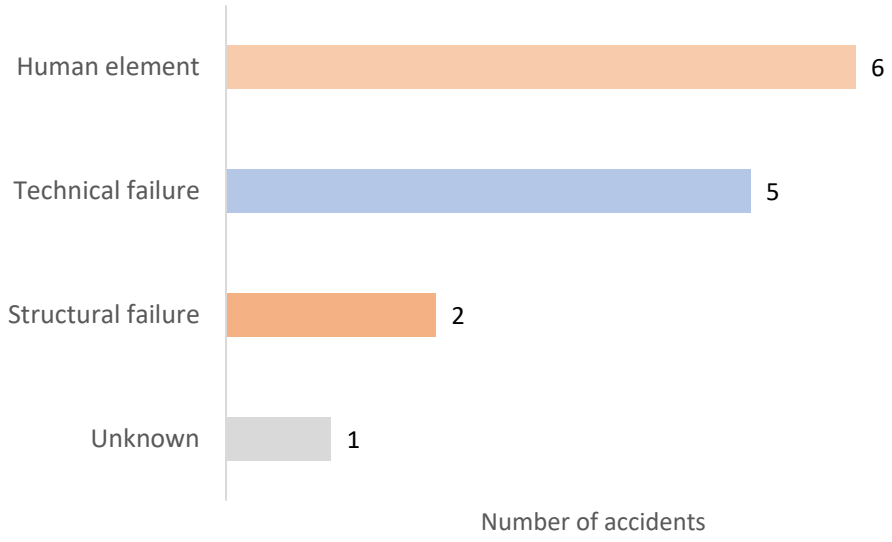

Figure 24: Cause of the accidents resulting in pollution in 2018

The spatial distribution of the accidents resulting in pollution for the period is presented in Figure 25 (next page). Special characteristics such as low salinity, small water volume, restricted connection to the ocean, seasonality and the ice cover during winter make the Baltic Sea highly vulnerable to the effects of oil spills which makes swift response very important. Intensive regional cooperation in the field of response and preparedness to spills in the Baltic Sea has been carried out within HELCOM since the 1970s (HELCOM Response Working Group). Due to such cooperation efforts the oil recovery rate in the Baltic Sea is generally much higher than the global average and, as proved by previous pollution accidents of regional importance, it can reach as much as 50 %.

