

Supplementary Material S2: Hazards list

Table S1: Hazard list to be vetted by the focus group experts. No color should be used in print

Factors	Hazard Type	Hazard	Source
Cont.Event.1.Visual detection failure			
Human Factors	Detection Competence / Capacity	Failure to identify visually a Unidentified Floating Object (UFO)	Mayol, 2007; Silber, Bettridge and Cottingham, 2009; Weinrich, Pekarcik and Tackaberry, 2010; Arcangeli et al., 2012; Silber and Bettridge, 2012; Couvat and Gambaiani, 2013; Lloyd's Register, 2015
Human Factors	Detection Competence / Capacity	Failure to identify visually a whale	Mayol, 2007; Silber, Bettridge and Cottingham, 2009; Weinrich, Pekarcik and Tackaberry, 2010; Arcangeli et al., 2012; Silber and Bettridge, 2012; Couvat and Gambaiani, 2013; Lloyd's Register, 2015
Human Factors	Detection Competence / Capacity	Inattention (multitasking/too much information/too many activities/fatigue...)	Mayol, 2007; Silber, Bettridge and Cottingham, 2009; Weinrich, Pekarcik and Tackaberry, 2010; Arcangeli et al., 2012; Silber and Bettridge, 2012; Couvat and Gambaiani, 2013; Lloyd's Register, 2015
Human Factors	Detection Competence / Capacity	Lack of watch	Varin, comm. pers.
Human Factors	Detection Competence / Capacity	Lack of training to detect whale	Varin, comm. pers.
Environmental	Season	Whale density and species vary in function of seasons	Mayol, Capoulade and Beaubrun, 2007; Silber, Bettridge and Cottingham, 2009; Arcangeli et al., 2012; Williams et al., 2016
Environmental	Area	Whale density and species vary in function of areas	Mayol, Capoulade and Beaubrun, 2007; Silber, Bettridge and Cottingham, 2009; Arcangeli et al., 2012; Williams et al., 2016
Environmental	Whale activity	Whale activity influence visual detection (Blow/dive with no fluke/Dive with fluke/Lunge feeding/Resting/Surface activity)	Williams et al., 2016
Environmental	Climatic condition	Rain - Affect visual detection	Mayol, Capoulade and Beaubrun, 2007; Arcangeli et al., 2012; Lloyd's Register, 2015; Williams et al., 2016
Environmental	Climatic condition	Haze - Affect visual detection	Mayol, Capoulade and Beaubrun, 2007; Arcangeli et al., 2012; Lloyd's Register, 2015; Williams et al., 2016
Environmental	Climatic condition	Sun - Affect visual detection	Varin, comm. pers.
Environmental	Climatic condition	Night - Affect visual detection	Seguinot, Varin, comm. pers.
Environmental	Climatic condition	Swell - Affect visual detection	Mayol, Varin, comm. pers.
Environmental	Climatic condition	Wind - Affect visual detection	Mayol, Capoulade and Beaubrun, 2007; Arcangeli et al., 2012; Lloyd's Register, 2015; Williams et al., 2016; Varin, comm. pers.
Cont.Event.2.Human avoidance failure			
Human Factors	Avoidance Competence / Capacity	Hierarchical unwillingness to speak up, power distance gap	Lloyd's Register, 2015
Human Factors	Avoidance Competence / Capacity	Multitasking: Too many activities, leading to a loss of focus on high priority tasks	Lloyd's Register, 2015
Human Factors	Avoidance Competence / Capacity	Lack of training to avoid (depending on the whale behaviour)	Lloyd's Register, 2015; Varin, Capoulade, Roubaud, comm. pers.

Cont.Event.3.Ship technology detection failure			
Shipboard Technology	Electronic charts	Whale not reported on the REPCET interface (not reported or REPCET bug)	Seguinot, Roux, Mayol, comm.pers
Cont.Event.4.Ship technology avoidance failure			
Shipboard Technology	Mechanical failure	Inability to execute manoeuvre (Steering System Failures (rare) or Complete Black-out (electronic issue))	Lloyd's Register, 2015
Shipboard Technology	Ship type and equipment	Ship speed	Varin, Capoulade, Roubaud, comm. pers.
Shipboard Technology	Ship type and equipment	Turn radius	Varin, Capoulade, Roubaud, comm. pers.
Cont.Event.5.Detection and avoidance failure due to situational characteristics			
Physical surrounding	Density of maritime traffic	Density of mixed ship (some without VTS) provides a safe avoidance	Martins and Maturana, 2013; Akten, 2004; Ngarajan <i>et al.</i> , 2008; Lloyd's Register, 2015.
Physical surrounding	Density of maritime traffic	Congestion of the traffic	Martins and Maturana, 2013; Akten, 2004; Ngarajan <i>et al.</i> , 2008; Lloyd's Register, 2015.
Physical surrounding	Limited sea room	Choke points, Close proximity of anchorages and harbour areas, Proximity of navigational hazards (e.g., shoal)	Martins and Maturana, 2013; Akten, 2004; Ngarajan <i>et al.</i> , 2008; Lloyd's Register, 2015.
Policies	Regulatory framework	Marine safety information	Roubaud, Capoulade, Mayol, Varin, comm. pers.
Policies	Regulatory framework	Navigational rules (COLREG)	Roubaud, Capoulade, Mayol, Varin, comm. pers.
Policies	Regulatory framework	TSS & Precautionary area	Roubaud, Capoulade, Mayol, Varin, comm. pers.
Cont.Event.6.Avoidance and detection failure due to commercial constraint			
Internal functioning	Commercial pressures	Avoidance of a whale area will increase fuel consumption	Lloyd's Register, 2015
Internal functioning	Commercial pressures	Pressures to make ETAs, others	Lloyd's Register, 2015
Policies	Other environmental stakes	Gaseous pollutants (e.g., ECA, SECA)	Seguinot, Mayol, comm.pers
Policies	Regulatory framework	Inadequate, misunderstood, unforced regulatory framework	Lloyd's Register, 2015