European Maritime Safety Agency

ANNUAL OVERVIEW OF MARINE CASUALTIES AND INCIDENTS 2016

EMSA

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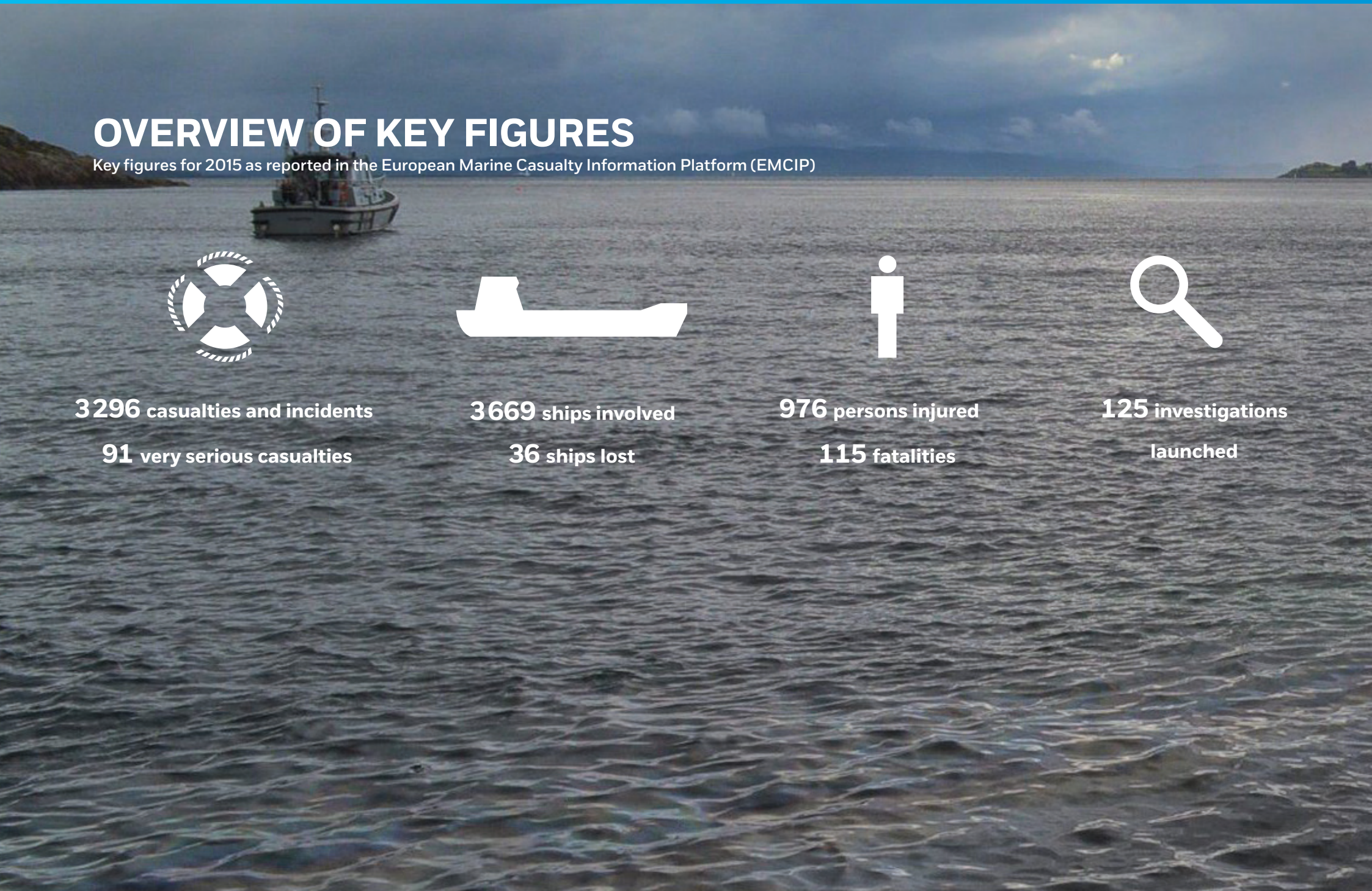


OVERVIEW OF KEY FIGURES

Key figures for 2015 as reported in the European Marine Casualty Information Platform (EMCIP)

3 296 casualties and incidents

91 very serious casualties

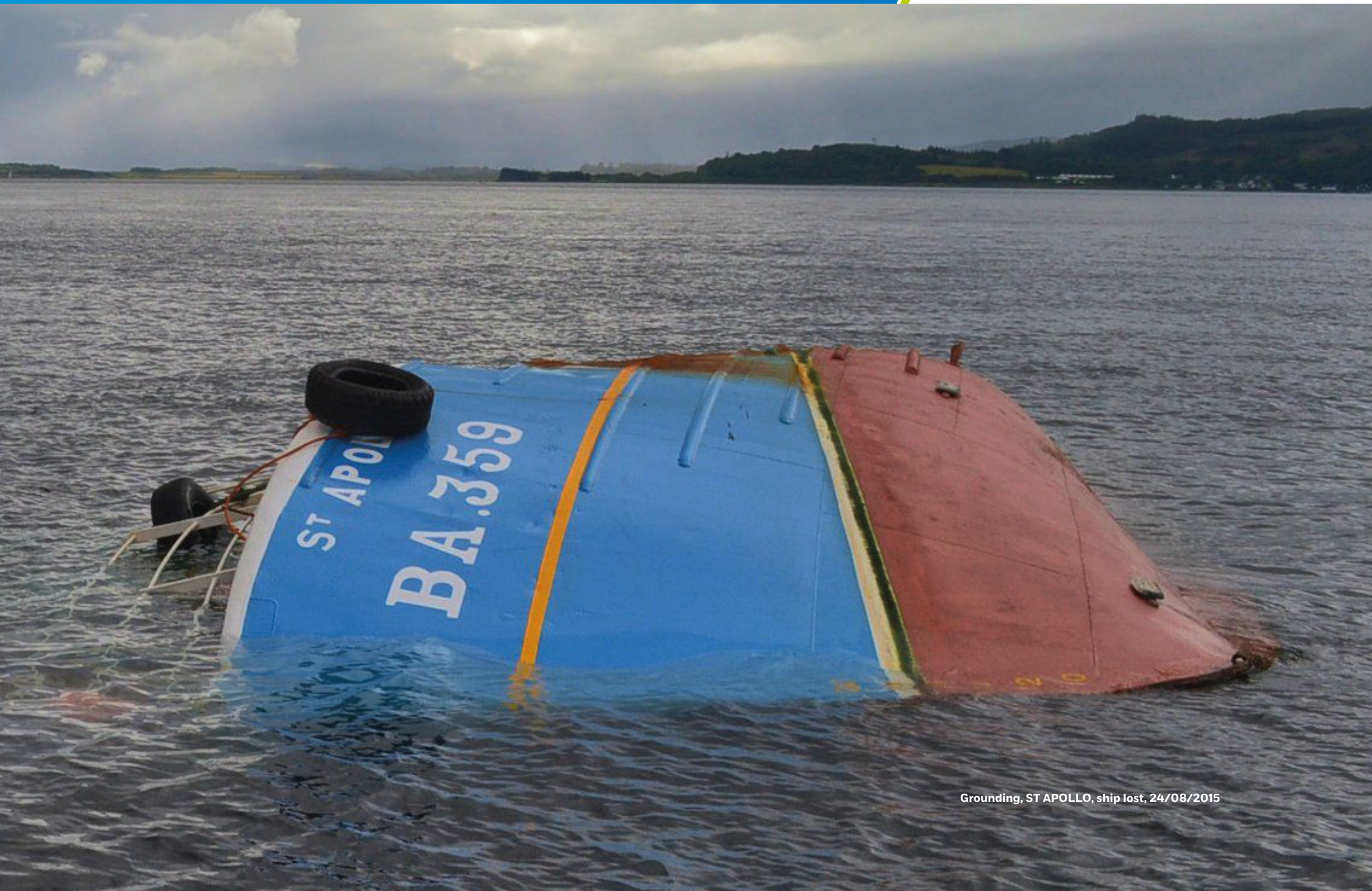
3 669 ships involved

36 ships lost

976 persons injured

115 fatalities

125 investigations launched



Grounding, ST APOLLO, ship lost, 24/08/2015

CONTENTS

Collision, ALEXANDRIA 1 and EVER SMART, ships damaged, 11/02/2015

Fire/Explosion, NAKHODKA, 1 live lost, 26/04/2014

Photo credits: DK/DMAIB, DK/Danish Institute of Fire and Security Technology, FR/BEAMer, GE/BSU, GR/HBMCI, MT/MSIU, NL/DSB, SE/SHK, UK/MAIB, UK/MCA, Iain Butterworth

Statistics, tables, graphs, charts and maps have been generated by EMSA based on information contained in EMCIP.

NOTICE

Article 1 of Directive 2009/18/EC of the European Parliament and of the Council of 23 April 2009 establishing the fundamental principles governing the investigation of accidents in the maritime transport sector and amending Council Directive 1999/35/EC and Directive 2002/59/EC of the European Parliament and of the Council states:

"The purpose of the Directive 2009/18/EC of 23 April 2009 is to improve maritime safety and the prevention of pollution by ships, and so reduce the risk of future marine casualties, by:

(a) facilitating the expeditious holding of safety investigations and proper analysis of marine casualties and incidents in order to determine their causes; and

(b) ensuring the timely and accurate reporting of safety investigations and proposals for remedial action.

Investigations under this Directive shall not be concerned with determining liability or apportioning blame."

The information contained in this document is to be used only for the improvement of maritime safety and the prevention of pollution by ships. It shall not be used for determining liability or apportioning blame.

DISCLAIMER

The marine casualty and incident data presented is strictly for information purposes only. The statistics presented are from the data stored in the European Marine Casualty Information Platform (EMCIP) by the investigative bodies of the EU States. It reflects the information at the time the data was extracted (20/07/2016). While every care has been taken in preparing the content of the report to avoid errors, the Agency makes no warranty as to the accuracy, completeness or currency of the statistics in the report. The Agency shall not be liable for any kind of damages or other claims or demands incurred as a result of incorrect, insufficient or invalid data, or arising out of or in connection with the use, copying or display of the content, to the extent permitted by European and national laws. The information contained in the report should not be construed as legal advice.

ACKNOWLEDGEMENTS

The Agency wishes to acknowledge the contribution made by the EU States and the European Commission and to thank them for their support in the conduct of this work and in the preparation of this report.

EXECUTIVE SUMMARY

During 2015 there were 115 reported fatalities, 976 persons injured, 36 ships lost and 125 investigations launched.

With 3296 marine casualties and incidents in 2015, the total number reported in EMCIP has reached almost 12600. Some under-reporting of marine casualties and incidents still appears to exist, although there has been continuous improvement since the implementation of the relevant EU legislation in 2011. Estimates indicate that under-reporting relates mostly to the less serious casualties and incidents and this is consistent with the increases shown in these categories while more serious casualties remained at levels similar to previous years.

Over the period 2011-2015, half of the casualties were of a navigational nature, such as contacts, groundings/strandings or collisions. Amongst occupational accidents, 39% were attributed to slippings, stumblings and fallings of persons. Human erroneous action represented 62% of accidental events and 71% of accidental events were linked to shipboard operations as a contributing factor.

In 2015 more than 1700 cargo ships were involved in marine casualties and incidents that resulted in 64 fatalities, an abnormally high number due to the loss of the general cargo ship El Faro with 33 victims, including 5 Polish crewmembers. Despite the number of fishing vessels lost continuing to increase and reaching more than 25 last year, a significant decrease of fatalities and injuries was noted.

Across the period 2011-2015, the number of fatalities on board passenger ships is dominated by the Costa Concordia (32 fatalities and 17 injured persons in 2012) and the Norman Atlantic (11 fatalities and 31 injured persons in 2014). Over the period, 65% of the victims on board passenger ships were passengers.

Also across the period 2011-2015, Member States' investigative bodies have launched 749 investigations and 566 reports have been published. Among the 1000 safety recommendation issued, 40% were related to operational practices, in particular safe working practices. Half of the safety recommendations were addressed to shipping companies and the rate of positive responses was above 75%.

Presentation of the future EMCIP at the 7th EMCIP User group meeting, February 2016, EMSA, Lisbon

CHAPTER 1

INTRODUCTION

Capsizing / Listing, PHANTOM, ship damaged, 15/02/2012

Background

The purpose of the European Maritime Safety Agency is to ensure a high, uniform and effective level of maritime safety, maritime security, prevention of and response to pollution caused by ships and by oil and gas installations.

EMSA's activities cover the following main areas:

- providing technical and scientific assistance to the Member States and the European Commission in the proper development and implementation of EU legislation on maritime safety, security, prevention of pollution by ships as well as to simplify maritime transport administrative duties;
- monitoring the implementation of EU legislation through visits and inspections;
- improving cooperation with and between Member States in all key areas;
- at the request of the Commission, providing technical operational assistance to non-EU countries around relevant sea basins;
- offering operational assistance, including developing, managing and maintaining maritime services for ship monitoring; and
- carrying out operational preparedness, detection and response tasks with respect to pollution caused by ships and by oil and gas installations.

As a body of the European Union, the Agency sits at the heart of the EU maritime safety and pollution response network and collaborates with many industry stakeholders and public bodies, in close cooperation with the Commission and the Member States.

Following the entry into force of Directive 2009/18/EC[1] establishing the fundamental principles governing the investigation of accidents in the maritime transport sector, EU States shall, among other obligations:

- establish independent, impartial and permanent accident investigation bodies. Landlocked countries without a maritime fleet are not obliged to comply with this provision, other than to designate a focal point. This is the case currently for the Czech Republic and Slovakia;
- require to be notified of marine accidents and incidents. This obligation covers casualties and incidents that:
  - involve ships flying the flag of one of the Member States;
  - occur within Member States' territorial seas and internal waters;
  - involve other substantial interests of the Member States;
- investigate casualties depending upon their severity. Casualties which are classified as very serious shall be investigated; serious casualties shall be assessed in order to decide whether or not to undertake a safety investigation.
- publish investigation reports; and
- notify the European Commission of marine casualties and incidents via EMCIP.

EMCIP is the European Marine Casualty Information Platform; a centralised database for EU States to store and analyse information on marine casualties and incidents.

This EMSA-run platform is populated with data by the competent national authorities. It is this data which forms the basis of the Annual Overview of Marine Casualties and Incidents.

In this publication, the terms "Europe" and "EU States" are considered to be the 28 EU States plus the EFTA States, Iceland and Norway.

[1] Directive 2009/18/EC of the European Parliament and of the Council of 23 April 2009 establishing the fundamental principles governing the investigation of accidents in the maritime transport sector and amending Council Directive 1999/35/EC and Directive 2002/59/EC of the European Parliament and of the Council.

Scope

EMSA has the obligation to provide a yearly overview of marine casualties and incidents under the Agency's founding Regulation (EC) No 1406/2002 as amended by Regulation (EU) No 100/2013.

This publication contains statistics on marine casualties and incidents that: involve ships flying the flag of one of the EU States; occur within EU States' territorial sea and internal waters as defined in UNCLOS; or involve other substantial interests of the EU States.

Considering the date of the implementation of the Accident Investigation Directive in 2011, this publication covers the period from 1st January 2011 to 31st December 2015. The data can be subject to changes over time as EU States add more information or older cases to the EMCIP database. For this reason, the figures extracted from the database in July 2016 and presented in this publication are likely to be slightly different to those presented throughout the year in various fora or in the next edition to be published in 2017.

The figures are presented in this publication to provide a general overview of the safety of maritime transport in the scope of European interests. However, it is limited by the quantity and nature of information presently contained in EMCIP and is therefore not intended as a comprehensive technical analysis. This is due to the fact the implementation of the Accident Investigation Directive has only been required since 17 June 2011, as well as due to progressive implementation by some Member States. Should further information about specific cases be required, readers are invited to contact the national competent Investigative bodies (whose contact details can be found in Appendix 4 of the publication).

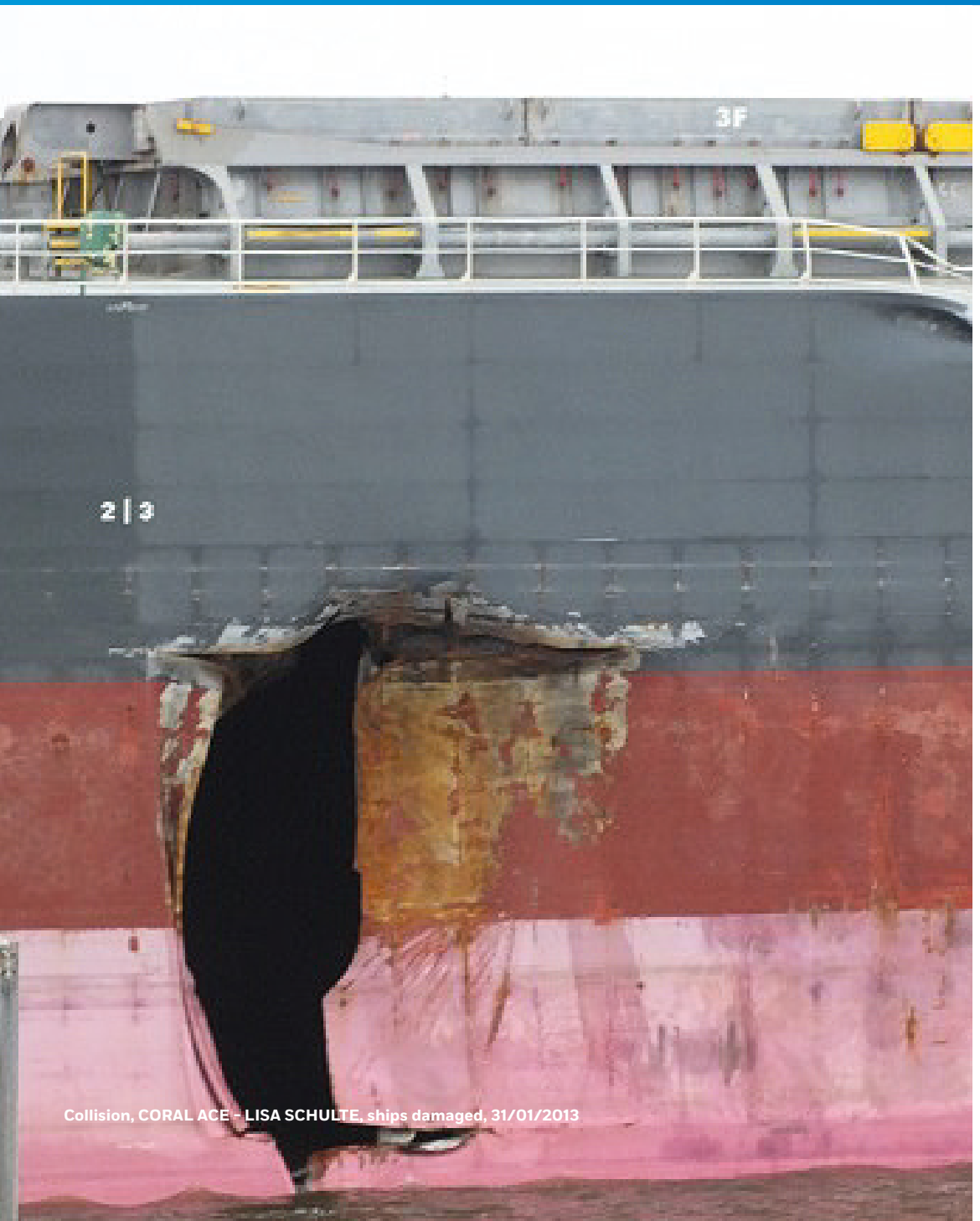
Content of the review

This publication has been organised in such a way as to cover the main aspects of maritime safety as given in the Directive and as included in the Agency's remit. This edition focuses on the main types of ships: cargo ships, fishing vessels, passenger ships, service ships and other ships. Each chapter is divided into the following parts: detailed ship types, nature of marine casualties and incidents, location, events and contributing factors and consequences. A final chapter describes the activities of the EU investigative bodies.

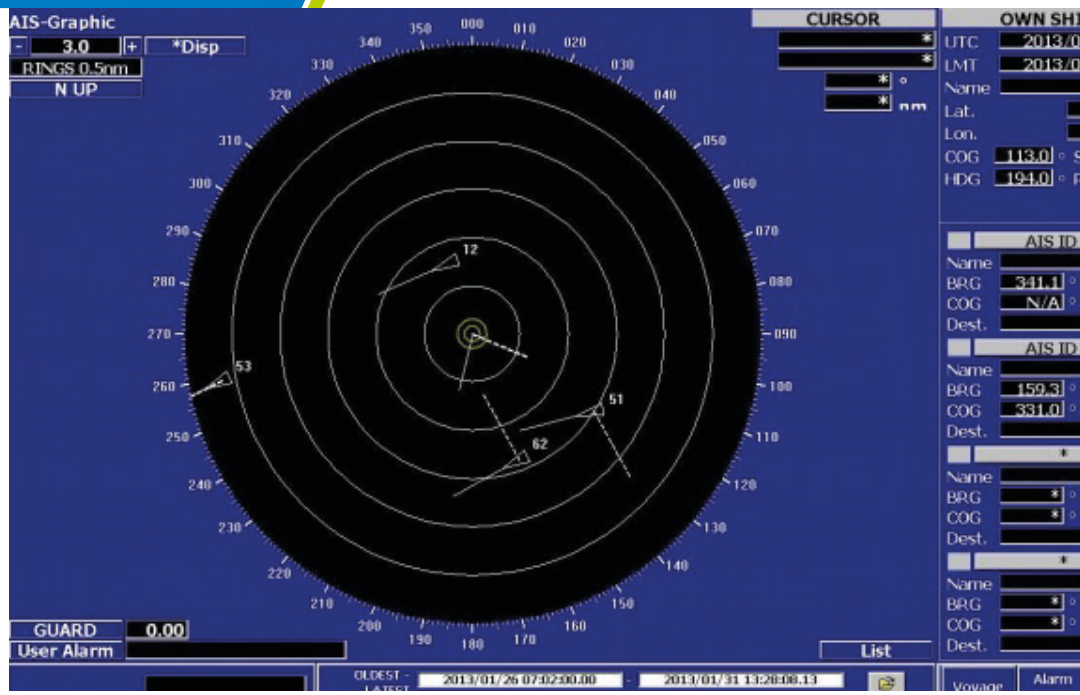
More information about the Agency's activities related to marine accidents can be found at:

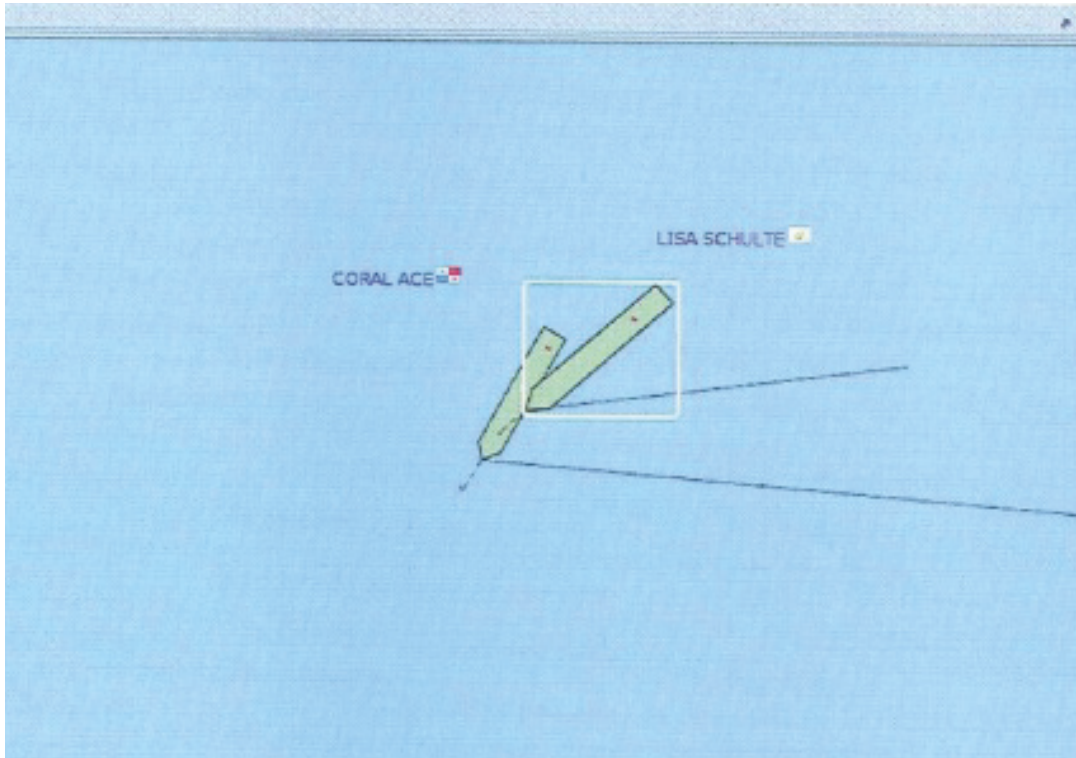
http://www.emsa.europa.eu/implementation-tasks/accident-investigation.html
https://emcipportal.jrc.ec.europa.eu/

A list of acronyms and definitions as well as extra information on the accident categories used can be found in Appendix 1. Appendix 2 illustrates the data model and Appendix 3 contains the detailed lists of ships used in EMCIP. The list of accident investigation bodies in Europe can be found in Appendix 4.



Collision, CORAL ACE - LISA SCHULTE, ships damaged, 31/01/2013





CHAPTER 2

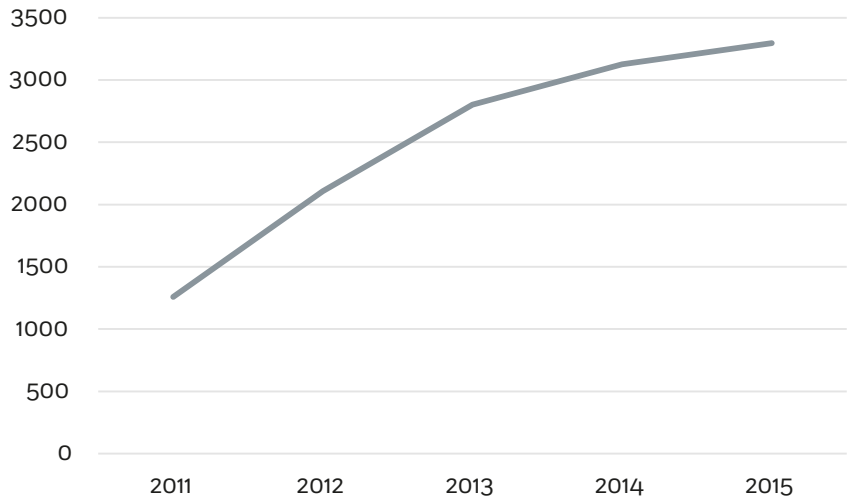
MARINE CASUALTIES AND INCIDENTS IN GENERAL

Collision, NILS HOLGERSSON - URD, ships damaged, 03/05/2012

2.1 NUMBER AND SEVERITY

This section provides general information about the number of marine casualties and incidents and their severity.

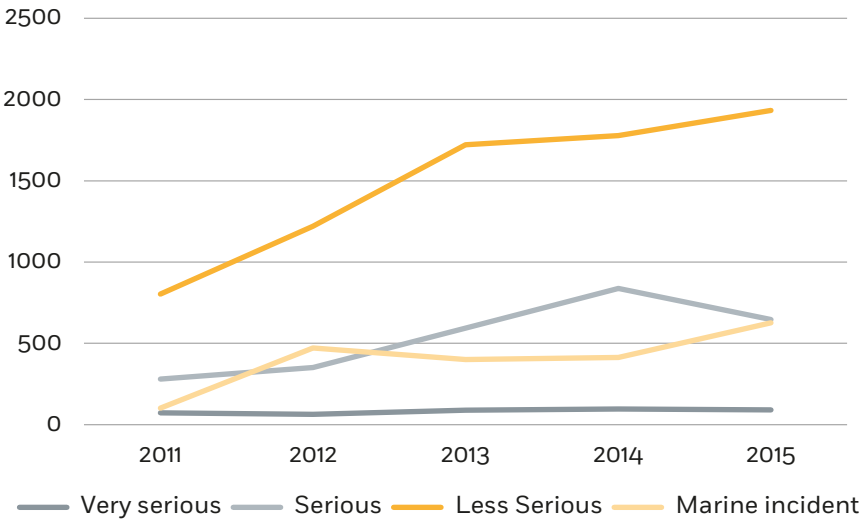
Figure 1: Number of reported marine casualties and incidents



The total number of reported marine casualties and incidents is 12 591.

Each year since the implementation of the Directive the number of marine casualties and incidents reported has continued to increase. Comparisons with various sources suggest that under-reporting of marine casualties and incidents still exists, with a total of 4000 per year being a better estimate.

Figure 2: Number of marine casualties and incidents per severity



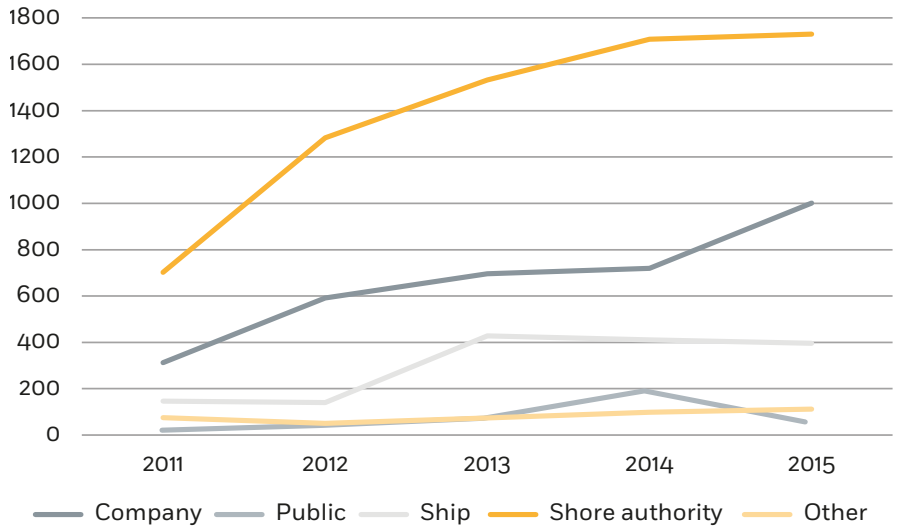
The number of very serious casualties has been steady over the past 5 years. 3.3% of the casualties were reported to be very serious.

Across the three other severity categories, the total number of casualties and incidents reported annually reflects an increase of reporting. The reduction of serious casualties is the consequence of a modification by some Member States in the classification of injury severities, which led to the decrease of reported serious casualties and an increase of less serious casualties and incidents.

In 2015, 3% of the reported marine casualties were very serious, 19% serious, 59% less serious and 19% were marine incidents, which is similar to the averages for the period 2011-2015.

The under reporting of marine incidents remain the most significant issue within the reporting scheme defined by Directive 2009/18/EC.

Figure 3: Reporting entities



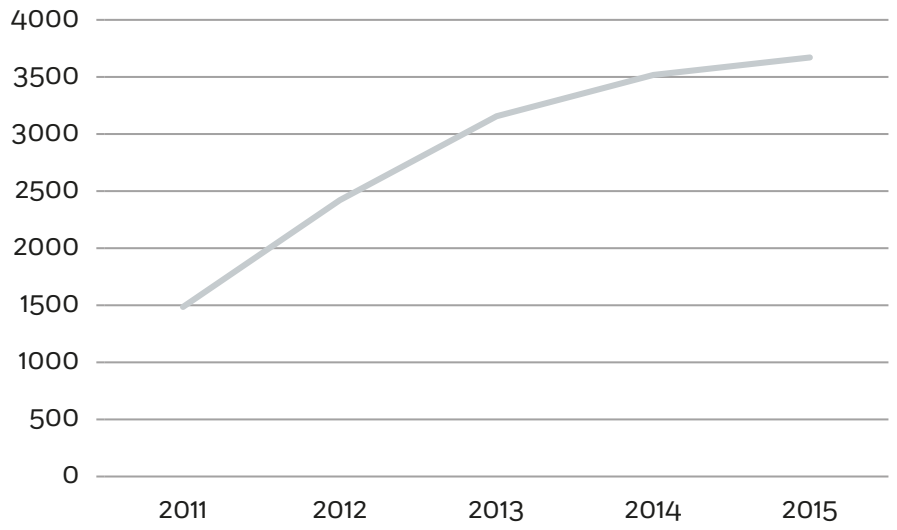
Over the past 5 years, marine casualties and incidents were mainly reported to the accident investigation bodies through the Shore Authorities. Reporting by Ship companies has also been significant and increased over the period, while reporting directly from the ship has been constant for the 3 past years.

55% of the marine casualties and incidents were reported to the Investigative bodies by the Shore Authorities.

2.2 MAIN SHIP TYPES

This section focuses on the ships involved in marine casualties and incidents. Ships have been classified by the main categories: cargo ship, fishing vessel, passenger ship, service ship and other ship.

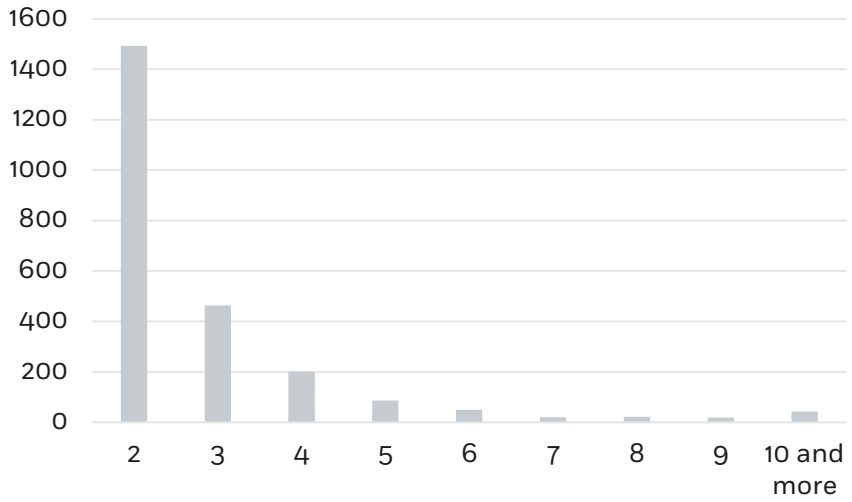
Figure 4: Number of ships involved in casualties.



A casualty might involve more than one ship, in particular in the case of collision where two or more ships could be involved.

The 12591 marine casualties and incidents that happened from 2011 to 2015 involved 14245 ships.

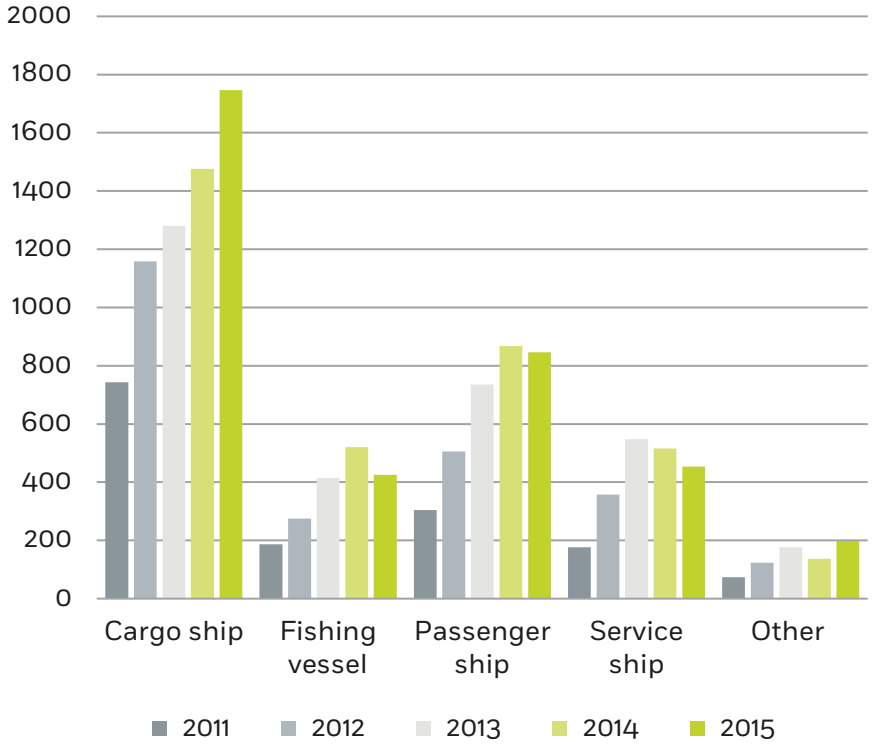
Figure 5: Number of individual ships involved in more than one casualty 2011-2015



Similarly, a single ship can be affected by several casualties (different dates, different nature of casualty, etc.).

A total of 9 417 individual ships were involved in marine casualties and incidents. 7 018 of these ships were involved in one only. 2 399 were involved in more than one, as shown in the distribution above.

Figure 6: Distribution of ships involved by main category 2011-2015



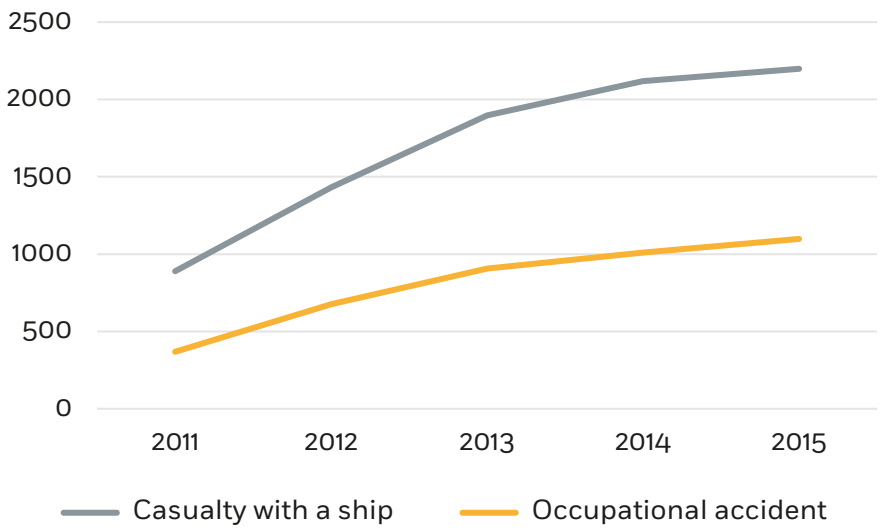
During the period 2011-2015, General Cargo ships were the main category involved (45%), followed by Passenger ships (23%).

The five ship categories have followed the same increase over the period.

2.3 NATURE OF MARINE CASUALTIES AND INCIDENTS

This section examines the different natures of marine casualties and incidents.

Figure 7: Marine casualties and incidents by type



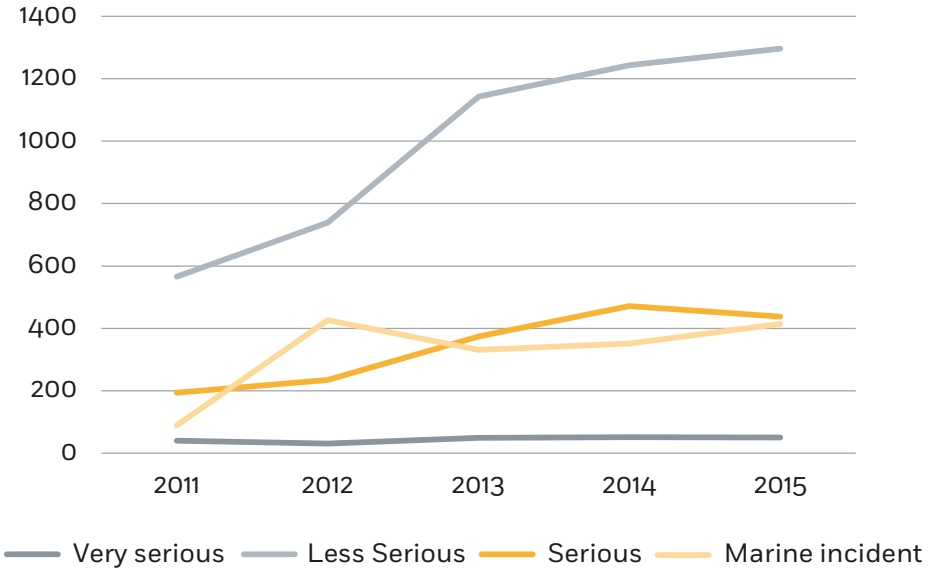
A total of 8 533 casualties with a ship and 4 058 occupational accidents were recorded.

The ratio 1/3 to 2/3 between casualties with a ship and occupational accidents remained stable from 2011 to 2015.

If reporting of occupational accidents resulting in light injuries that would be classified as less serious were improved, a significant change in the ratio would be noted.

2.3.1 CASUALTY WITH A SHIP

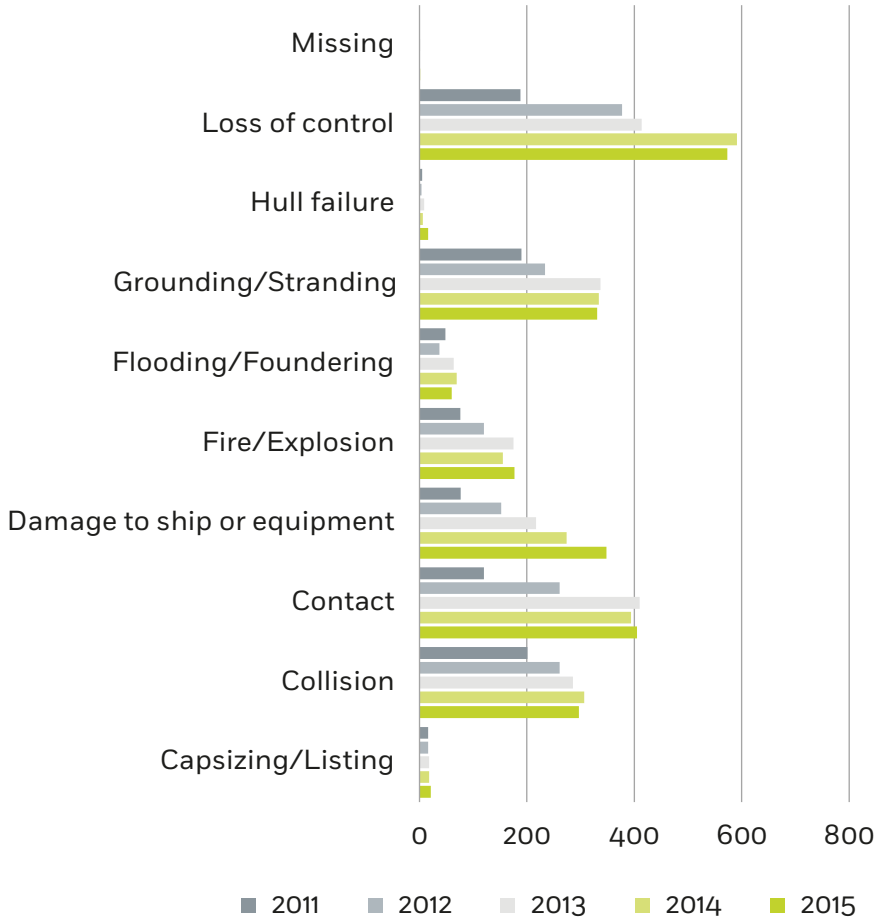
Figure 8: Severity of casualty with a ship



3% of casualties with a ship were very serious, 20% serious, 58% less serious and 19% marine incidents, from 2011 to 2015.

The distribution follows that for all marine casualties and incidents (figure 2).

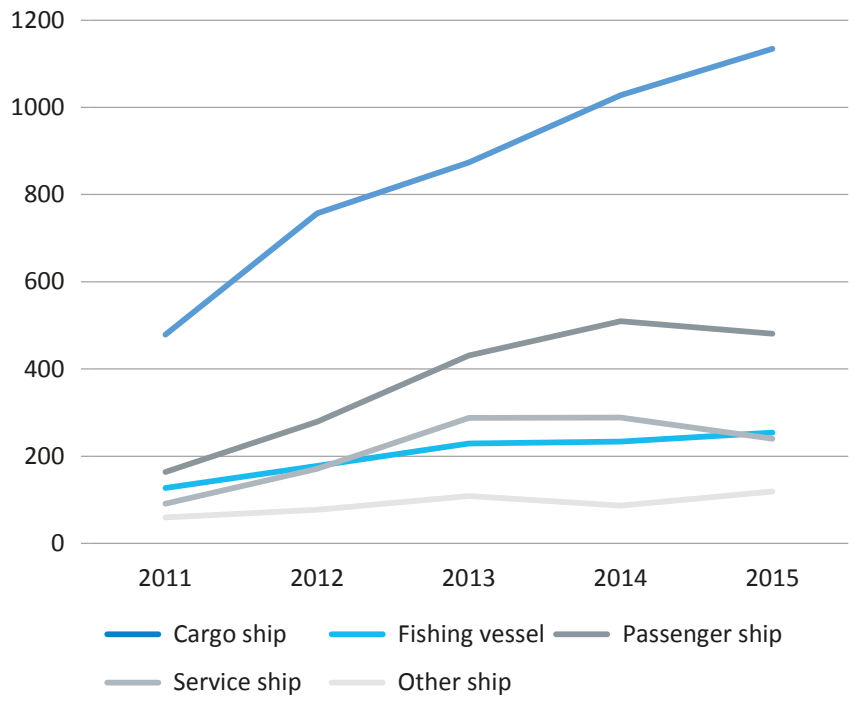
Figure 9: Distribution of casualties with ships



The combination of contact (1590 cases), grounding/stranding (1426) and collision (1352) shows that navigational casualties represent 50% of all casualties with a ship.

Grounding / Stranding INCE INEBOLU, ship damaged, 05/09/2014

Figure 10: Distribution of ships involved in a "casualty with a ship" by ship category



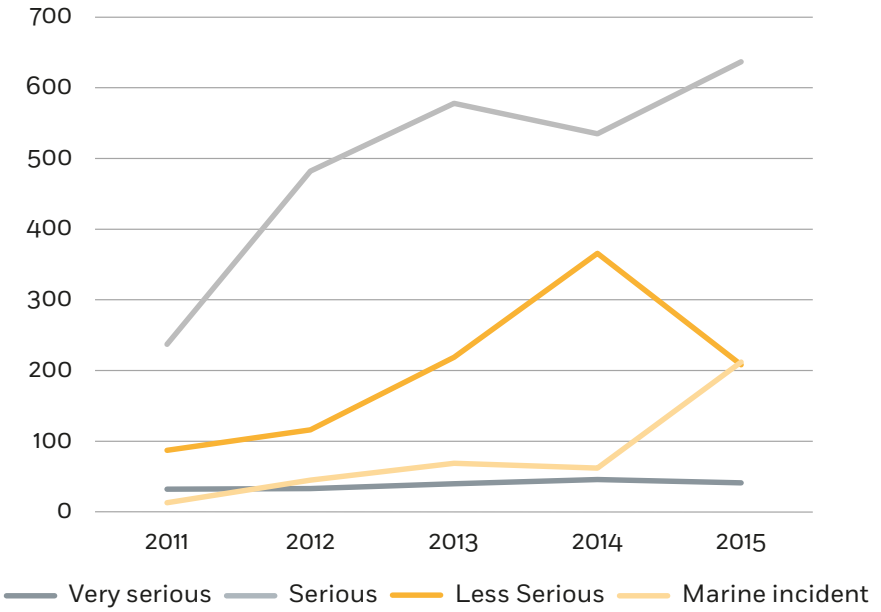
During the period 2011-2015, Cargo ship was the most frequent ship type involved in "casualty with a ship" (49%), followed by Passenger ship (22%).

While the number of fishing vessels and other ships involved was steady over the past 3 years, the numbers of passenger ships and service ships have slightly decreased. However the number of cargo ships involved continued to increase significantly.

2.3.2 OCCUPATIONAL ACCIDENTS

Marine casualties and incidents related to "occupational accidents" are classified as "deviations".

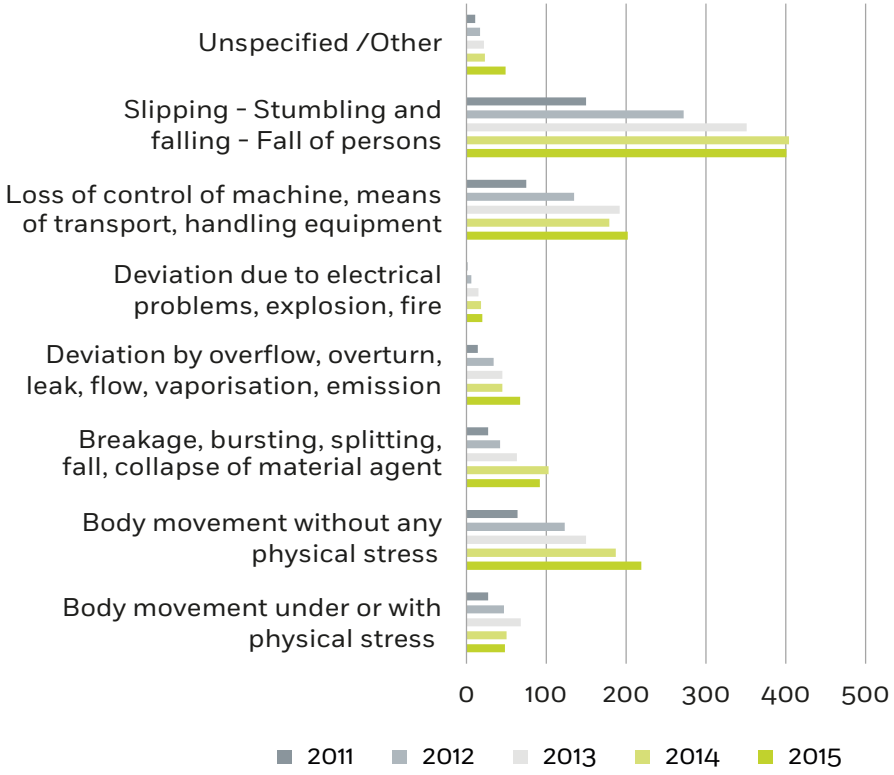
Figure 11: Type of severity in case of occupational accident



From 2011 to 2015, 5% of the occupational accidents were very serious, 24% serious, 61% less serious and 10% marine incidents.