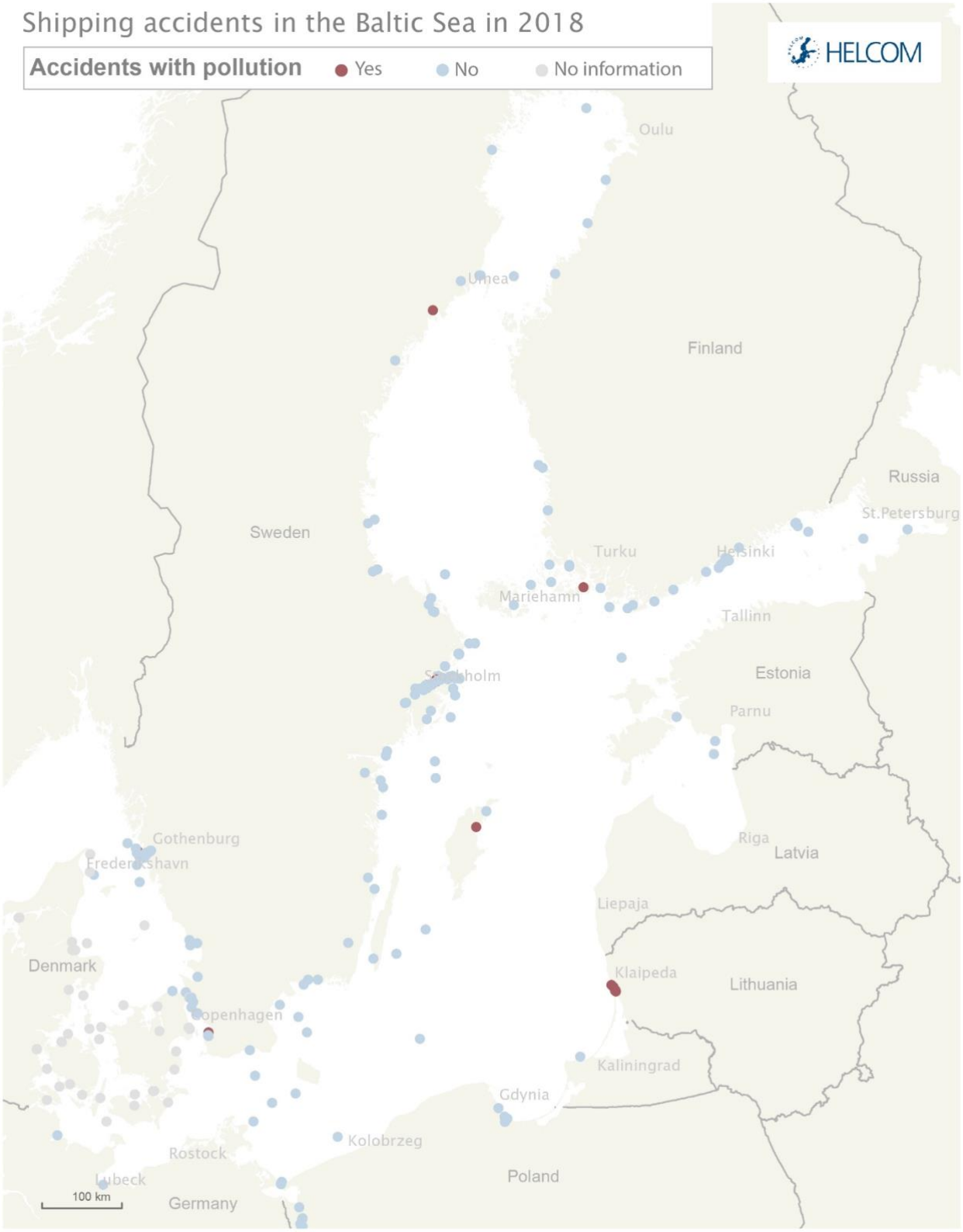

Figure 25: Shipping accidents with pollution in the Baltic Sea in 2018.

7.2. Response activities

Response activities in the Baltic Sea region have been reported by the Baltic Sea states following a request by the HELCOM Secretariat. All the Contracting Parties answered to the data request from the HELCOM Secretariat, the information is available in the table 3 next page.

Table 3: Reported response activities in the Baltic Sea area in 2018

Country	Year	Date	Time	Place	Latitude	Longitude	Source	Type of pollution	Amount of pollution (m^3)	Amount recovered at sea (m^3)	Amount recovered on shore (m^3)	Polluted coastline (km)	Amount and state of affected wildlife	Affected species	Action taken for collection and/or treatment of wildlife	Recovery operation at sea (days)	Recovery operation on shore (days)	Responsible organization	Further details
Denmark	No significant response activities																		
Estonia	2018	30.5.2018		at sea	59° 18,7` N	22° 6,9` E	ship	oil	0.49	0	0	0	0						
Estonia	2018	18.6.2018		at sea	58° 40` N	20° 58` E	ship	oil	2.7	0	0	0	0						
Estonia	2018	4.7.2018		at sea	58° 40,6` N	21° 14,3` E	ship	oil	0.32	0	0	0	0						
Estonia	2018	6.8.2018		at sea	58° 54,3` N	21° 20,6` E	ship	oil	0.2	0	0	0	0						
Estonia	2018	17.8.2018		at sea	59° 28` N	24° 25` E	ship	oil	0.3	0	0	0	0						
Estonia	2018	18.12.2018		at sea	59° 29,2` N	24° 31.9` E	ship	oil	0.1	0	0	0	0						
Finland	No significant response activities																		
Germany	No significant response activities																		
Latvia	No significant response activities																		
Poland	No significant response activities																		
Lithuania	No significant response activities																		
Russia	2018	13.4.2018	14:42	Big port Saint Petersburg			Barge "NB-1"	approx. fuel oil	20x3 m					none	OSR by shipyard brigade		2	Shipyard "Ust'-luzhskaya proizvodstvenno-torgovaya kompaniya" LLC	
Russia	2018	14.11.2018	14:22	Ust-Luga port			Bunkering Tanker "Kapitan Ponikarovsky"	fuel oil	400x1000 m					none	OSR using the resources of rescue unit of "Kontur" LLC	2		Shipowner "Kontur" LLC	
Sweden	2018	23.07.2018	7:21	Blackarna	57.9549	16.8685	Ship	Fuel oil	14	9	2	1	20-30 affected birds	Birds		10	1-10 days	Swedish Coast Guard	Operation Makassar Highway
Sweden	2018	07.05.2018	23:29	South of Öland	55.9233	16.4661	Unknown	Mineral oil	12	1	0	0	0			2		Swedish Coast Guard	No pollutants were found

Annex 1

Guideline for filling-in the HELCOM Reporting Format on Shipping Accidents (as of September 2016).

All accidents including, but not limited to grounding, collision with other vessel or contact with fixed structures (offshore installations, wrecks, etc.), disabled vessel (e.g. machinery and/or structure failure), fire, explosions, etc., which took place in territorial seas or EEZ of the Contracting Party and involved any ships which are required to carry AIS should be reported to the HELCOM Secretariat using the agreed reporting format, irrespectively if there was pollution or not.

The reporting format is provided as an excel file and includes the following information entries. The predefined entries should be used!