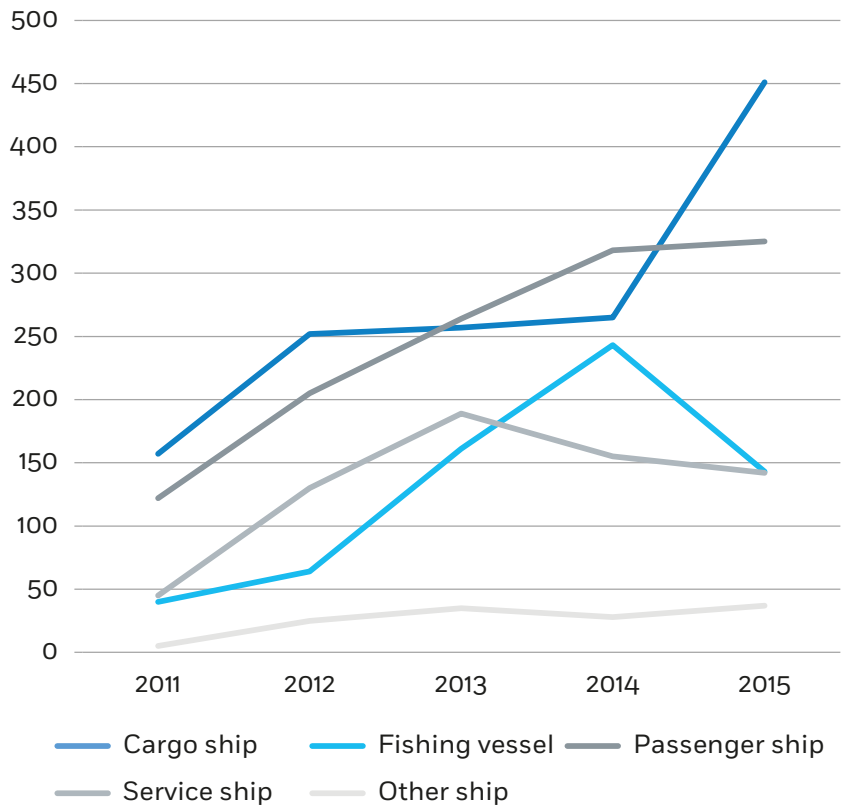
As indicated in figure 2, a modification in the classification of injuries has led to a reduction in serious occupational accidents and an increase of less serious accidents and marine incidents.

Figure 12: Distribution of deviations



Slipping-Stumbling and falls of persons was the most frequent event (39%), followed by loss of control of objects (19%) and body movement without physical stress (18%).

Figure 13: Distribution of ships involved in an occupational accident by ship category



Cargo ships (34%) represent together with passenger ships (31%) the main categories of ship where occupational accidents occurred.

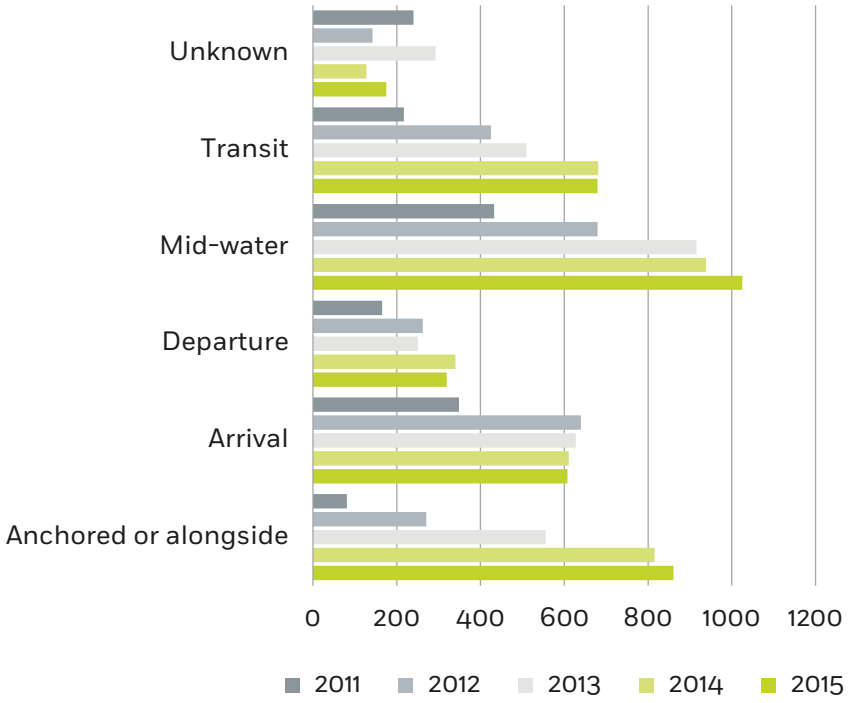
While the number of occupational accidents on board fishing vessels and service ships has decreased, there was an increase of 75% on cargo ships during 2015.

2.4 LOCATION OF MARINE CASUALTIES AND INCIDENTS

This section provides information about the location of the ships when marine casualties or incidents occurred.

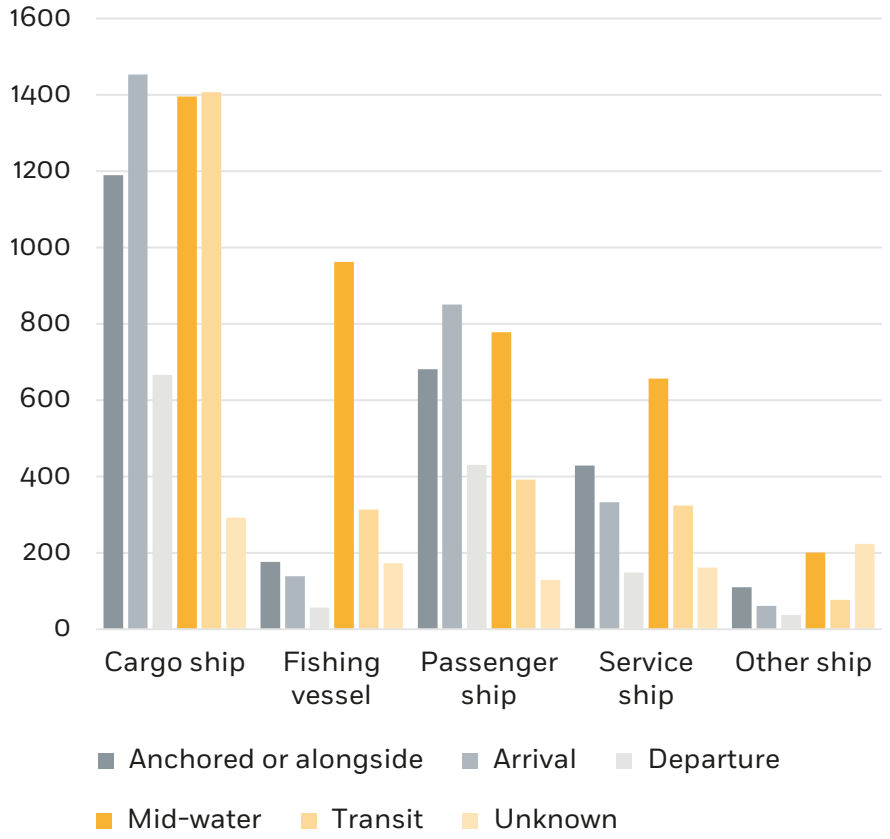
2.4.1 VOYAGE SEGMENTS

Figure 14: Distribution of voyage segments



The distribution of marine casualties and incidents is similar among the phases of a voyage, with a few more in mid-water and less during the departure.

Figure 15: Distribution of voyage segments per ship type 2011-2015



While the departure is the safest segment for cargo ships, the arrival phase is the least safe for passenger ships.

2.4.2 REGIONAL DISTRIBUTION

This section provides information on the geographical location of the marine casualties and incidents reported.

Figure 16: Global distribution 2011-2015

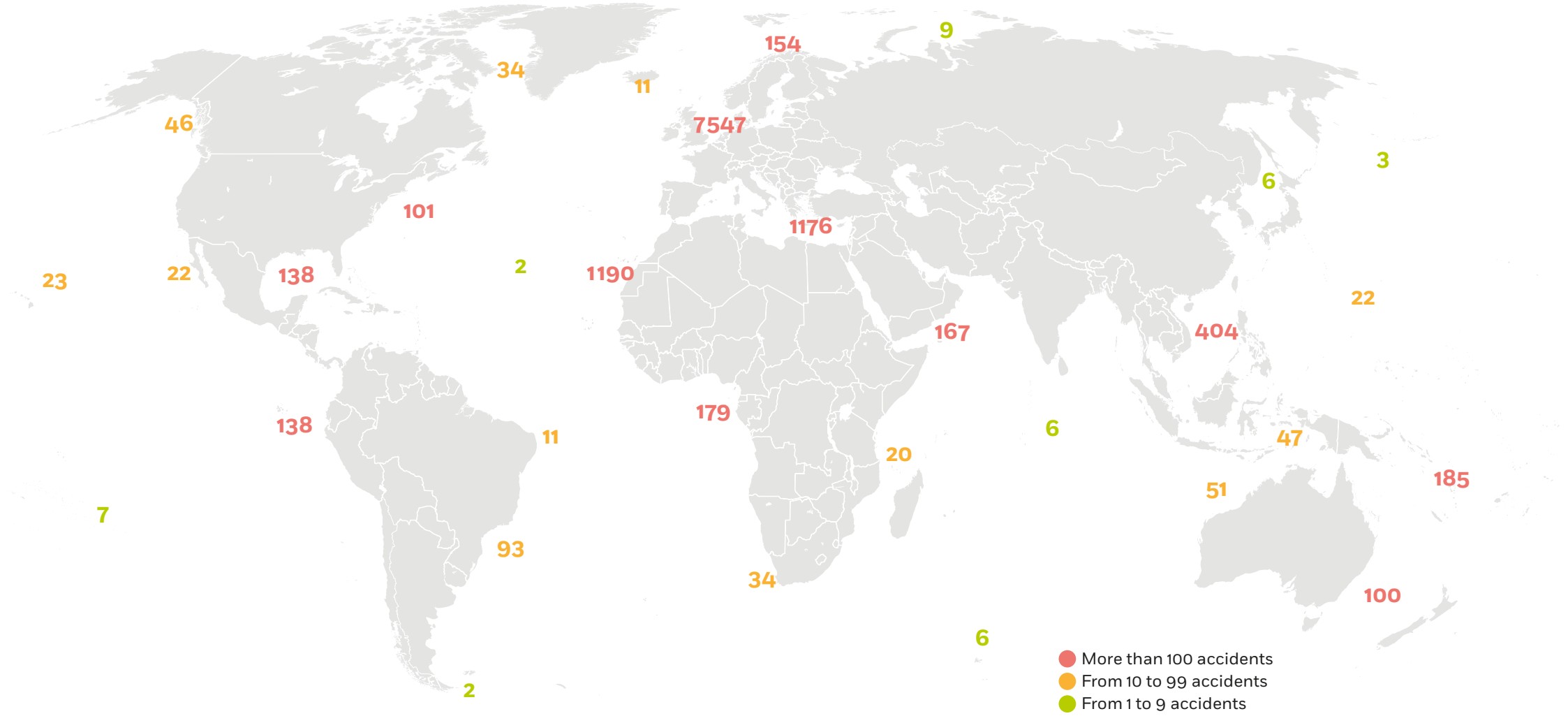
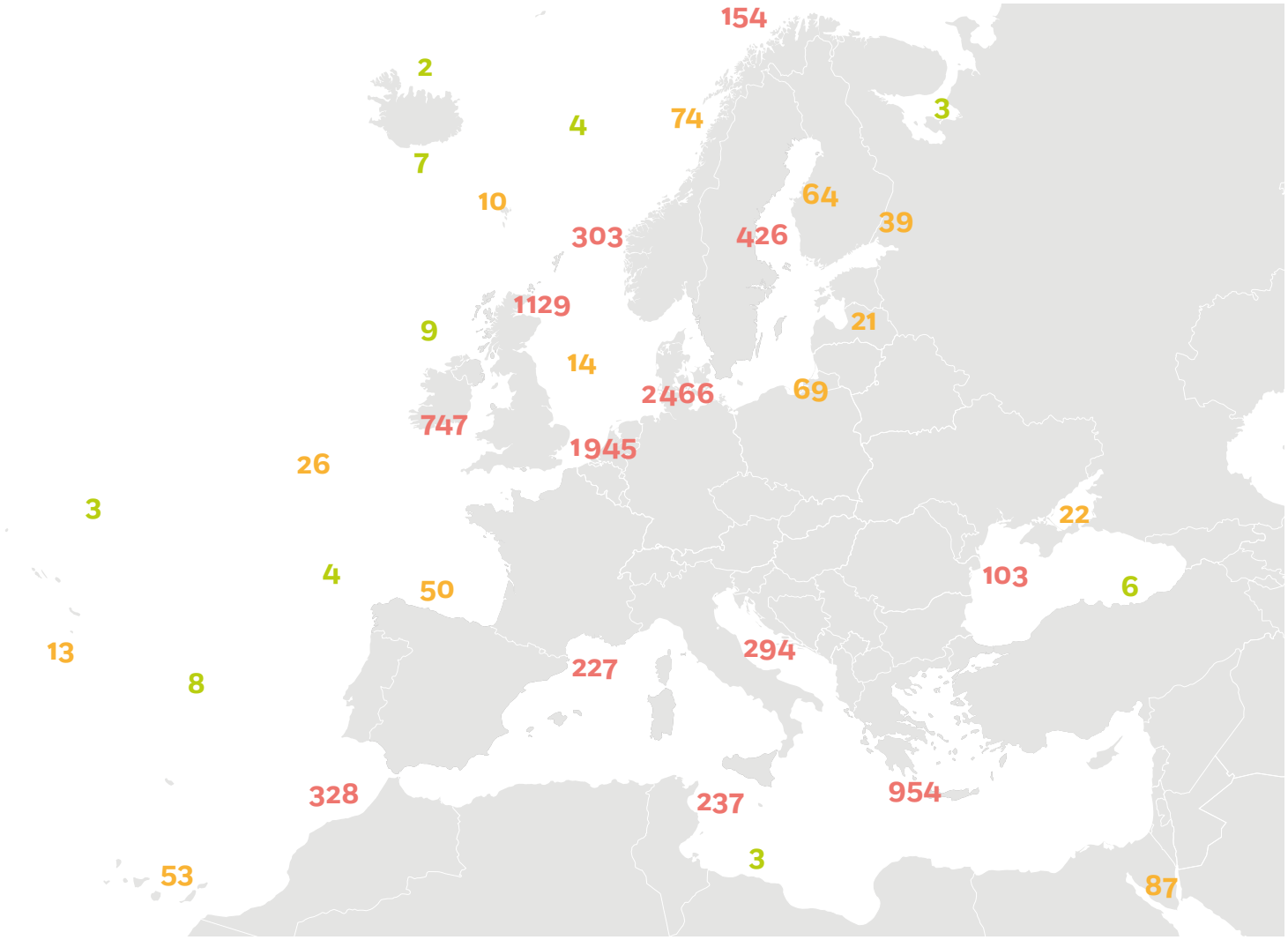


Figure 17: Distribution within the territorial sea and internal waters of EU States 2011-2015



TERRITORIAL SEA refers to the area within which a Coastal State exercises sovereignty, which is beyond its land territory and internal waters and, in the case of an archipelagic State, its archipelagic waters, covering an adjacent belt of the sea. It is a belt of coastal water extending at most 12 nautical miles (22.2 km; 13.8 mi) from the baseline (usually the mean low-water mark) of a Coastal State.

Figure 18: Distribution along the Atlantic Coast, in the North Sea and English Channel 2011-2015

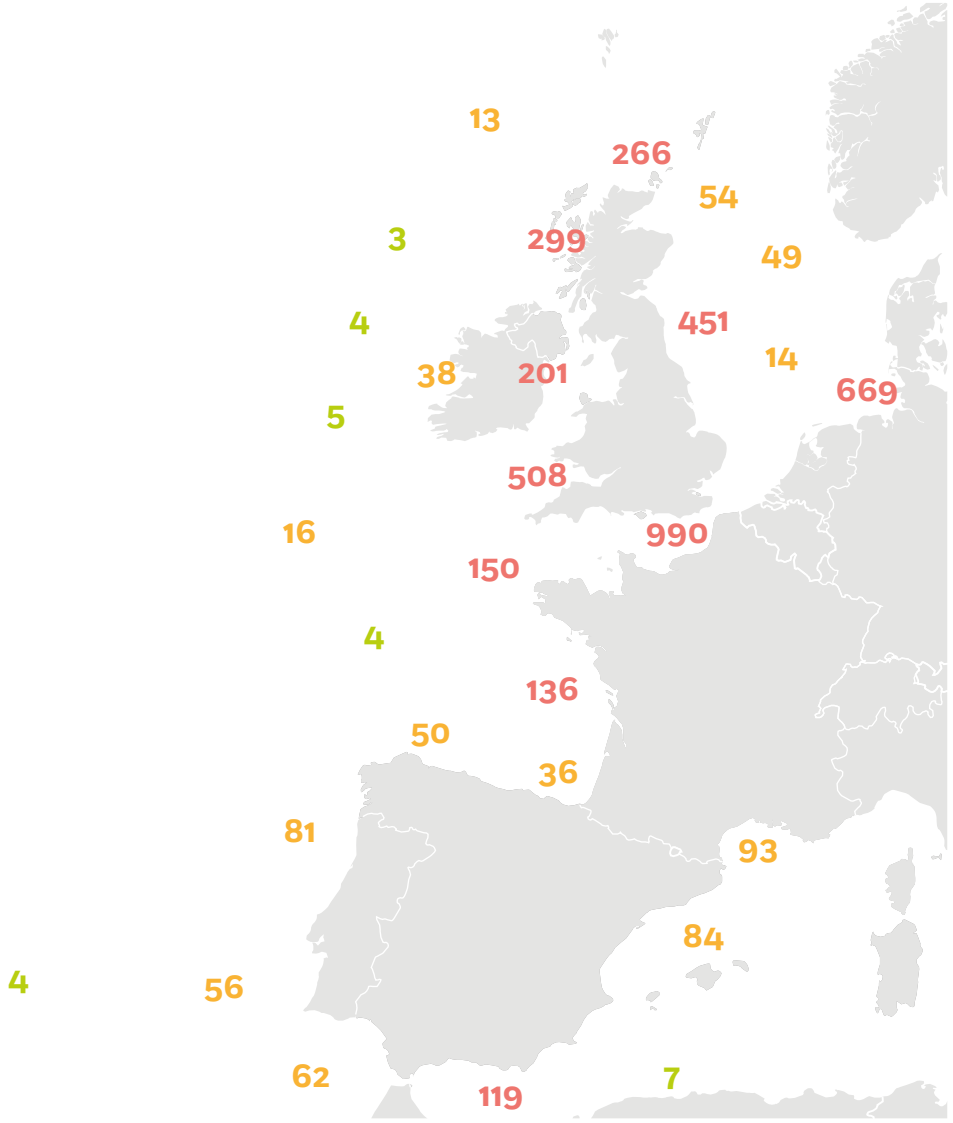


Figure 19: Distribution in the Baltic Sea and approaches 2011-2015

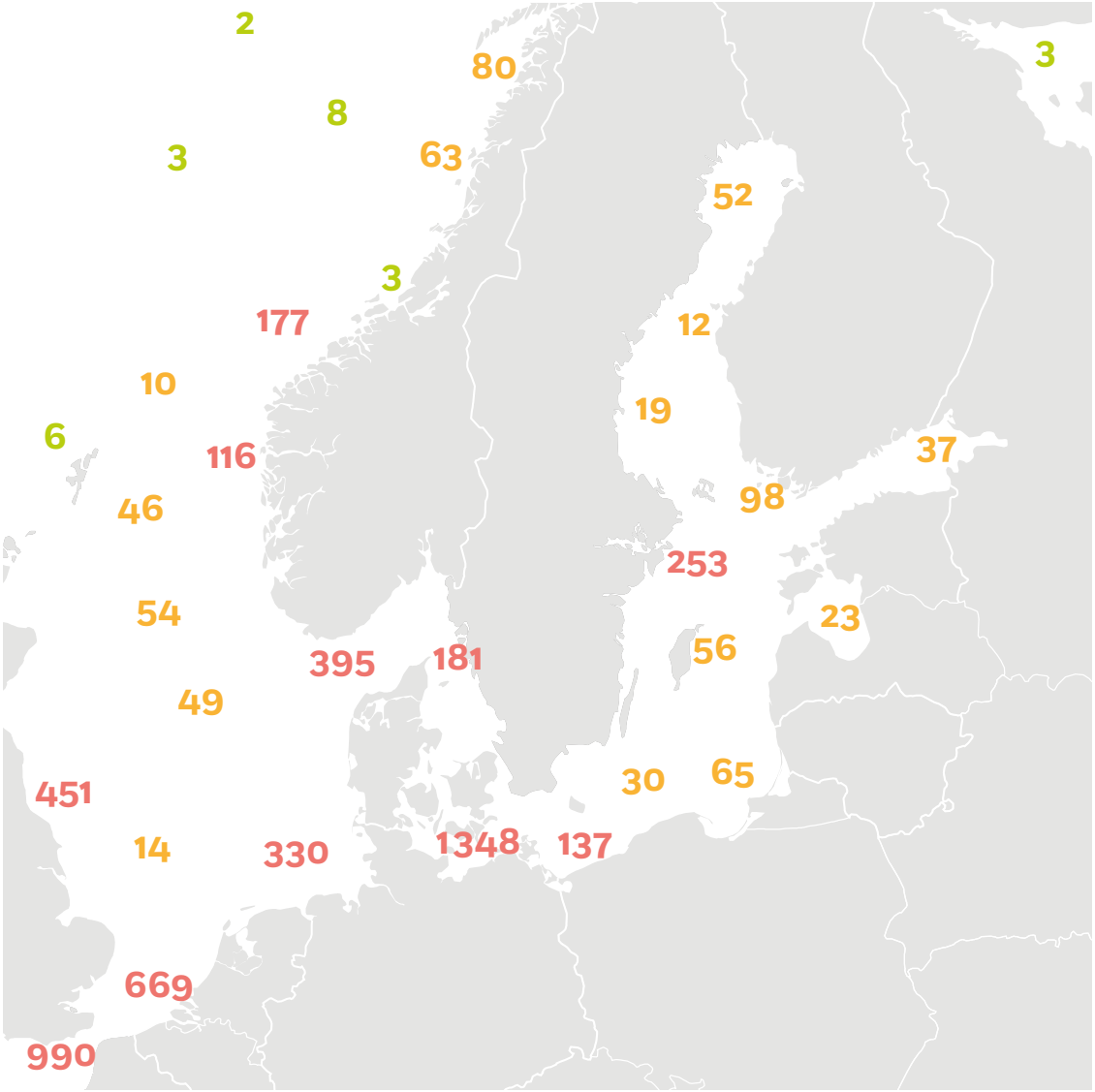
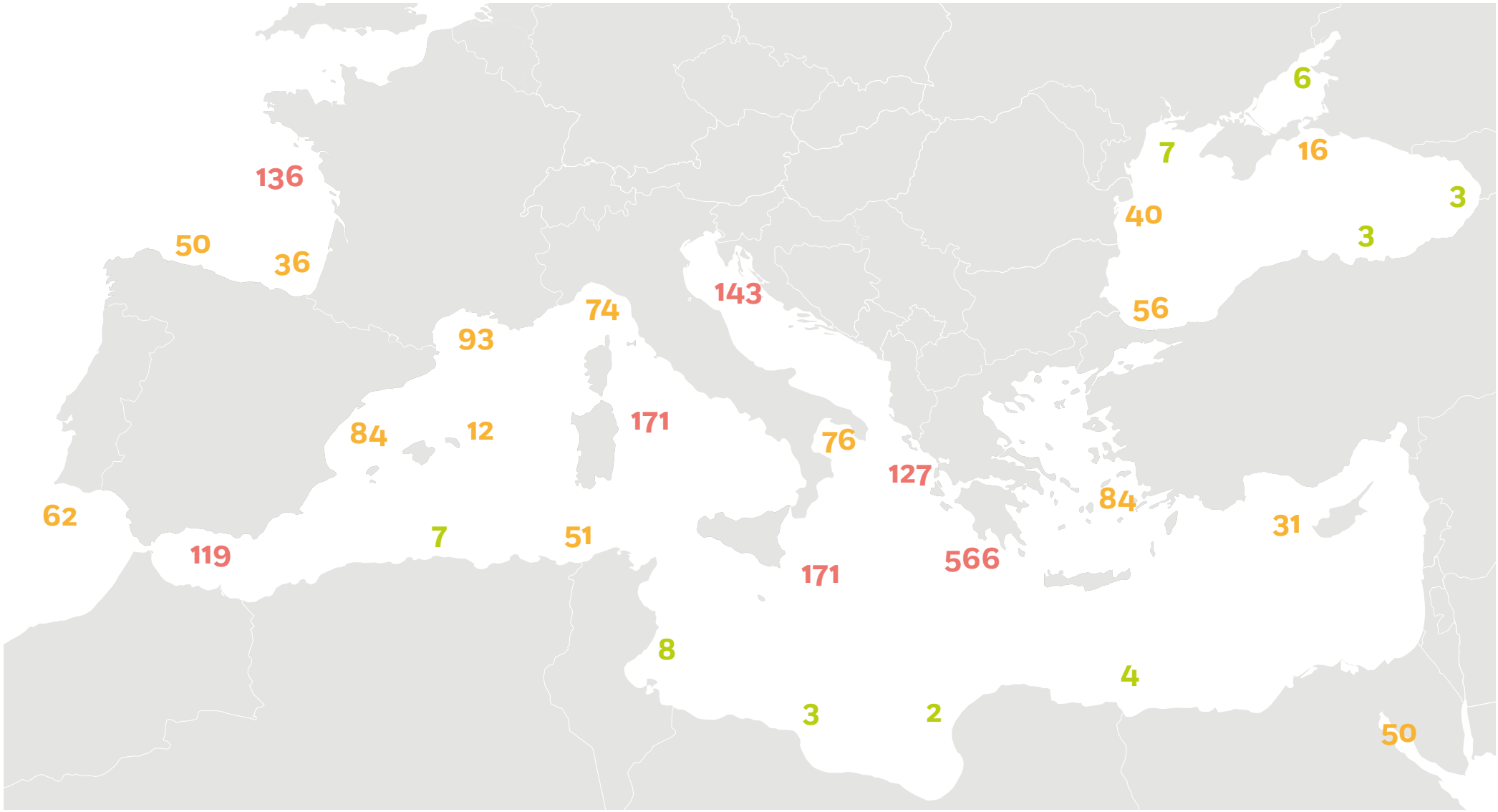


Figure 20: Distribution in the Mediterranean Sea and Black Sea 2011-2015



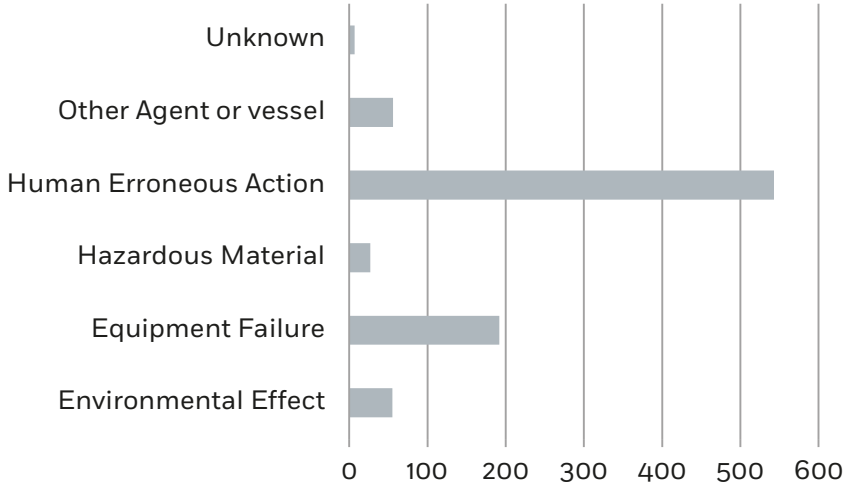
2.5 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

This section addresses the events and contributing factors having led to casualties and incidents for the period 2011-2015.

Investigators search for the root causes of the casualty or incident. Such causes comprise "accidental events" and "contributing factors". The Reporting Scheme used in EMCIP follows this approach. A detailed model of EMCIP can be found in Appendix 2.

2.5.1 ACCIDENTAL EVENTS

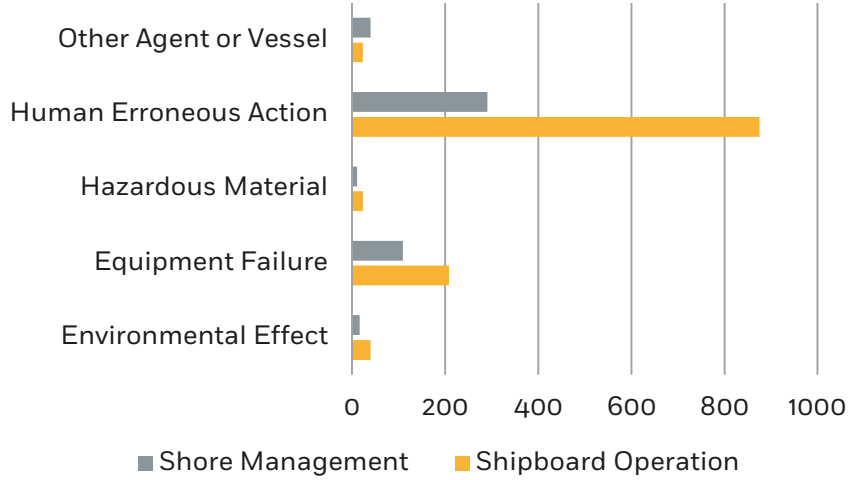
Figure 21: Distribution of accidental events 2011-2015



From a total of 880 accidental events analysed during the investigations, 62% were attributed to a Human Erroneous Action.

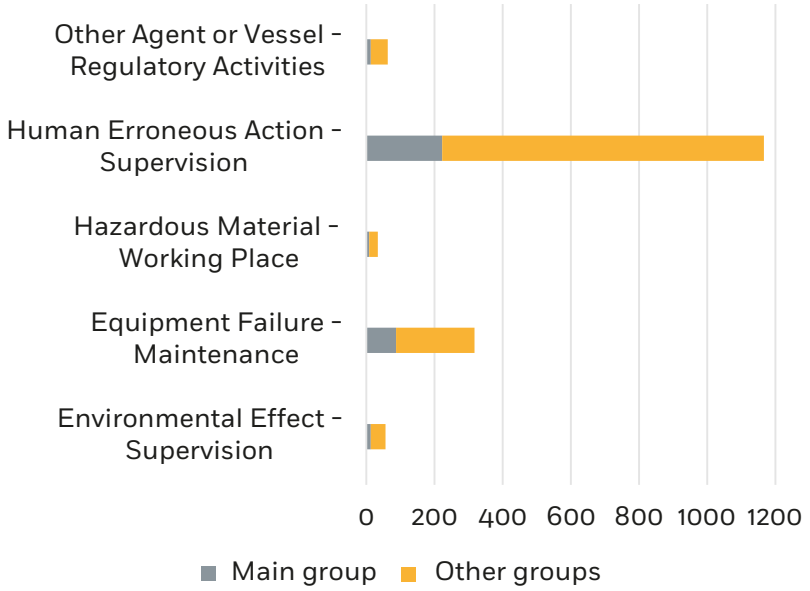
"Contributing factors" are separated into two categories, and then sub-divided into specific groups identifying the condition that contributed to an accidental event or worsened its consequence.

Figure 22: Relationship between accidental events and the main contributing factors 2011-2015



Shipboard operations represented the main contributing factor at 71% of the total.

Figure 23: Groups of Contributing Factors



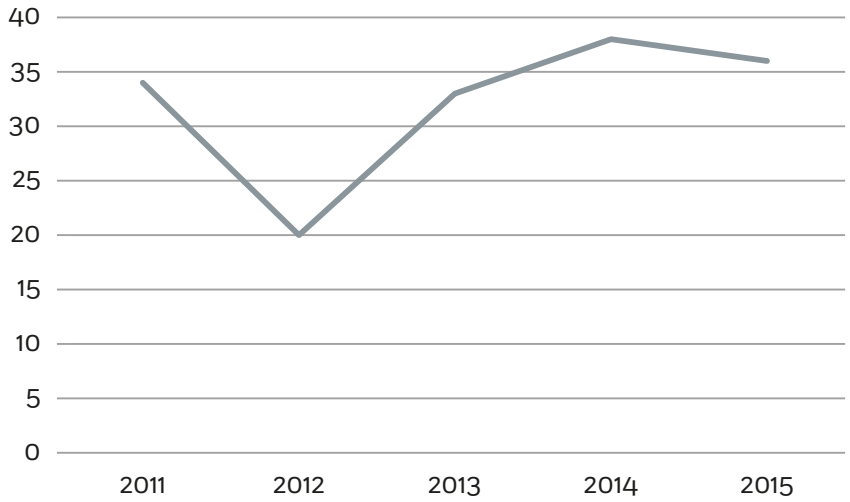
This figure shows the contributing factor most quoted per category of accidental event (for example maintenance was quoted as contributing factor for 27% of accidental events described as equipment failure).

2.6 CONSEQUENCES

This section contains information about the consequences of casualties to ships, persons or the environment.

2.6.1 CONSEQUENCES TO SHIP

Figure 24: Number of ships lost

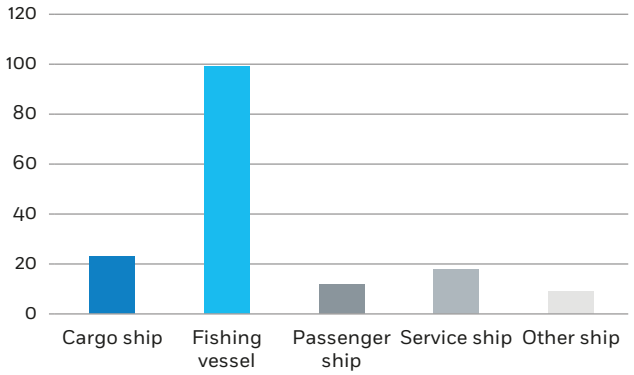


A total of 161 ships were lost from 2011 to 2015.

166 ships were reported sunk, some of them being recovered.

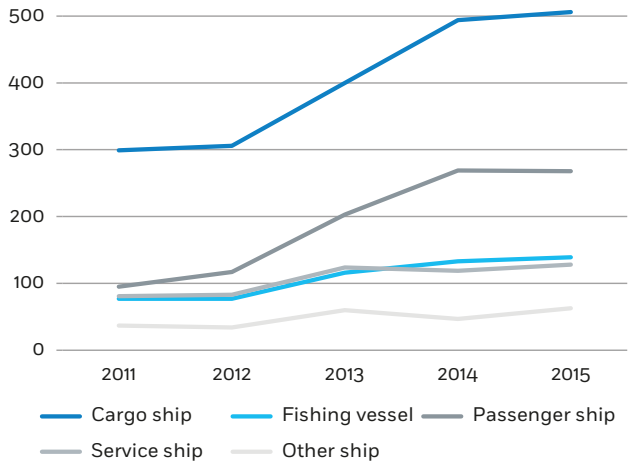
The initial casualty event was flooding/foundering (49 cases). The second most significant was collision (43 cases).

Figure 25: Distribution of ships lost per ship category 2011-2015



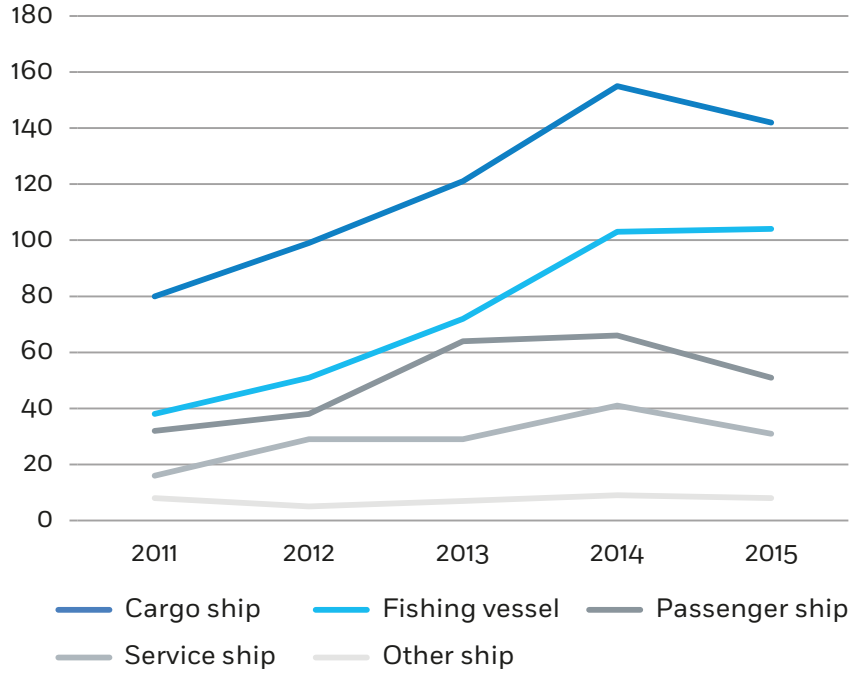
With a total of almost 100, fishing vessel is the category of ship that encountered the highest number of ships lost.

Figure 26: Number of ships damaged



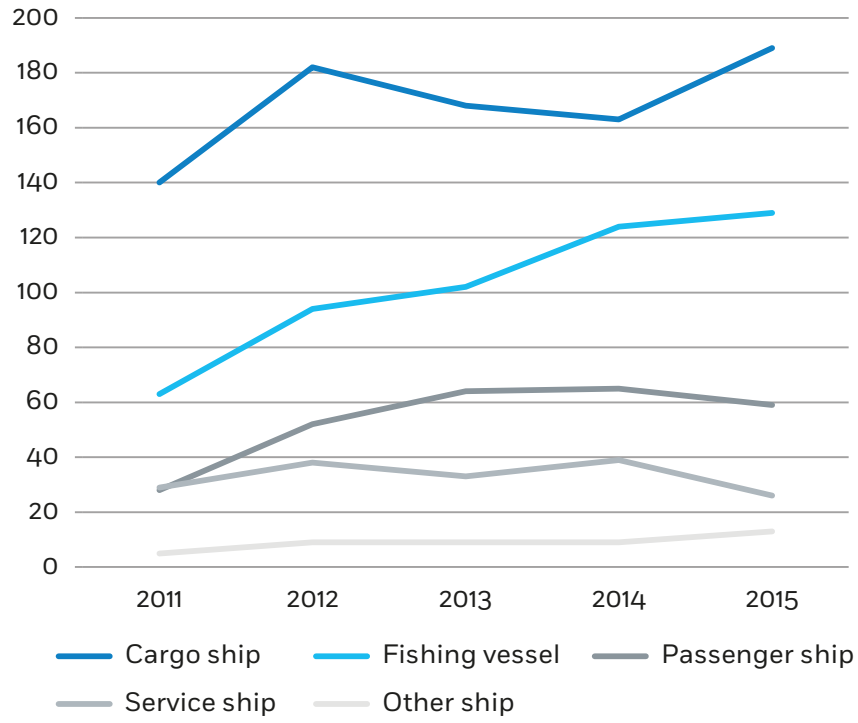
4275 ships reported some damage, the largest category being cargo ships (47%). Figures appear to be stable over the last two years.

Figure 27: Number of ships considered unfit to proceed



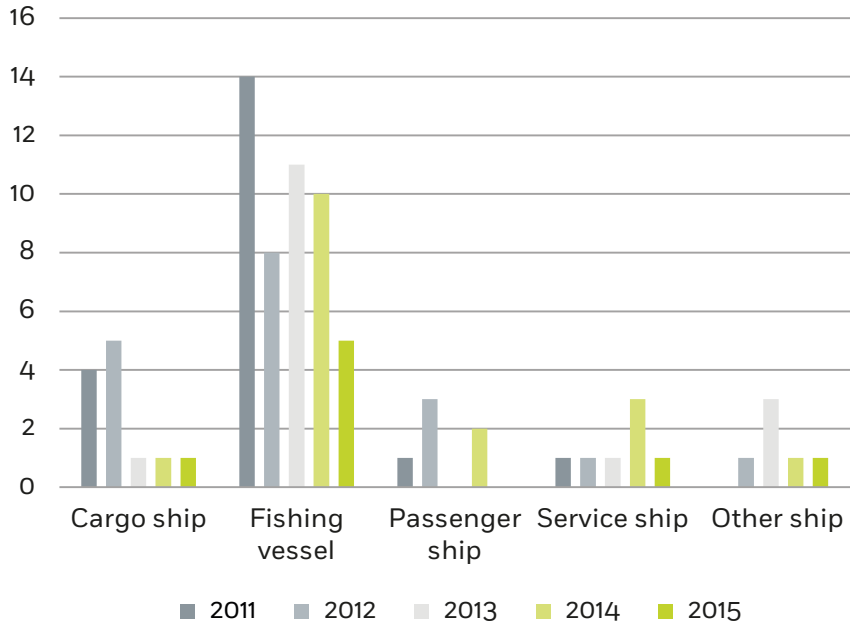
A total of 1399 ships were reported to be “unfit to proceed”. There was a decrease in 2015 for all ship types.

Figure 28: Number of ships requiring towage or shore assistance



1832 ships needed towage or shore assistance, with a significant increase for cargo ships in 2015.

Figure 29: Number of abandoned ships

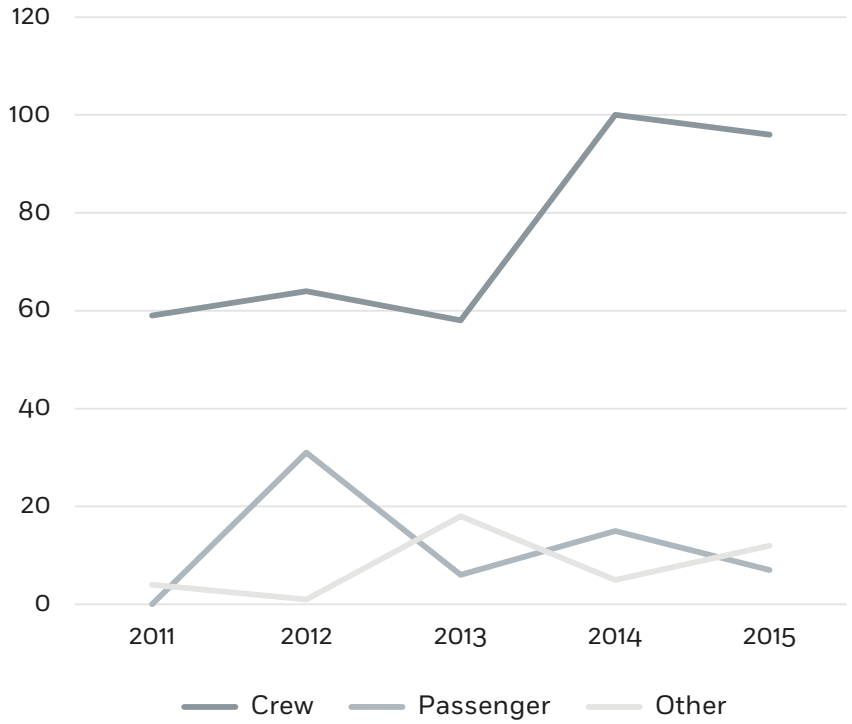


A total of 79 ships were abandoned. Of these, 48 were fishing vessels. The number of abandoned ships per year has significantly dropped from 20 to 7 within 5 years.

2.6.2 CONSEQUENCES TO PERSONS

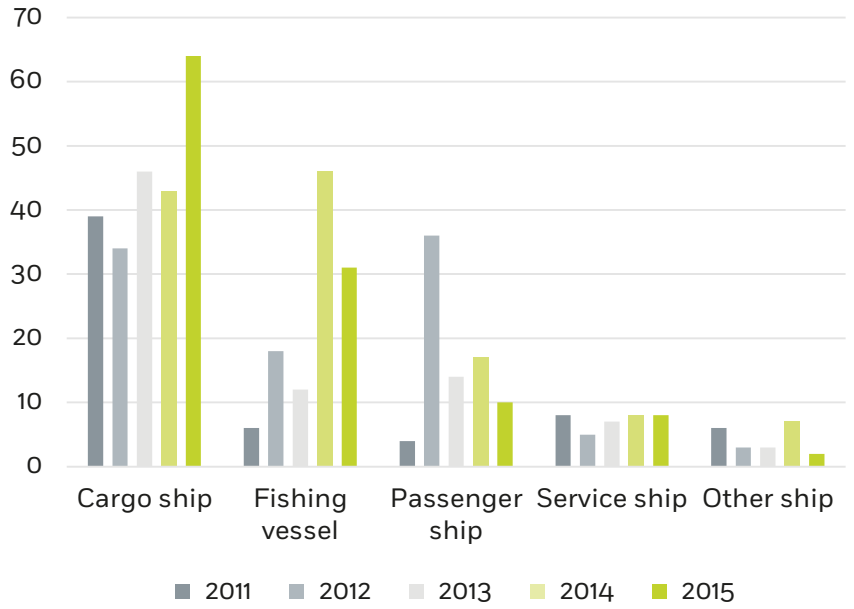
2.6.2.1 FATALITIES

Figure 30: Distribution of fatalities by categories of person



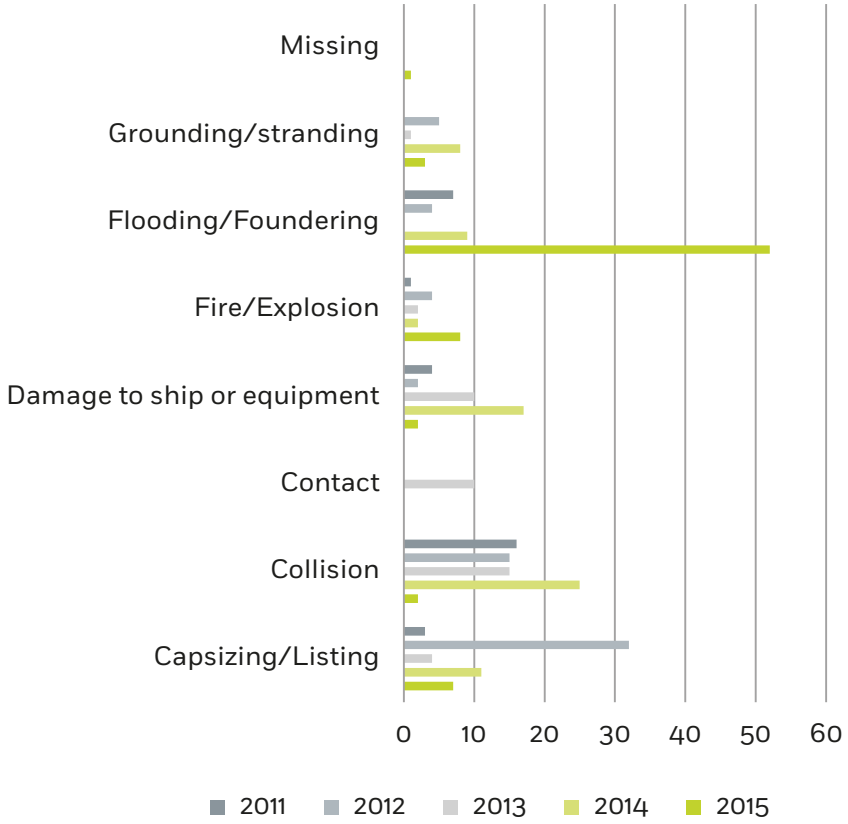
The total number of lives lost during the period 2011-2015 was 477, with a significant increase in 2014 in comparison with all previous years. With 377 fatalities, crew have been the most affected category of persons.

Figure 31: Distribution of fatalities by ship categories



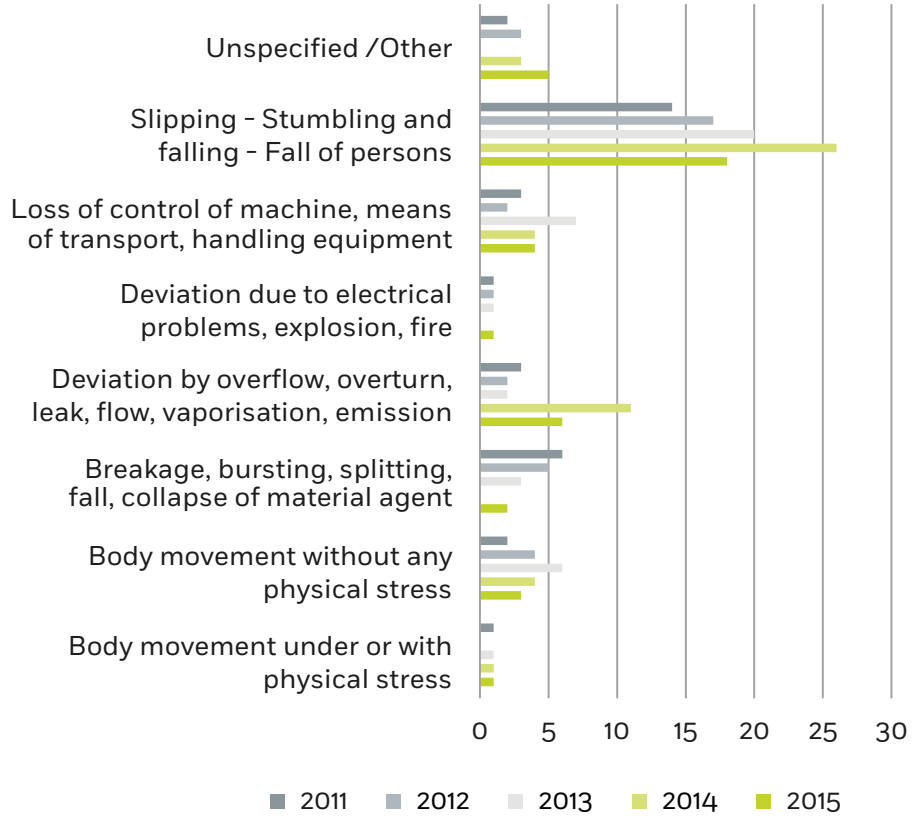
Evolution of fatalities per ship types has been irregular over the 5 year period. While it was stable for service and other ships, 2012 was the worst year for passenger ships and 2014 for fishing vessels. For cargo ships, a general increase was visible over the total period and 2015 was the worst year.

Figure 32: Distribution of fatalities by casualty events



Fatalities mainly occurred during a collision (15%), a flooding/foundering (15%) or capsizing/listing (12%).

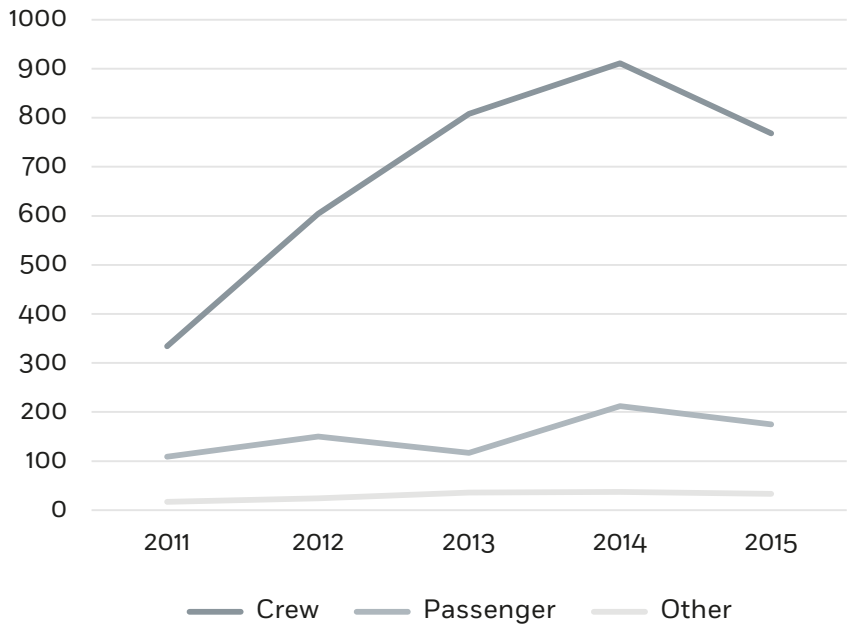
Figure 33: Distribution of fatalities by deviations



Slipping-Stumbling and falls of persons is the main cause of fatalities due to occupational accidents.

2.6.2.2 INJURIES

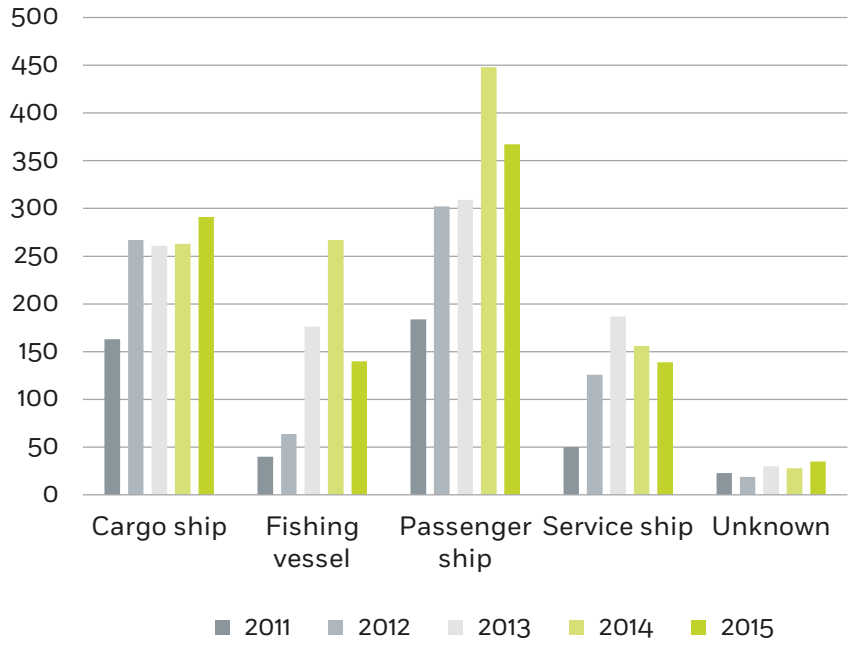
Figure 34: Distribution of injuries by category of person



Among the total of 12591 casualties from 2011 to 2015, 3755 accidents resulted in a total of 4335 injured persons. A significant decrease of injuries took place in 2015, with less than 1000 people injured.

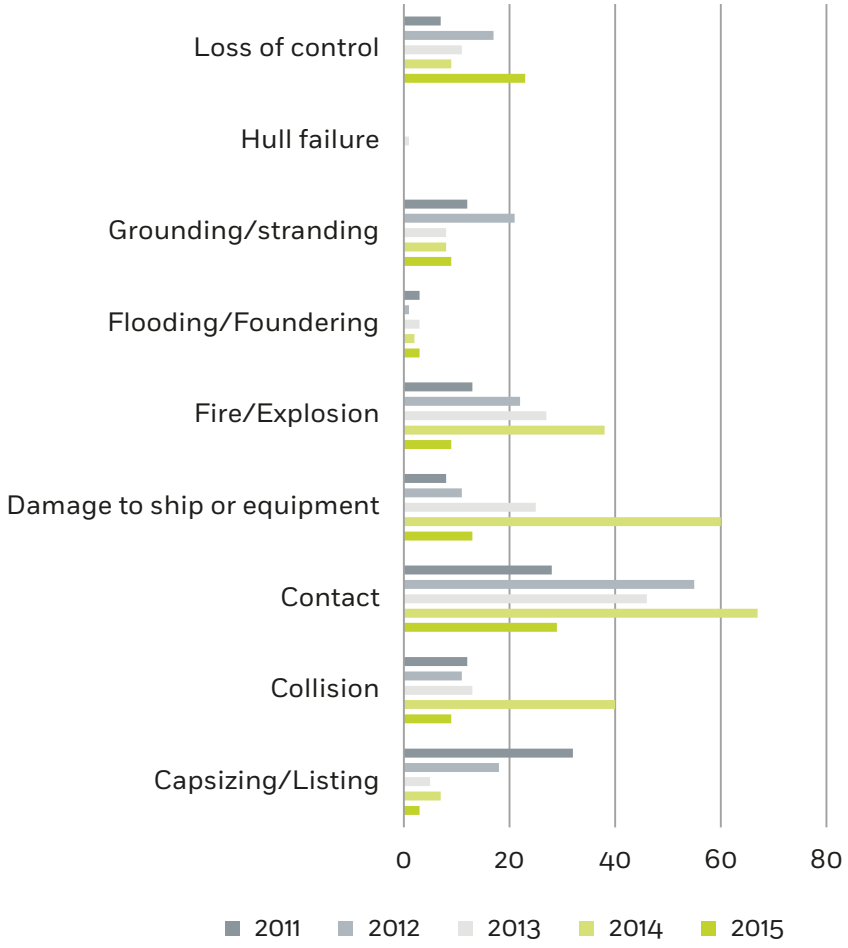
Crew represent the main category of persons injured at sea (3425 during the period 2011-2015).

Figure 35: Distribution of injured people by ship type



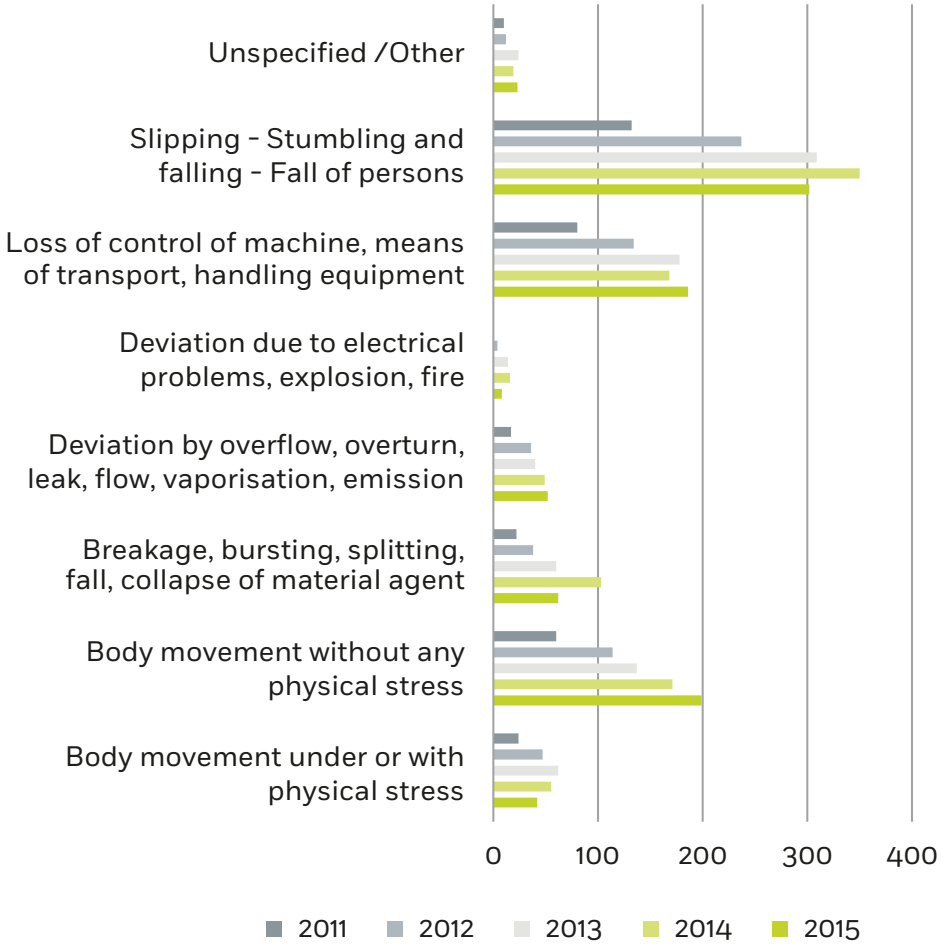
1610 persons were injured on board passenger vessels.

Figure 36: Distribution of injuries by casualty event



50% of the injuries took place during navigational events (contact, collision and grounding/standing).

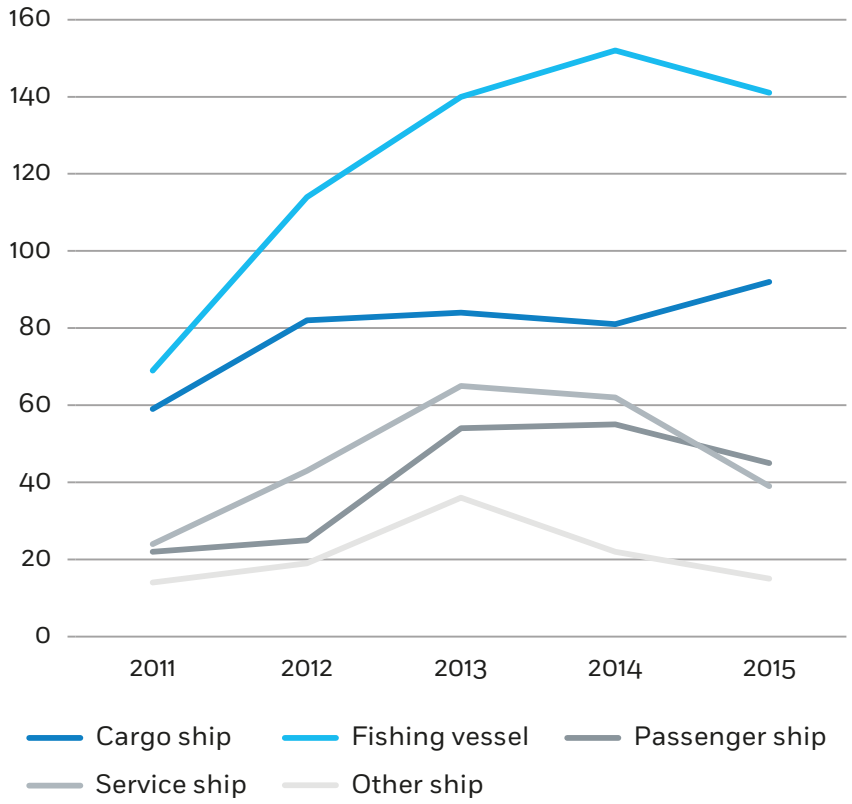
Figure 37: Distribution of injuries by deviation



As with fatalities, most of the injuries (31%) occurred during slipping-stumbling and falls of persons.

2.6.3 OTHER CONSEQUENCES

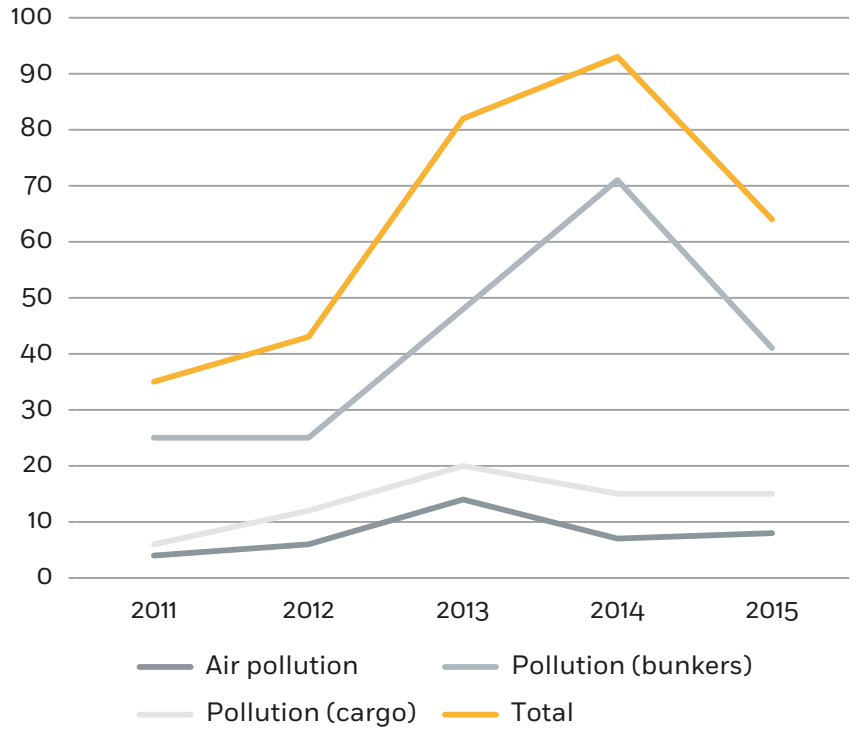
Figure 38: Distribution of Search and Rescue (SAR) operations by ship type



1554 ships needed a SAR operation of which 616 were fishing vessels.

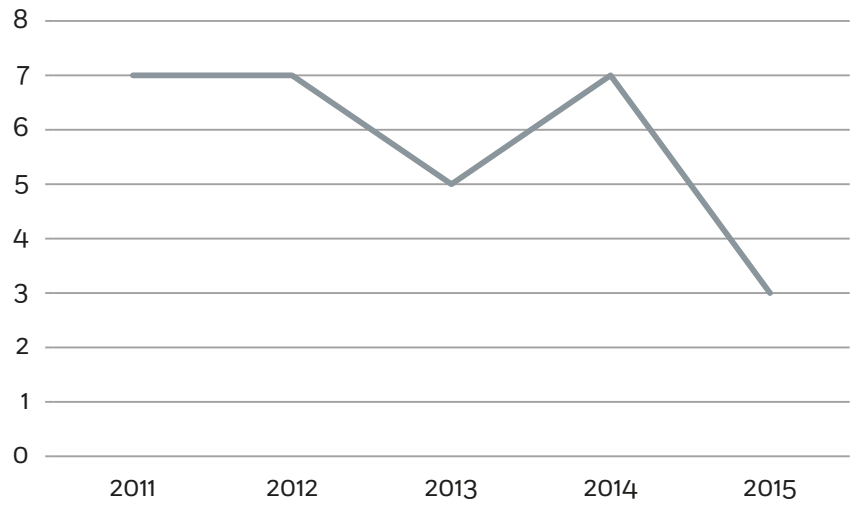
70% of the SAR operations related to ship casualties and 30% to occupational accidents.

Figure 39: Types of pollution



317 cases of pollution were reported. Among them, 278 affected the sea, whilst 39 were air pollution. In the majority of the cases (210), sea pollution was caused by the release of ship's bunkers and other pollutants (e.g. residues, lubricating or hydraulic oils). A decrease of such pollution was noted in 2015.

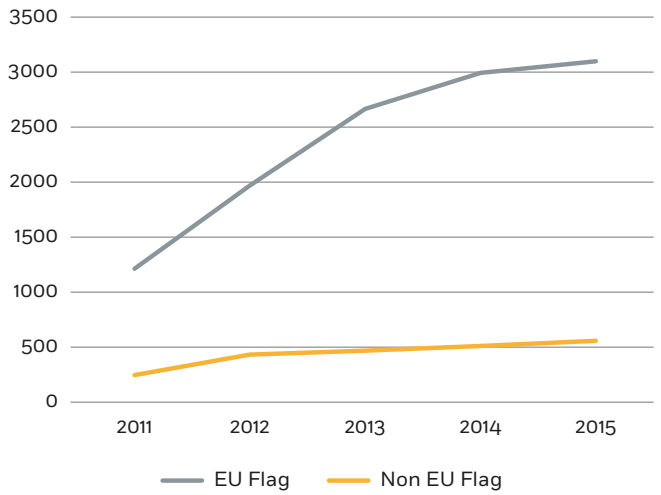
Figure 40: Distribution of oil pollution response



Oil pollution response was deployed mainly after grounding/stranding (12 cases), or collision between ships (10 times).

2.7 INVOLVEMENT OF EU STATES AS FLAG STATE, COASTAL STATE OR SUBSTANTIALLY INTERESTED STATE

Figure 41: Distribution of ship flags

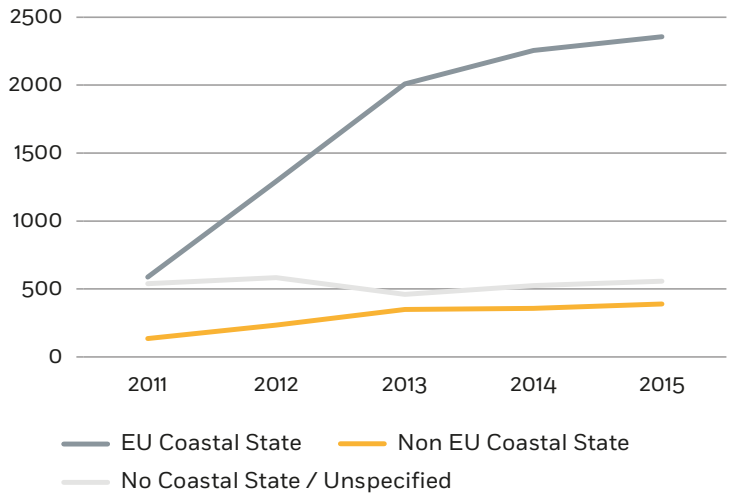


11937 ships flagged under an EU State were involved in a marine casualty or incident. 27 EU States were involved as flag of the ship.

2218 ships flagged under a total of 92 non-EU countries were involved in a marine casualty or incident. The flag of 90 ships was not identified.

The higher number of EU flag States in comparison with non-EU flag States reflects the scope of the Directive

Figure 42: Distribution of Coastal States



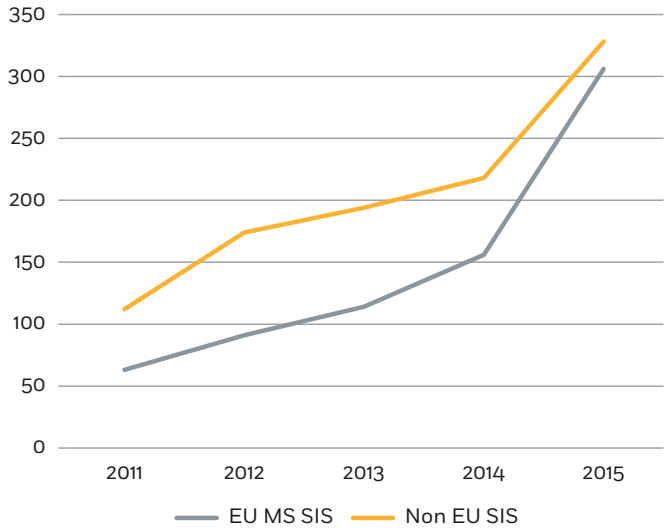
In 9 929 cases, at least one coastal State was reported to be affected by the marine casualty or incident. Considering the total number of marine casualties and incidents (12 591), this means that 79% of the accidents happened in territorial seas or internal waters.

27 EU States were involved as a coastal State 8 494 times. The Czech Republic, Luxembourg and Slovakia were the three EU States not involved.

127 non-EU countries were reported as coastal State 1465 times.

As with EU flag ships, there is a higher number of EU coastal States affected by a marine casualty or incident in comparison with non-EU coastal States. This reflects the scope of Directive.

Figure 43: Distribution of substantially interested States (SIS) other than flag or coastal States



Other than flag States or coastal States as described previously, in 1 637 marine casualties and incidents, at least one substantially interested State was reported. Considering the total number of marine casualties and incidents (12 591), a State different from the flag or the coastal State was interested in 13% of marine casualties and incidents.

The significant increase of substantially interested states could be explained by a more accurate identification of entities other than the flag State or the coastal State, as well as a better knowledge of the EU and International legislation on casualty investigation by such entities.

26 EU States were involved as substantially interested States 730 times.

96 non-EU countries were substantially interested States 1026 times.

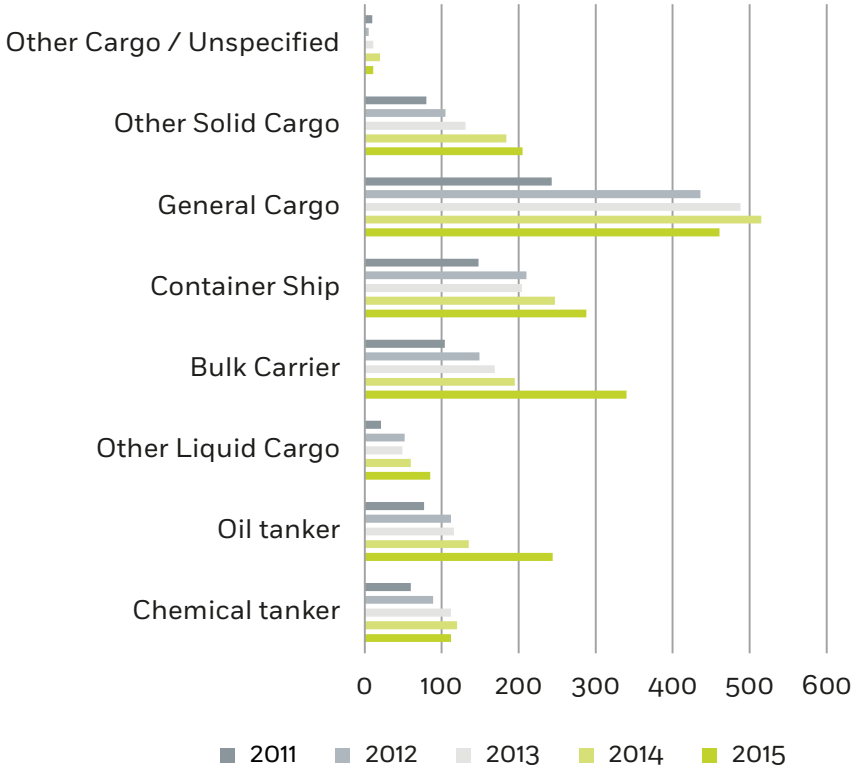
CHAPTER 3
CARGO SHIPS

Capsizing/Listing, flooding/foundering and grounding, HOEGH OSAKA, ship and cargo damaged, 03/01/2015

3.1 DETAILED DISTRIBUTION

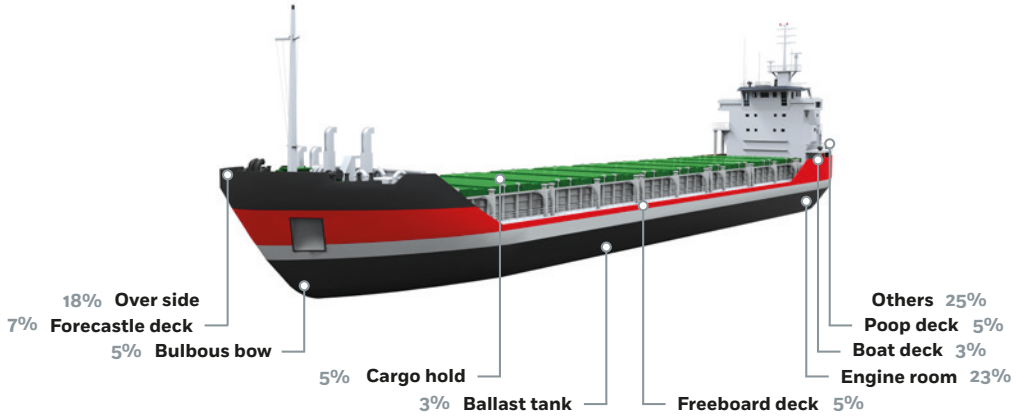
From 2011 to 2015, 6403 Cargo ships were involved in 5942 marine casualties and incidents

Figure 44: Distribution of cargo ships involved



The subcategory most frequently involved was "General Cargo" (33%), followed by Container ships (17%) and Bulk carriers (15%). A significant increase in bulk carriers and oil tankers involved was apparent in 2015.

Figure 45: Main places of casualties involving cargo ships 2011-2015

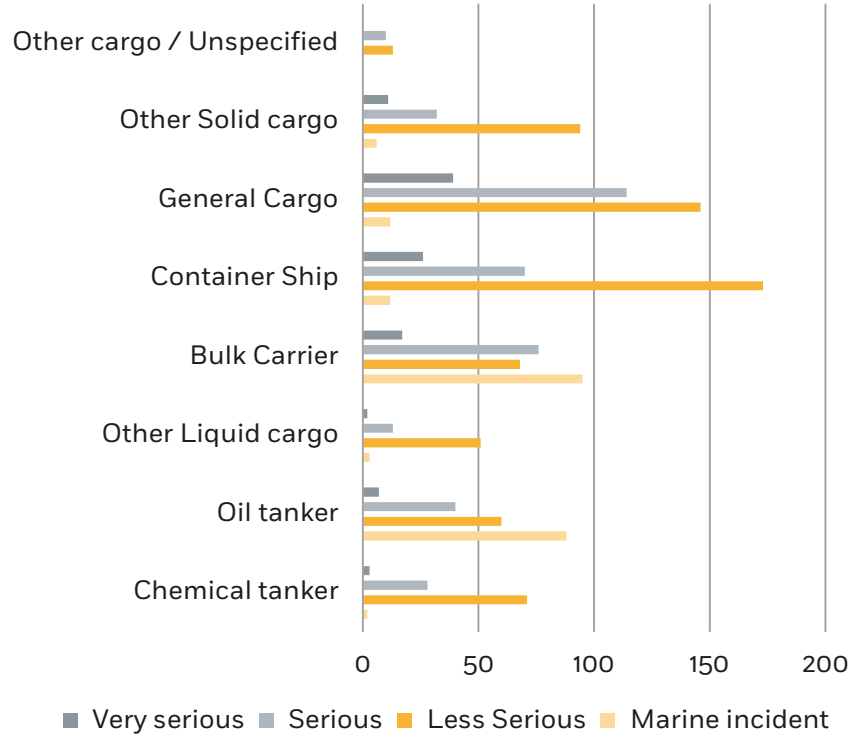


Places were specified in 4956 cases. The main location of marine casualties and incidents was the Engine Room (1163 cases), followed by Over Side (884 cases).

3.2 NATURE OF MARINE CASUALTIES AND INCIDENTS

3.2.1 CASUALTY WITH A SHIP

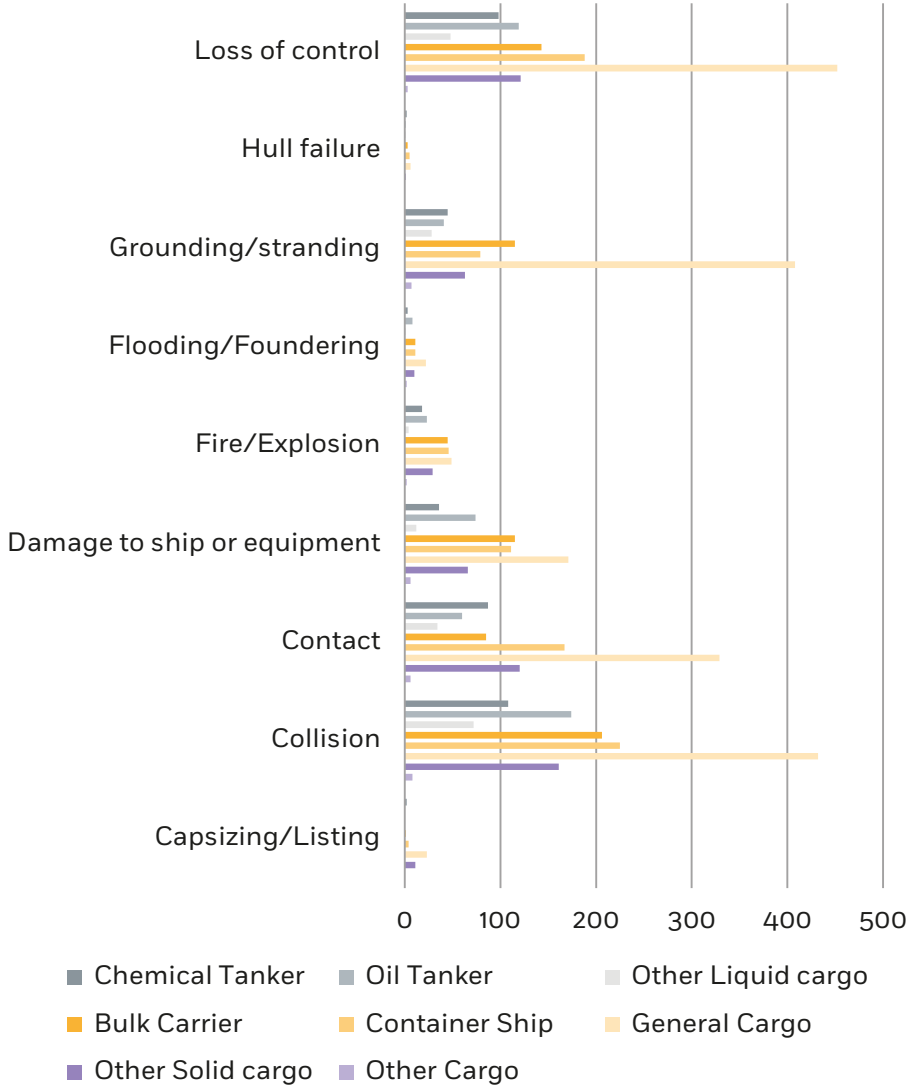
Figure 46: Distribution of severities per cargo ship type 2011-2015



For cargo ships, the number of very serious casualties with a ship, as a proportion of all reported casualties and incidents involving cargo ships, is lower (1.3%) than the average for all ship types (3.0%).

Half of the casualties and incidents were related to General Cargo ships.

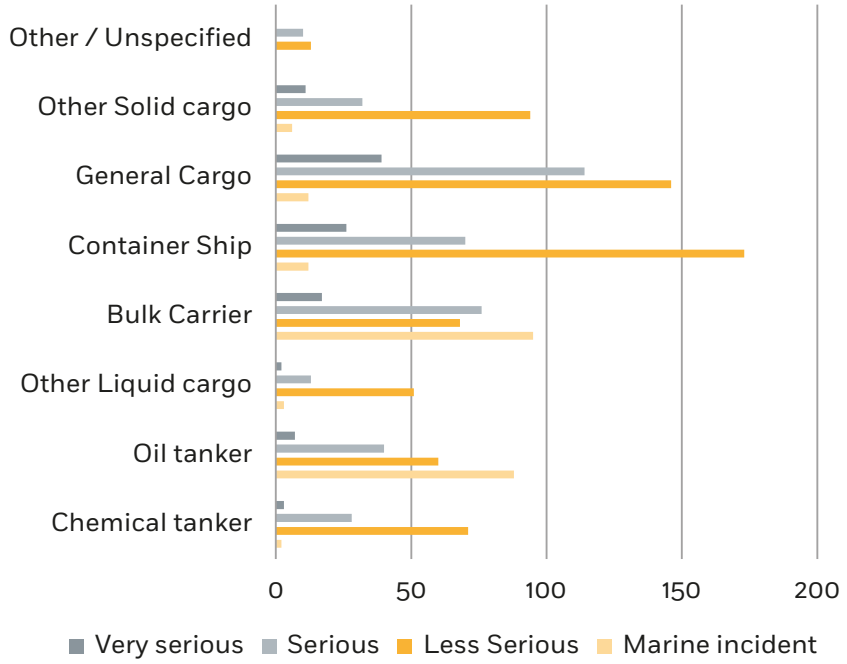
Figure 47: Distribution of casualty events per cargo ship type 2011-2015



Collisions represent 27% of the events involving cargo ships.

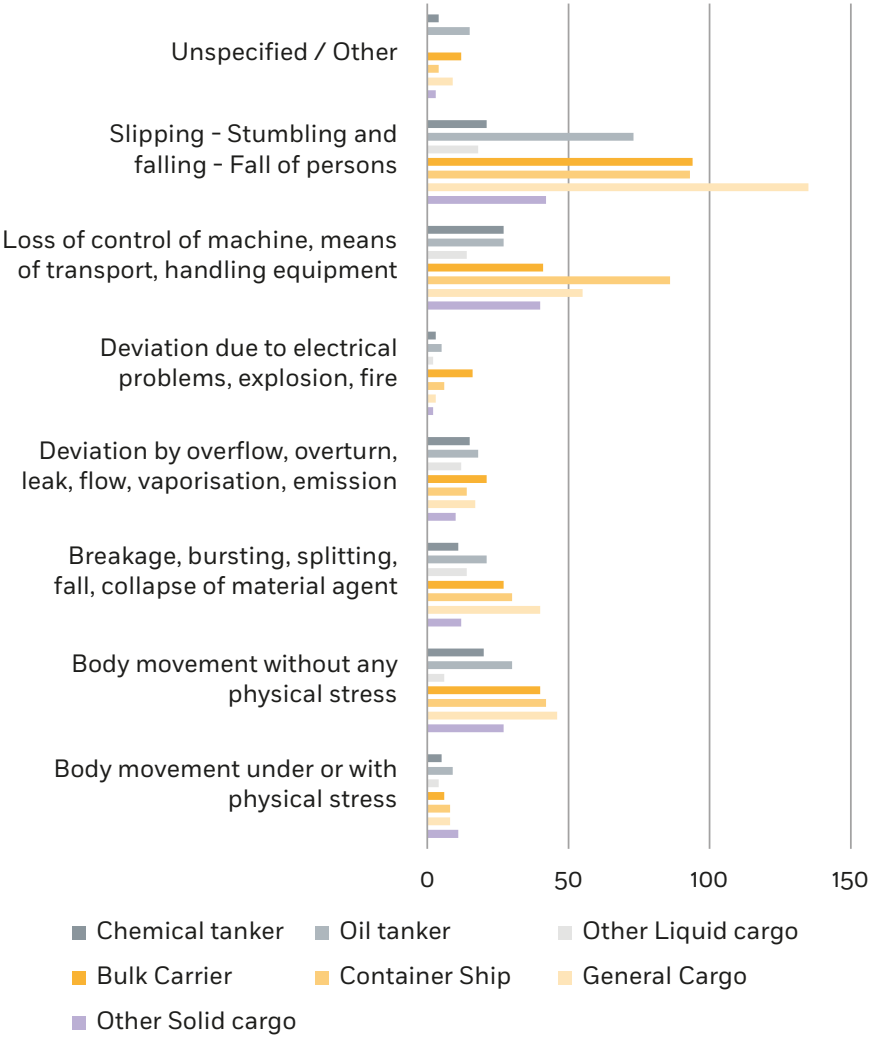
3.2.2 OCCUPATIONAL ACCIDENT

Figure 48: Severity of occupational accidents per cargo ship type 2011-2015



The proportion of very serious occupational accidents is higher (7.6%) than the average for all ship types (5%). 22% of the cases were related to general cargo ships and 20% to container ships.

Figure 49: Distribution of deviations per cargo ship type 2011-2015



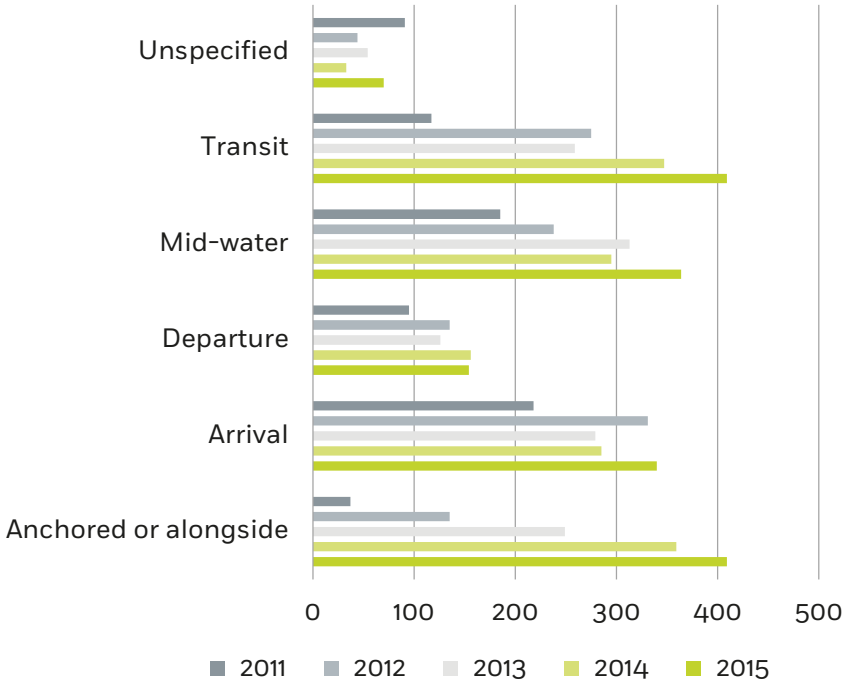
Slipping-Stumbling and falls of persons was the most frequent deviation (34.5%).

3.3 LOCATION OF MARINE CASUALTIES AND INCIDENTS

This chapter provides information about the location of cargo ships when marine casualties or incidents occurred.

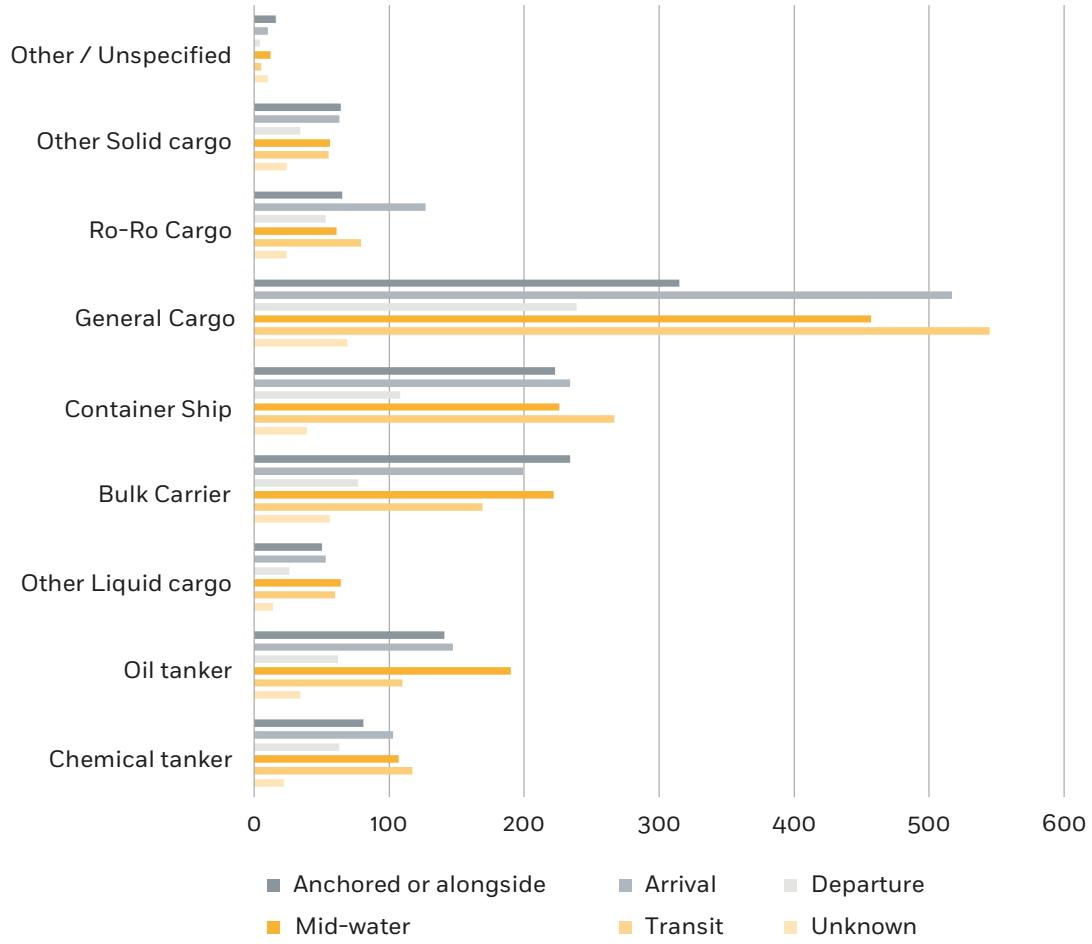
3.3.1 VOYAGE SEGMENTS

Figure 50: Distribution by voyage segment



The increase of events per voyage phase is in line with the improvement of reporting.

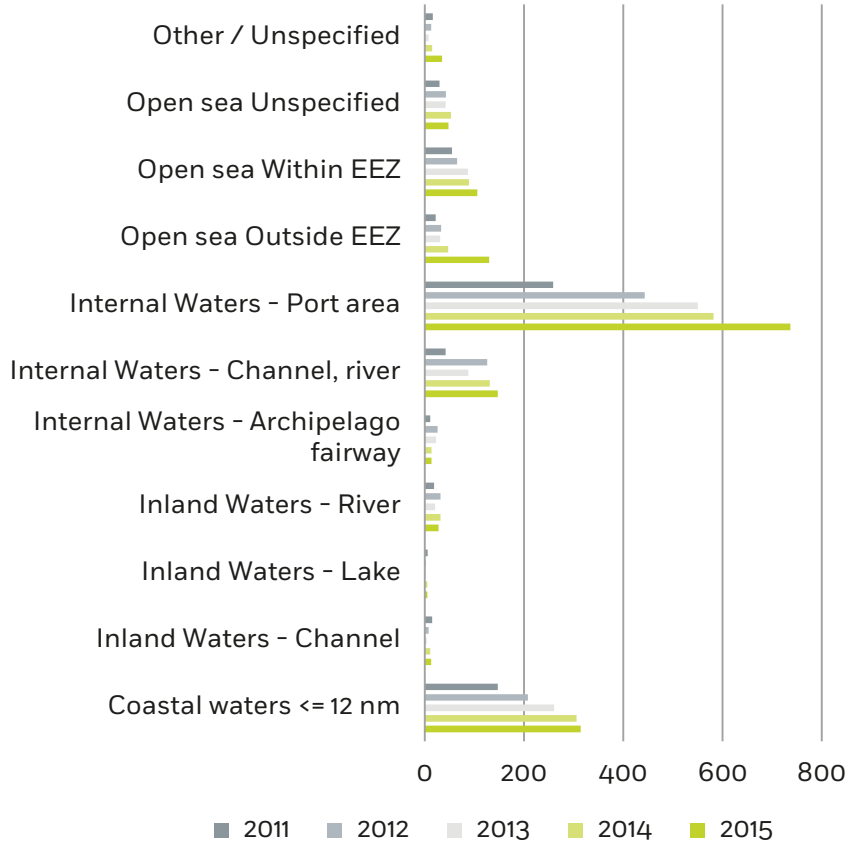
Figure 51: Distribution by voyage segment per cargo ship type 2011-2015



Distribution of marine casualties and incidents is similar across the voyage segments for all cargo ship types. The departure phase remained the safest over the period.

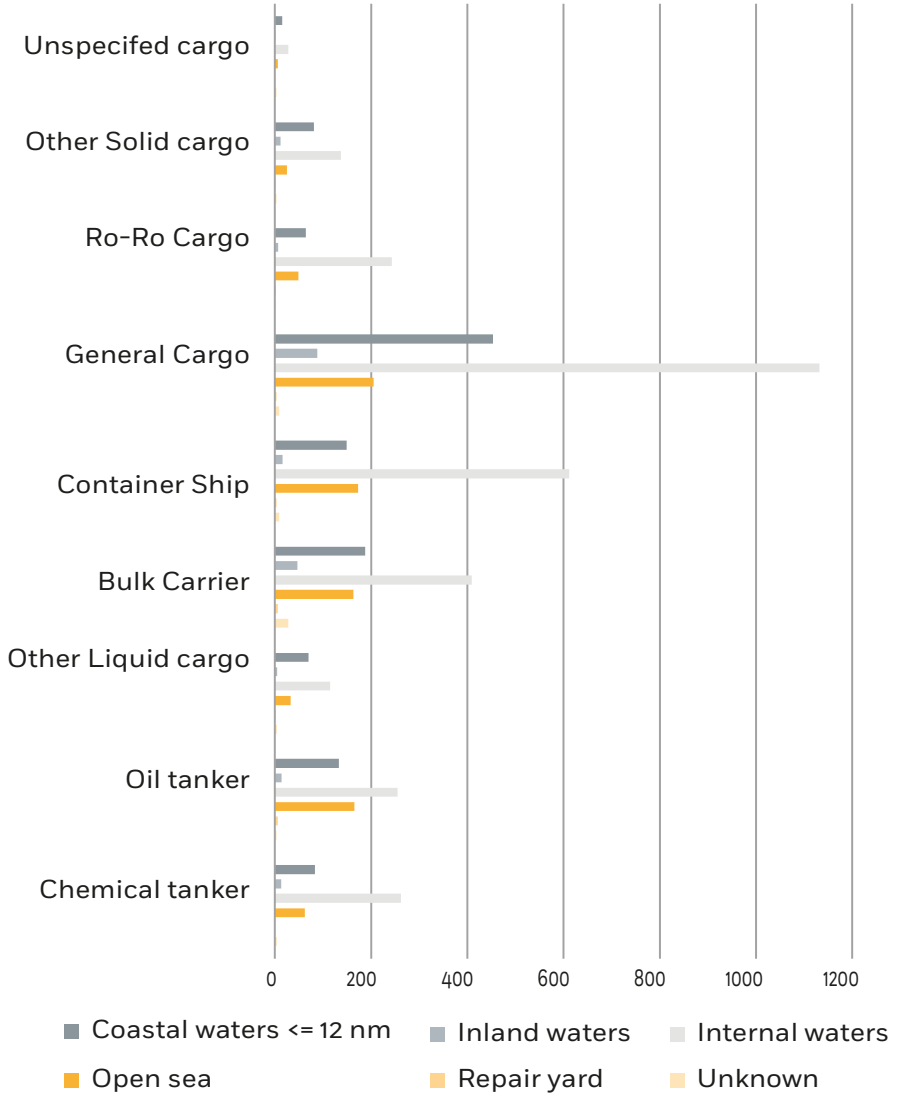
3.3.2 LOCATION

Figure 52: Distribution by location of marine casualties and incidents



46% of the casualties took place in port areas, followed by 22% in coastal waters.

Figure 53: Distribution by location of marine casualties and incidents per cargo ship type 2011-2015



All types of cargo ships have the highest numbers of casualties and incidents within internal waters.