Country	Country in whose water the accident took place	
Year	Year of accident	
Date (dd.mm.yyyy)		
Time (hh:mm)		
Latitude (DD)	Please provide latitude in decimal degrees, e.g. 57.123	
Longitude (DD)	Please provide longitude in decimal degrees, e.g. 18.456	
Location of accident	Fixed answers; please choose from: **"Port"**, **"Port approach"**, **"Open sea"** or **"n.i."** (no information available). The category "Open sea" covers all accidents at sea i.e. not defined as "Port" or "Port approach". Categories are used only for the purpose of statistics and are too be defined according to national practice of the reporting authority.	
Ship 1	Ship 1 name, ID, flag	
	Ship 1 AIS category	Fixed answers; please choose from: **"Tanker"**, **"Cargo"**, **"Passenger"** or **"Other".**
	Ship 1 type (detail)	Please, provide further details on type of ship, e.g. tanker (oil, chemical, gas tanker), cargo ship (general cargo, bulk carrier, etc) and other ships (icebreaker, tug boat, ro-ro, etc).
	Hull construction (tankers only)	Fixed answers; please choose from: **"Single, hull"**, **"Double hull"**, **"Double bottom"**, **"Double sides"**, **"Mid deck"** or **"Other"** .
	Size (gt)_ship1	
	Draught (m)_ship1	Fixed answers; please choose from**: "< 7m"**, **"7-9m"**, **"9-11m"**, **"11-13m"**, **"13-15m"**, **">15m"** or **"n.i."**.
Ship 2 (if relevant)	Ship 2 name, ID, flag	
	Ship 2 AIS category	Fixed answers; please choose from: **"Tanker"**, **"Cargo"**, **"Passenger"** or **"Other".**

Fill this in only if accident involved two ships, e.g. in case of a collision	Ship 2 type (detail)	Please, provide further details on type of e.g. tanker (oil, chemical, gas tanker), cargo ship (general cargo, bulk carrier) and other ships (icebreaker, tug boat, ro-ro etc).
	Hull construction (tankers only)	Fixed answers; please choose from: **"Single, hull"**, **"Double hull"**, **"Double bottom"**, **"Double sides"**, **"Mid deck"** or **"Other"** .
	Size (gt)_ship2	
	Draught (m)_ship2	Fixed answers; please choose from**: "< 7m"**, **"7-9m"**, **"9-11m"**, **"11-13m"**, **"13-15m"**, **">15m"** or **"n.i."**.
Type of cargo	If relevant, please specify amount and type of cargo, e.g. people (passengers and crew), oil, dangerous goods, harmful substances, bunker, ballast and empty, other.	
Type of accident	Fixed answers; please choose from: **"Collision"** (striking or being struck by another ship) **"Stranding/grounding"** (being aground, or hitting/touching shore or sea bottom or underwater objects (wrecks, etc.)) **"Contact"** (striking any fixed or floating object other than those included previously) **"Pollution"** (e.g. during fuel transfer) **"Fire or explosion"** **"Hull failure/ failure of watertight doors/ports etc."** **"Machinery damage"** **"Damages to ships or equipment"** **"Capsizing/listing"** **"Missing (assumed lost)"** **"Accidents with life-saving appliances"** **"Other"**	
Type of collision or contact*(collision and contact accidents only)*	Fixed answers; please choose from: **"With vessel"**, **"With vessel and object", "With object"** or **"n.i."**.	
Further details about accident	More detailed information, especially if "Other" was selected in the "Type of accident" column.	

Cause of accident	Fixed answers; please choose from: **"Human element"** (violations or error) **"Structural failure"** **"Technical failure"** (machinery/equipment incl. design errors) **"Cargo related"** **"External causes"**(including environment, navigational infrastructure, criminal acts etc.) **"Unknown"**
Human element subcategories	Please provide further details if "Human element" was selected in the previous column. Fixed answers; please choose from: **"Violation"** (deliberate decision to act against a rule or plan) **"Slip"** (unintentional action where failure involves attention) **"Lapse"** (unintentional action where failure involves memory) **"Mistake"** (an intentional action where there is an error in the planning process; there is no deliberate decision to act against a rule or procedure):
Accident in ice conditions	Fixed answers, please choose from: **"Yes", "No"** or **"n.i.".**
Crew trained in ice navigation	Fixed answers, please choose from: **"Yes", "No"** or **"n.i.".**
Further details on cause of accident	Please, provide further details on cause e.g. hard winds, heavy waves, reduced visibility, etc.
Pilot on board	Fixed answers, please choose from: **"Yes"**, **"No"**, **"Exemption certificate"** or **"n.i."**.
Offence against rules or regulations	Please, specify e.g. use of pilot, routeing, weather restriction, deficiency of the ship, operation of the ship, COLREG, speed limits, max draft, others.
Damage	Please specify, e.g. lives (crew and passengers), total loss, leakage, others.
Need of assistance	Please specify, e.g. SAR, towing, lightering, salvage, others.
Pollution	Fixed answers; please choose from: **"Yes"**, **"No"** or **"n.i.**.
Amount of pollution (m^3)	

Amount of pollution (tonnes)	
Type of pollution	Please, specify e.g. crude oil, diesel fuel, other.
Consequences/response action	Please, specify e.g. consequences of pollution, response to contamination taken, amount of pollution recovered, etc.
Additional info	Any other relevant information, e.g. needed to evaluate the limitation of data, etc.