3.3.3 REGIONAL DISTRIBUTION

Figure 54: Regional distribution of marine casualties and incidents 2011-2015

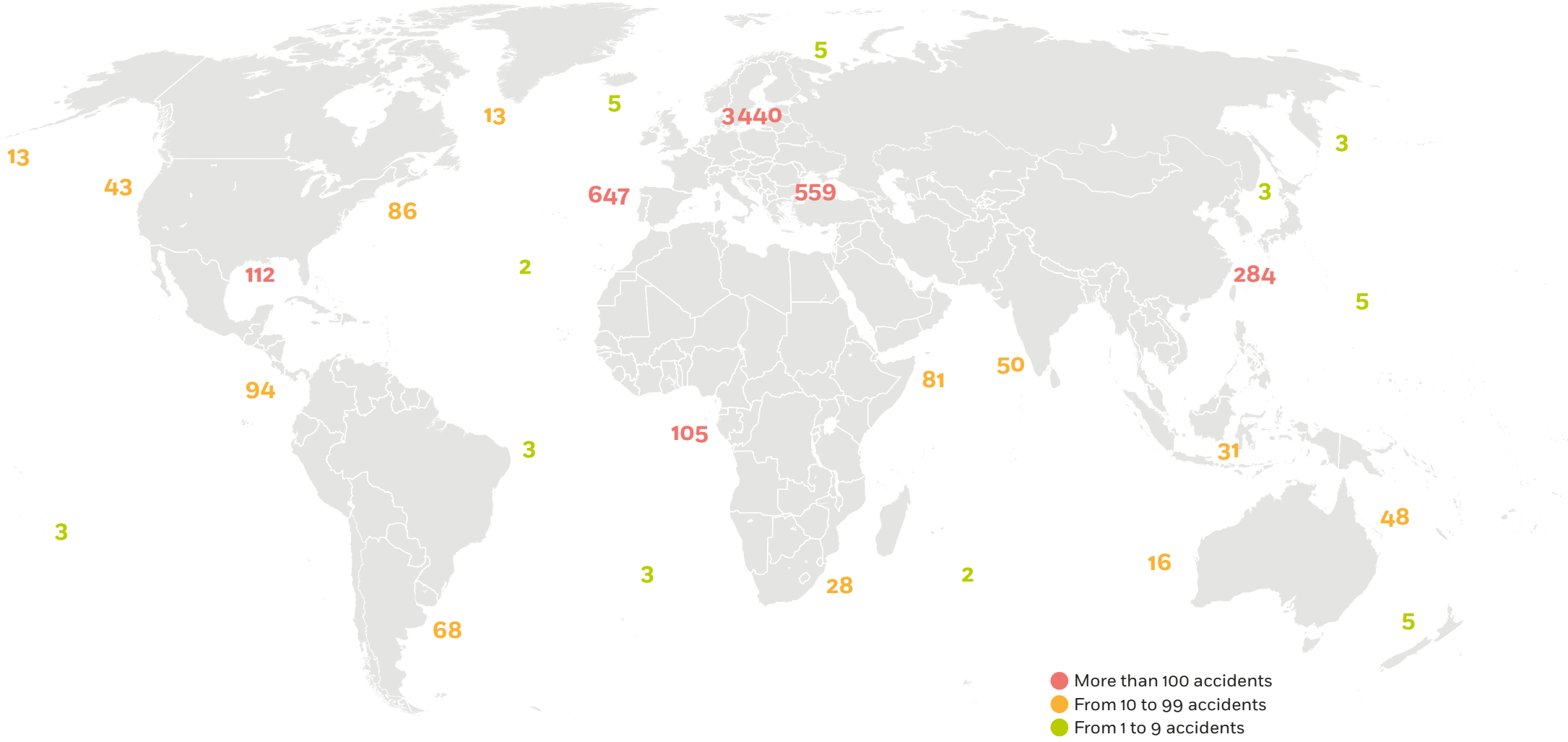
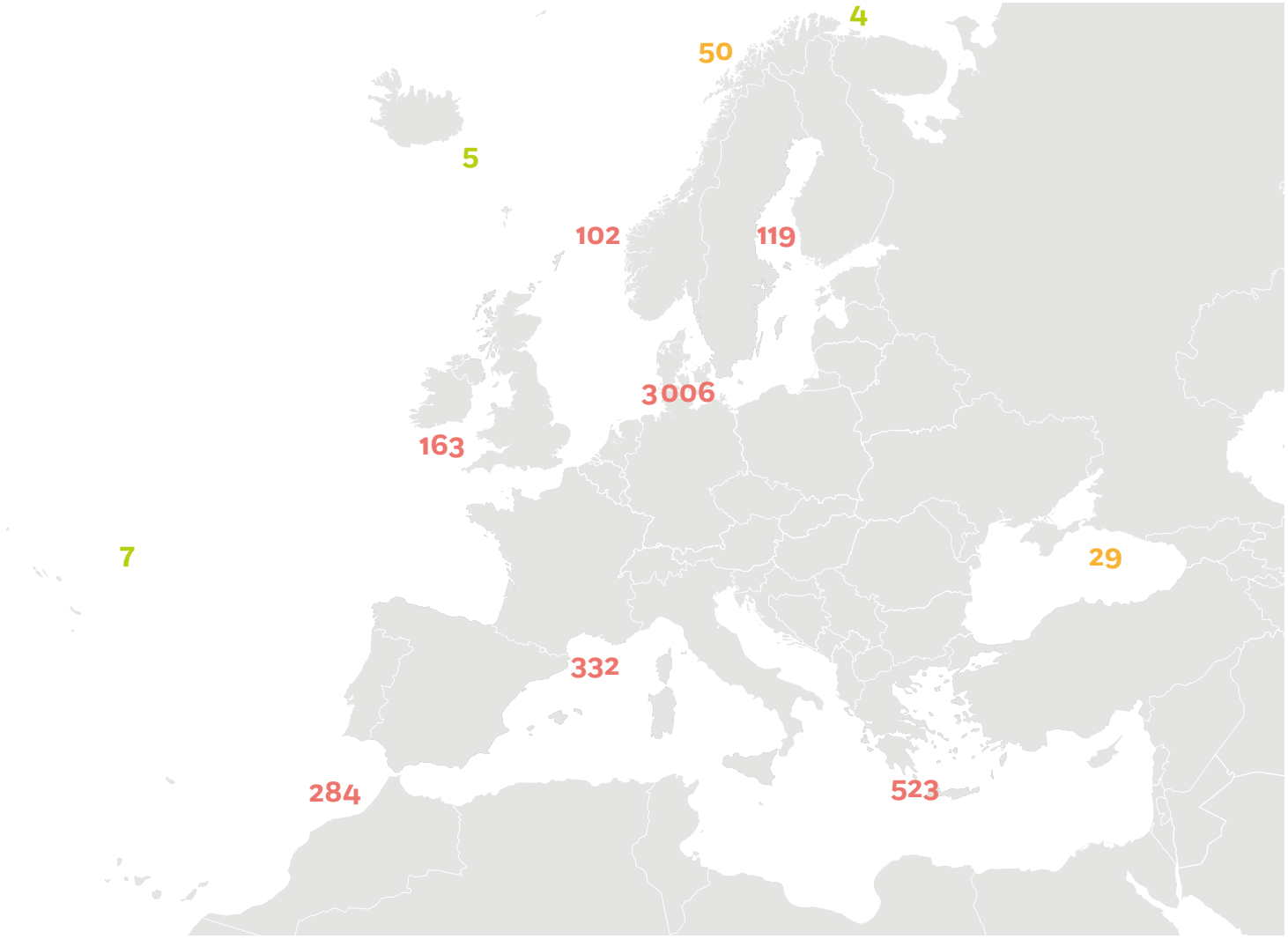
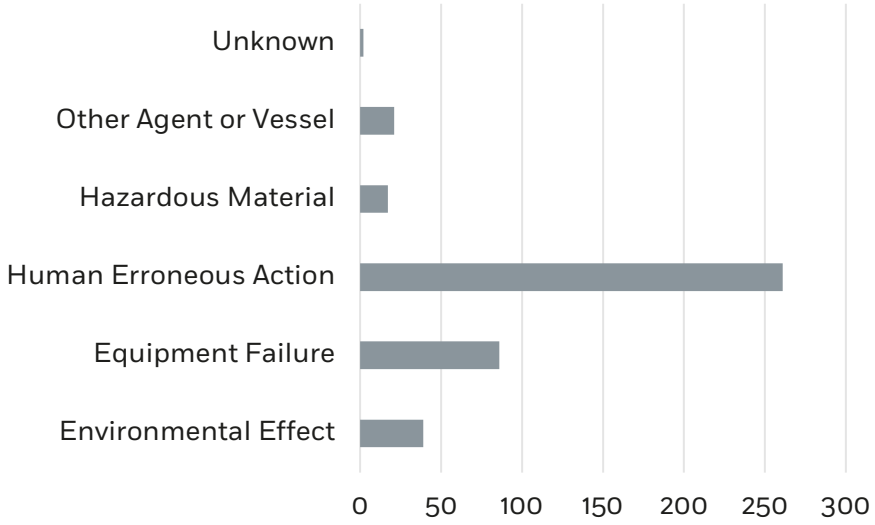


Figure 55: Distribution of marine casualties and incidents within the territorial sea and internal waters of EU States 2011-2015



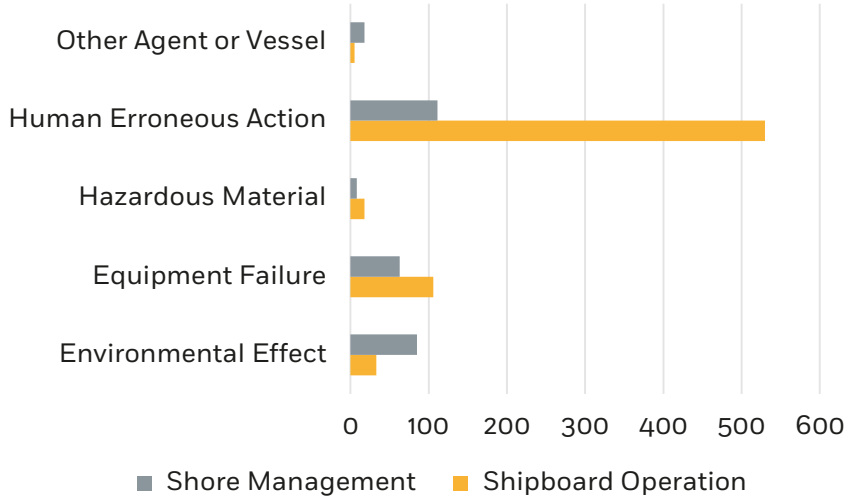
3.4 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

Figure 56: Accidental Events 2011-2015



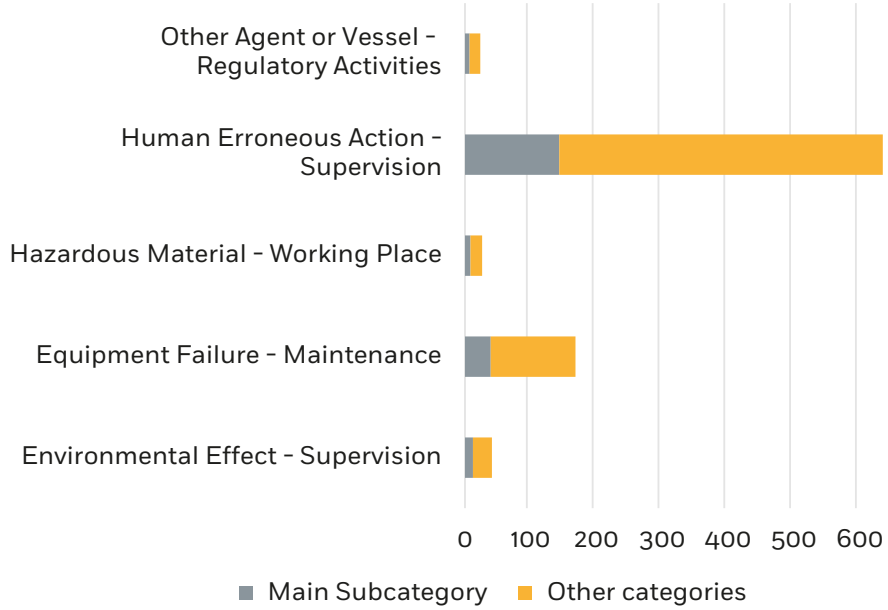
Among the 426 accidental events related to cargo ships, human erroneous actions were quoted most often (62%), followed by equipment failure (20%).

Figure 57: Relationship between Accidental Events and the main Contributing Factors 2011-2015



For almost all accidental events, shipboard operation appeared to be the most significant contributing factor (71%).

Figure 58: Groups of Contributing Factors 2011-2015

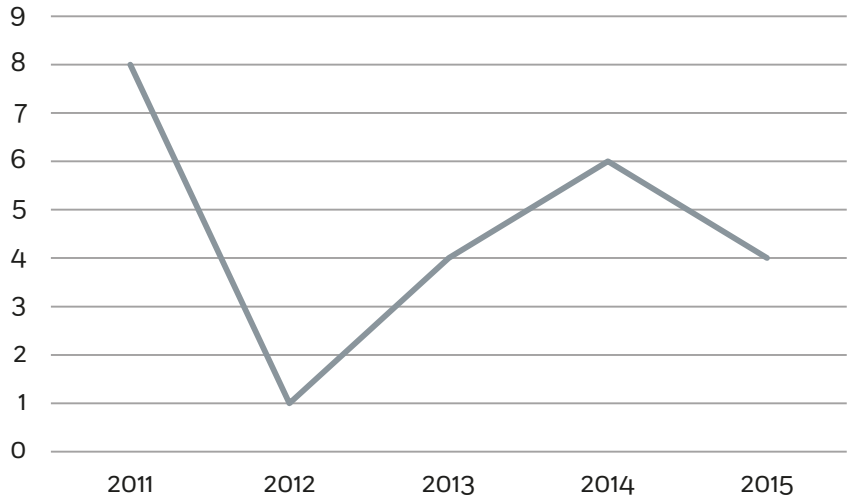


This figure indicates the contributing factor that was most quoted per category of accidental event. For example, supervision was most quoted as the significant contributing factor when the accidental event was human erroneous action and environmental effect.

3.5 CONSEQUENCES

3.5.1 CONSEQUENCES TO SHIPS

Figure 59: Cargo ships lost



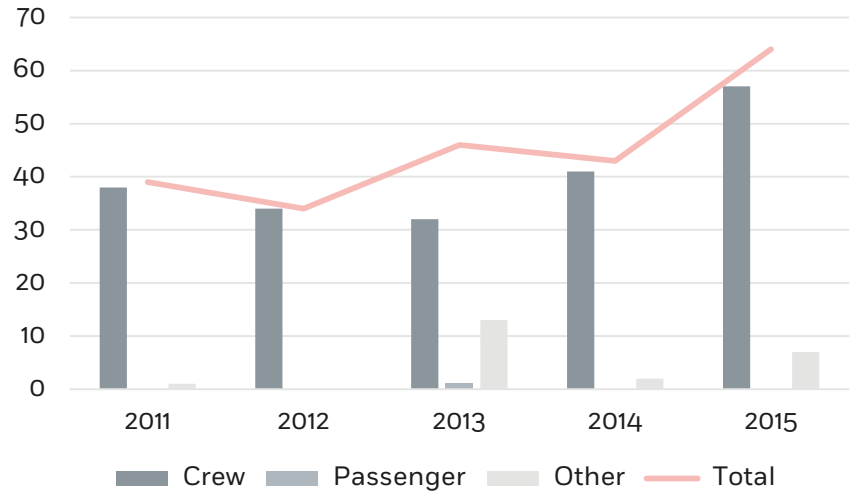
Among the 23 cargo ships that were lost, 18 were general cargo.

After a very low number of cargo ships lost in 2012, followed by a two year increase, a decrease was noted in 2015.

3.5.2 CONSEQUENCES TO PERSONS

3.5.2.1 FATALITIES

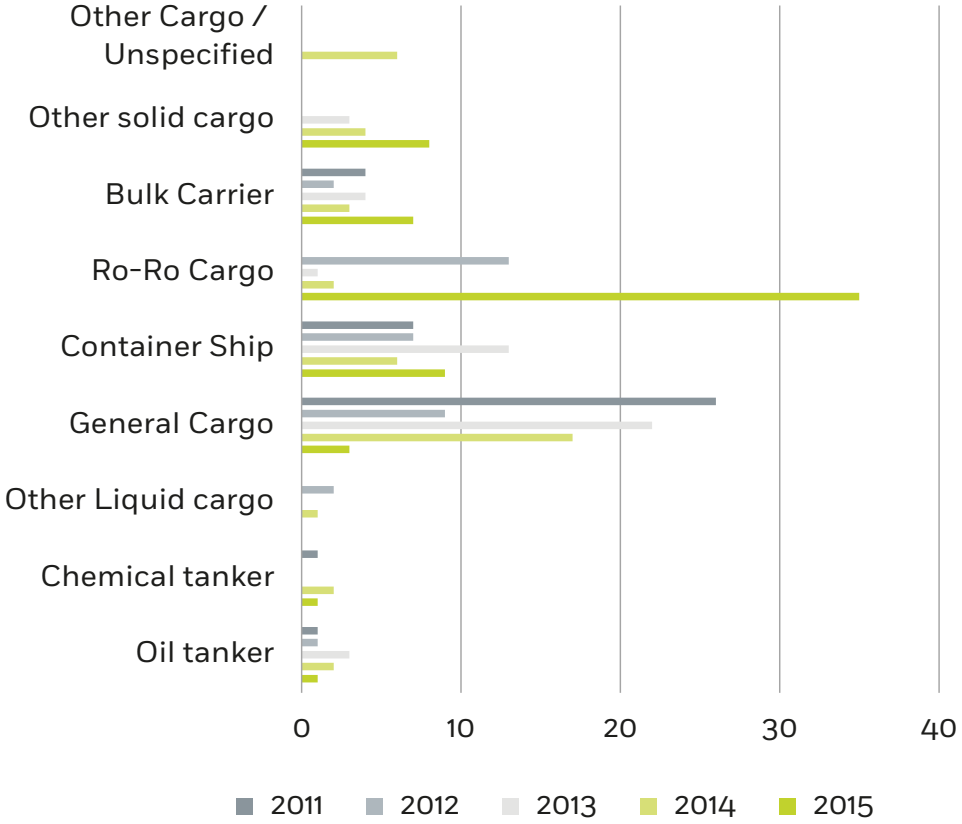
Figure 60: Number of fatalities



The number of fatalities on board cargo ships increased significantly in 2015.

Fatalities of crew comprised 89% of cases.

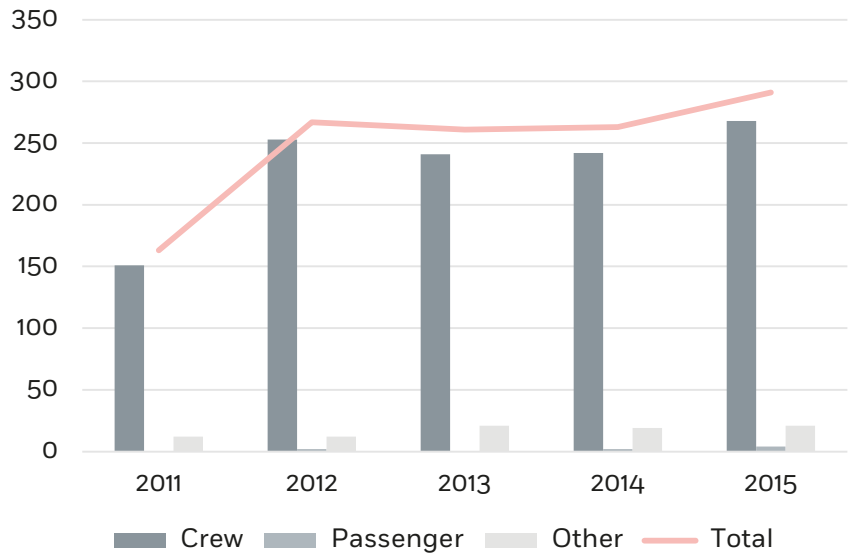
Figure 61: Distribution of fatalities per cargo ship type



While more fatalities occurred on board general cargo ships across the period, a significant decrease was noted in 2015. The number of fatalities was very high on board ro-ro cargo ships in 2015, due to the sinking of El Faro on 02/10/2015 with 33 victims.

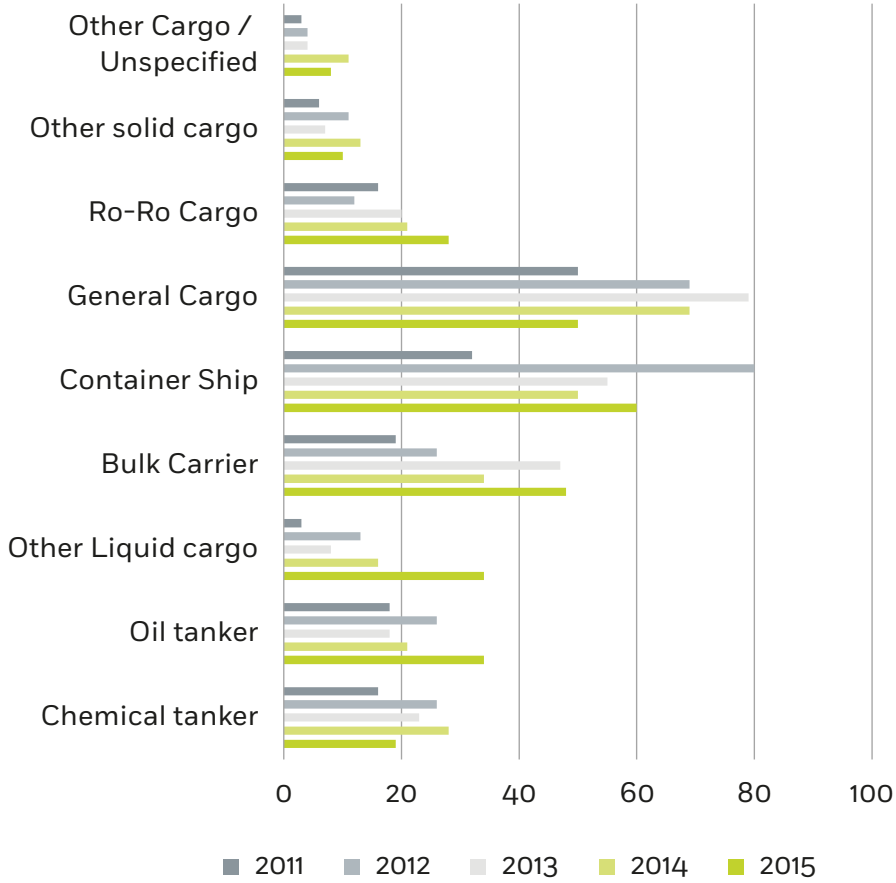
3.5.2.2 INJURIES

Figure 62: Number of injuries



The number of injuries has been stable with an average number of 250 per year among the crew category.

Figure 63: Distribution of injuries per cargo ship type



While 25% of injuries happened on board general cargo ships, container ships also accounted for 22%.

CHAPTER 4

FISHING VESSELS

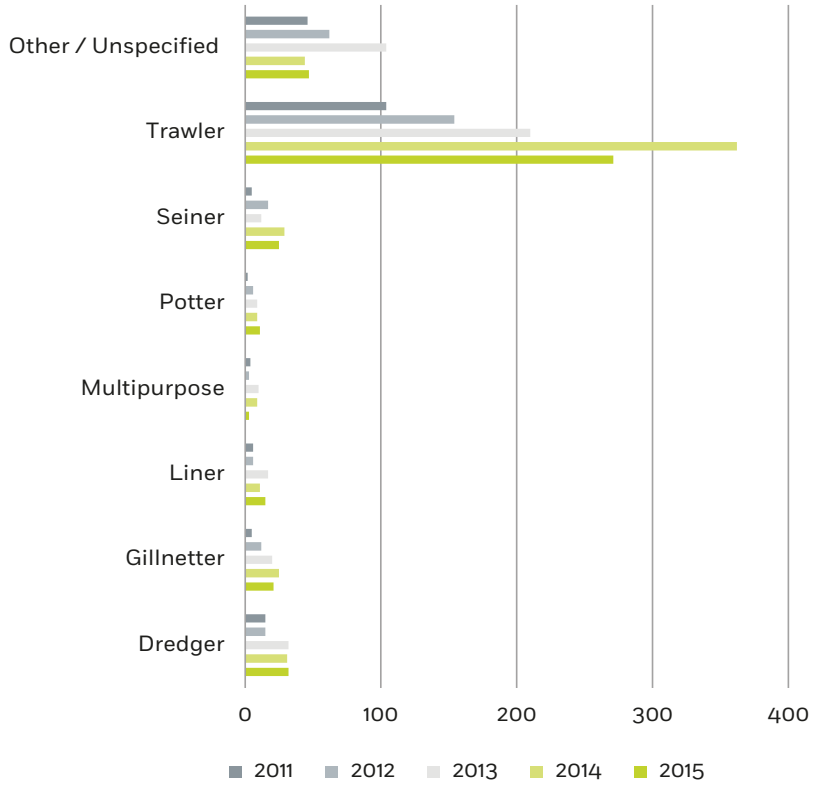
Grounding, ST APOLLO, ship lost, 24/08/2015

From 2011 to 2015, 1821 Fishing vessels were involved in 1749 marine casualties and incidents

The Directive does not apply to marine casualties and incidents involving only fishing vessels with a length of less than 15 metres. Such vessels are considered within the scope of the Directive only when they are involved in an occurrence together with a ship which is covered by the Directive.

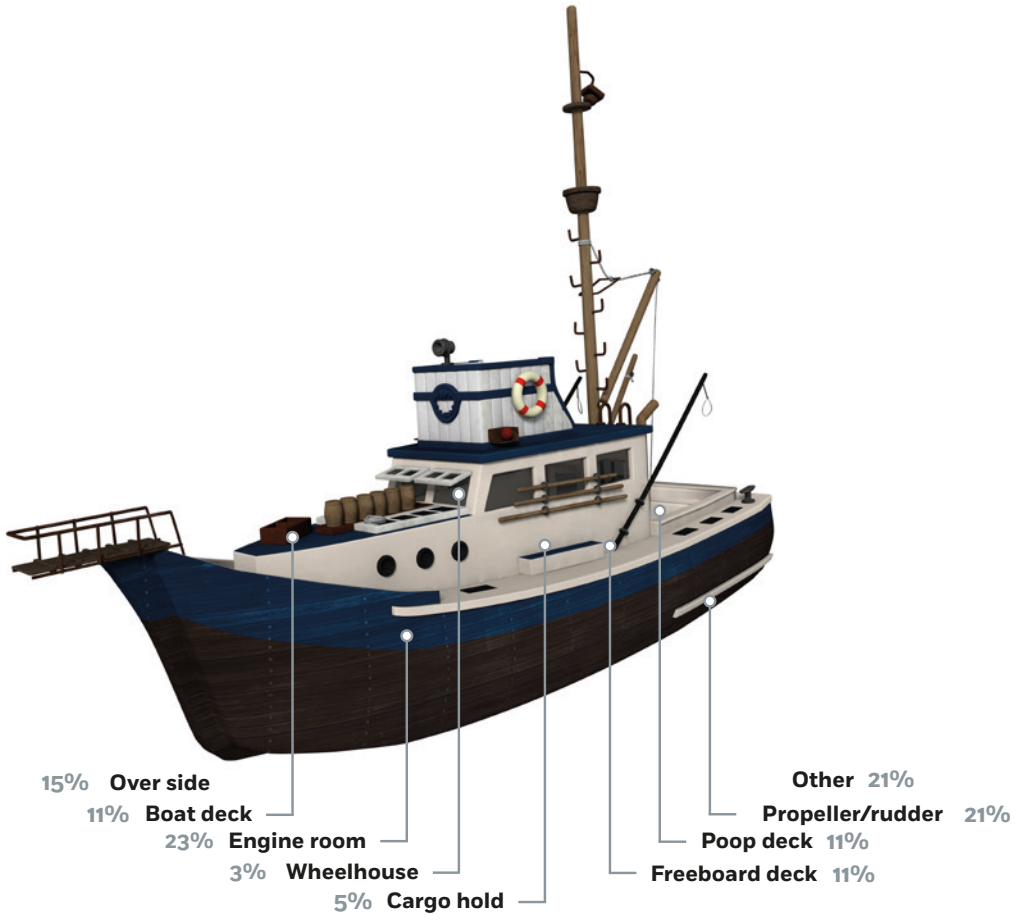
4.1 DETAILED DISTRIBUTION

Figure 64: Distribution by fishing vessel type



Among fishing vessels involved, the most specified subcategory was trawlers (60%), followed by dredgers (17% cases) and gillnetters (7%).

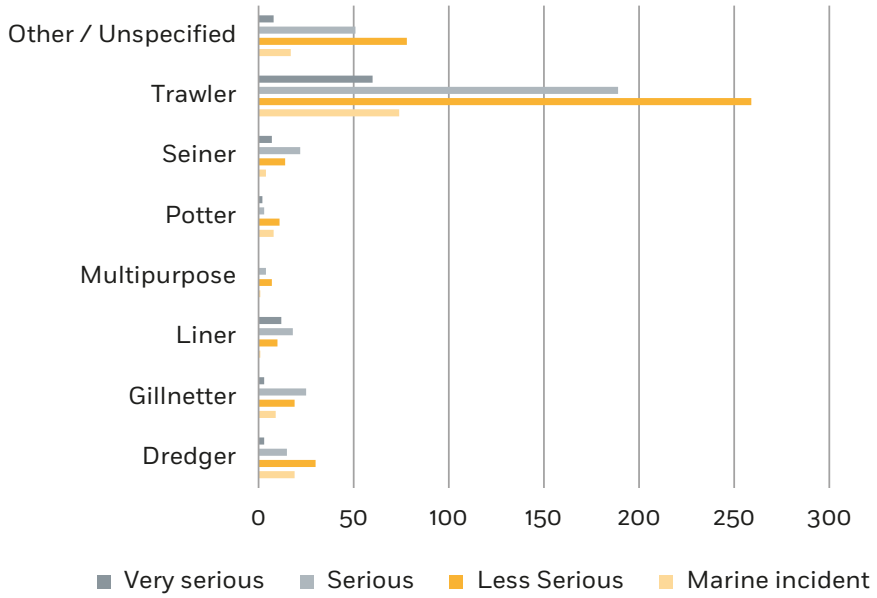
Figure 65: Main places of casualties involving fishing vessels 2011-2015



4.2 NATURE OF MARINE CASUALTIES AND INCIDENTS

4.2.1 CASUALTY WITH A SHIP

Figure 66: Distribution of severities per fishing vessel type 2011-2015

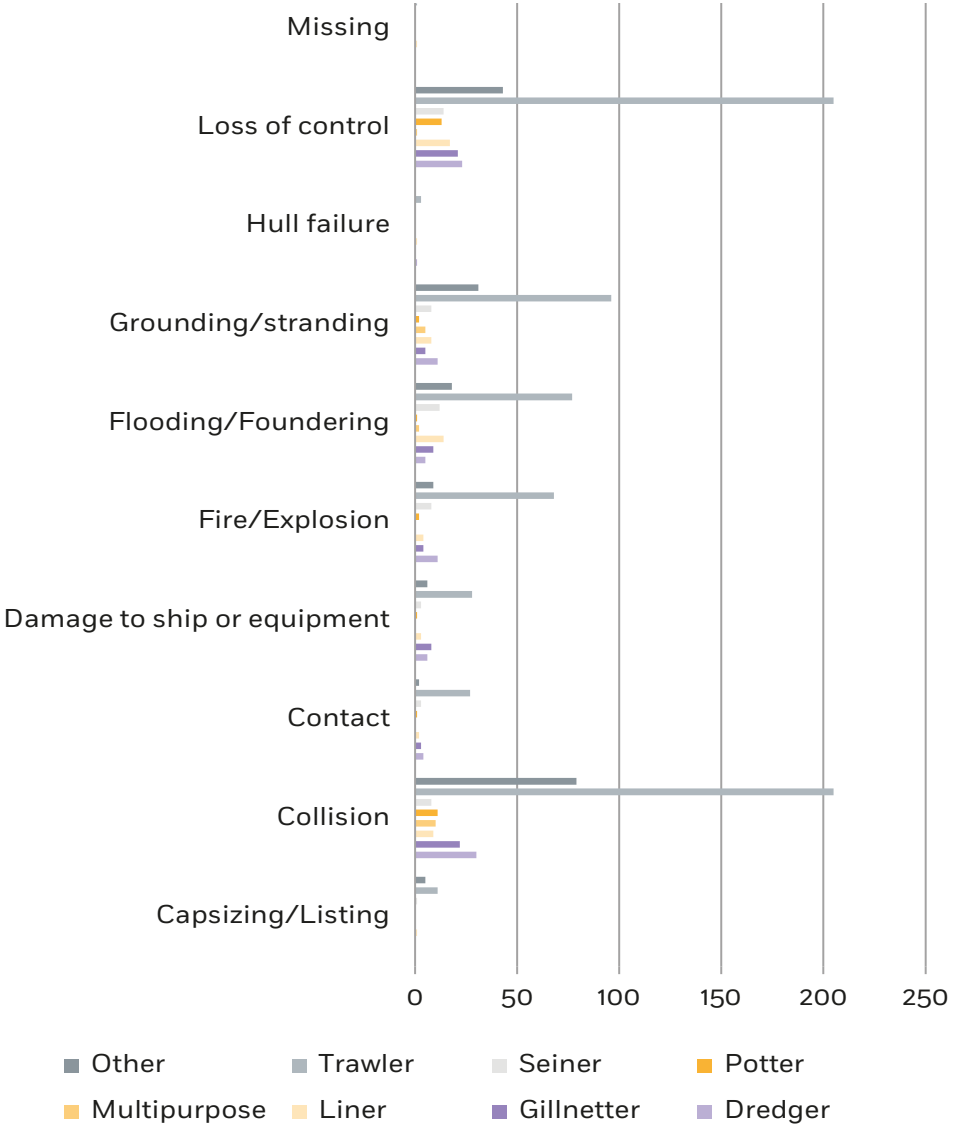


Amongst all fishing vessels, 59% of the casualties with a ship involved a trawler.

For fishing vessels, the number of very serious casualties with a ship, as a proportion of all reported casualties and incidents involving cargo ships, is much higher (10%) than the average for all ship types (3.0%).

Amongst all fishing vessels, 63% of the very serious casualties involved trawlers. Within the trawler category, 10.3% of the accidents were very serious.

Figure 67: Distribution of casualty events per fishing vessel type 2011-2015



The two most quoted categories of casualty events were collision and loss of control of propulsion power.

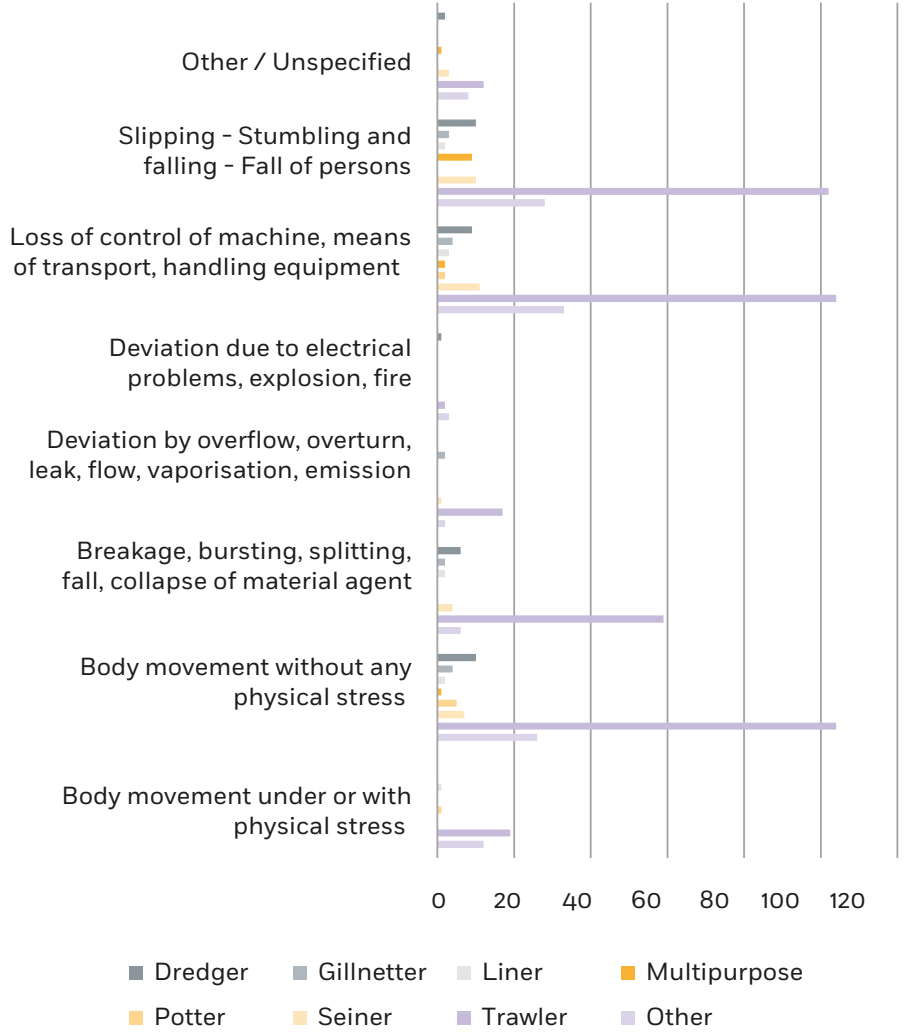
4.2.2 OCCUPATIONAL ACCIDENTS

Figure 68: Severity of occupational accidents per fishing vessel type 2011-2015

64% of the occupational accidents took place on board trawlers. Within this category, 6% of the events were very serious.

The rate of very serious occupational accidents related to fishing vessels is 5.9%, close to the general average of 5% for all ship types.

Figure 69: Distribution of deviations per fishing vessel type 2011-2015



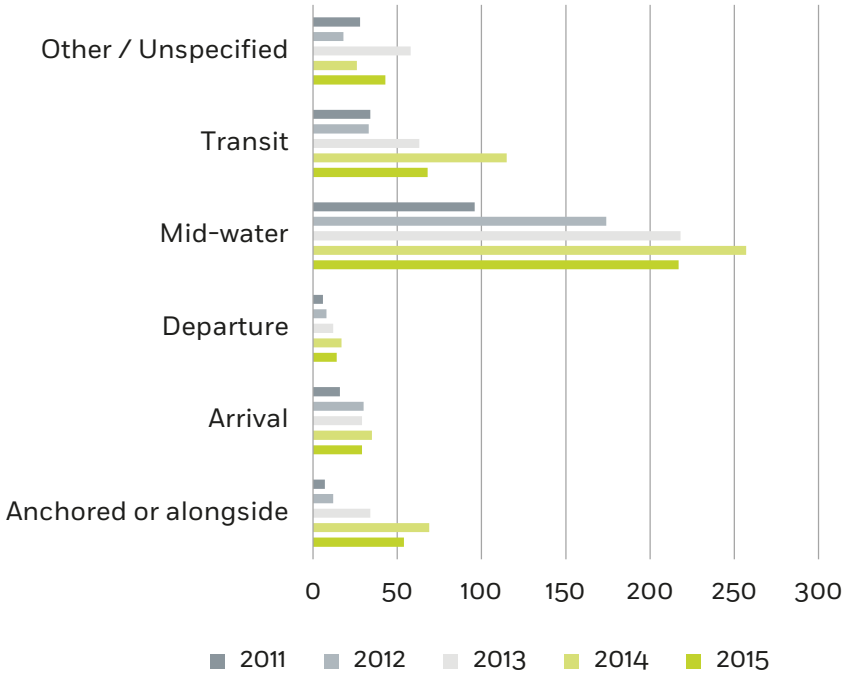
Deviations on board fishing vessels were equally distributed between slipping-stumbling and fall of persons, loss of control of an equipment and body movement without physical stress.

4.3 LOCATION OF MARINE CASUALTIES AND INCIDENTS

This section provides information about the location of the fishing vessels when marine casualties or incidents occurred.

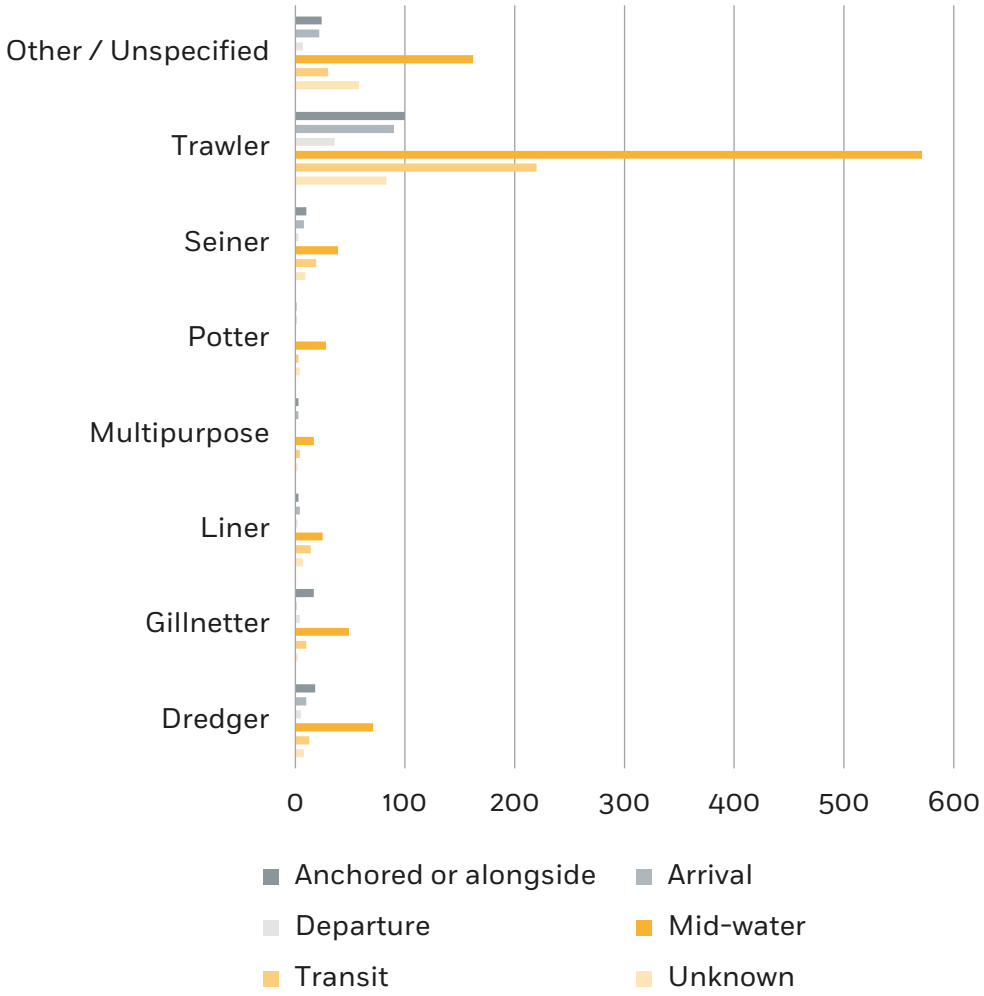
4.3.1 VOYAGE SEGMENTS

Figure 70: Distribution by voyage segment



53% of casualties to fishing vessels occurred during the mid-water phase of the voyage, when fishing operations take place.

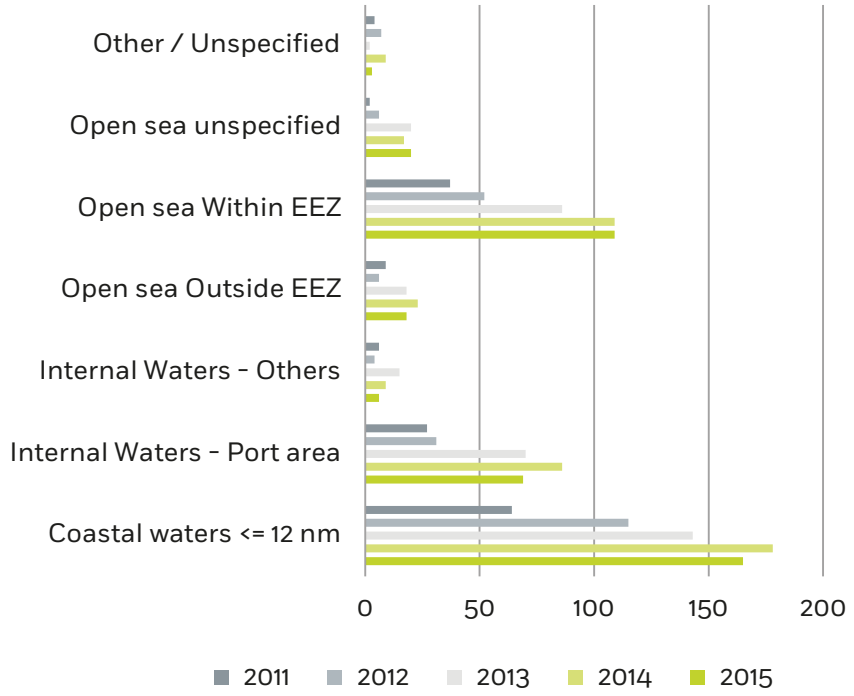
Figure 71: Distribution by voyage segment per fishing vessel type 2011-2015



Predominance of accidents for all types of fishing vessels during the mid-water part of the voyage is notable.

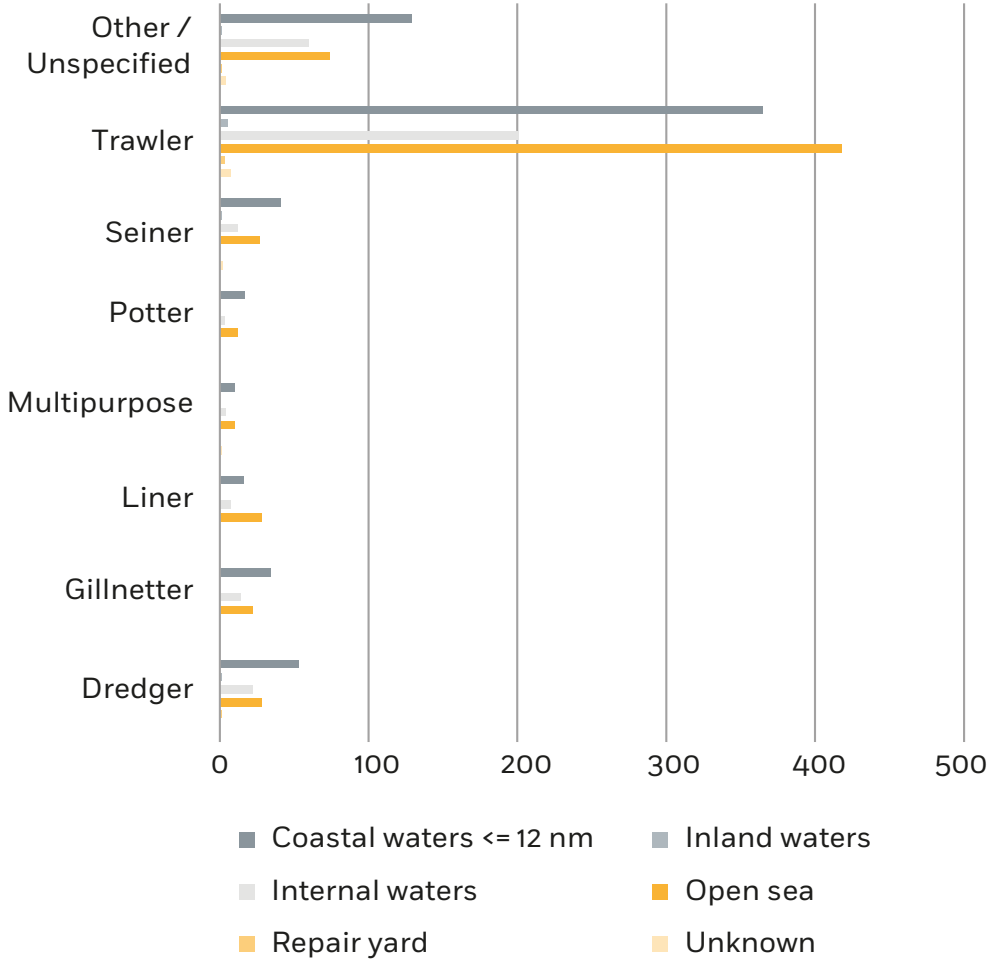
4.3.2 LOCATION

Figure 72: Distribution by location of marine casualties and incidents



41% of the casualties took place in coastal waters, followed by 25% in open sea within the EEZ.

Figure 73: Distribution by location of the marine casualties and incidents per fishing vessel type 2011-2015



For all fishing vessel types, accidents mostly took place in coastal waters or open sea.

4.3.3 REGIONAL DISTRIBUTION

Figure 74: Regional distribution of marine casualties and incidents 2011-2015

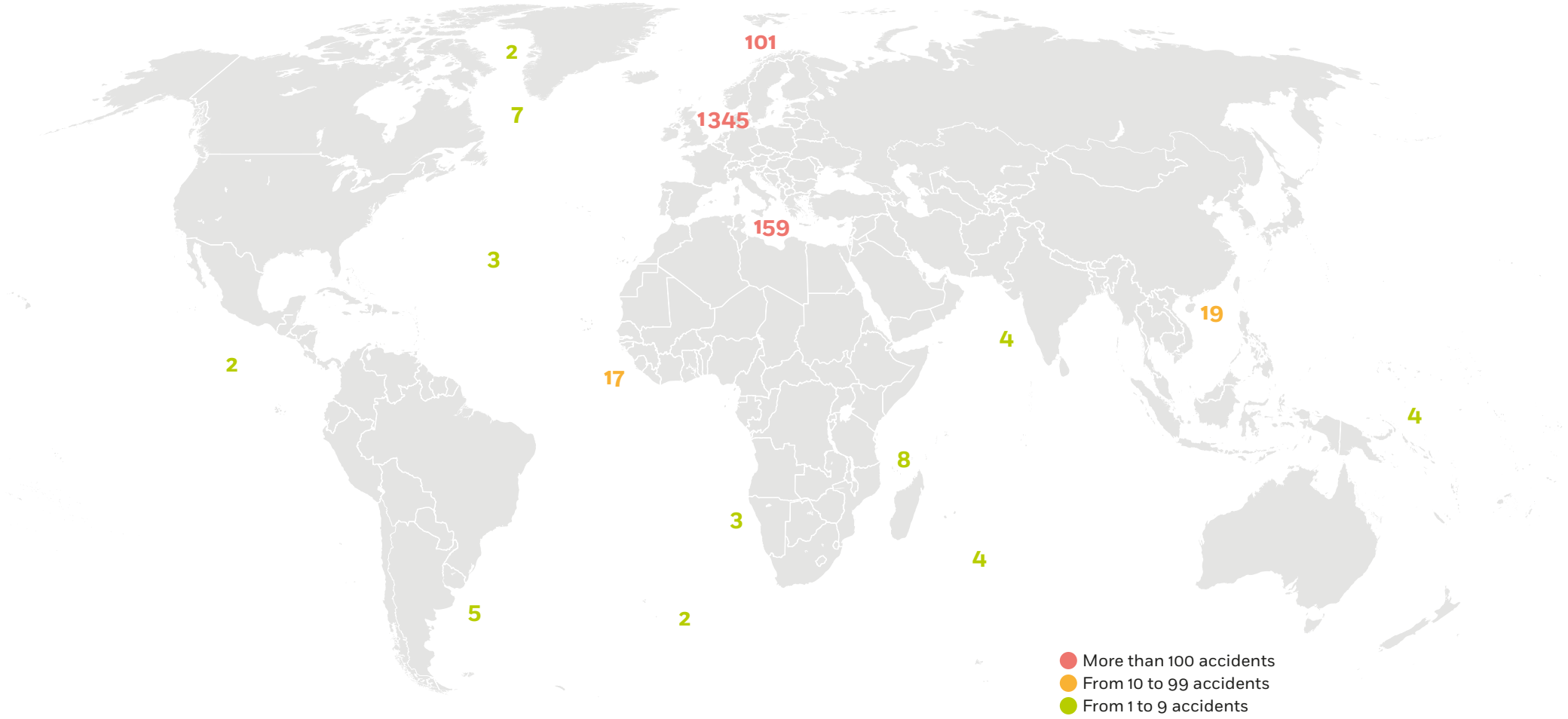
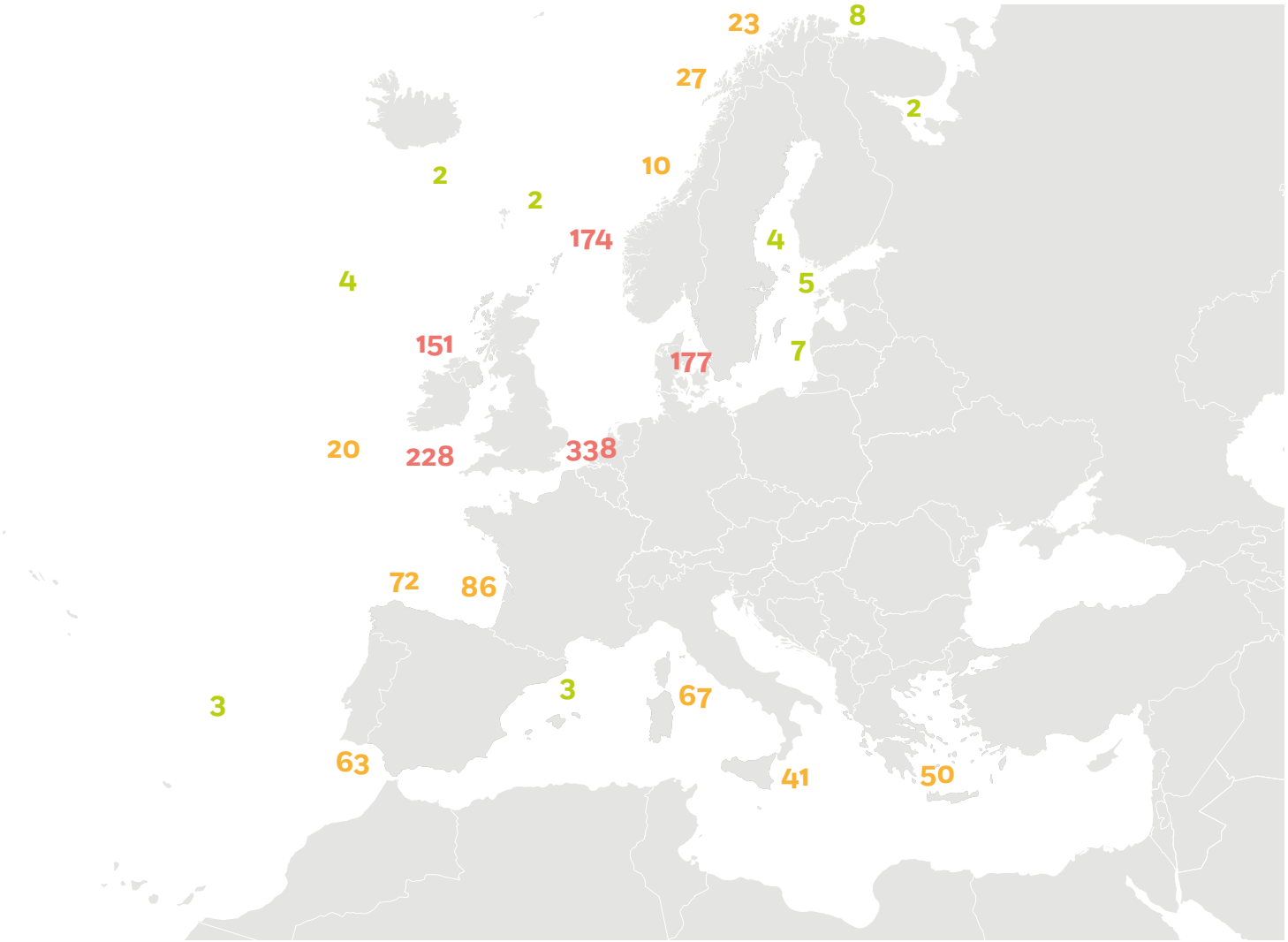
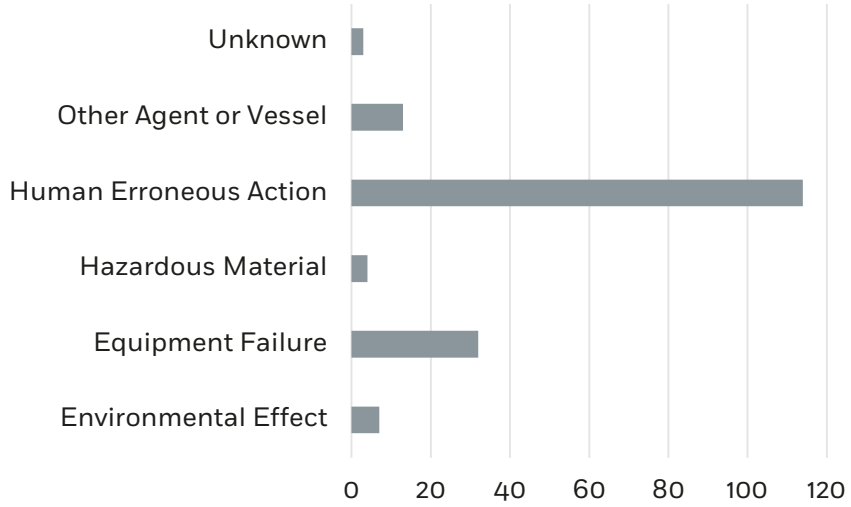


Figure 75: Distribution of marine casualties and incidents within the territorial sea and internal waters of EU States 2011-2015



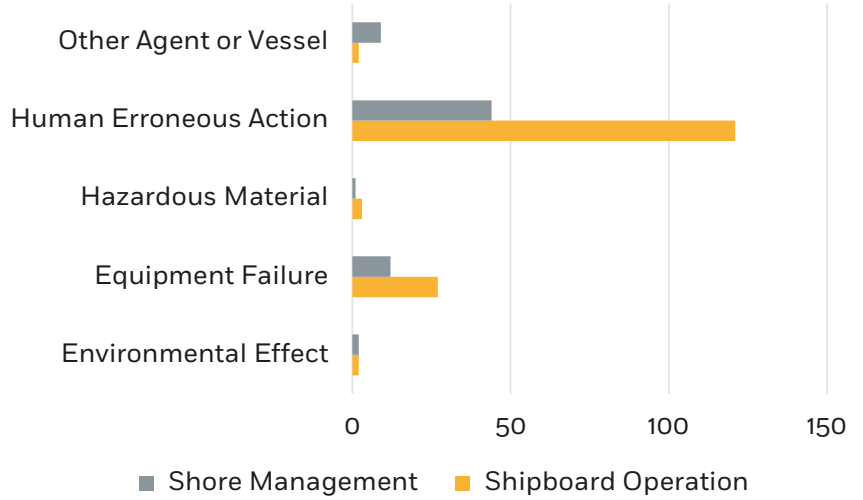
4.4 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

Figure 76: Accidental events 2011-2015



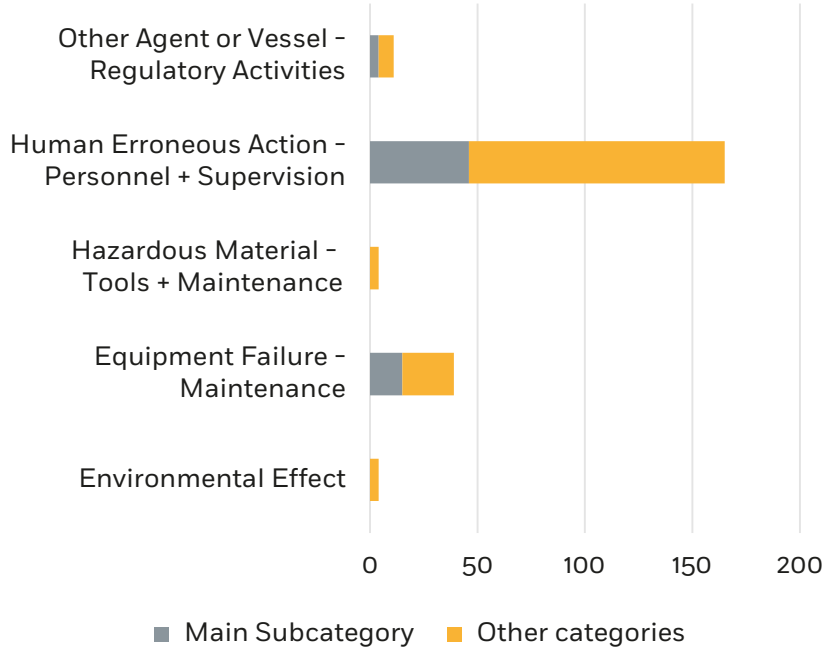
From a total of 173 accidental events analysed during the investigations, 66% were attributed to a Human Erroneous Action.

Figure 77: Relationship between Accidental Events and the main Contributing Factors 2011-2015



On board fishing vessels, shipboard operations was the most quoted contributing factor with 70% of the total.

Figure 78: Groups of Contributing Factors 2011-2015

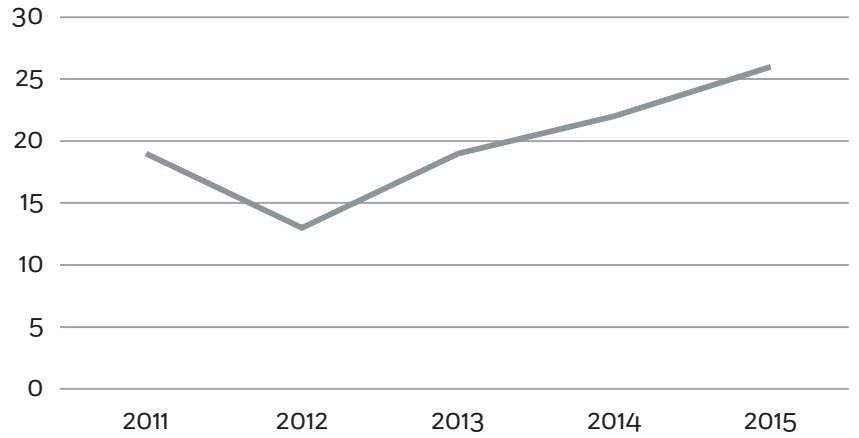


This figure provides the contributing factor that was most quoted per category of accidental event. "Maintenance" was quoted as the most significant contributing factor when the accidental event was Equipment Failure.

4.5 CONSEQUENCES

4.5.1 CONSEQUENCES TO SHIPS

Figure 79: Fishing vessels lost



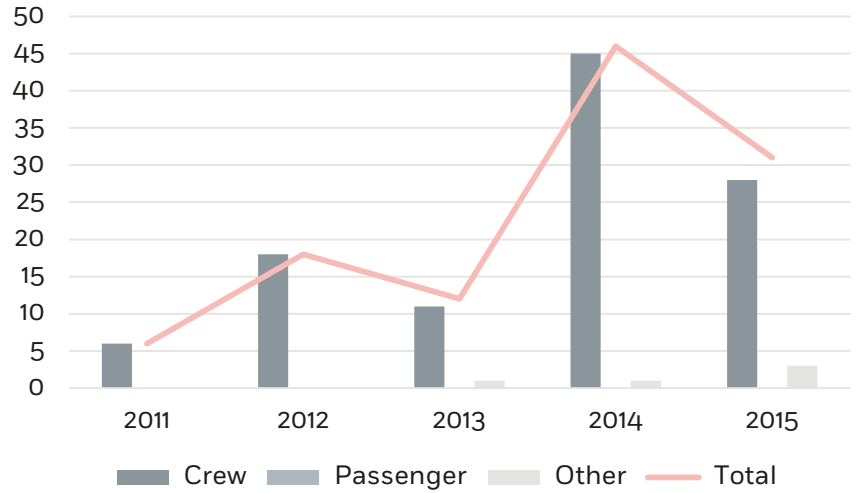
The number of fishing vessels lost has continuously increased since 2012.

Among the 99 fishing vessels that sank in 2011-2015, 60 were trawlers.

4.5.2 CONSEQUENCES TO PERSONS

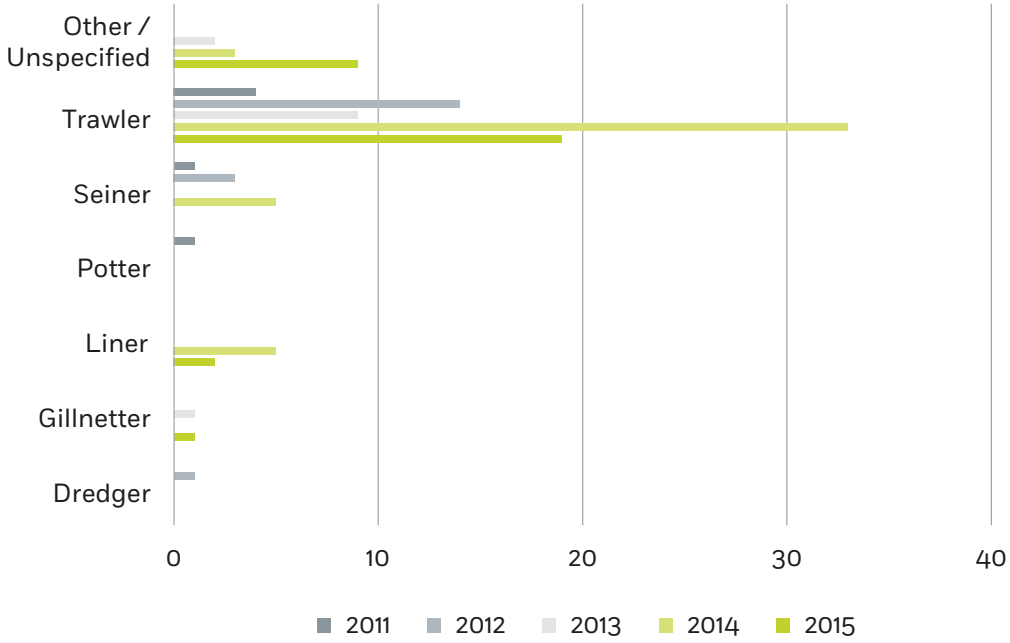
4 5.2.1 FATALITIES

Figure 80: Number of fatalities



After a significant increase from 2011 to 2014, a 33% decrease of fatalities was noted in 2015.

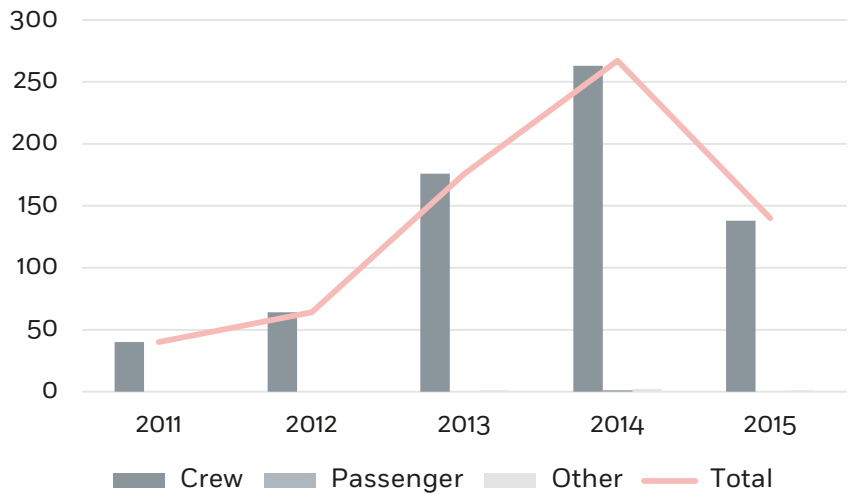
Figure 81: Distribution of fatalities per fishing vessel type



Most fatalities occurred on board trawlers.

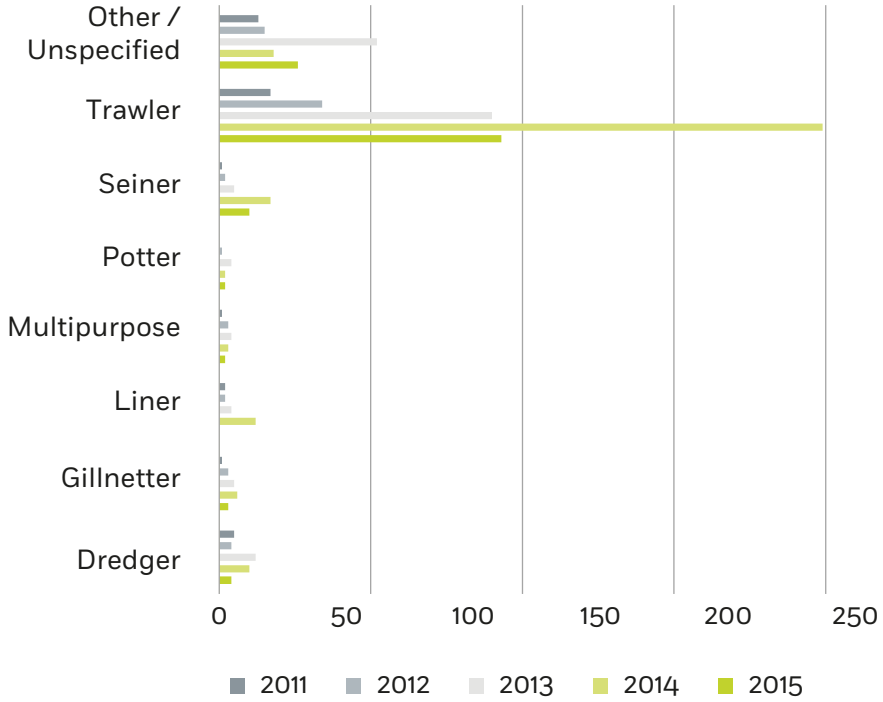
4.5.2.2 INJURIES

Figure 82: Number of injuries



Similar to the reduction of fatalities on board fishing vessels, the number of injuries decreased by 48% in 2015.

Figure 83: Distribution of injuries per fishing vessel type



The reduction of injuries in 2015 has taken place across all fishing vessel types.

CHAPTER 5

PASSENGER SHIPS

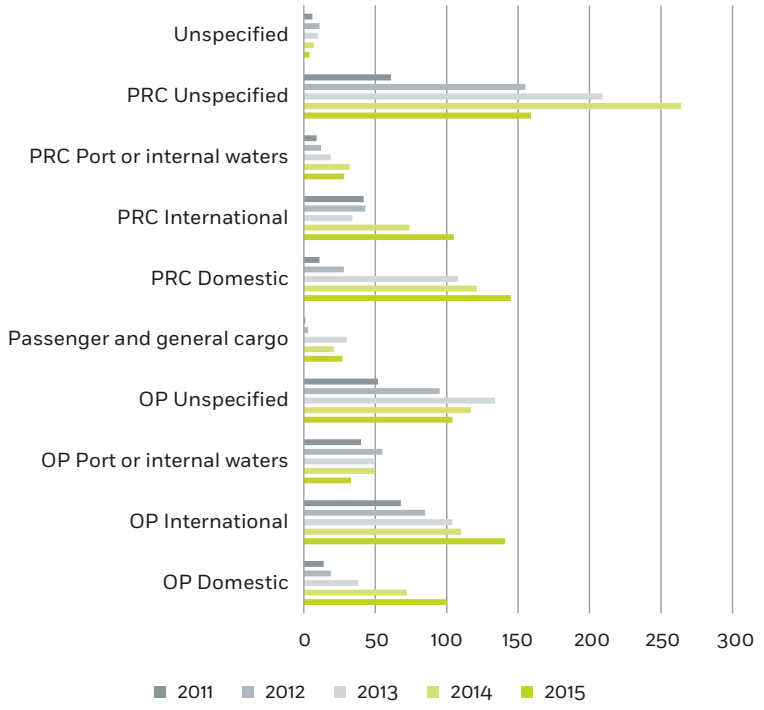
Fire, NISOS MYKONOS, ship damaged, 14/06/2013

From 2011 to 2015, 3259 Passenger ships were involved in 3182 marine casualties and incidents.

The Directive does not apply to marine casualties and incidents involving only inland waterway passenger ships operating in inland waterways. Such ships are considered within the scope of the Directive only when they are involved in an occurrence together with a ship which is covered by the Directive.

5.1 DETAILED DISTRIBUTION

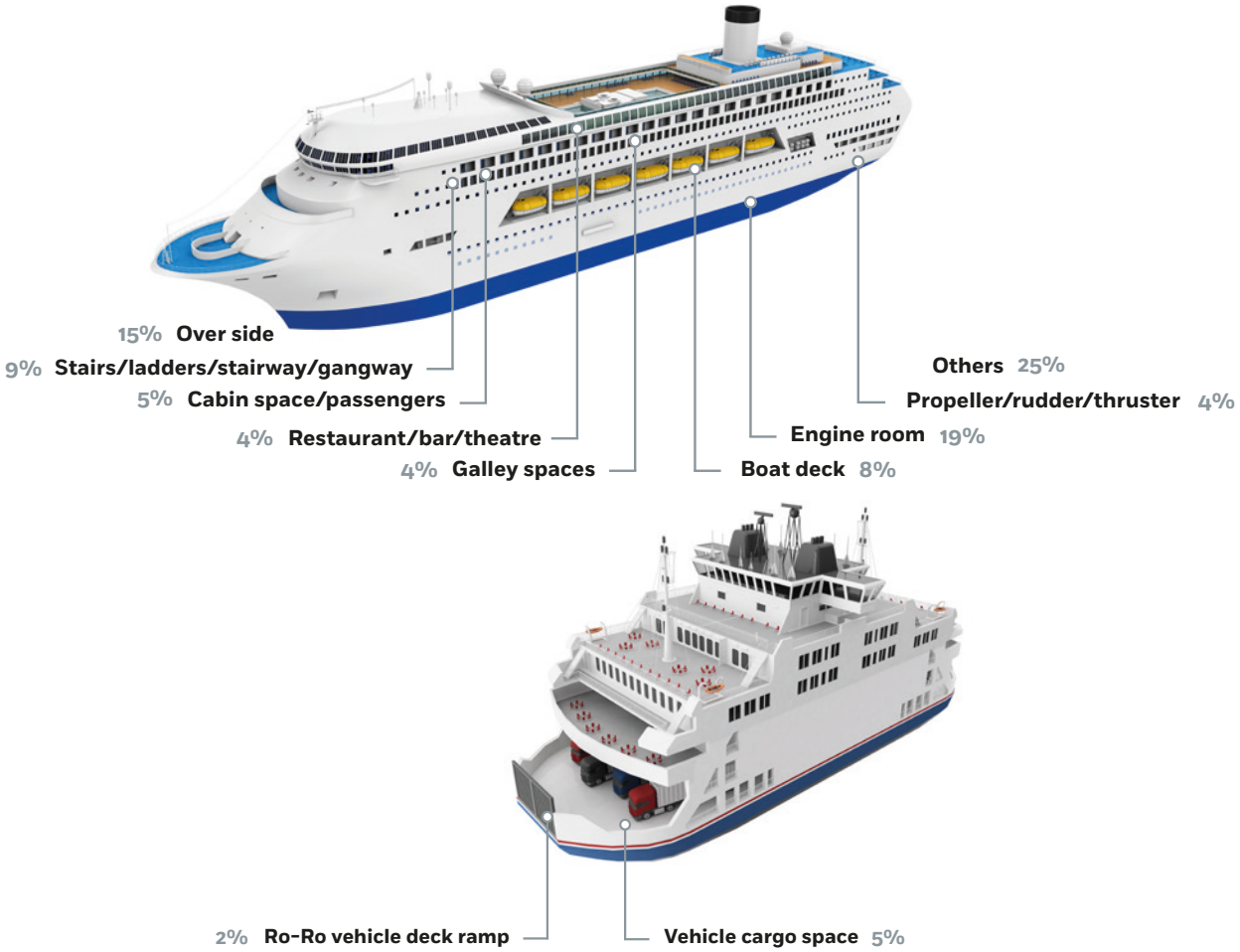
Figure 84: Distribution of passenger ship types involved



OP: Only passenger ; PRC: Passenger and ro-ro cargo

Among the Passenger ships involved, the most quoted subcategory was ships carrying only Passengers on International voyage (16%), followed by "Passenger and Ro-Ro cargo" ships (also known as "Ferries") during domestic voyages (13%). After 4 years of increasing casualties, a limited decrease was noted in 2015 (868 in 2014 and 846 in 2015).

Figure 85: Main places of casualties involving passenger ships 2011-2015

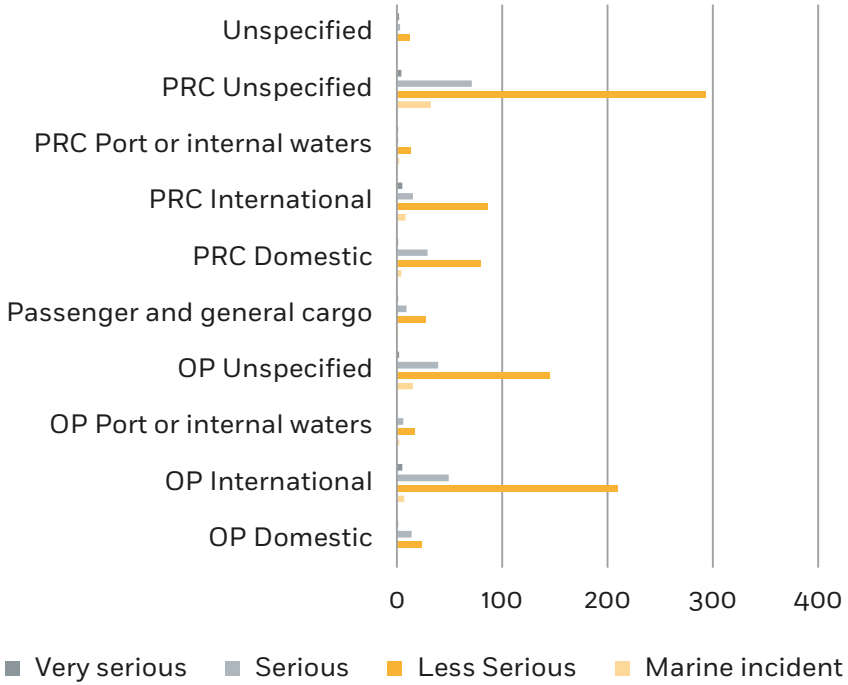


The place on board was specified in 2602 cases. The most quoted location of accidents was the Engine Room (around 500 cases), followed by Over Side (around 400 cases).

5.2 NATURE OF MARINE CASUALTIES AND INCIDENTS

5.2.1 CASUALTY WITH A SHIP

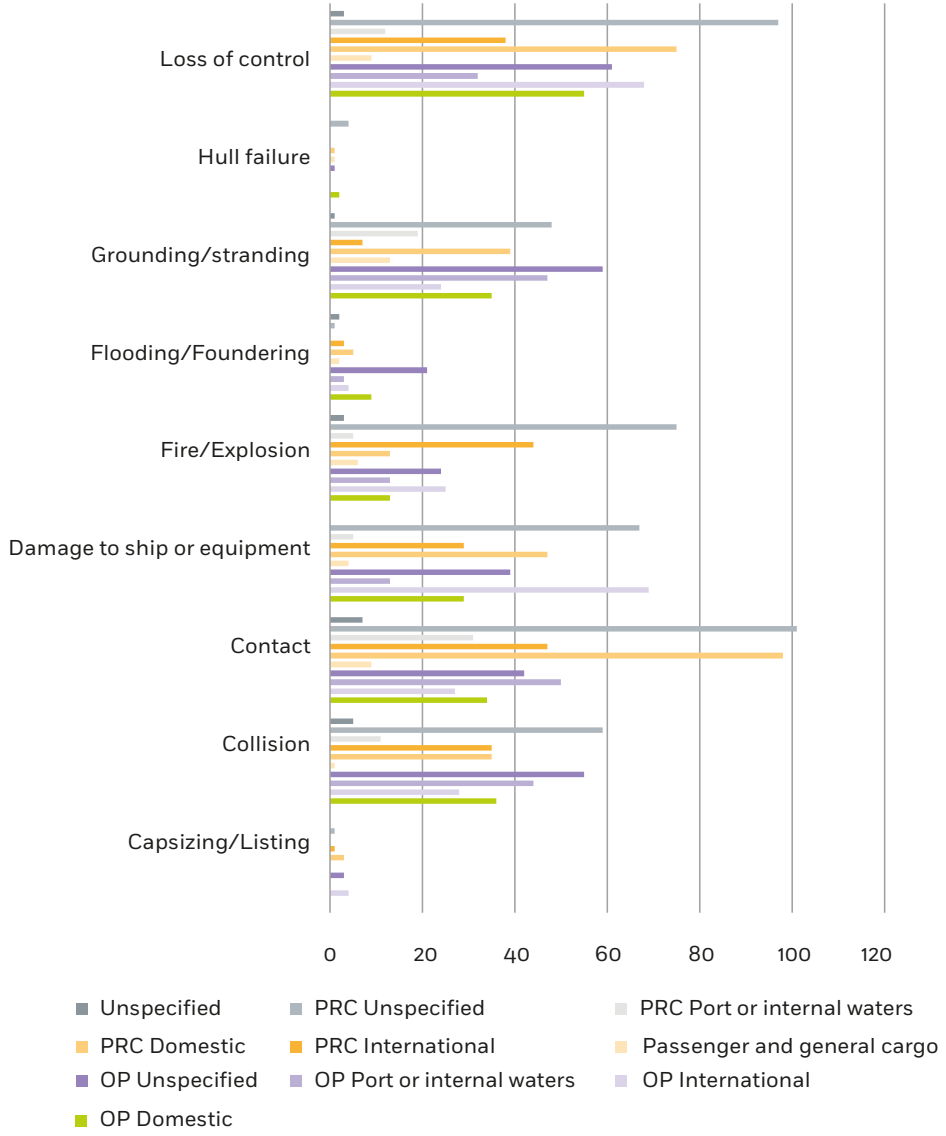
Figure 86: Distribution of severities by passenger ship type 2011-2015



OP: Only passenger ; PRC: Passenger and ro-ro cargo

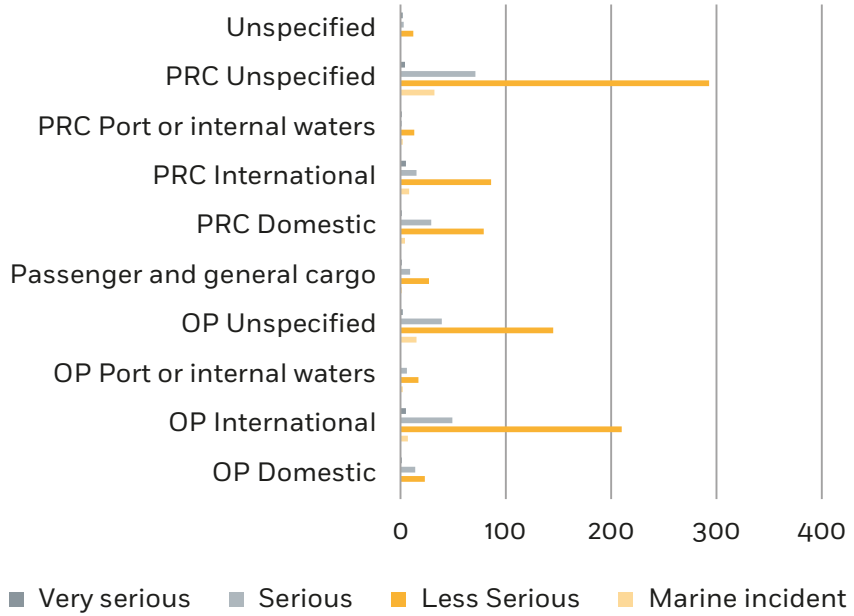
For passenger ships, the number of very serious casualties with a ship, as a proportion of all reported casualties and incidents involving passenger ships, is lower (1.3%) than the average for all ship types (3%).

Figure 87: Distribution of casualty events per passenger ship type 2011-2015



5.2.2 OCCUPATIONAL ACCIDENTS

Figure 88: Severity of occupational accidents per passenger ship type 2011-2015

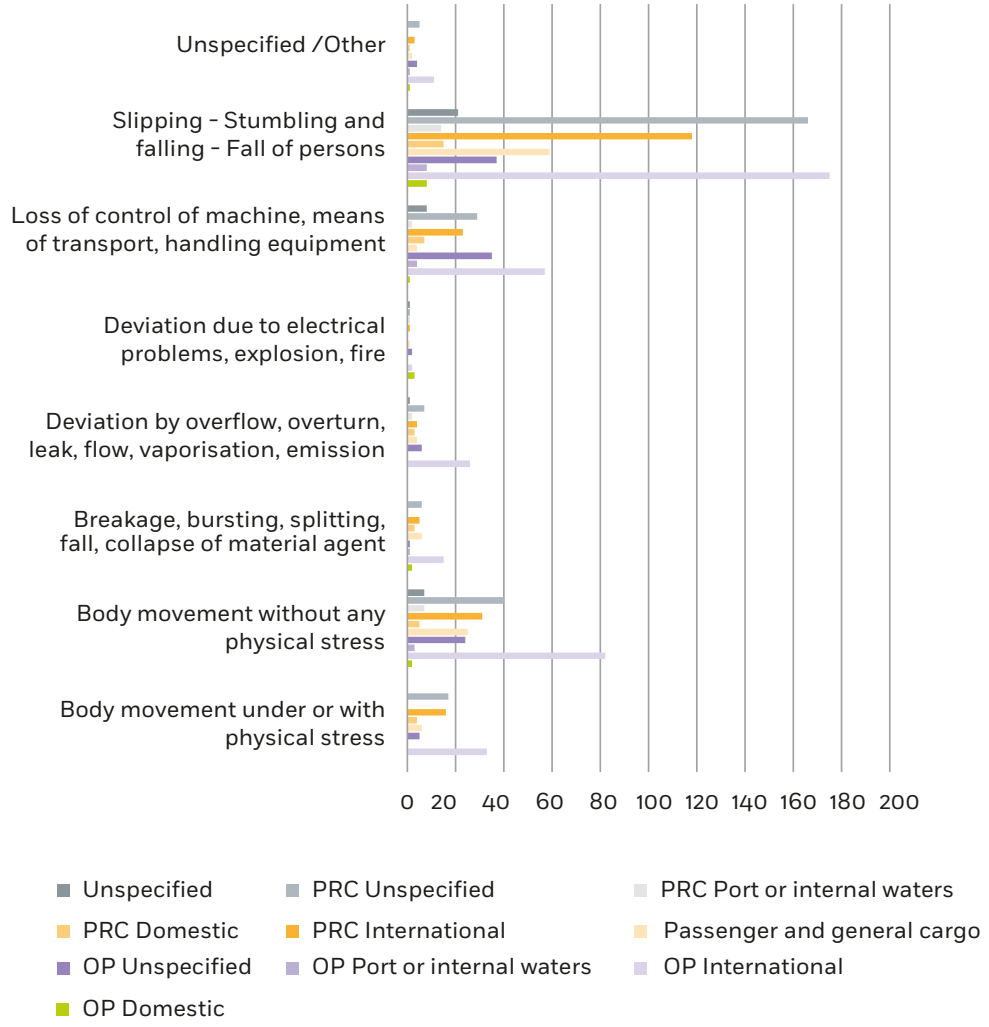


OP: Only passenger
PRC: Passenger and ro-ro cargo

Occupational accidents happened mainly on board ships carrying only passengers on international voyages or on board ships carrying passengers and roro cargo.

The number of very serious occupational accidents is much lower (1.8%) than the general average (5%).

Figure 89: Distribution of deviations per passenger ship type 2011-2015



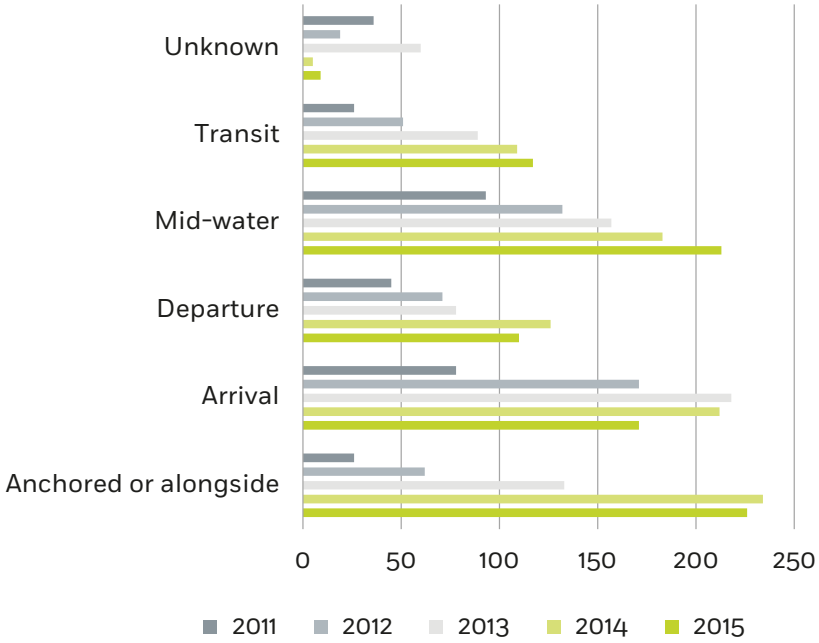
Slipping-Stumbling and falls of persons is the most significant deviation on board passenger ships.

5.3 LOCATION OF MARINE CASUALTIES AND INCIDENTS

This section provides information about the location of the ships when marine casualties or incidents occurred

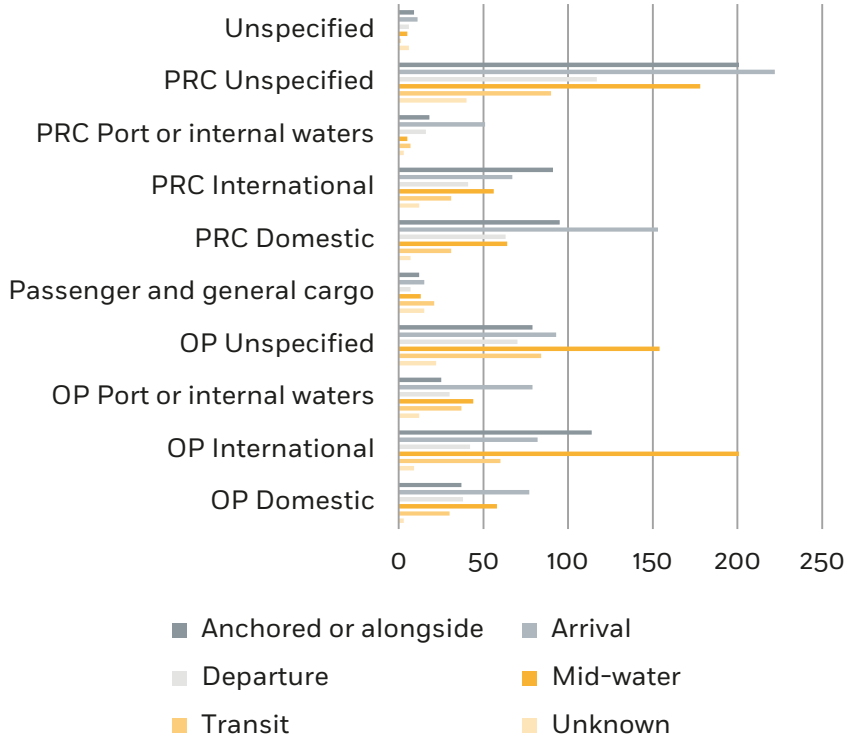
5.3.1 VOYAGE SEGMENTS

Figure 90: Distribution by voyage segment



Despite a reduction of the number of marine casualties and incidents during the past 2 years, the arrival phase of a voyage has been in general the least safe one. The continuous increase of casualties to passenger ships during the mid-water phase is also noted.

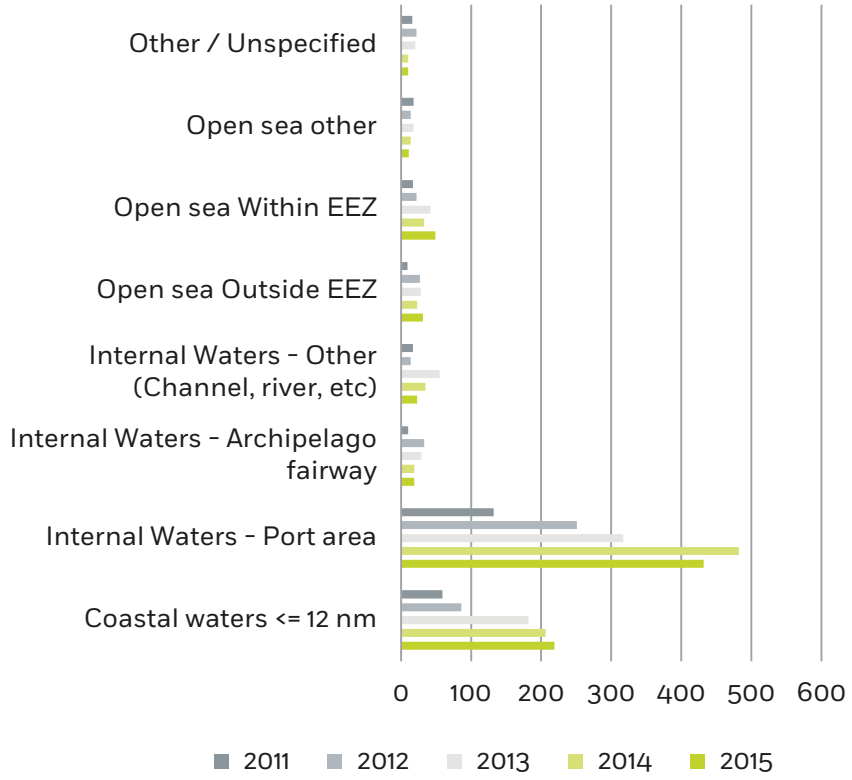
Figure 91: Distribution by voyage segment per passenger ship type 2011-2015



Apart from passenger and ro-ro cargo on international voyages, the predominance of casualties during the mid-water and arrival phases is clear.

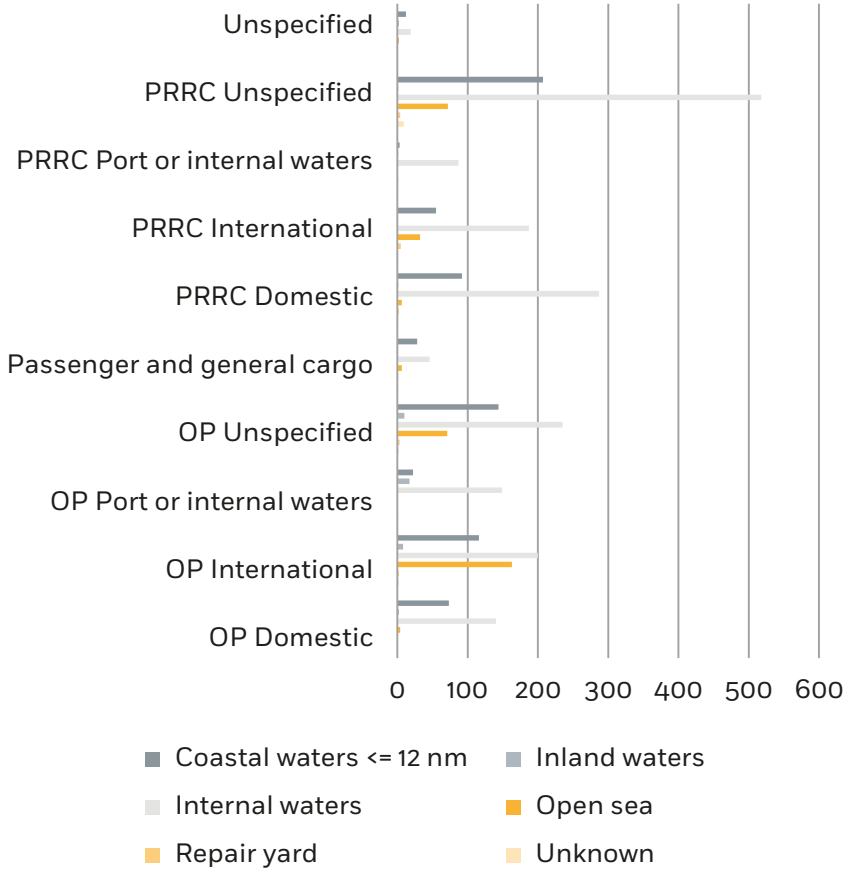
5.3.2 LOCATION

Figure 92: Distribution by location of the marine casualties and incidents



53% of the casualties took place in internal waters and port areas, followed by 25% in coastal waters.

Figure 93: Distribution by location per passenger ship type 2011-2015



For all types of passenger ships, the majority of casualties took place in internal waters.

5.3.3 REGIONAL DISTRIBUTION

Figure 94: Regional distribution of marine casualties and incidents 2011-2015

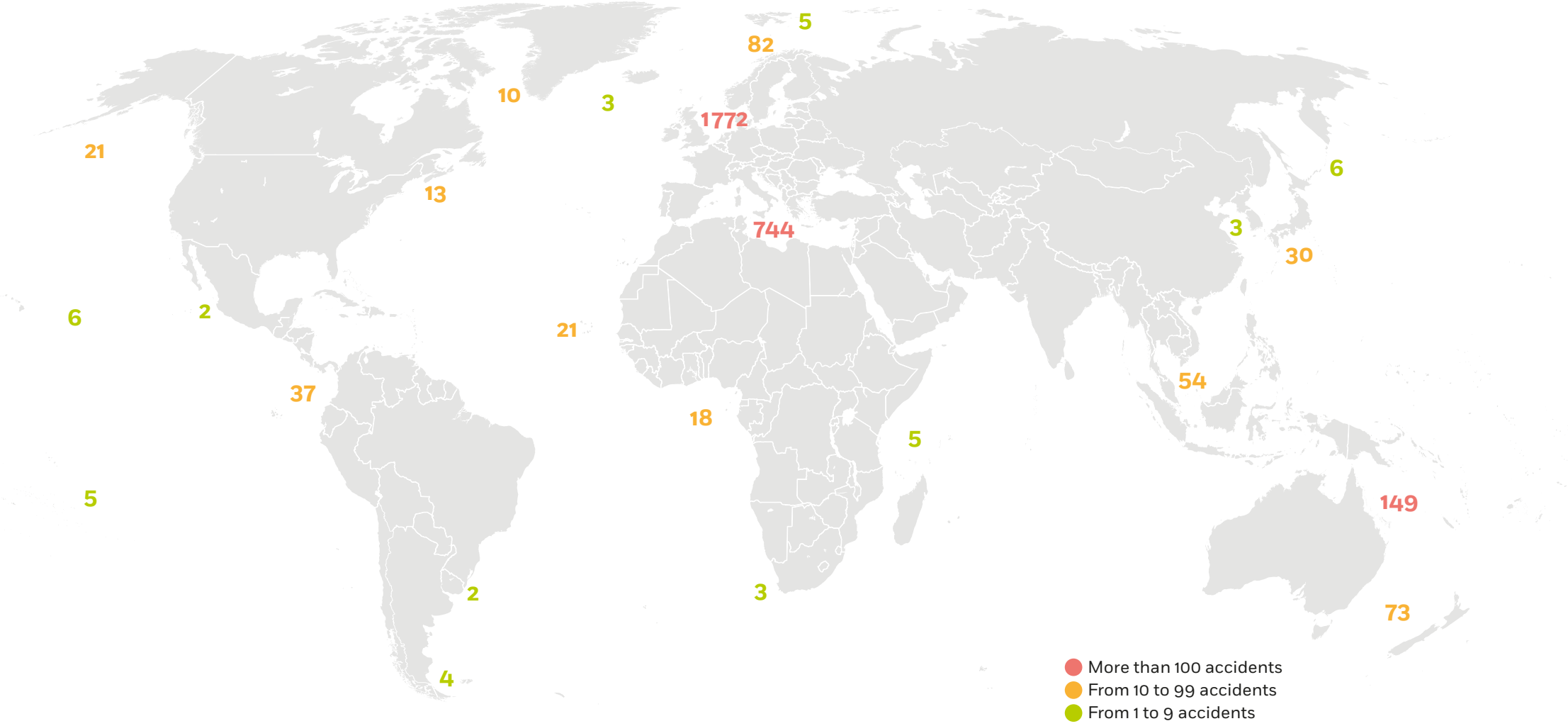
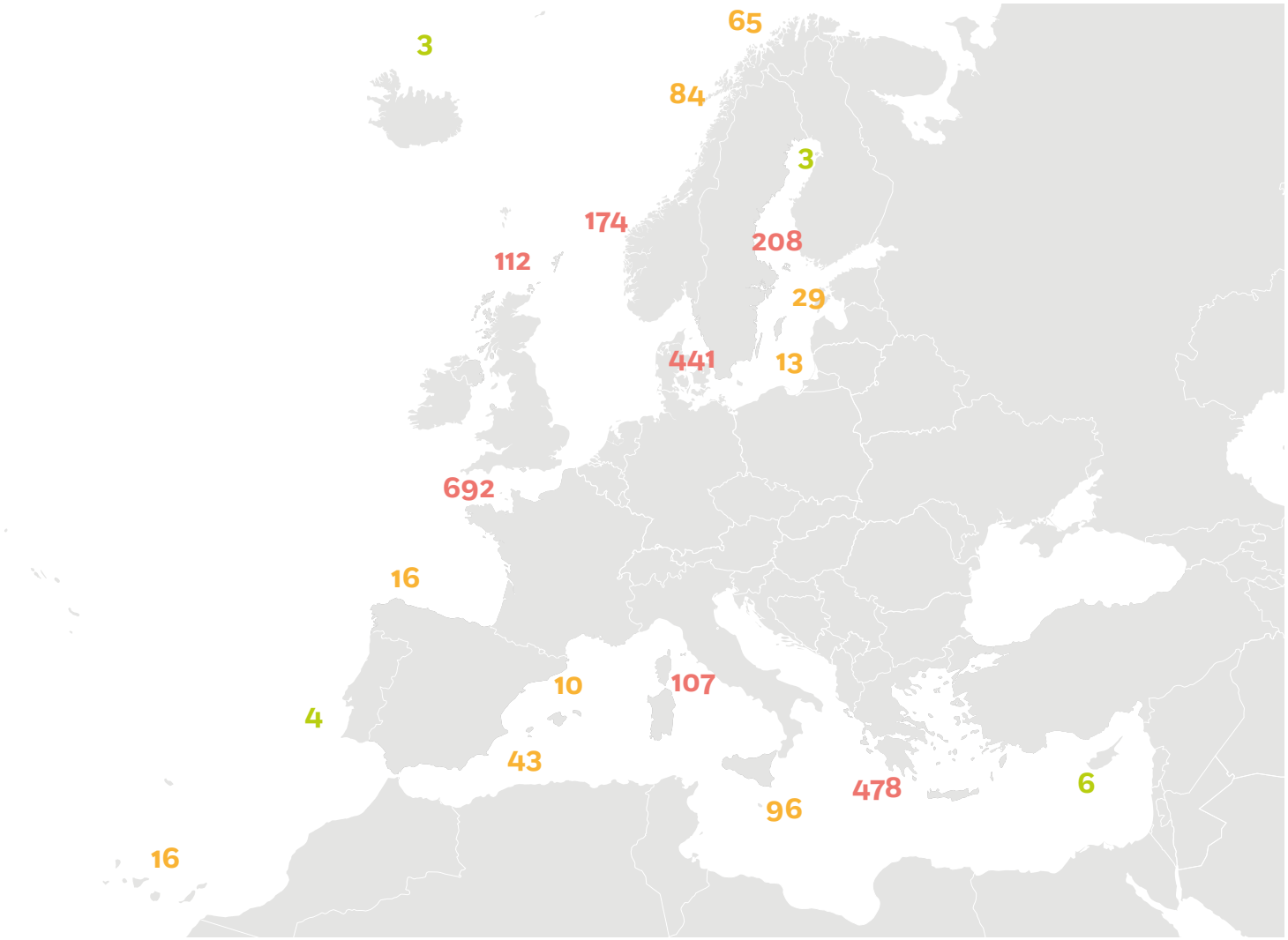
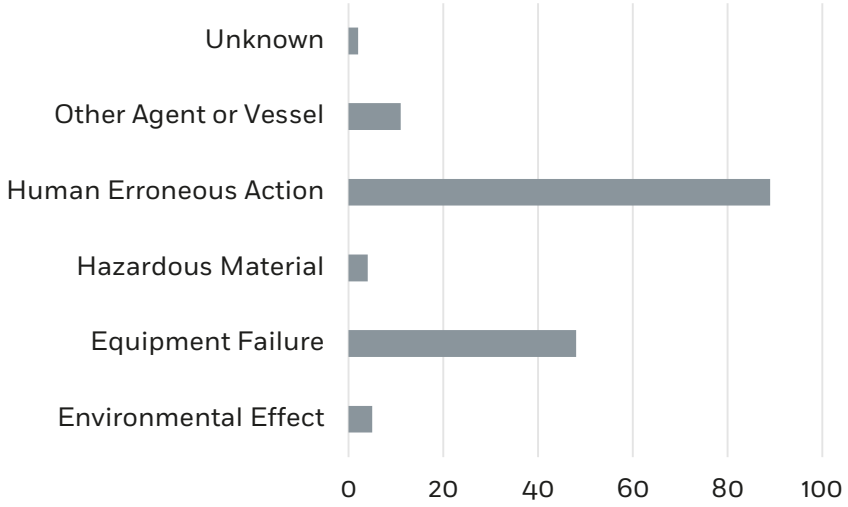


Figure 95: Distribution of marine casualties and incidents within the territorial sea and internal waters of EU States 2011-2015



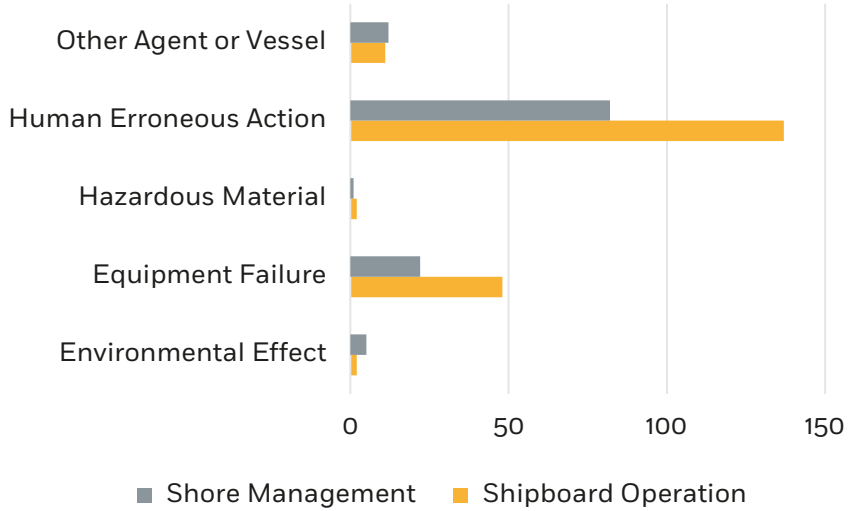
5.4 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

Figure 96: Accidental events 2011-2015



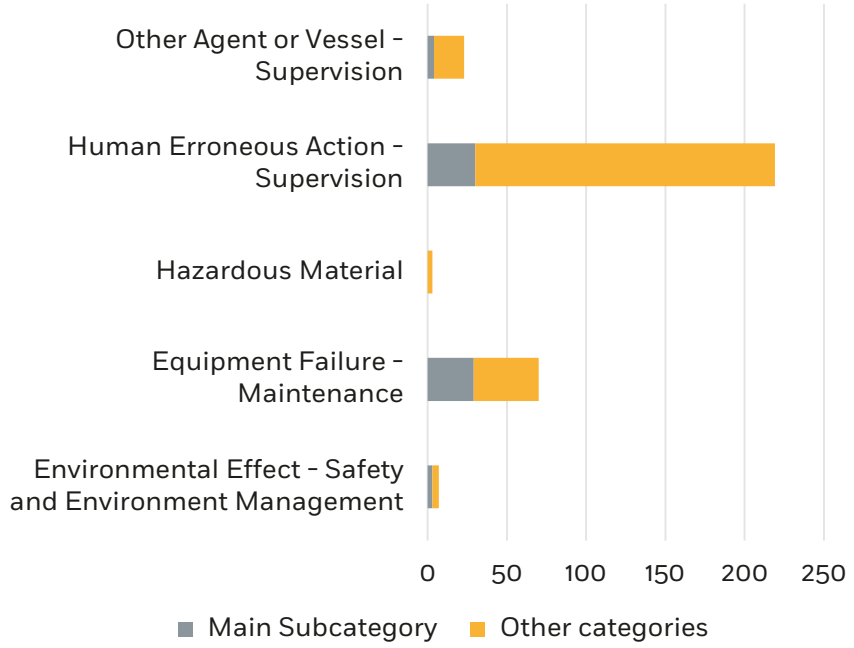
From a total of 159 accidental events analysed during the investigations 56% were attributed to a Human Erroneous Action.

Figure 97: Relationship between Accidental Events and the main Contributing Factors 2011-2015



Shipboard operations represented the main contributing factor with 62% of the total.

Figure 98: Groups of Contributing Factors 2011-2015

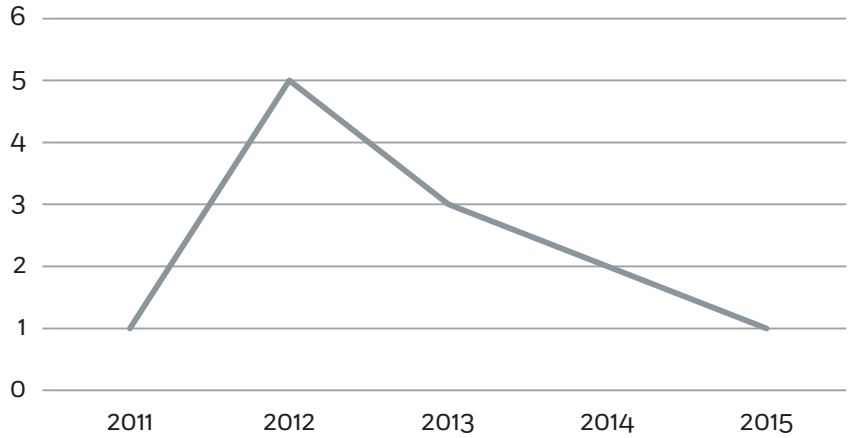


This figure provides the most quoted contributing factor per category of accidental event. “Supervision” was quoted as the most significant contributing factor when the accidental event was “Human Erroneous Action”.

5.5 CONSEQUENCES

5.5.1 CONSEQUENCES TO SHIPS

Figure 99: Passenger ships lost



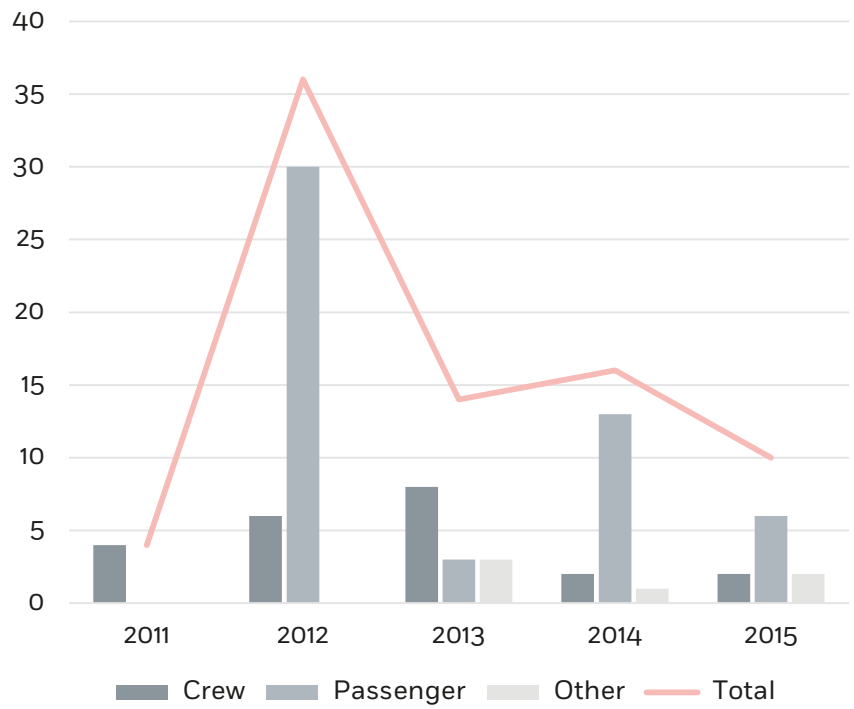
Among the 12 passenger ships that sank, 7 were passenger ships “carrying only passengers”.

The number of passenger ships lost has been reducing since 2012.

5.5.2 CONSEQUENCES TO PERSONS

5.5.2.1 FATALITIES

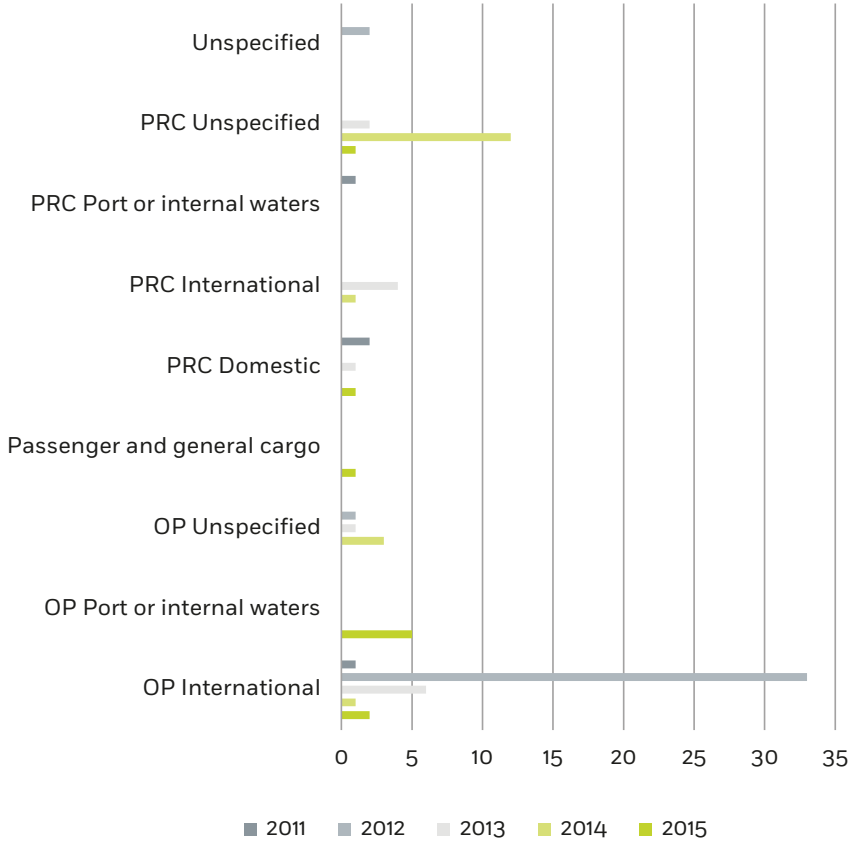
Figure 100: Number of fatalities



Since the year 2012, the number of fatalities has regularly decreased.

65% of the victims were passengers.

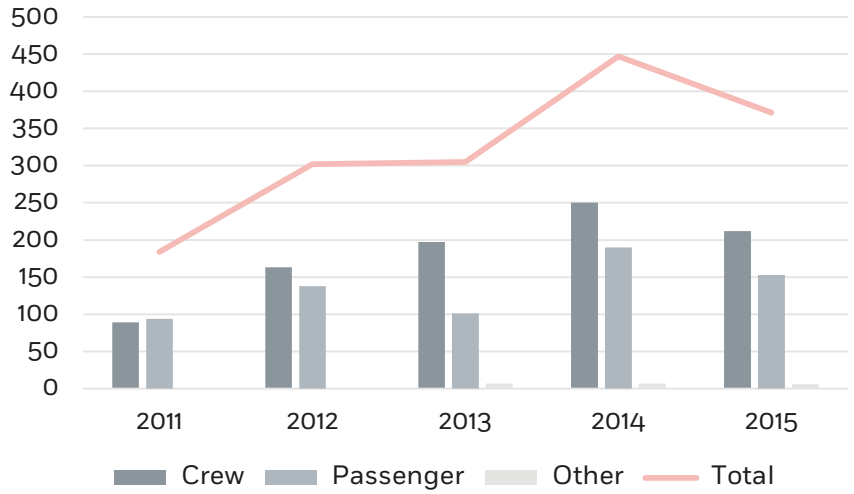
Figure 101: Distribution of fatalities per passenger ship type



Besides the 2 major events, Costa Concordia in 2012 and Norman Atlantic in 2014, fatalities occurred evenly across the passenger ship types.

5.5.2.2 INJURIES

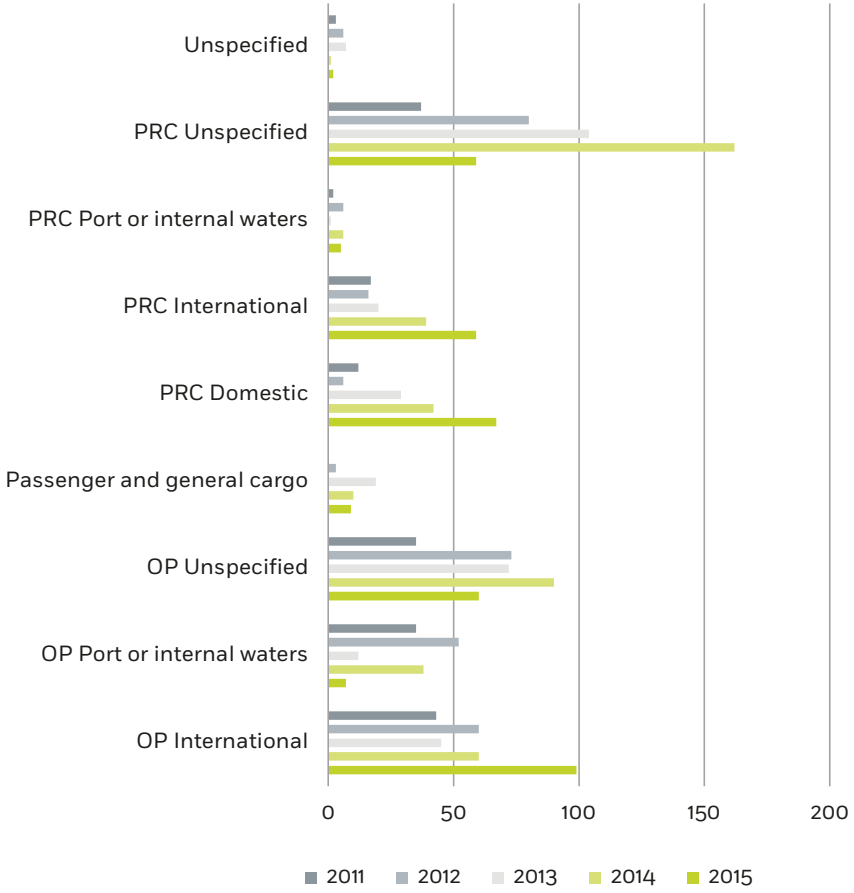
Figure 102: Number of injuries



After 4 years of continuous increase of injuries, the number of victims decreased by 17% in 2015.

Injuries happened mainly to seafarers (57%).

Figure 103: Distribution of injuries per passenger ship type



27% of the injuries took place on board passenger and roro cargo ships.

The reduction noted for 2015 has not been equally distributed between the passenger ship types, reducing on passenger and ro-ro cargo ships, but increasing on ships carrying only passengers on international voyages.

CHAPTER 6

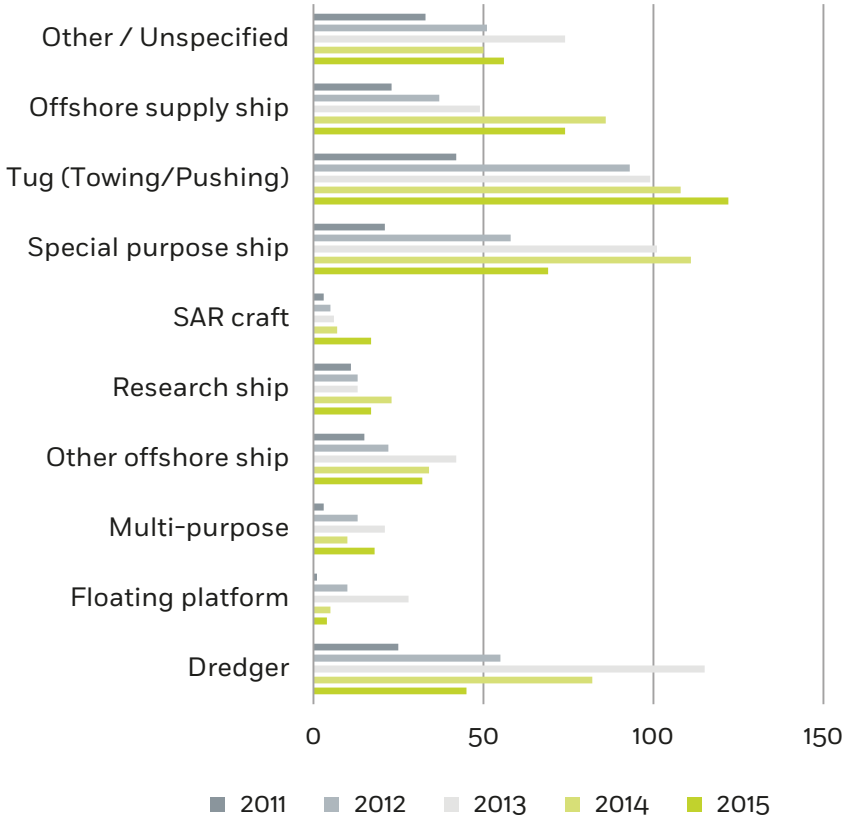
SERVICE SHIPS

Damage to ship or equipment, CAROL ANNE, 1 life lost, 30/04/2015

The Directive does not apply to marine casualties and incidents involving only ships of war and troop ships and other ships owned or operated by a Member State and used only on government non-commercial service and fixed offshore drilling units. Such ships are considered within the scope of the Directive only when they are involved in an occurrence together with a ship which is covered by the Directive.

6.1 DETAILED DISTRIBUTION

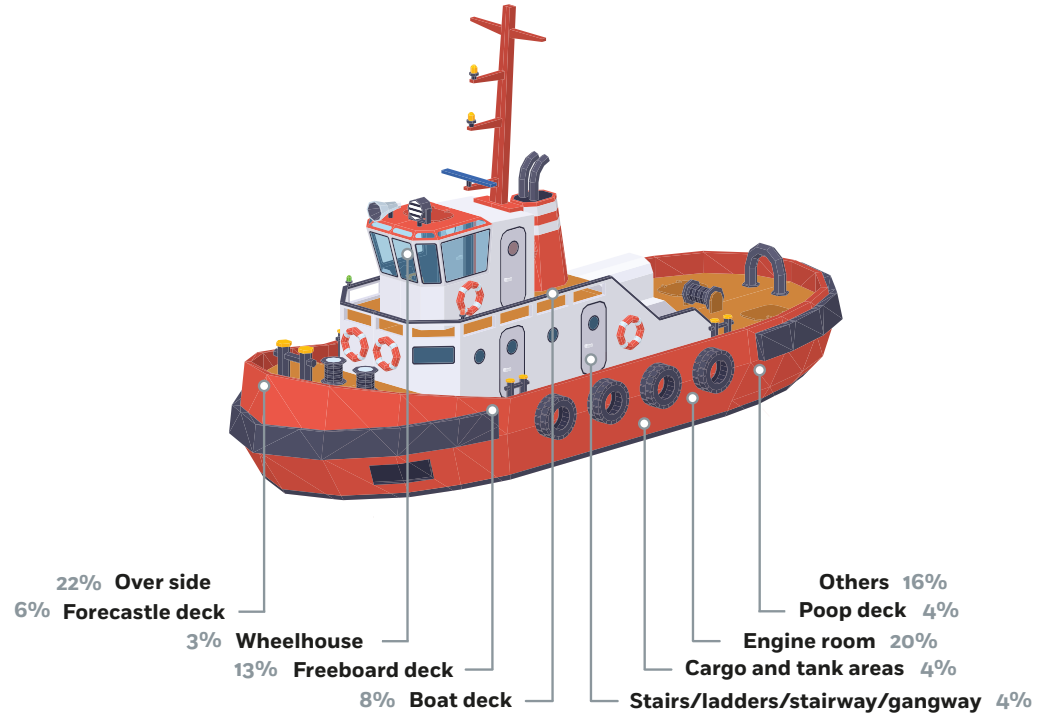
Figure 104: Distribution of service ship types involved



The main subcategory was represented by Tugs (23%), followed by Special Purpose ships (17%) and Dredgers (16% cases).

The number of service ships involved generally decreased in 2015, except for tugs, where the number has increased since 2011.

Figure 105: Main places of casualties involving service ships 2011-2015

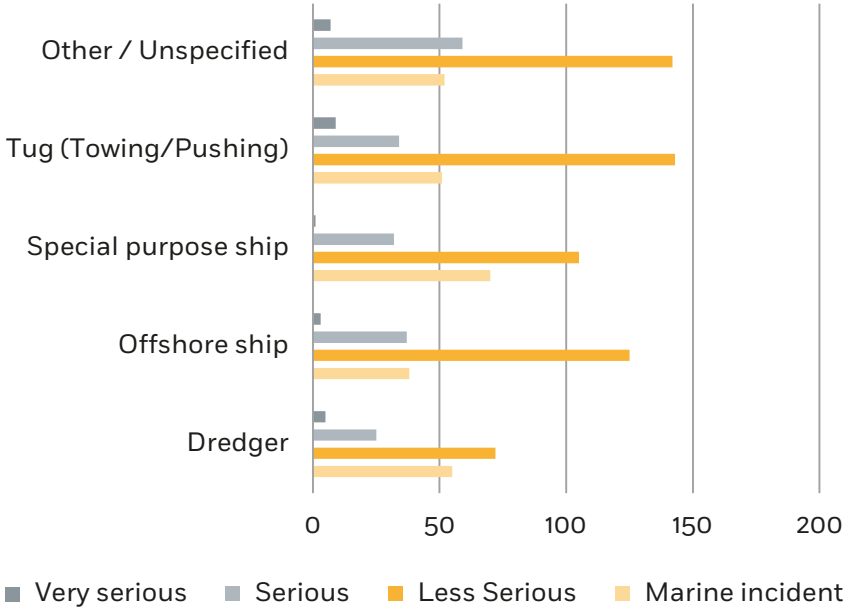


Places were specified in 1433 cases. The main location of casualties was Over side (319 cases), followed by Engine Room (285 cases).

6.2 NATURE OF MARINE CASUALTIES AND INCIDENTS

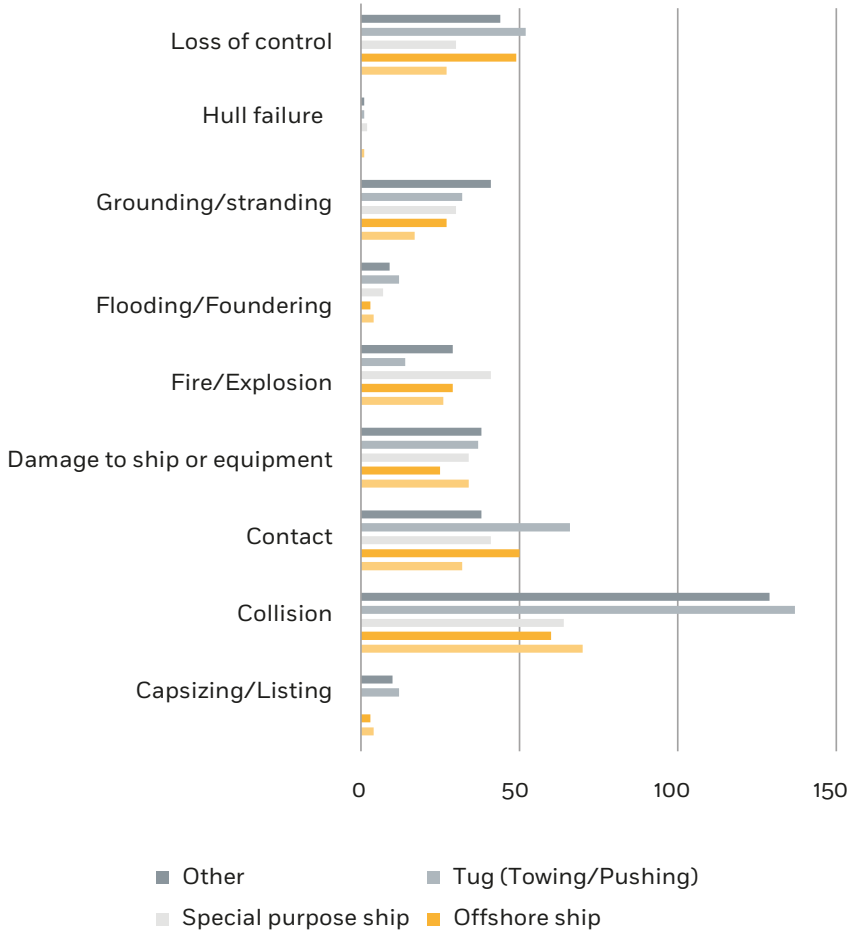
6.2.1 CASUALTY WITH A SHIP

Figure 106: Distribution of severity by service ship type 2011-2015



For service ships, the number of very serious casualties with a ship, as a proportion of all reported casualties and incidents involving service ships, is lower (2.3%) than the average for all ship types (3.0%).

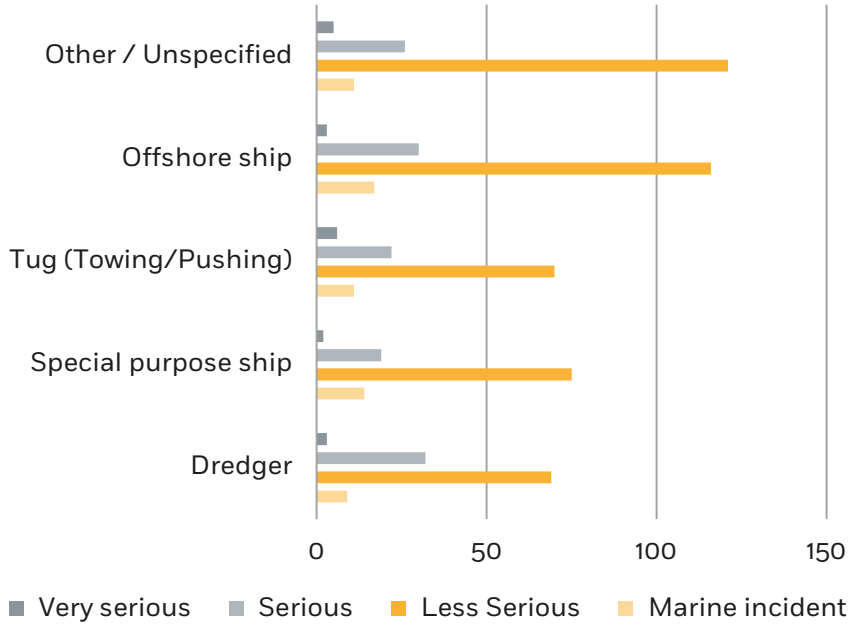
Figure 107: Distribution of casualty events per service ship type 2011-2015



Collision is the main casualty event across all the service ship types.

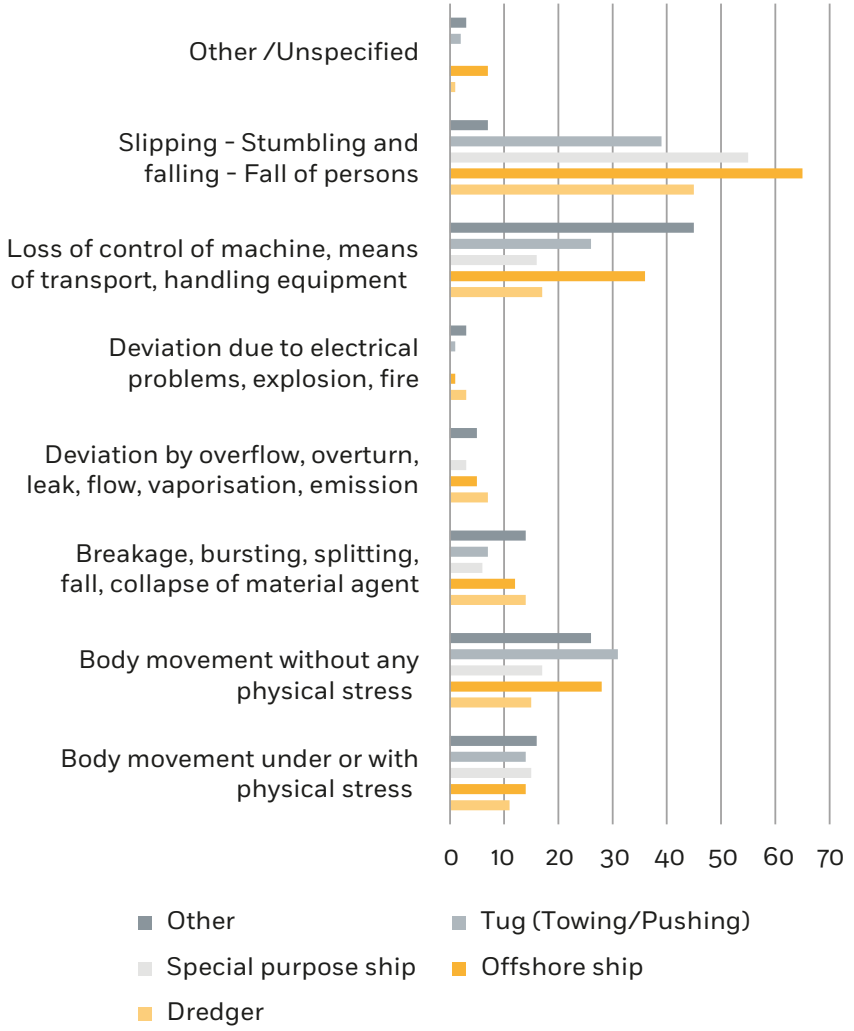
6.2.2 OCCUPATIONAL ACCIDENT

Figure 108: Severity of occupational accidents per service ship type 2011-2015



Severity of occupational accidents on board service ships is much lower (2.8%) than the average for all ship types (5%).

Figure 109: Distribution of deviations per service ship type 2011-2015



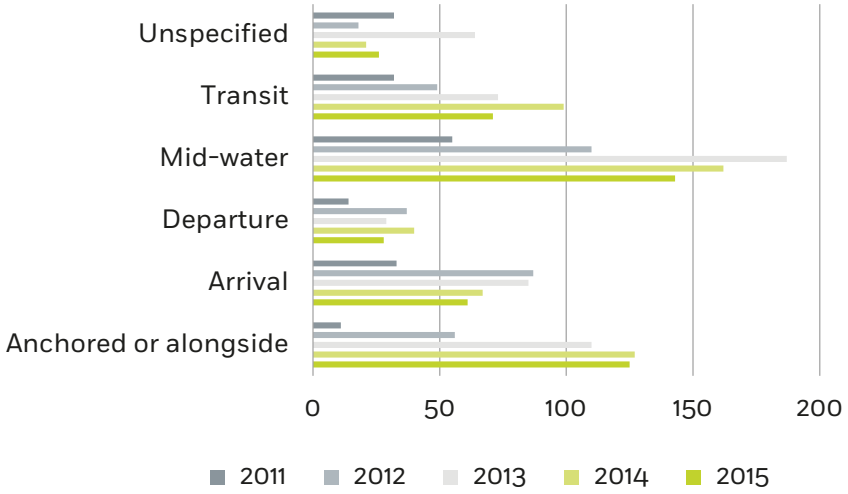
Slipping-Stumbling and falls of persons constitute the most significant deviation, generally on board all service ships.

6.3 LOCATION OF MARINE CASUALTIES AND INCIDENTS

This section provides information about the location of the ships when marine casualties or incidents occurred.

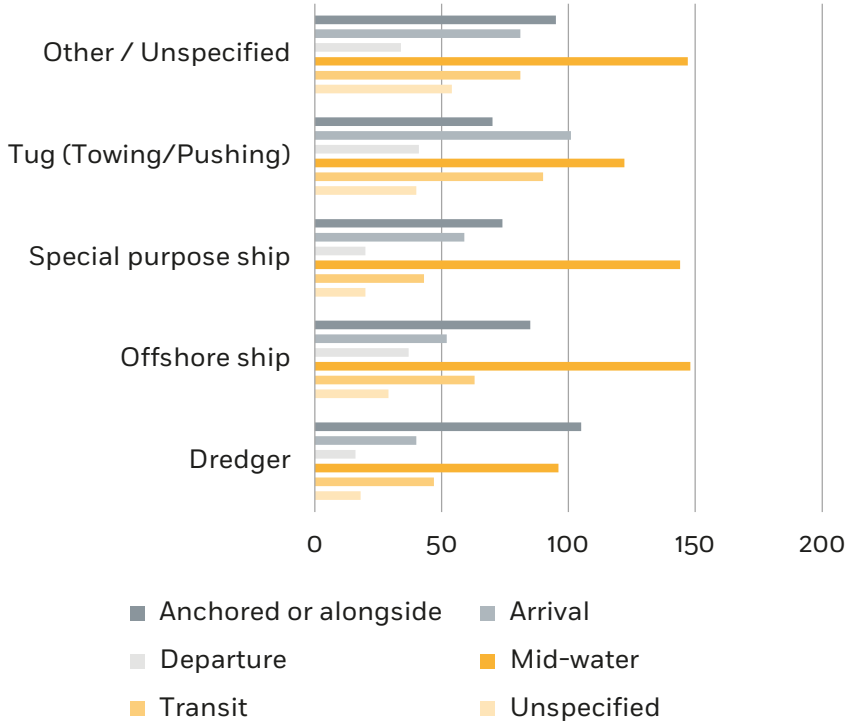
6.3.1 VOYAGE SEGMENTS

Figure 110: Distribution by voyage segment



Despite a significant decrease of casualties to service ships in the 2013, the mid-water phase has been the least safe voyage phase.

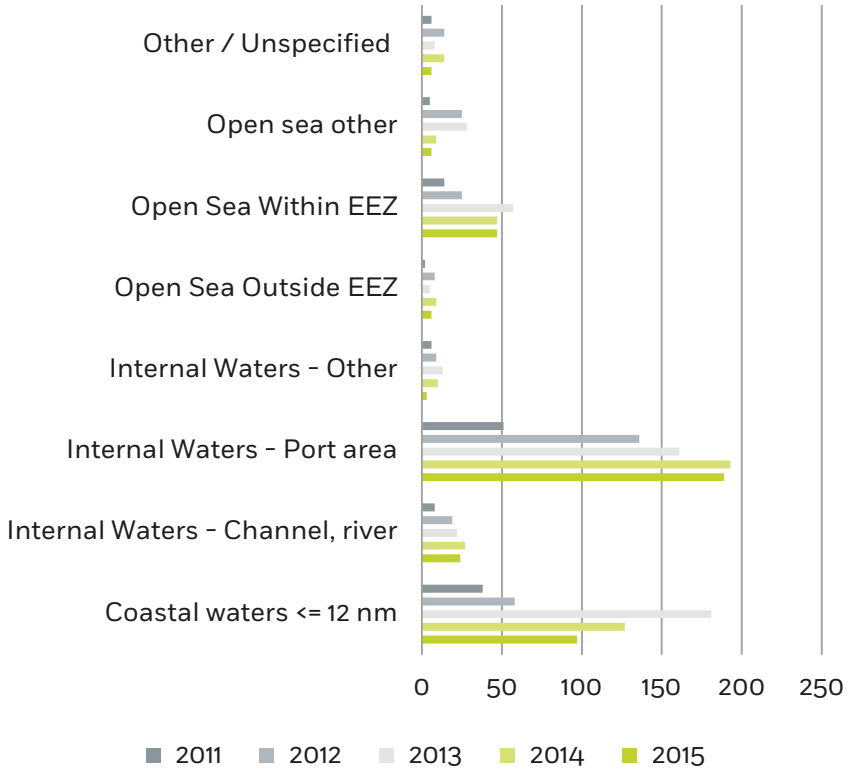
Figure 111: Distribution by voyage segment per service ship type 2011-2015



Apart from the dredgers that had casualties mainly when anchored or alongside, all other types of service ships had casualties during the mid-water phase of the voyage.

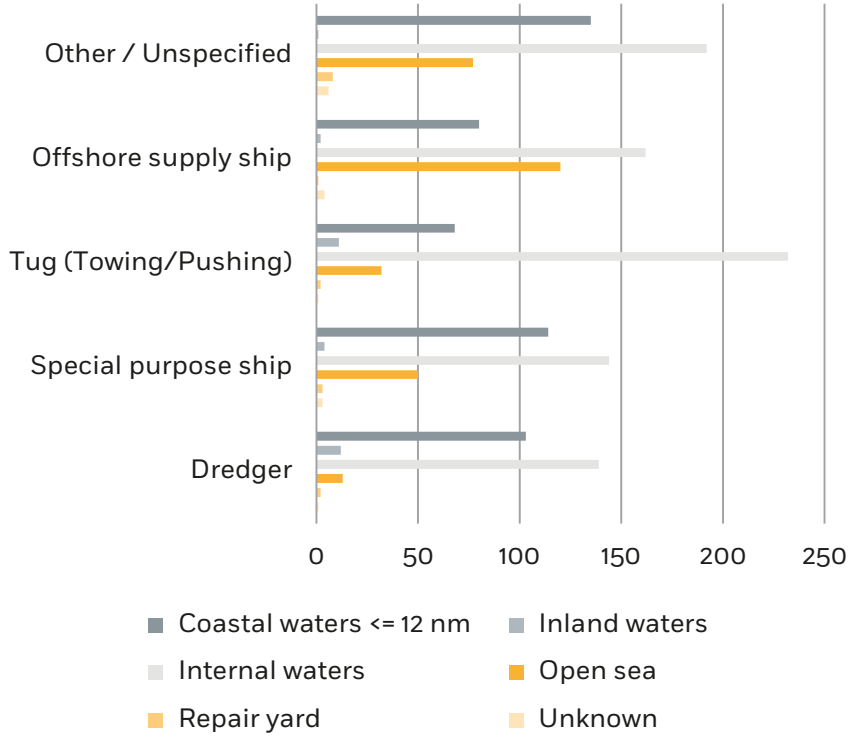
6 3.2 LOCATION

Figure 112: Distribution by location of the marine casualties and incidents



43% of the casualties took place in internal waters and port areas, followed by 29% in coastal waters.

Figure 113: Distribution by location of the marine casualties and incidents per service ship type 2011-2015



Internal waters and port areas were the main location of accidents whatever the type of service ship.

6.3.3 REGIONAL DISTRIBUTION

Figure 114: Global distribution of marine casualties and incidents 2011-2015

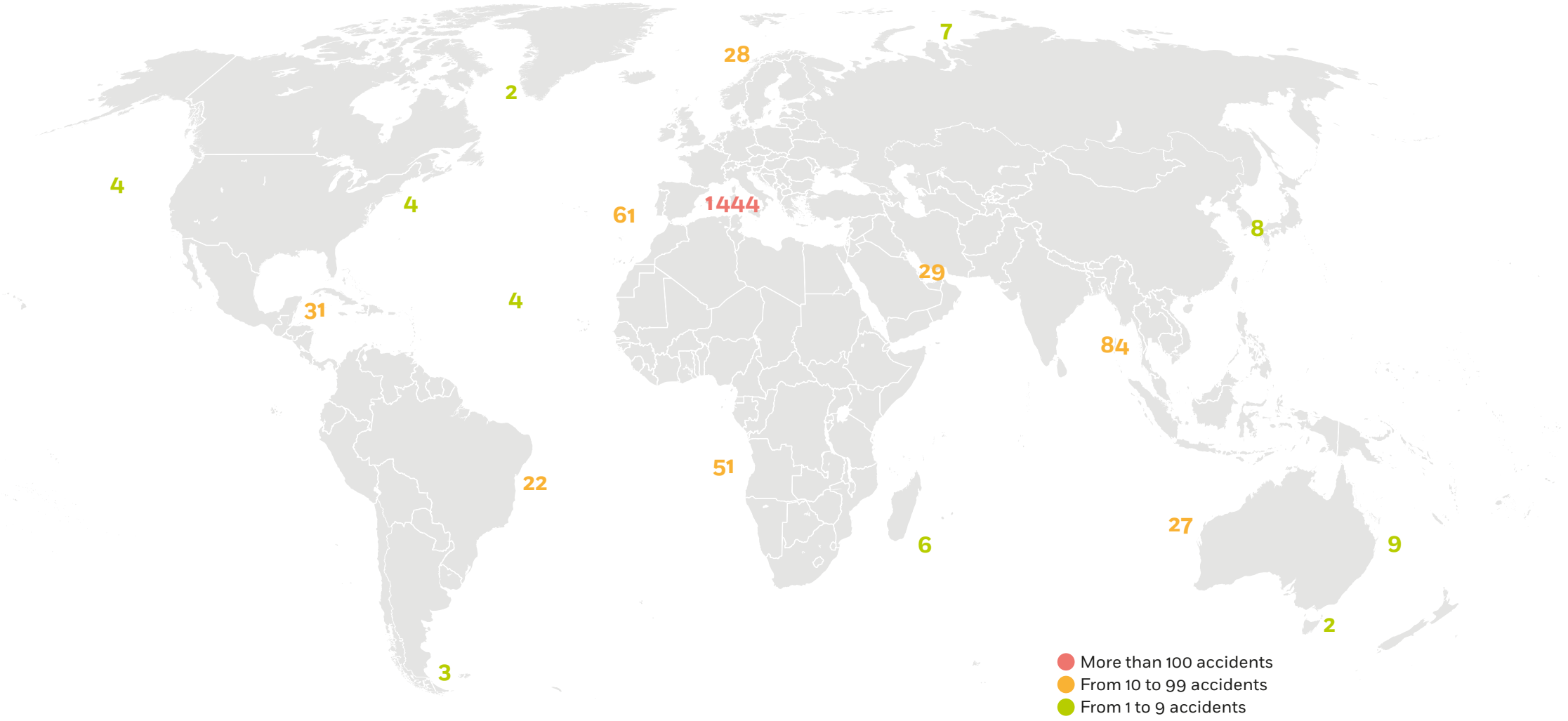
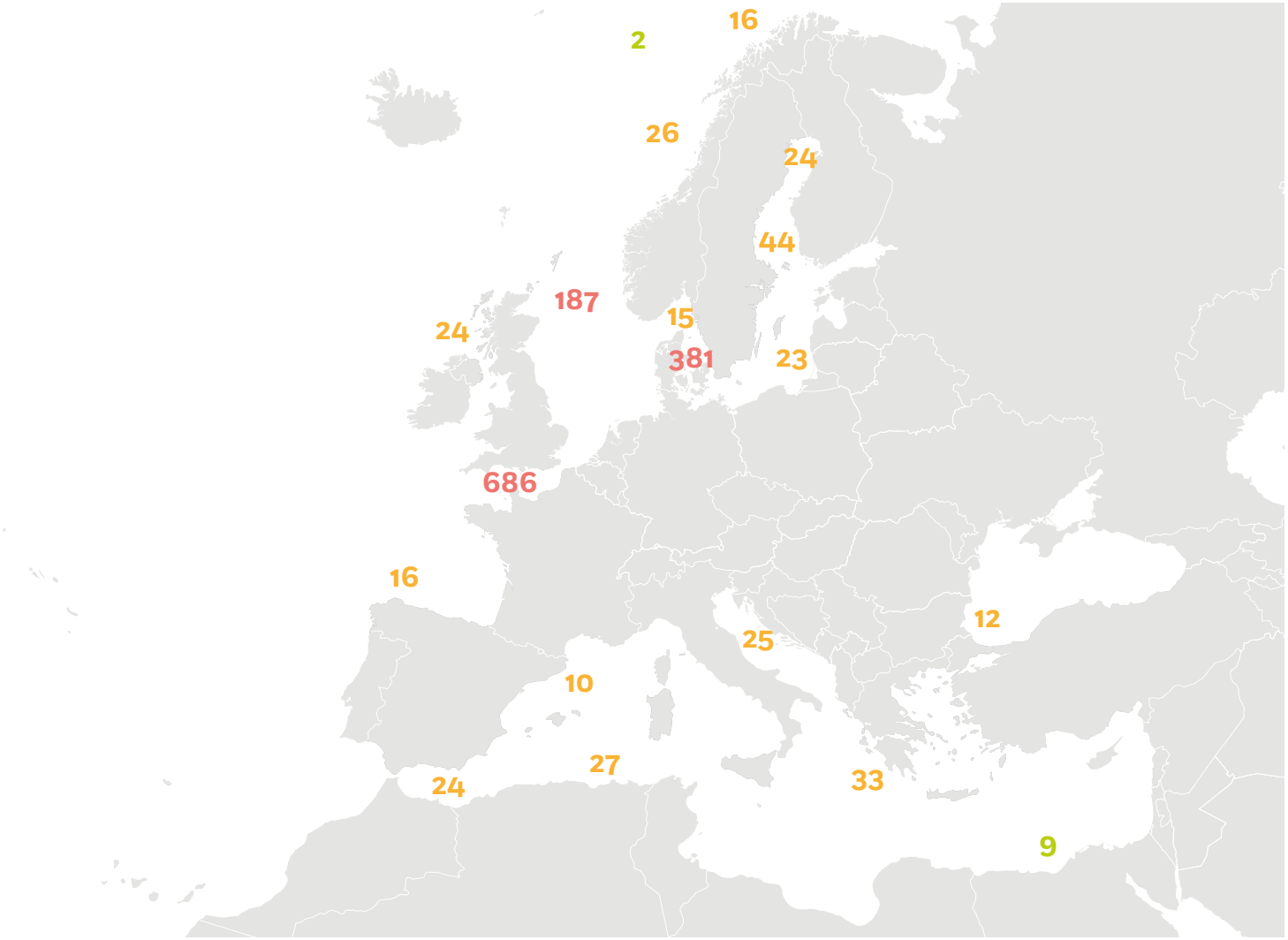
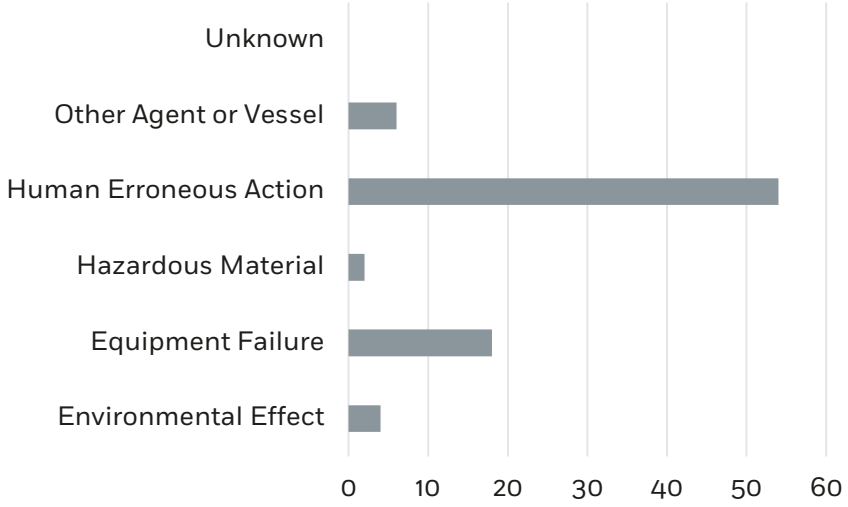


Figure 115: Distribution of marine casualties and incidents within the territorial sea and internal waters of EU States 2011-2015



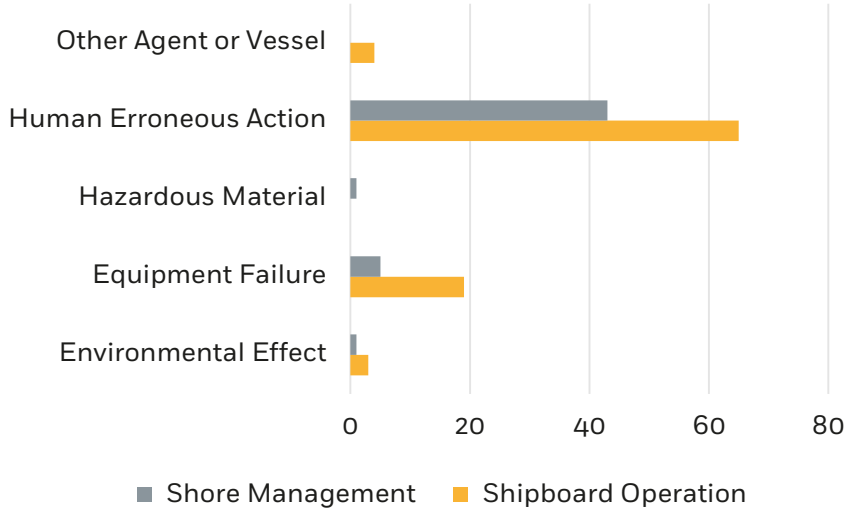
6.4 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

Figure 116: Accidental Events 2011-2015



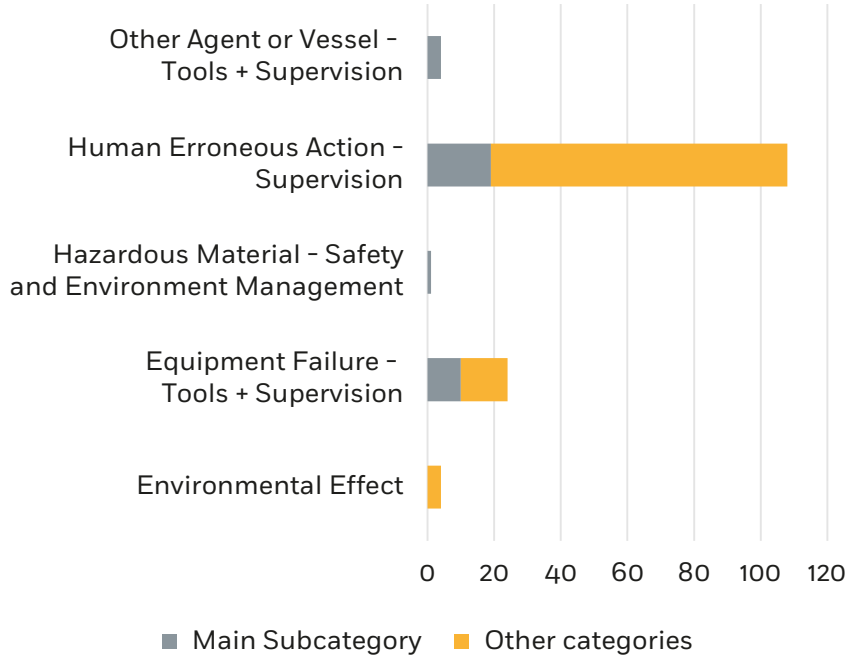
From a total of 84 accidental events analysed during the investigations 64% were attributed to a Human Erroneous Action.

Figure 117: Relationship between Accidental Events and the main Contributing Factors 2011-2015



When reported, shipboard operations represented the main contributing factor with 65% of the total.

Figure 118: Groups of Contributing Factors 2011-2015

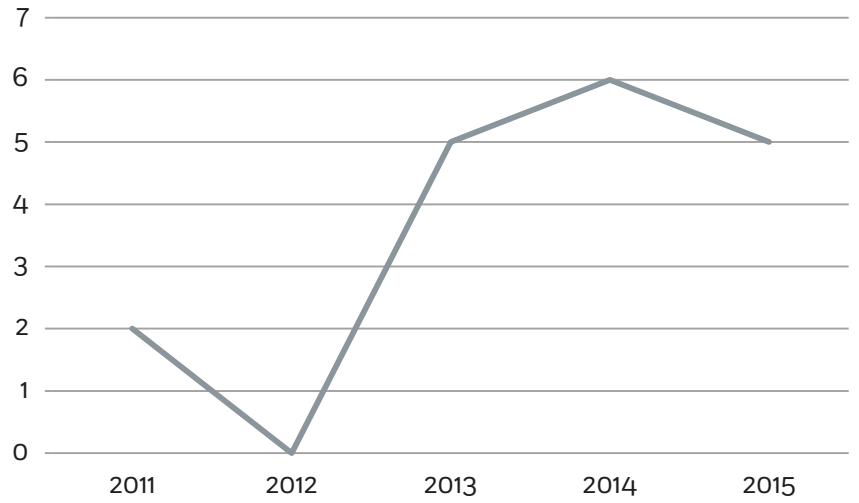


This figure indicates the contributing factor that was most quoted per category of accident event. Supervision was quoted as the most significant contributing factor when the accident event was human erroneous action.

6.5 CONSEQUENCES

6.5.1 CONSEQUENCES TO SHIPS

Figure 119: Service ships lost



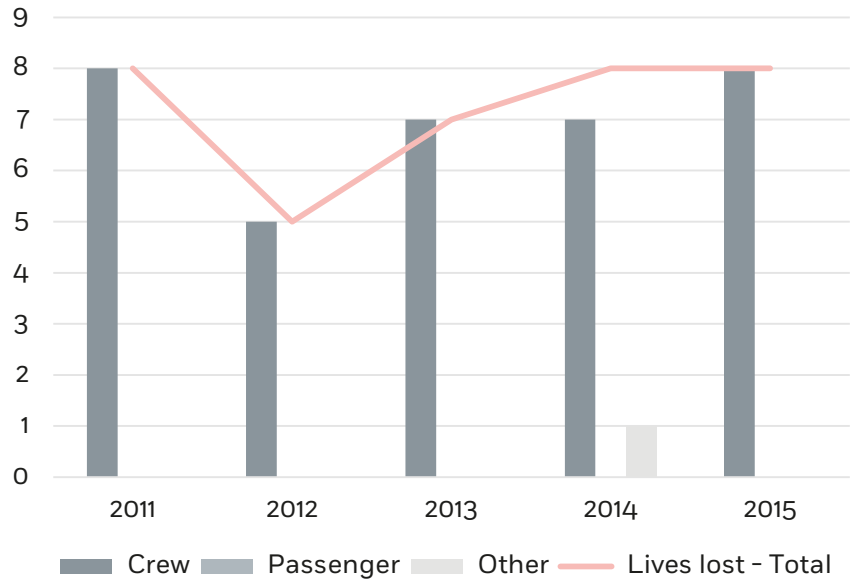
While no service ships were lost in 2012, losses increased up to 6 in 2014.

Among the 18 ships sunk, 12 were tugs.

6.5.2 CONSEQUENCES TO PERSONS

6.5.2.1 FATALITIES

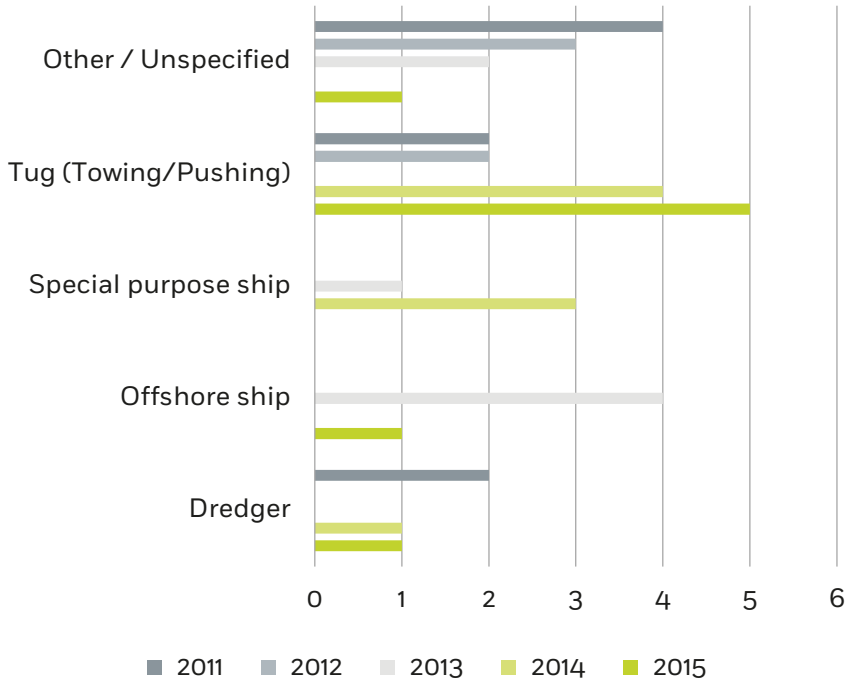
Figure 120: Number of fatalities



After a lower number of fatalities in 2012, the number of victims rose until 2014 and remained equal in 2015.

Almost all victims were crew members.

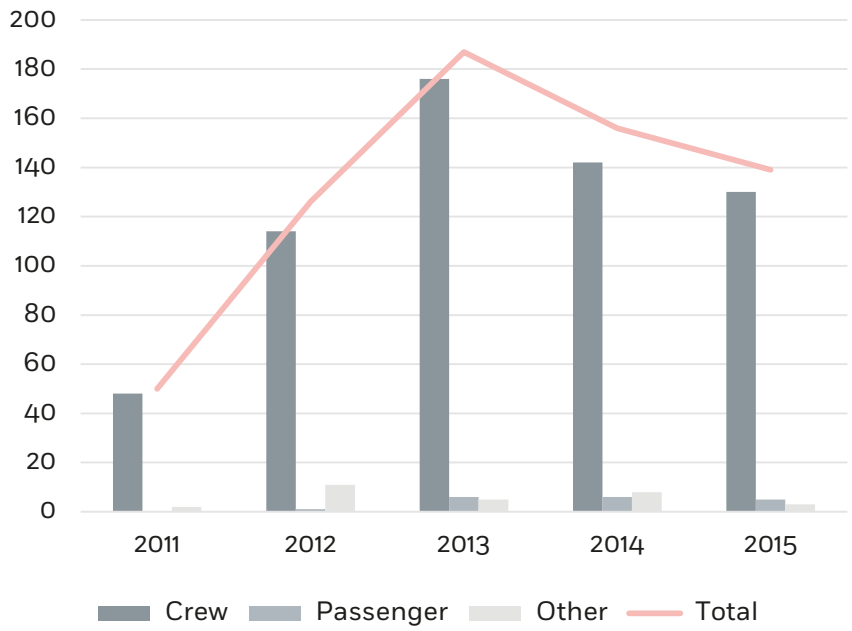
Figure 121: Distribution of fatalities per service ship type



36% of the fatalities occurred on board tugs.

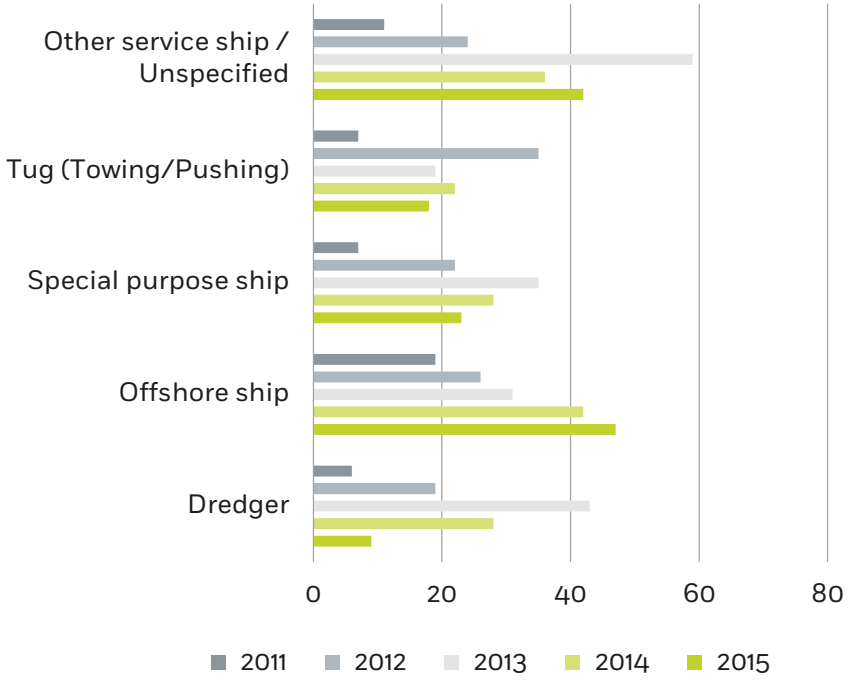
6.5.2.2 INJURIES

Figure 122: Number of injuries



After an increase of injuries in 2013, the number of persons injured decreased during two consecutive years.

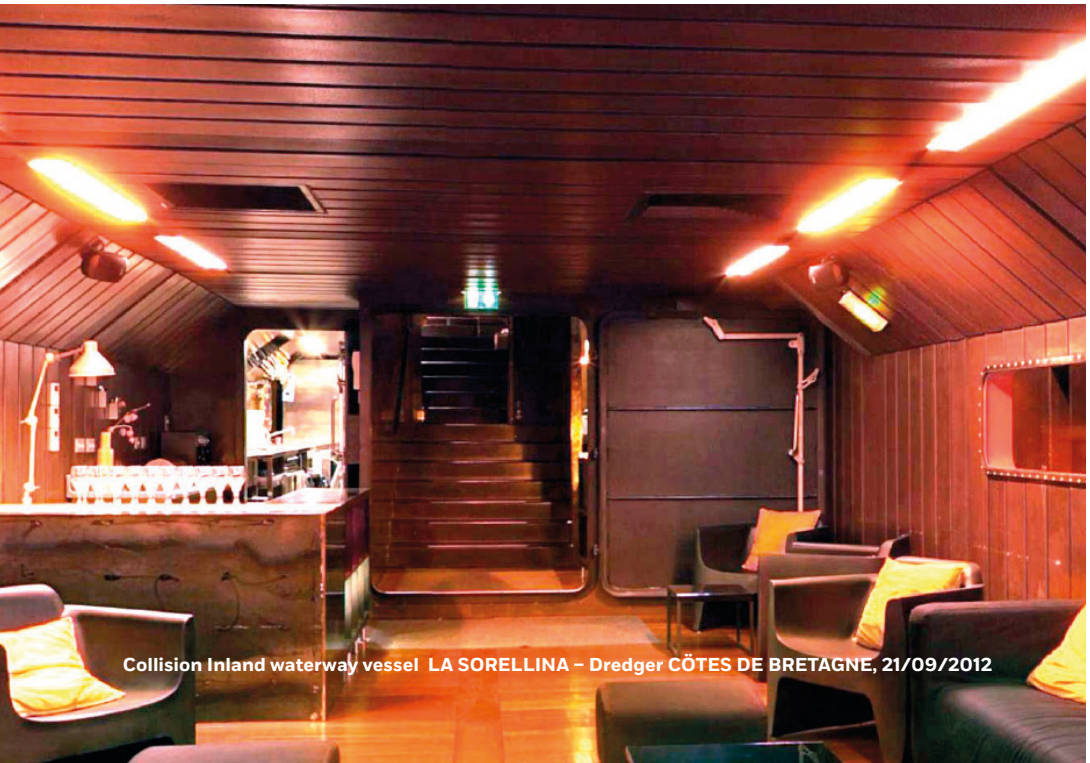
Figure 123: Distribution of injuries per service ship type



The marine casualties and incidents resulting in injuries were equally distributed among the service ship types. This was also the case for the decrease of injuries, apart from offshore ships.

CHAPTER 7

OTHER SHIPS



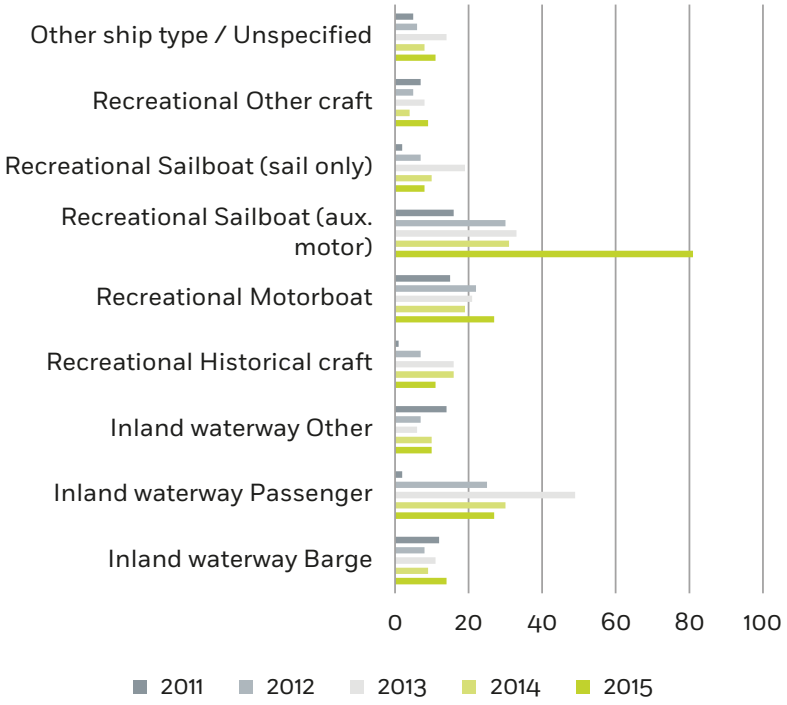
Collision Inland waterway vessel LA SORELLINA – Dredger CÔTES DE BRETAGNE, 21/09/2012

From 2011 to 2015, 710 other type ships were involved in 640 marine casualties and incidents.

The Directive does not apply to marine casualties and incidents involving only ships not propelled by mechanical means, wooden ships of primitive build, pleasure yachts and pleasure craft not engaged in trade, unless they are or will be crewed and carrying more than 12 passengers for commercial purposes. Such ships are considered within the scope of the Directive only when they are involved in an occurrence together with a ship which is covered by the Directive (e.g. a collision between a cargo ship and a recreational craft).

7.1 DETAILED DISTRIBUTION

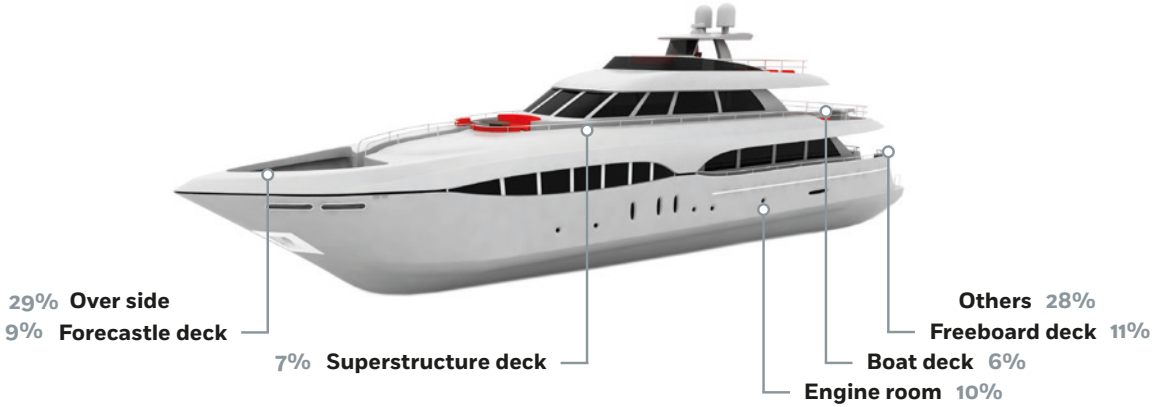
Figure 124: Distribution of other ships involved



Among the other type ships involved, the main subcategory was represented by the recreational sailboats (aux. motor) (27%), followed by Inland Waterway Passenger ships (19%) and recreational sailboats (sail only) (15%).

A significant increase of casualties involving the category recreational sailing boat with an auxiliary engine happened in 2015 (+161%).

Figure 125: Main places of casualties involving other type ships 2011-2015

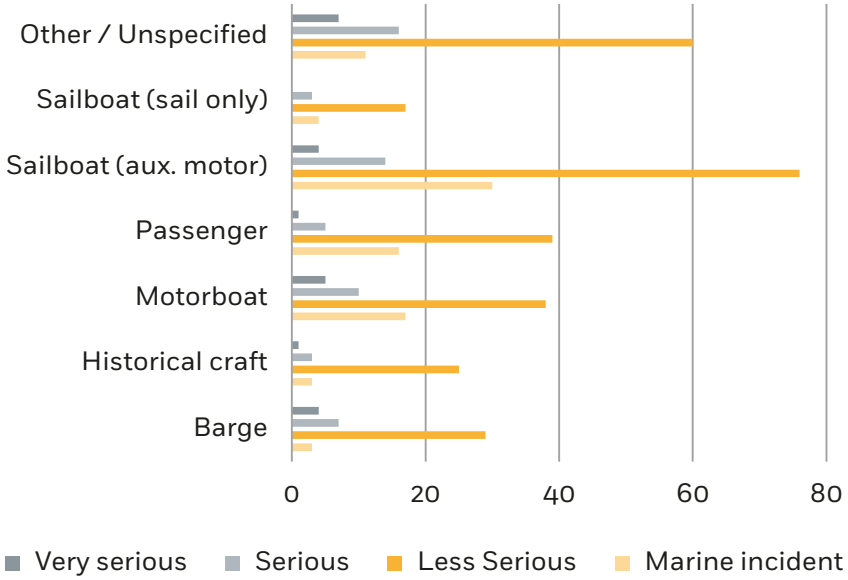


Places were specified in 392 cases. The main location of accidents was Over Side (113 cases), followed by Freeboard Deck (45 cases) and engine room (40).

7.2 NATURE OF MARINE CASUALTIES AND INCIDENTS

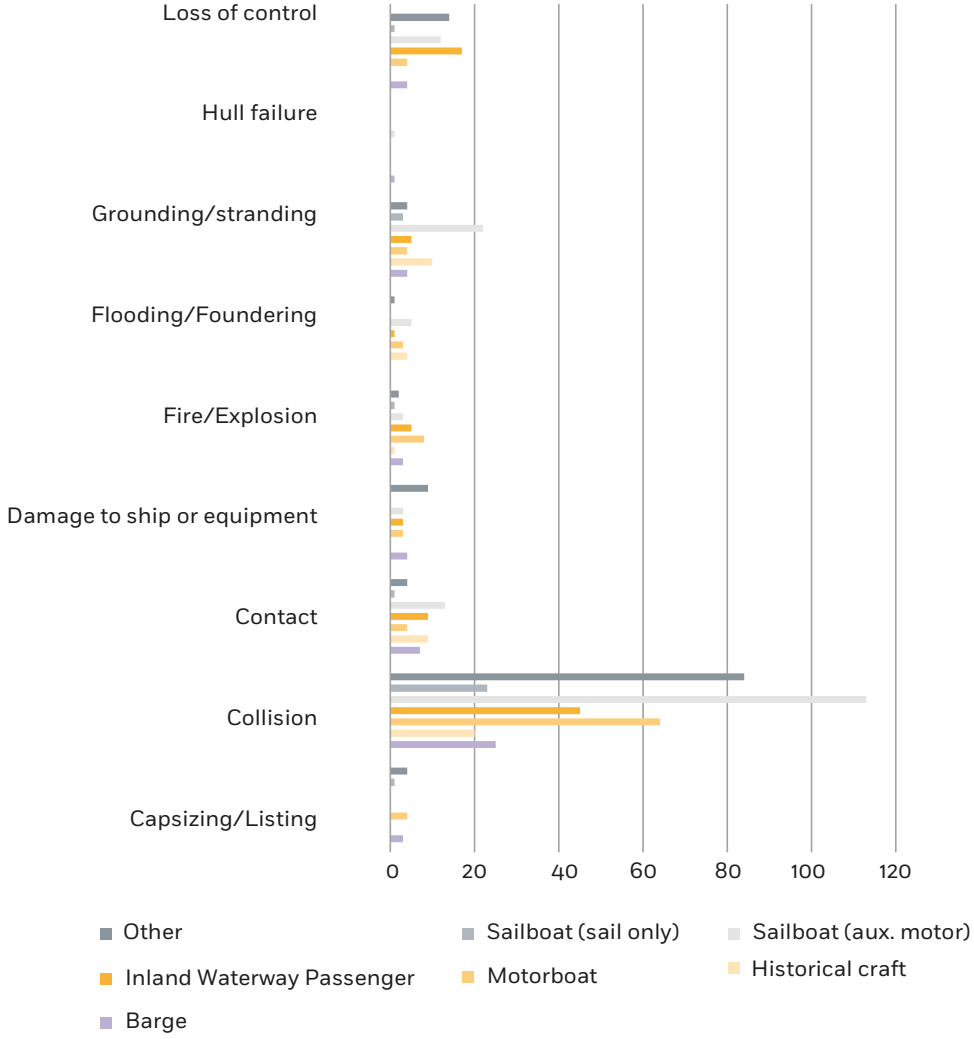
7.2.1 CASUALTY WITH A SHIP

Figure 126: Distribution of severity by other ship type 2011-2015



For other ships, the number of very serious casualties with a ship, as a proportion of all reported casualties and incidents involving other ships, is higher (4.9%) than the average for all ship types (3.0%).

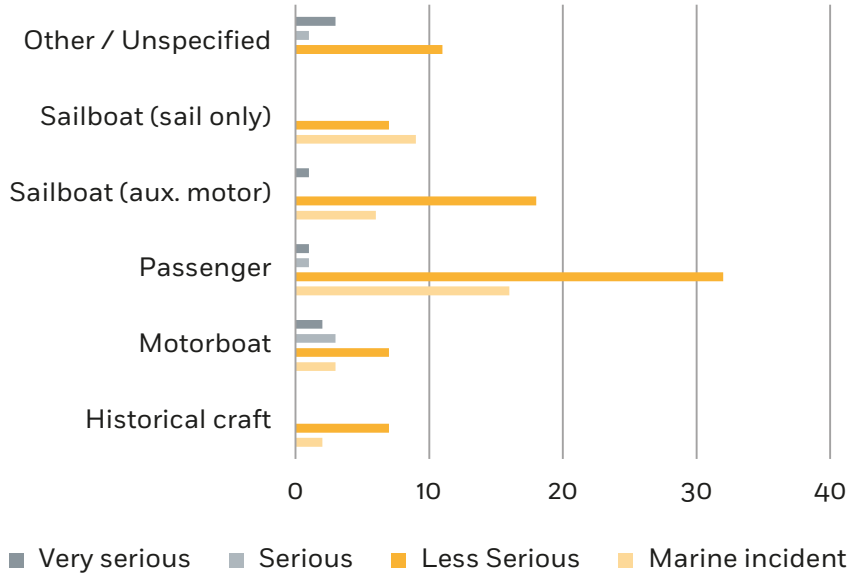
Figure 127: Distribution of casualty events per other ship type 2011-2015



The ships within this category, despite being excluded from the scope of Directive 2009/18/EC, were however recorded as they were involved in a collision with a ship falling under the scope. This explains the very high rate of collision as casualty event.

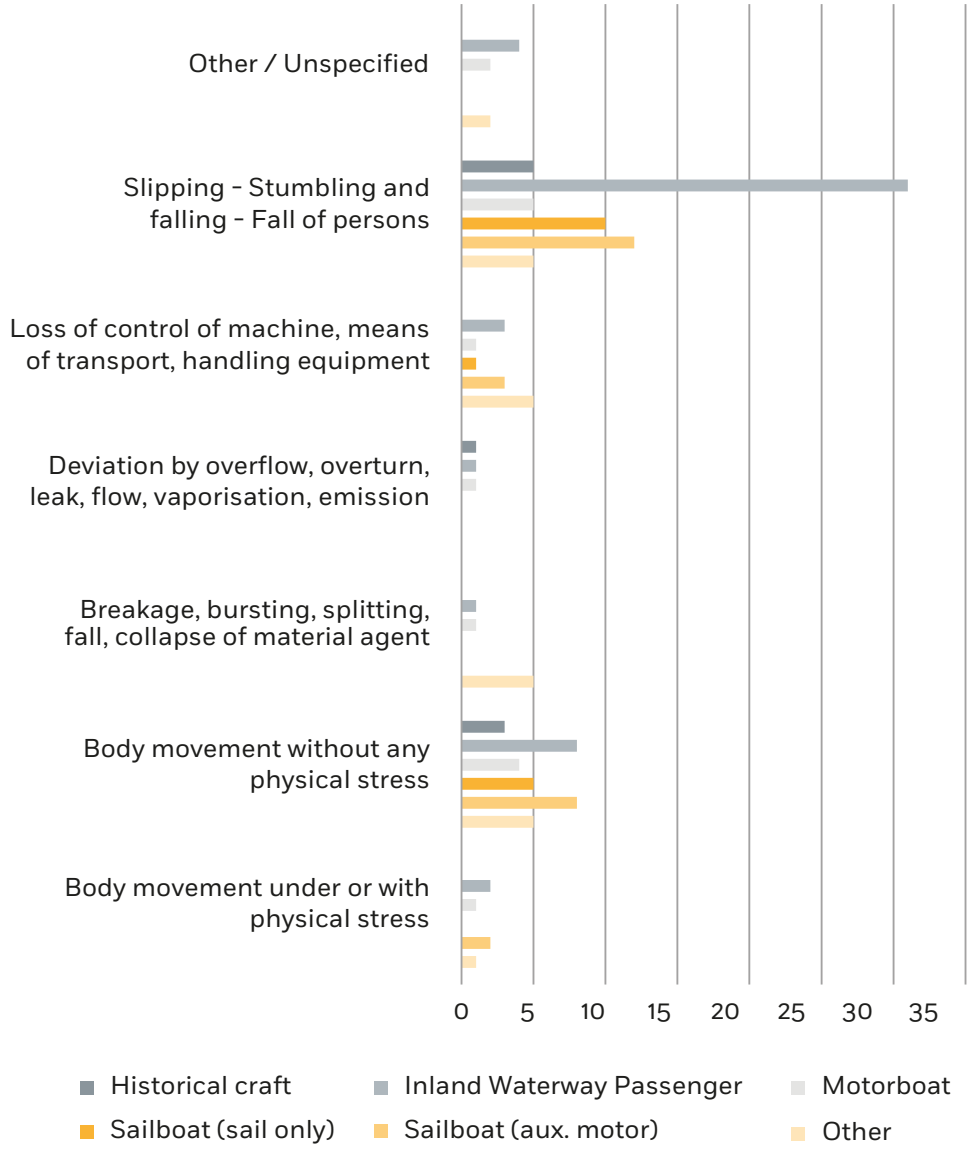
7.2.2 OCCUPATIONAL ACCIDENT

Figure 128: Severity of occupational accidents per other ship type 2011-2015



The rate of very serious occupational accidents (5.4%) is similar to the general average for all ship types (5%).

Figure 129: Distribution of deviations per other ship type 2011-2015



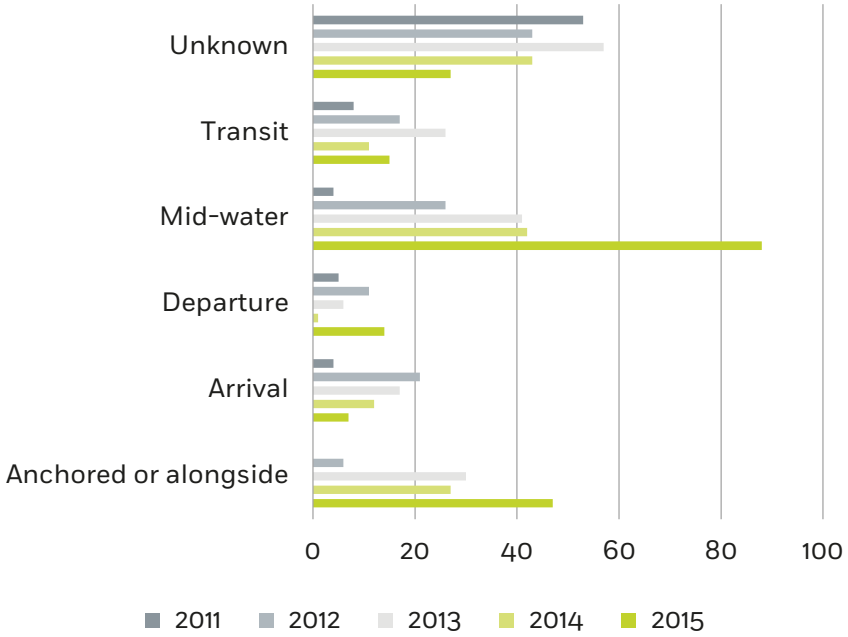
Slipping-Stumbling and falls of persons was the most quoted deviation that occurred on board this category of ships.

7.3 LOCATION OF MARINE CASUALTIES AND INCIDENTS

This section provides information about the location of the ships when marine casualties or incidents occurred.

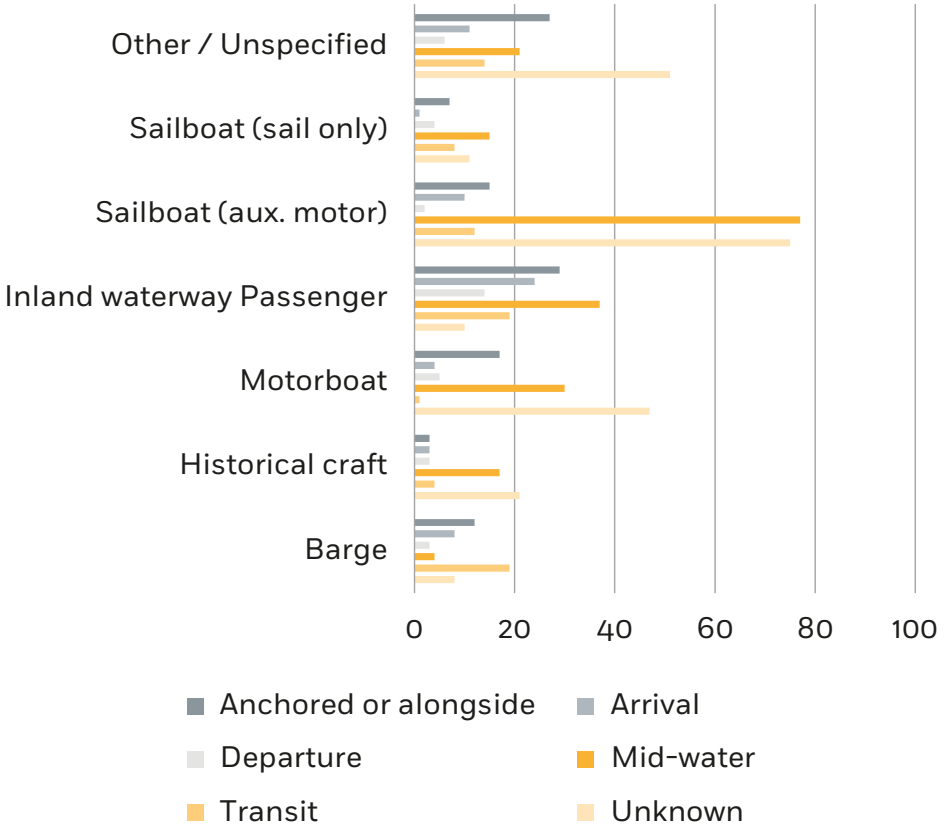
7.3.1 VOYAGE SEGMENTS

Figure 130: Distribution by voyage segment



Marine casualties and incidents mostly occurred during the mid-water phase of the voyage, and a significant increase (+110%) was noted in 2015.

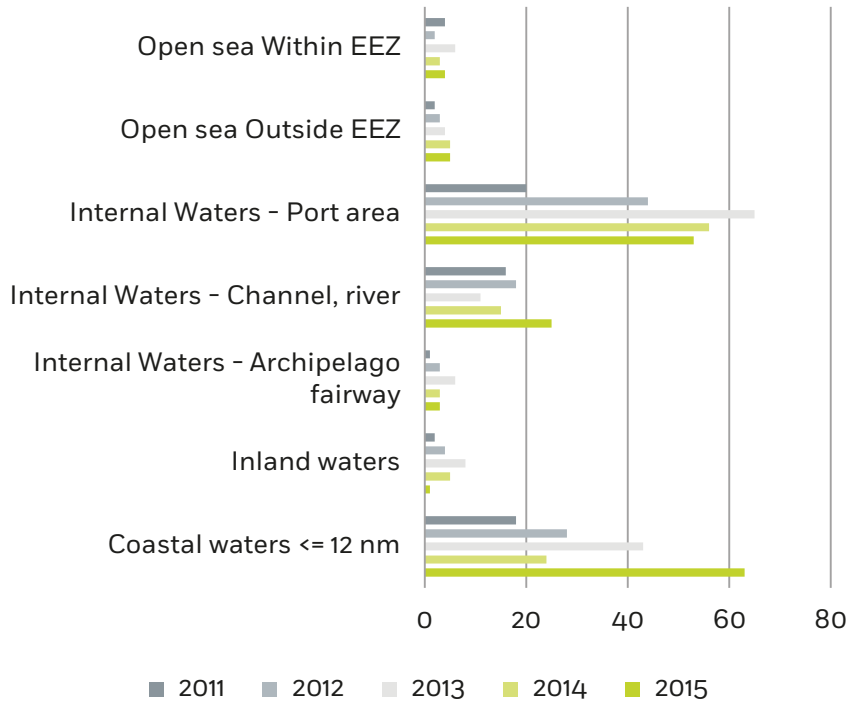
Figure 131: Distribution by voyage segment per other ship types 2011-2015



The mid-water phase of a voyage is confirmed to be the least safe, whatever the ship type.

7.3.2 LOCATION

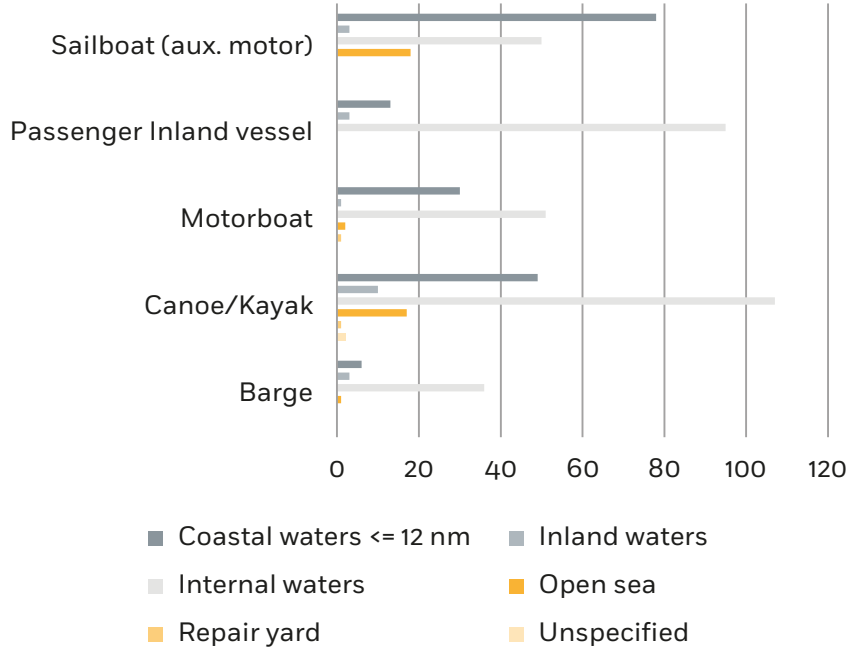
Figure 132: Distribution by location of the marine casualties and incidents



42% of the casualties took place in port areas, followed by 31% in coastal waters.

An increase of marine casualties and incidents (+160%) in coastal waters in 2015 is visible

Figure 133: Distribution by location of marine casualties and incidents per other ship type 2011-2015



For all categories of ships, the internal waters and port areas saw the most casualties and incidents.

7.3.3 REGIONAL DISTRIBUTION

Figure 134: Regional distribution of marine casualties and incidents 2011-2015

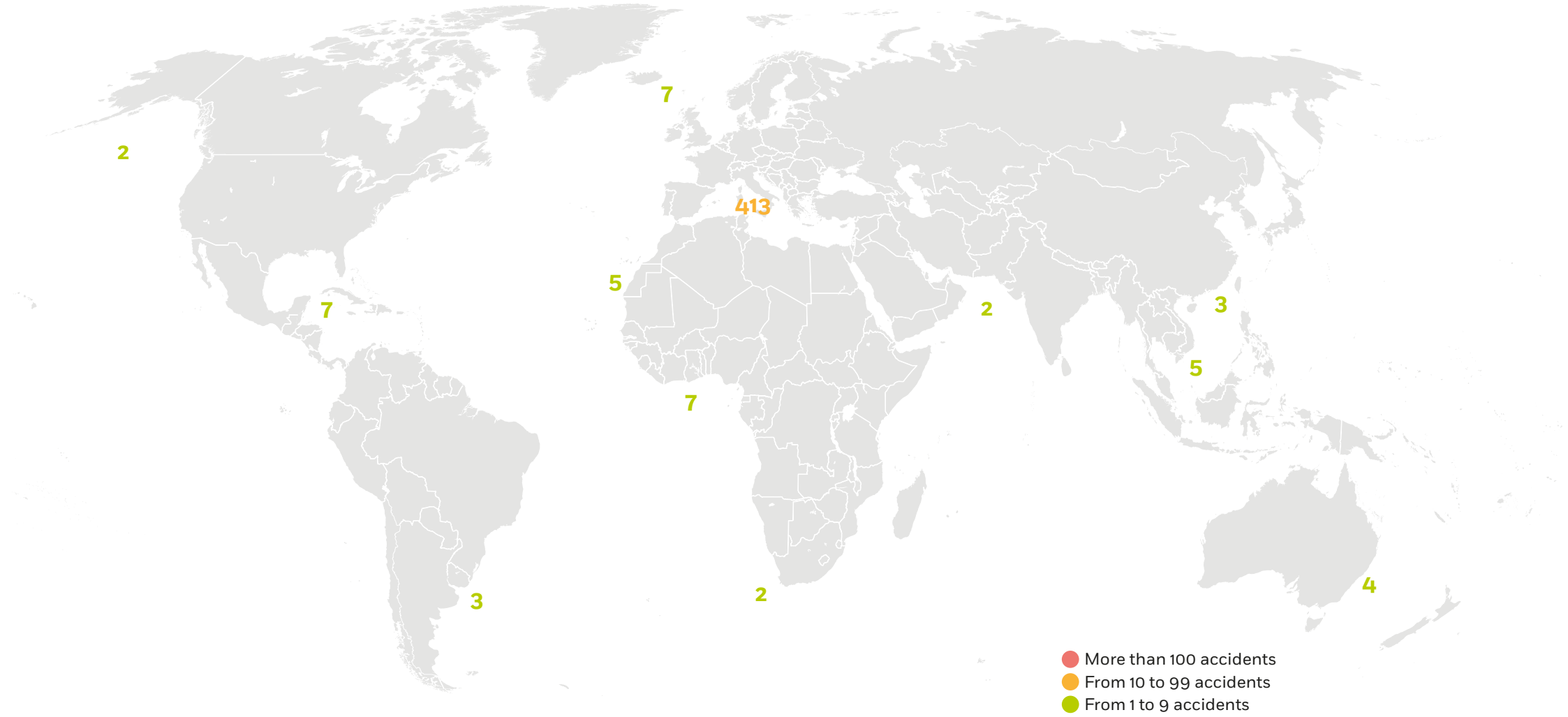
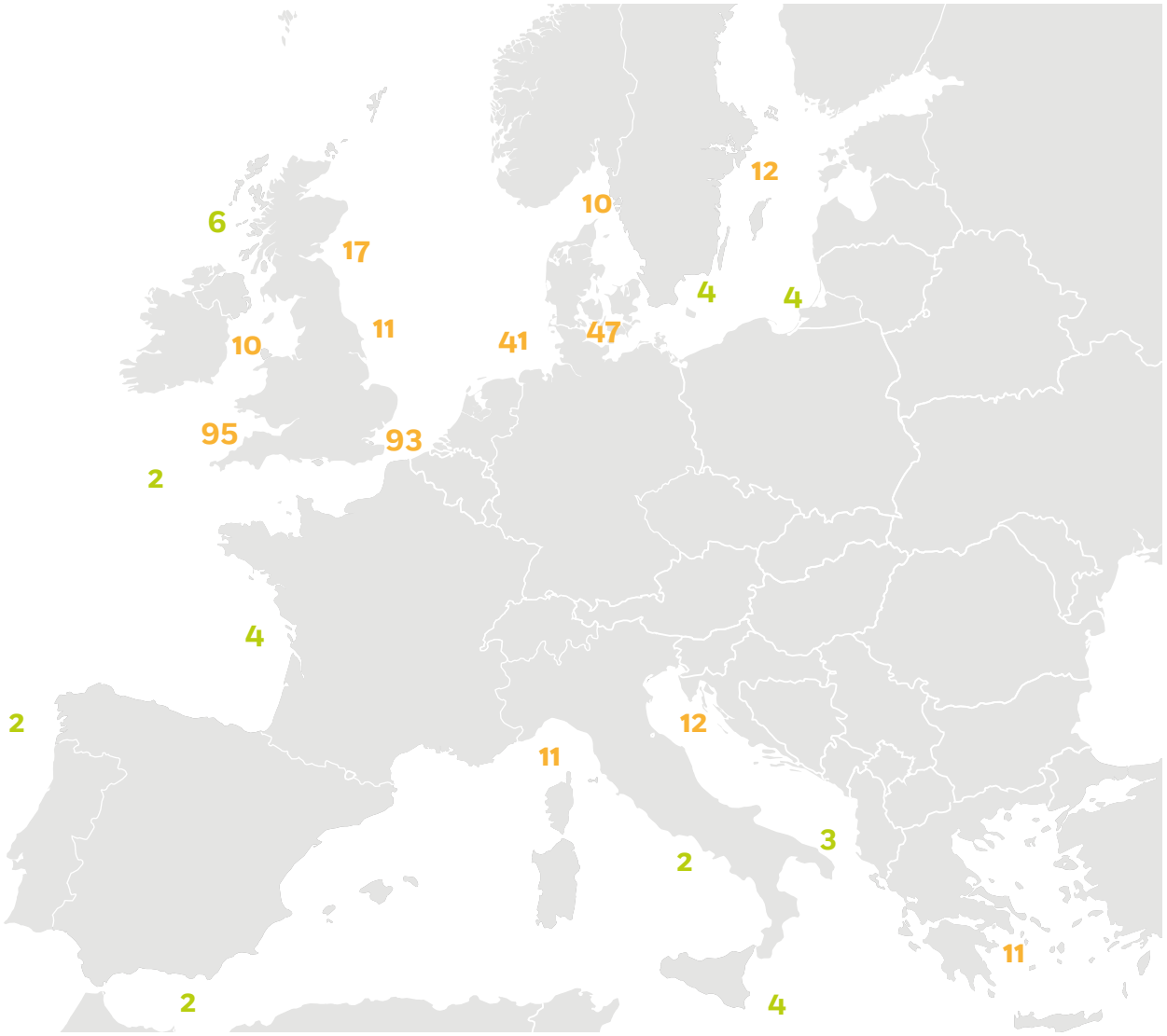


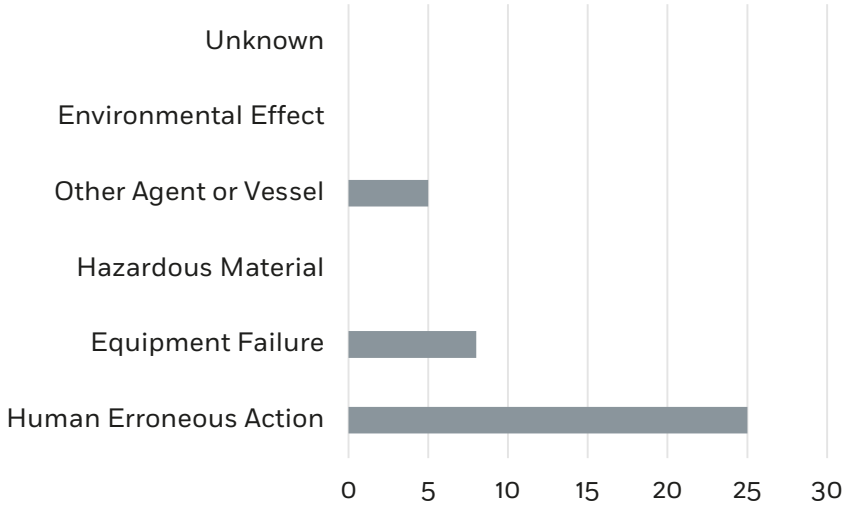
Figure 135: Distribution of marine casualties and incidents within the territorial sea and internal waters of EU States 2011-2015



7.4 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

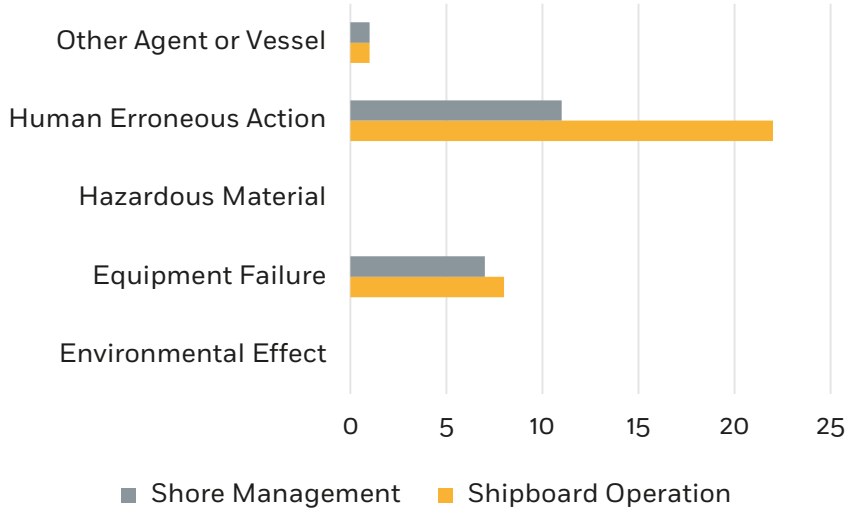
Due the limited number of cases and therefore little information about accidental events in this ship type, the figures below should be considered as indicative rather than conclusive. However possible conclusions that can be made follow the conclusions made for the four other categories of ship.

Figure 136: Accidental Events 2011-2015



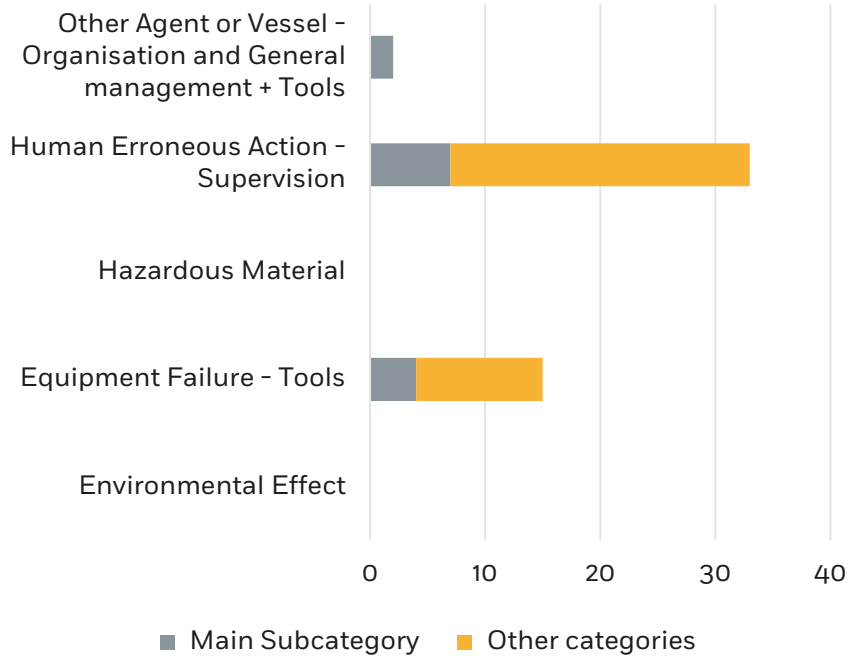
From a total of 38 accidental events analysed during the investigations, 66% were attributed to Human Erroneous Action.

Figure 137: Relationship between Accidental Events and the main Contributing Factors 2011-2015



When reported, shipboard operations was most quoted as contributing factor with 62% of the total.

Figure 138: Groups of Contributing Factors 2011-2015

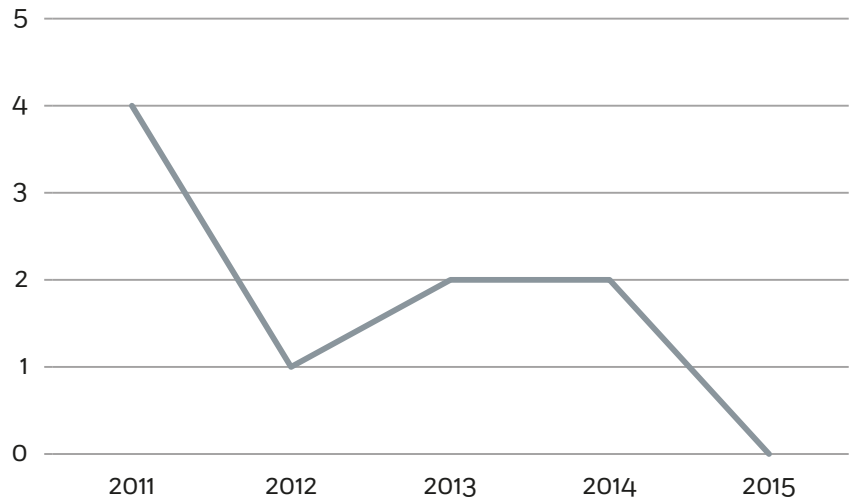


This figure indicates the contributing factor that was most quoted per category of accidental event. "Supervision" was most quoted when the accidental event was human erroneous action, while Tools was the most quoted contributing factor when the accidental event was equipment failure.

7.5 CONSEQUENCES

7.5.1 CONSEQUENCES TO SHIPS

Figure 139: Other ships lost



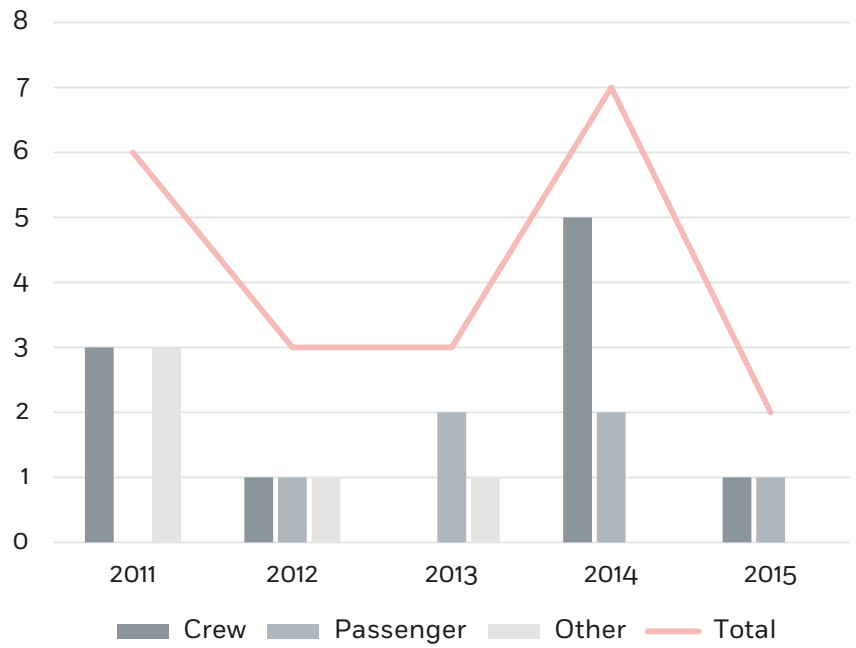
Out of the 9 other type ships that were lost, the majority were recreational craft.

Over the period, numbers decreased until none were reported lost in 2015.

7.5.2 CONSEQUENCES TO PERSONS

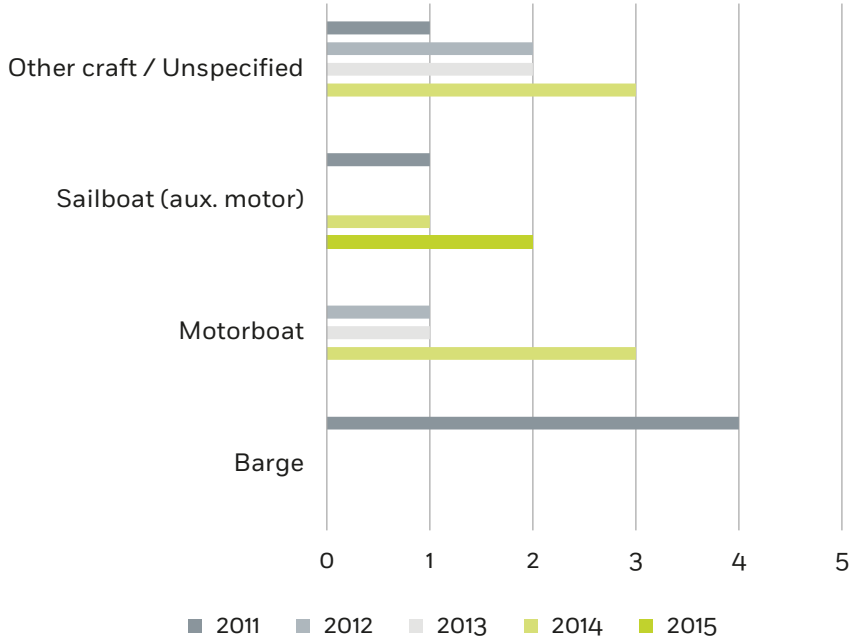
7.5.2.1 FATALITIES

Figure 140: Number of fatalities



The number of fatalities dropped significantly in 2015 (70% decrease). Crew members, passengers and other persons involved in the operation of the ships, were affected.

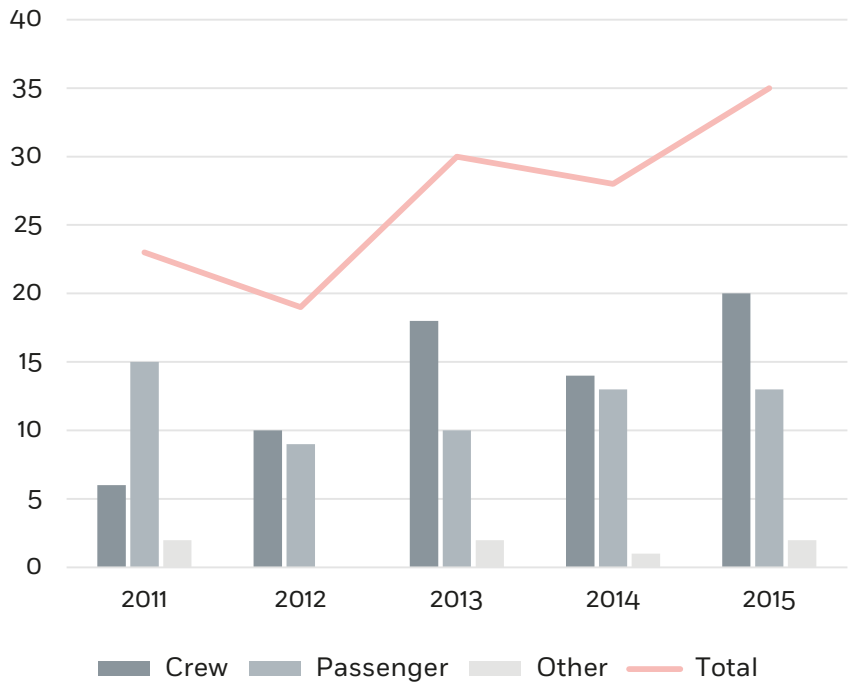
Figure 141: Distribution of fatalities per other ship type



Apart from a high number of fatalities on a barge in 2011, most fatalities occur on board leisure craft (motorboat or sailboat).

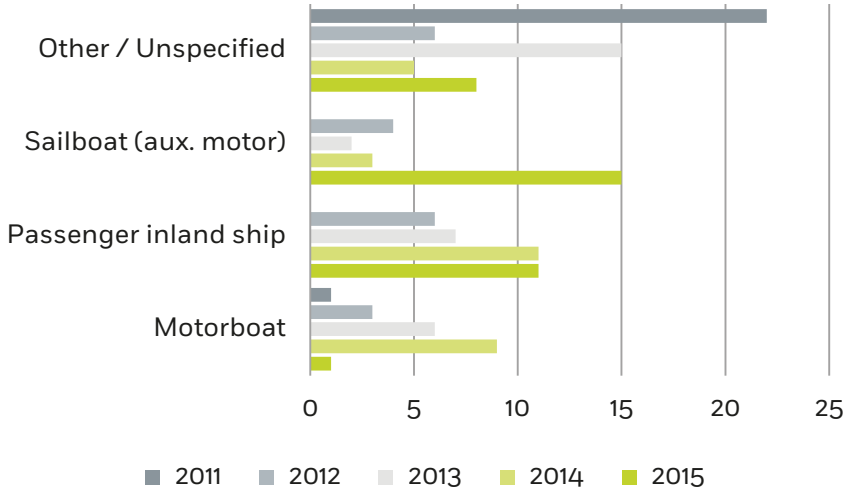
7.5.2.2 INJURIES

Figure 142: Number of injuries



Most injuries occurred on leisure boats but a significant number also happened on passenger inland waterway vessels.

Figure 143: Distribution of injuries per other ship type



Most injuries occurred on leisure boats but a significant number also happened on passenger inland inland waterway vessels.

CHAPTER 8

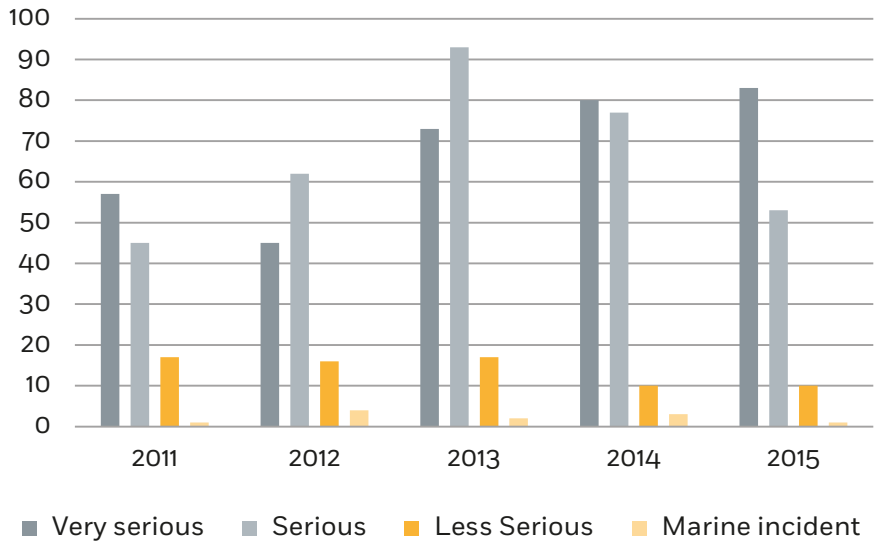
ACTION TAKEN BY INVESTIGATIVE BODIES

Mooring equipment failure, GALAXY, 1 life lost

This chapter describes the activities undertaken by the investigative bodies of EU States regarding the investigations performed, reports published and safety recommendations issued.

8.1 SAFETY INVESTIGATIONS

Figure 144: Number of investigations launched by severity of marine casualties and incidents



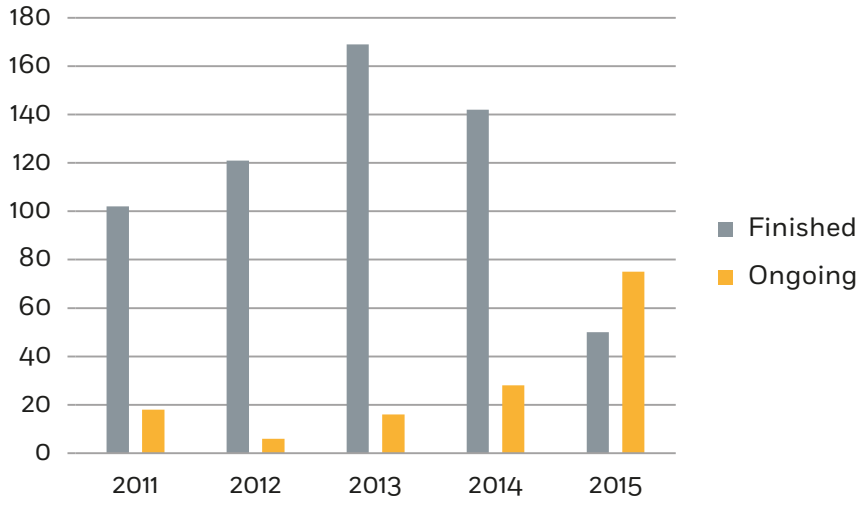
A total of 749 investigations were launched during the five-year period, 45% of these being related to very serious casualties and 44% to serious casualties.

Among them, 8 safety investigations having a direct link with EU interests were conducted by 6 non-EU countries.

The number of very serious casualties investigated in figure 142 is lower than the total number of very serious casualties reported.

This difference is explained by the obligation to investigate all very serious casualties only after 17 June 2011 (date of implementation of the Directive 2009/18/EC) while some very serious marine casualties and incidents took place between 1/1/2011 and 17/06/2011. If they were investigated by a maritime authority, as was the practice in some Member States before 17 June 2011, they were not reported to EMCIP. The remaining difference could be explained by the delay of some Member States in reporting marine casualty and incident data in EMCIP, and the true number of investigated cases could be higher than that reported at the time of the analysis.

Figure 145: Status of investigations launched 2011-2015

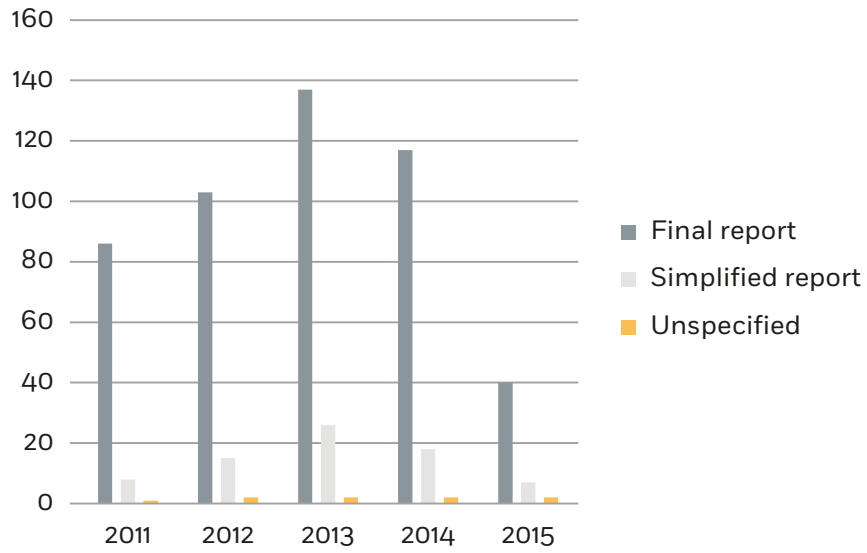


584 investigations were reported by the investigative bodies to be concluded.

When the data were extracted for this publication, 22 investigations were to be started.

8.2 INVESTIGATION REPORTS

Figure 146: Number of investigation reports published

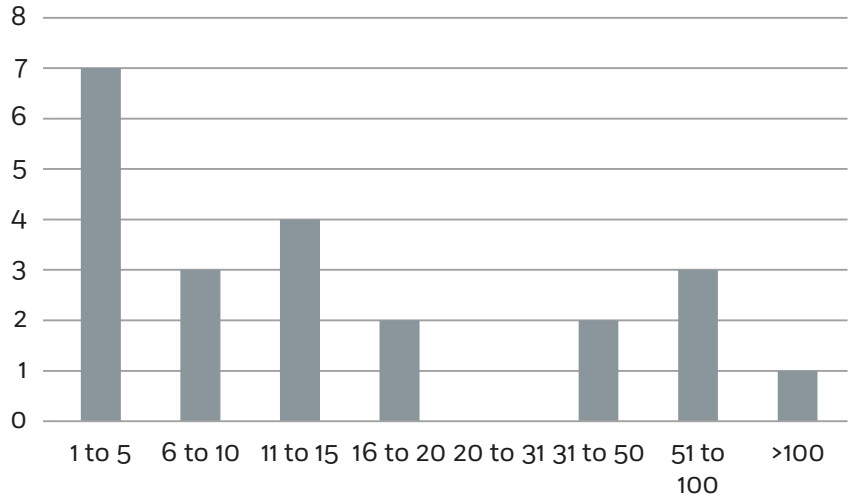


566 investigation reports were published during the five-year period. The type of report, whether final or simplified, is decided by the investigative body depending on the severity of the casualty and/or the potential to prevent future casualties.

The list of all investigation reports published in EMCIP as per Article 17 of the Accident Investigation Directive 2009/18/EC can be found on the EMCIP Portal at the following address:

https://emcipportal.jrc.ec.europa.eu/index.php/Investigation-reports

Figure 147: Number of reports published by Member States 2011-2015

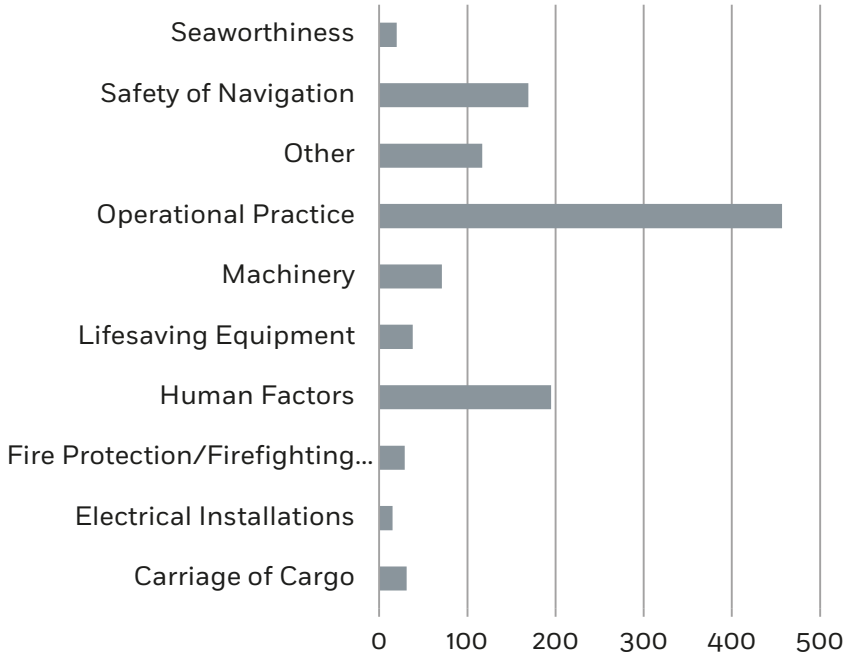


22 Member States have published at least one report. 63% of the reports were published by 4 Member States.

The average time to publish a report after the casualty date was 387 days (data available for 313 reports out of 566).

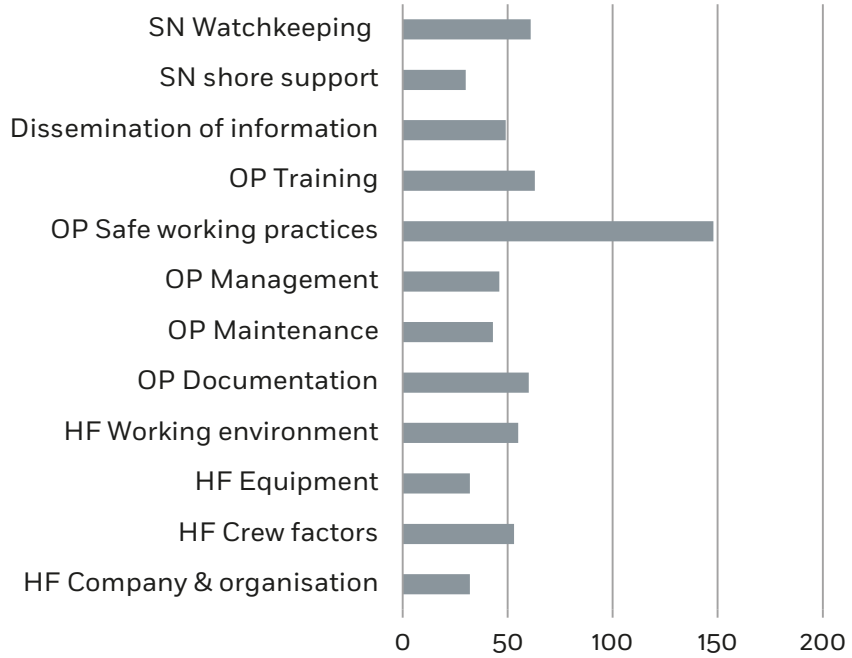
8.3 SAFETY RECOMMENDATIONS

Figure 148: Distribution of safety recommendations issued per focus area 2011-2015



A total of 953 safety recommendations have been issued. Each safety recommendation could be related to one or more focus areas. As shown in the figure above, they covered a range of 10 focus areas, the main one being operational practices (40%), followed by human factors (17%) and safety of navigation (15%).

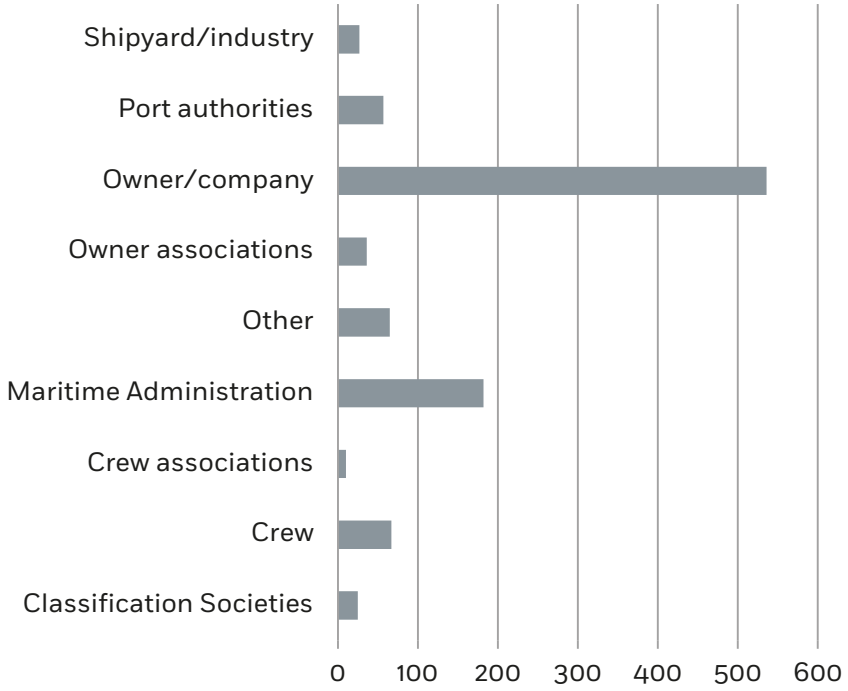
Figure 149: Distribution of main sub-focus area quoted more than 30 times 2011-2015



SN: Safety of navigation
OP: Operational Practice
HF: Human factors

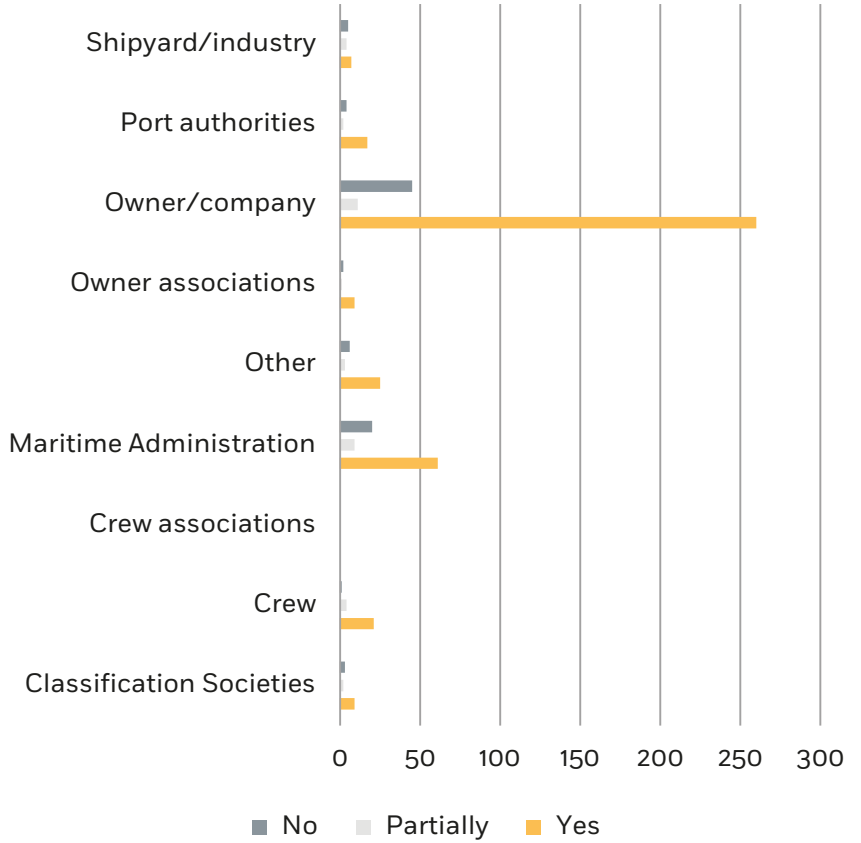
Safety recommendations are evenly spread among the 12 most quoted sub-focus areas (from 5% to 10% each), apart from "Operational Practice – Safe Working practices" (22%).

Figure 150: Addressees of Safety Recommendations 2011-2015

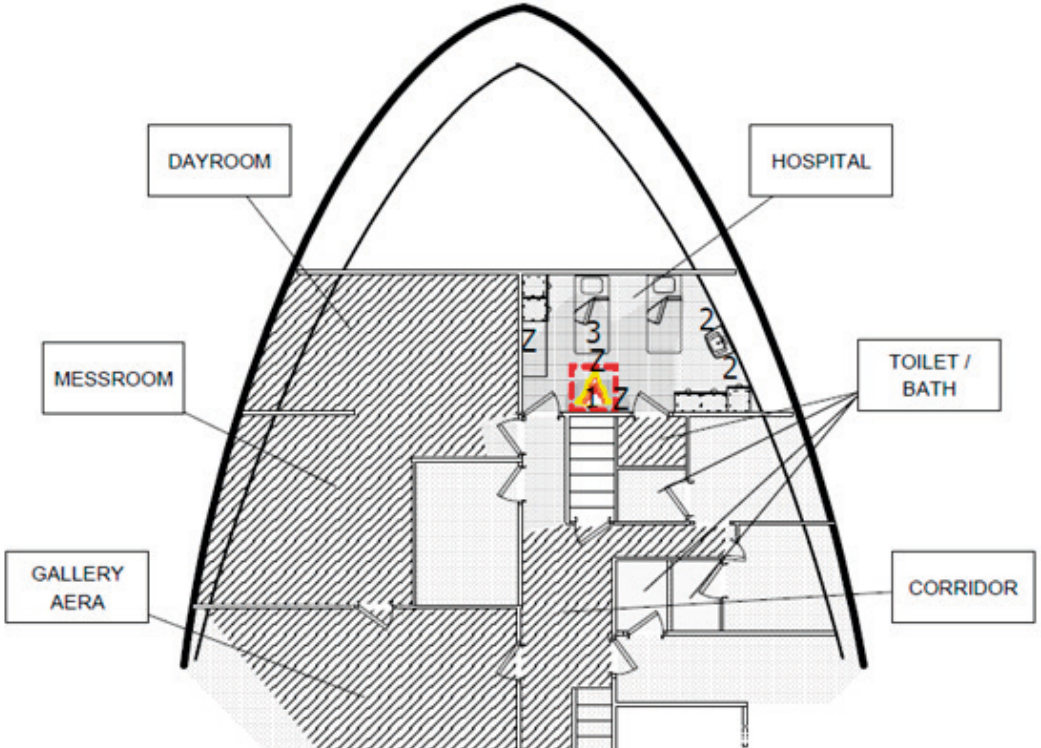


From a total of 1005 addressees that received at least one safety recommendation, 50% were the owners or the companies of the ships involved in the accidents, and 18% were the maritime administrations.

Figure 151: Responses to Safety Recommendations 2011-2015



Out of the 531 answers provided by the addressees, 77% of safety recommendations were considered positively and 7% partially.



Fire in accommodation, MAERSK CHAMPION, 09/01/2012

APPENDICES

Flooding / Foundering, CEMFJORD, ship lost, 8 lives lost, 03/01/2015

APPENDIX 1

EMSA: European Maritime Safety Agency

EMCIP: European Marine Casualty Information Platform

EU: European Union

EC: European Commission

IMO: International Maritime Organization

SAR: Search and Rescue

DEFINITIONS FROM THE IMO CASUALTY INVESTIGATION CODE AND THE DIRECTIVE 2009/18/EC

Specific terms used in this publication are also used for marine safety investigation purposes and have the following meanings:

1. A **coastal State** means a State in whose territory, including its territorial sea, a marine casualty or marine incident occurs.

2. **Flag State** means a State whose flag a ship is entitled to fly.

3. A **marine casualty** means an event, or a sequence of events, that has resulted in any of the following which has occurred directly in connection with the operations of a ship:

    1. the death of, or serious injury to, a person;
    2. the loss of a person from a ship;
    3. the loss, presumed loss or abandonment of a ship;
    4. material damage to a ship;
    5. the stranding or disabling of a ship, or the involvement of a ship in a collision;
    6. material damage to marine infrastructure external to a ship, that could seriously endanger the safety of the ship, another ship or an individual; or
    7. severe damage to the environment, or the potential for severe damage to the environment, brought about by the damage of a ship or ships.

However, a marine casualty does not include a deliberate act or omission, with the intention to cause harm to the safety of a ship, an individual or the environment.

4. A **marine incident** means an event, or sequence of events, other than a marine casualty, which has occurred directly in connection with the operations of a ship that endangered, or, if not corrected, would endanger the safety of the ship, its occupants or any other person or the environment.

However, a marine incident does not include a deliberate act or omission, with the intention to cause harm to the safety of a ship, an individual or the environment.

5. A **marine safety investigation** means an investigation or inquiry into a marine casualty or marine incident, conducted with the objective of preventing marine casualties and marine incidents in the future. The investigation includes the collection and analysis of evidence, the identification of causal factors and the making of safety recommendations as necessary.

6. A **marine safety investigation report** means a report that contains:

    1. summary outlining the basic facts of the marine casualty or marine incident and stating whether any deaths, injuries or pollution occurred as a result;
    2. the identity of the flag State, owners, operators, the company as identified in the safety management certificate, and the classification society (subject to any national laws concerning privacy);
    3. where relevant the details of the dimensions and engines of any ship involved, together with a description of the crew, work routine and other matters, such as time served on the ship;
    4. a narrative detailing the circumstances of the marine casualty or marine incident;

5. analysis and comment on the causal factors including any mechanical, human and organizational factors;
6. a discussion of the marine safety investigation's findings, including the identification of safety issues, and the marine safety investigation's conclusions; and
7. where appropriate, recommendations with a view to preventing future marine casualties and marine incidents.

7. A **material damage** in relation to a marine casualty means:

1. damage that:

   1.1 significantly affects the structural integrity, performance or operational characteristics of marine infrastructure or a ship; and

   1.2 requires major repair or replacement of a major component or components; or

2. destruction of the marine infrastructure or ship.

8. The term **"serious casualty"** shall be understood in accordance with the updated definition contained in Circular MSC-MEPC.3/Circ.3 of the IMO Maritime Safety Committee and Marine Environment protection Committee of 18 December 2008; it says:

Serious casualties are casualties to ships which do not qualify as very serious casualties and which involve a fire, explosion, collision, grounding, contact, heavy weather damage, ice damage, hull cracking, or suspected hull defect, etc., resulting in:

- immobilization of main engines, extensive accommodation damage, severe structural damage, such as penetration of the hull under water, etc., rendering the ship unfit to proceed*, or
- pollution (regardless of quantity); and/or
- a breakdown necessitating towage or shore assistance.

* The ship is in a condition, which does not correspond substantially with the applicable conventions, presenting a danger to the ship and the persons on board or an unreasonable threat of harm to the marine environment.

9. A **serious injury** means an injury which is sustained by a person, resulting in incapacitation where the person is unable to function normally for more than 72 hours, commencing within seven days from the date when the injury was suffered.

10. A **severe damage to the environment** means damage to the environment which, as evaluated by the State(s) affected, or the flag State, as appropriate, produces a major deleterious effect upon the environment.

11. **Substantially interested State** means a State:

1. which is the flag State of a ship involved in a marine casualty or marine incident; or
2. which is the coastal State involved in a marine casualty or marine incident; or
3. whose environment was severely or significantly damaged by a marine casualty (including the environment of its waters and territories recognized under international law); or
4. where the consequences of a marine casualty or marine incident caused, or threatened, serious harm to that State or to artificial islands, installations, or structures over which it is entitled to exercise jurisdiction; or
5. where, as a result of a marine casualty, nationals of that State lost their lives or received serious injuries; or
6. that has important information at its disposal that the marine safety investigating State(s) consider useful to the investigation; or
7. that for some other reason establishes an interest that is considered significant by the marine safety investigating State(s).

12. **Territorial sea** (section 1 of Part II of the United Nations Convention on the Law of the Sea) refers to the area within which the sovereignty of a coastal State extends, beyond its land territory and internal waters and, in the case of an archipelagic State, its archipelagic waters, to an adjacent belt of sea, described as the territorial sea. It is a belt of coastal water extending at most 12 nautical miles (22.2 km; 13.8 mi) from the baseline (usually the mean low-water mark) of a coastal State.

13. A **very serious marine casualty** means a marine casualty involving the total loss of the ship or a death or severe damage to the environment.

Other definitions can be found within the:

"IMO Code for the Investigation of Marine Casualties and Incidents" which shall mean the Code for the investigation of Marine Casualties and Incidents annexed to resolution A.849(20) of the IMO Assembly of 27 November 1997. + RESOLUTION MSC.255(84) (adopted on 16 May 2008) ADOPTION OF THE CODE OF THE INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES FOR A SAFETY INVESTIGATION INTO A MARINE CASUALTY OR MARINE INCIDENT (CASUALTY INVESTIGATION CODE) + RESOLUTION A.1075(28) adopted on 24 February 2014

The scope of the Accident Investigation Directive 2009/18/EC can be found in its Article 2.

Other information can be found on:
http://www.emsa.europa.eu/implementation-tasks/accident-investigation.html
or on https://emcipportal.jrc.ec.europa.eu

Flooding / Foundering, CEMFJORD, ship lost, 8 lives lost, 03/01/2015

OTHER EXPRESSIONS, AS PER EMCIP TAXONOMY

1. An **accidental event** is an event that is assessed to be inappropriate and significant in the sequence of events that led to the marine casualty or marine incident.

2. **Casualty events** are unwanted events in which there was some kind of energy release with impact on people and/or ship including its equipment and its cargo or environment. They are classified in:

- **Capsizing/Listing** is a casualty where the ship no longer floats in the right-side-up mode due to: negative initial stability (negative metacentric height), or transversal shift of the centre of gravity, or the impact of external forces.
  - **Capsizing** when the ship is tipped over until disabled.
  - **Listing** when the ship has a permanent heel or angle of loll.
- **Collision** - a casualty caused by ships striking or being struck by another ship, regardless of whether the ships are underway, anchored or moored. This type of casualty event does not include ships striking underwater wrecks. The collision can be **with other ship** or **with multiple ships** or **ship not underway**.
- **Contact** - a casualty caused by ships striking or being struck by an external object. The objects can be: **Floating object** (**cargo, ice, other or unknown**); **Fixed object**, but not the sea bottom; or **Flying object**.
- **Damage to equipment** - damage to equipment, system or the ship not covered by any of the other casualty type.
- **Grounding/stranding** - a moving navigating ship, either under command, under **Power**, or not under command, **Drift**(ing), striking the sea bottom, shore or underwater wrecks.
- **Fire/explosion** - an uncontrolled ignition of flammable chemicals and other materials on board of a ship:

- **Fire** is the uncontrolled process of combustion characterised by heat or smoke or flame or any combination of these.
- **Explosion** is an uncontrolled release of energy which causes a pressure discontinuity or blast wave.

- **Flooding/foundering** is a casualty event when the ship is taking water on board.

  - **Foundering** will be considered when the vessel has sunk. Foundering should only be regarded as the first casualty event if we do not know the details of the flooding which caused the vessel to founder. In the chain of events foundering can be the last casualty event in this case there is the need to add accidental events.
  - **Flooding** – refers to a casualty when a vessel takes water on board and can be:

    - **Progressive** if the water flow is gradual.
    - **Massive** if the water flow is extensive.

- **Hull failure** - a failure affecting the general structural strength of the ship.

- **Loss of control -** a total or temporary loss of the ability to operate or manoeuvre the ship, failure of electric power, or to contain on board cargo or other substances:

  - **Loss of electrical power** is the loss of the electrical supply to the ship or facility;
  - **Loss of propulsion power** is the loss of propulsion because of machinery failure;
  - **Loss of directional control** is the loss of the ability to steer the ship;
  - **Loss of containment** is an accidental spill or damage or loss of cargo or other substances carried on board a ship.

- **Missing** - a casualty to a ship whose fate is undetermined with no information having being received on the loss and whereabouts after a reasonable period of time.

- **Non-accidental events** are intentional events as a result of illegal or hostile acts therefore they are not marine casualties or incidents. They are:

  - **Acts of war,** any act, against a ship or the people on board, by a State that would effectively terminate the normal international law of peacetime and activate the international law of war
  - **Criminal acts,** any crime, including an act, omission, or possession under the laws of a State or local government, which poses a substantial threat to people on board of a ship or to property (e.g. terrorism, sabotage, piracy)
  - **Illegal discharge** is an intentional discharge of polluting substances, oil or other noxious substances, from ships, and
  - **other**, other intentional act that incur loss of or damage to a ship or environmental damage or harm to people on board.

  Non-accidental events are not considered as marine casualties or incidents and are not covered by the scope of the accident investigation Directive (2009/18/EC).

3. **Contributing factor** is a condition that may have contributed to an accidental event or worsened its consequence (e.g. man/machine interaction, inadequate illumination).

4. Occupational accidents are grouped under **deviations**, which consist in the description of the event deviating from normality leading to the accident:

- **Deviation due to electrical problems, explosion, fire - Not specified**

  - Electrical problem due to equipment failure - leading to indirect contact
  - Electrical problem - leading to direct contact
  - Explosion
  - Fire, flare up
  - Other Deviations not listed above

Deviation by overflow, overturn, leak, flow, vaporisation, emission

- Solid state - overflowing, overturning
- Liquid state - leaking, oozing, flowing, splashing, spraying
- Gaseous state - vaporisation, aerosol formation, gas formation
- Pulverulent material - smoke generation, dust/particles in suspension/ emission of
- Other Deviations not listed above

Breakage, bursting, splitting, slipping, fall, collapse of Material Agent

- Breakage of material - at joint, at seams
- Breakage, bursting - causing splinters (wood, glass, metal, stone, plastic, others)
- Slip, fall, collapse of Material Agent - from above (falling on the victim)
- Slip, fall, collapse of Material Agent - from below (dragging the victim down)
- Slip, fall, collapse of Material Agent - on the same level
- Other deviations not listed above

Loss of control (total or partial) of machine, means of transport or handling equipment, handheld tool, object, animal

- Loss of control (total or partial) - of machine (including unwanted start-up) or of the material being worked by the machine
- Loss of control (total or partial) - of means of transport or handling equipment, (motorised or not)
- Loss of control (total or partial) - of hand-held tool (motorised or not) or of the material being worked by the tool
- Loss of control (total or partial) - of object (being carried, moved, handled, etc.)
- Loss of control (total or partial) - of animal
- Other Deviations not listed above

Slipping – Stumbling and falling – Fall of persons

- Fall of person - to a lower level
- Slipping - Stumbling and falling - Fall of person - on the same level
- Fall overboard of person
- Other deviations not listed above

Body movement without any physical stress (generally leading to an external injury)

- Walking on a sharp object
- Kneeling on, sitting on, leaning against
- Being caught or carried away, by something or by momentum
- Uncoordinated movements, spurious or untimely actions
- Other Deviations not listed above

Body movement under or with physical stress (generally leading to an internal injury)

- Lifting, carrying, standing up
- Pushing, pulling
- Putting down, bending down
- Twisting, turning
- Treading badly, twisting leg or ankle, slipping without falling
- Other Deviations not listed above

Shock, fright, violence, aggression, threat, presence

- Shock, fright
- Violence, aggression, threat - between company employees subjected to the employer's authority
- Violence, aggression, threat - from people external to the company towards victims performing their duties
- Aggression, jostle - by animal
- Presence of the victim or of a third person in itself creating a danger for

oneself and possibly others
- Other Deviations not listed above

Other Deviations not listed above in this classification

5. Categories describing the **location** where the casualty or accident occurred are:

-Outside 12nm it will be regarded as **open sea**

-If it is in waters up to 12 nautical miles it is **coastal waters ≤ 12 nm**

-If it is in the waters on the landward side of the baseline of the territorial sea it is regarded as **internal waters (archipelago fairway, channel/river, port area)**

-**Inland waters**, which includes any area of water defined by EU States and not categorized as 'sea'- e.g. canals, tidal and non-tidal rivers, lakes, and some estuarial waters (an arm of sea that extends inland to meet the mouth of a river)

-**Repair yard** and **unknown** are the two other possible values.

6. An **occupational accident** type means the mode in which a person on board was injured or killed. It can be:

- accident
- accident not related to ship operations
- illness
- suicide/homicide
- unknown

Illness, suicide and homicides are not covered by the scope of the Directive 2009/18/EC.

7. **Persons on board** are categorised as follow:

- Crew members / seafarers (any person who is employed or engaged or works in any capacity on board a ship);

- Passengers; and

- Others, for example persons working in harbours to load or unload ships

8. A **safety recommendation** is derived from the analysis and conclusions of the investigation and is related to particular subject areas, such as legislation, training, maintenance, etc.

Safety recommendations are addressed to those best placed to implement them, such as ship owners, maritime authorities, etc. Member States shall ensure that safety recommendations are duly taken into account by the addressees and, where appropriate, be given an adequate follow-up in accordance with Community and International law.

9. The **ship type** is decided according to the ship's main activity:

- **Cargo ship** is a commercial ship designed for the carriage of various types of cargo, goods or products and up to a maximum of 12 passengers

- **Fishing vessel** is a vessel equipped or used commercially for catching fish or other living resources at sea

- **Passenger ship** is a ship designed to transport more than 12 passengers

- **Service ship** is a ship designed for special services, like a tug or a dredger

- **Other ship**, may be:

  - **Inland waterway ship** is a ship intended solely or mainly for navigation on inland waterways.

- **Recreational craft** is a boat of any type, regardless of the means of propulsion, intended for sports or leisure purposes.
- **Navy ship** is a ship operating under the Navy or other military organization.
- **Unknown ship** type: occurrence for which it wasn't possible to identify the ship type.

Such ships are considered within the scope of the Directive only when they are involved in an occurrence together with a ship which is covered by the Directive (e.g. a collision between a cargo ship and a recreational craft).

In EMCIP, Marine casualties are separated into two different categories: a **"casualty with a ship"**, when a ship, its equipment or cargo is affected by an accident and an **"occupational accident"**, where the accident affects only a person.

10. A **sunken ship** means that the ship lost her buoyancy. It does not imply her total loss.

11. **Unfit to proceed** means that the ship is in a condition, which does not correspond substantially with the applicable international conventions or national legislation, presenting a danger to the ship and the persons on board or an unreasonable threat of harm to the marine environment.

12. As a consequence of a breakdown or immobilisation of the main engines or other event, the ships concerned needed **towage or shore assistance**.

13. The **voyage segment** determines the section of the voyage being undertaken at the time of the marine casualty or incident. It can be:

- **Anchored or alongside**

- **Arrival or Departure**

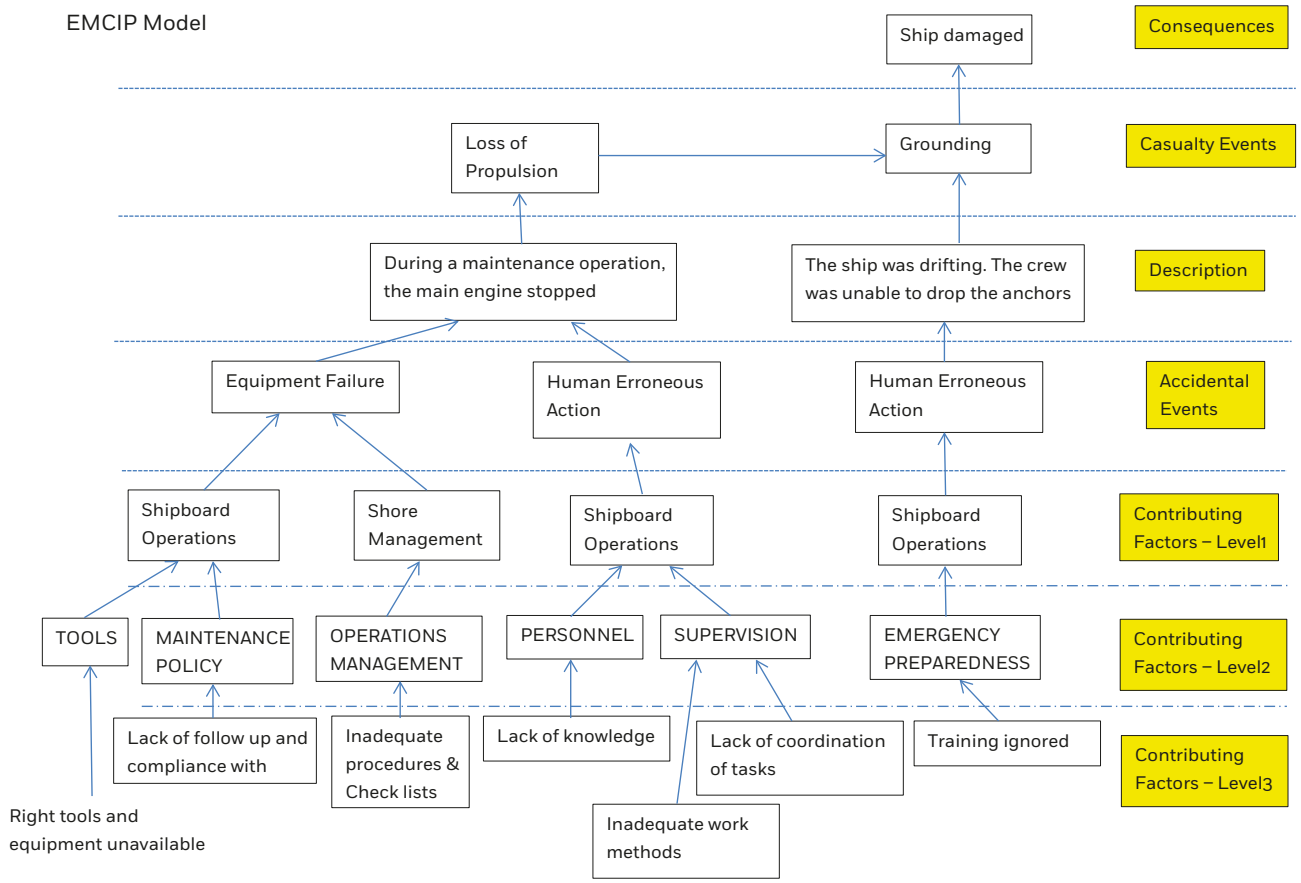
- **Transit** (between the departure and mid-water or mid-water and arrival)

- **Mid-water** (between transit phases)

Collision, CONSOUTH – PIRIREIS, 1 ship lost, 10 lives lost, 29/04/2013

APPENDIX 2

Figure 152: EMCIP Model



Safety Recommendations issued by the Investigative bodies aim at "cutting the links" between the Contributing Factors, Accidental Events and Casualty events.

When safety issues have been properly identified during a safety investigation, and followed by relevant safety recommendations, a proper consideration by the addressee should prevent similar casualties.

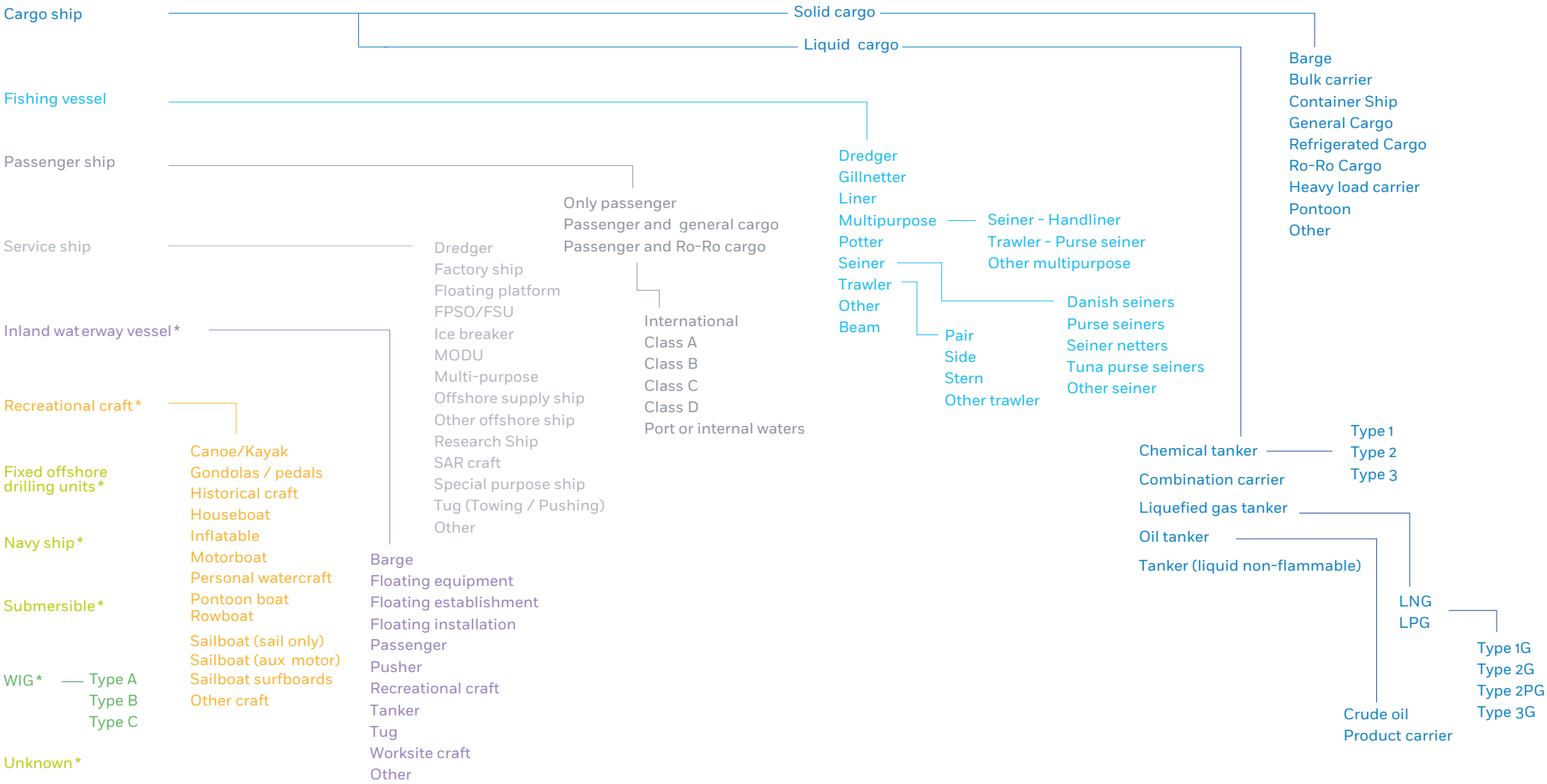
In order to report in a common way the information resulting from marine casualties, a codification of the various specific information was defined. Such codification provides also practical advice for a systematic investigation of marine casualties and incidents and allows the development of effective analysis and preventive action. It covers the different elements that connect the consequences of an accident to its root causes.

Such model is not only implemented at European level, but also at international level through the IMO resolution A28/Res.1075.

To support this model, a specific taxonomy related to marine casualties and incidents, composed by 630 fields, has been developed in the EMCIP database to store the various information collected during the investigation.

APPENDIX 3

EMCIP Ship Type



*ships grouped under category "Other ships" in this publication

Note: supplementary classification called 'Additional type of ship': HSC (ACV, Hydrofoil, SES, Other), with sub-values A, B and other

APPENDIX 4

LIST OF NATIONAL INVESTIGATIVE BODIES IN EU

Member State	Name of the national accident investigation body	Acronym	Website
Austria	Austrian Safety Investigation Authority	BAV/SUB	www.bmvit.gv.at
Belgium	Federal Public Service Mobility and Transport	FPS_TM	www.mobilit.belgium.be
Bulgaria	Maritime Accident Investigation Unit	MTITC	www.mtitc.government.bg
Croatia	Air, Maritime and Railway Traffic Accident Investigation Agency	AIN	www.ain.hr
Cyprus	Marine Accidents and Incidents Investigation service	MAIC	www.shipping.gov.cy
Czech Republic	Ministry of Transport, Czech Maritime Administration Navigation Department	MT_ND	www.mdcr.cz
Denmark	Danish Maritime Accident Investigation Board	DMAIB	www.dmaib.com
Estonia	Estonian Safety Investigation Bureau	ESIB	www.ojk.ee
Finland	Safety Investigation Authority of Finland	SIA	www.onnettomuustutkinta.fi
France	Marine Accident Investigation Office	BEAmer	www.bea-mer.developpement-durable.gouv.fr/
Germany	Federal Bureau of Maritime Casualty Investigation	BSU	www.bsu-bund.de
Greece	Helenic Bureau Marine Casualties Investigation	HBMCI	www.hbmci.gov.gr
Hungary	Hungarian Transportation Safety Bureau	TSB	www.kbsz.hu
Iceland	Icelandic Marine Accident Investigation Board	ITSB	www.rnsa.is
Ireland	Marine Casualty Investigation Board	MCIB	www.mcib.ie
Italy	Direzione Generale Investigazioni Ferroviarie e Marittime	DIGIFEMA	www.mit.gov.it
Latvia	Transport Accident and Incident Investigation Bureau	TAIIB	www.taiib.gov.lv
Lithuania	Transport Accident and Incident Investigation Division	TAITS	www.en.tm.lt/
Luxembourg	Administration of Technical Investigations	AET	www.mt.public.lu/transports/AET
Malta	Marine Safety Investigation Unit	MSIU	www.transport.gov.mt
The Netherlands	Dutch Safety Board	DSB	www.safetyboard.nl
Norway	Accident Investigation Board of Norway	AIBN	www.aibn.no
Poland	State Commission on Maritime Accident Investigation	PKBWM (SMAIC)	www.pkbwm.gov.pl

Member State	Name of the national accident investigation body	Acronym	Website
Portugal	Maritime Accident Investigation and Aeronautical Meteorology Authority	GAMA	www.gpiam.mam.gov.pt
Romania	Marine Accidents Investigation Department	MAID	www.mt.ro
Slovenia	Maritime Accident & Incidents Investigation Services	MAIIS	www.telecom.gov.sk
Spain	Standing Commission for Maritime Accident and Incident Investigation	CIAIM	www.ciaim.es
Sweden	Swedish Accident Investigation Authority	SHK	www.havkom.se
United Kingdom	Marine Accident Investigation Branch	MAIB	www.maib.gov.uk
United Kingdom / Gibraltar	Marine Accident Investigation Compliance Officer	MAICO	www.gibraltarship.com

Collision BARU SATU - KATHERINE, ships damaged, 04/07/2013


EMSA

ABOUT THE EUROPEAN MARITIME SAFETY AGENCY

The European Maritime Safety Agency is one of the European Union's decentralised agencies. Based in Lisbon, the Agency provides technical, operational and scientific assistance to the European member States in the fields of maritime safety, maritime security, prevention of, and response to, pollution caused by ships as well as response to marine pollution caused by oil and gas installations. The Agency contributes to the overall efficiency of maritime traffic and maritime transport.

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