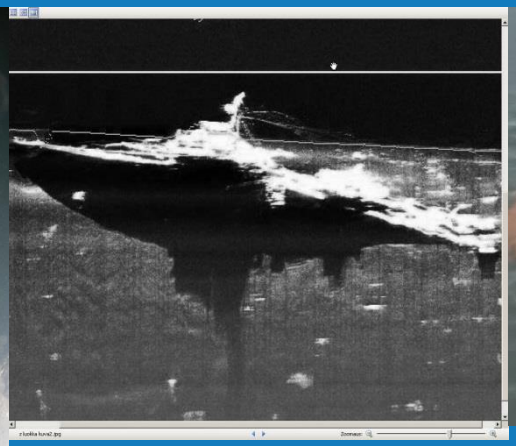
FRESHWATER CENTRE

Environmental Threats from Wrecks: The Point of View of the Environmental Authorities

Syke-BALEX Seminar on Wrecks as Environmental Risks: The Legal Framework



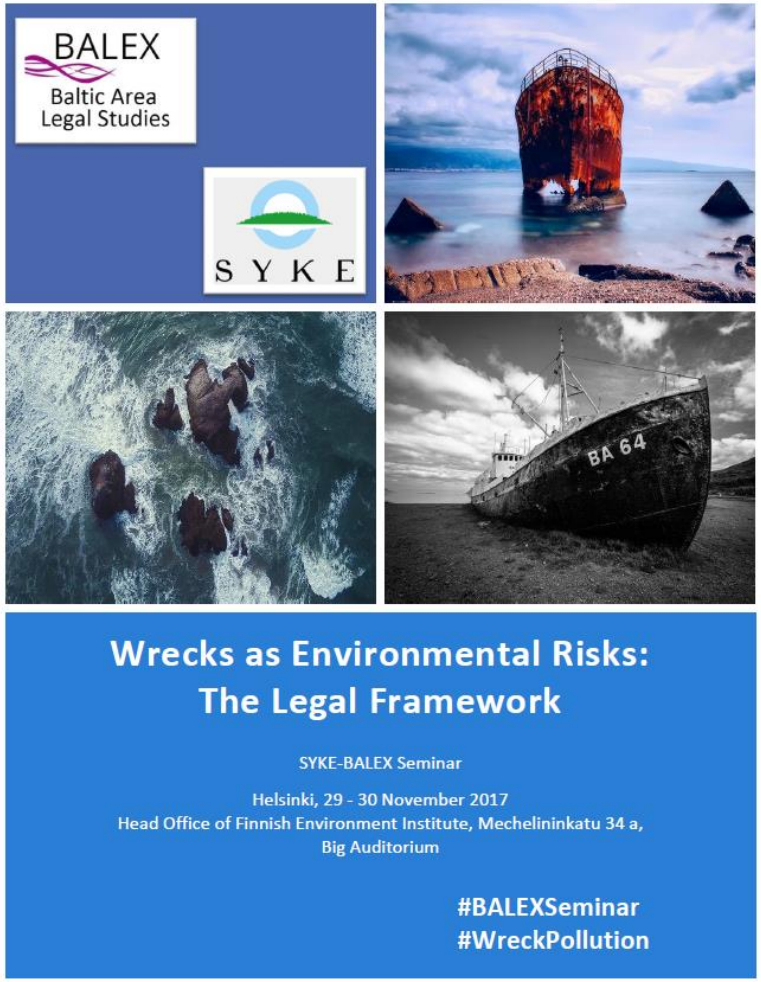
Jorma Rytkönen, Finnish Environment Institute

SYKE

BALEX
Baltic Area
Legal Studies

Contents

- Seminar Objectives and Focus
- Finnish ORV fleet
- Definition wreck here
- Environmental Impact
- SYKE's Wreck Register
- Oil Removal Operations
  - Basic tools, Surveillance, Oil removal, Operations
- Cases
- Swera
- HELCOM Submerged



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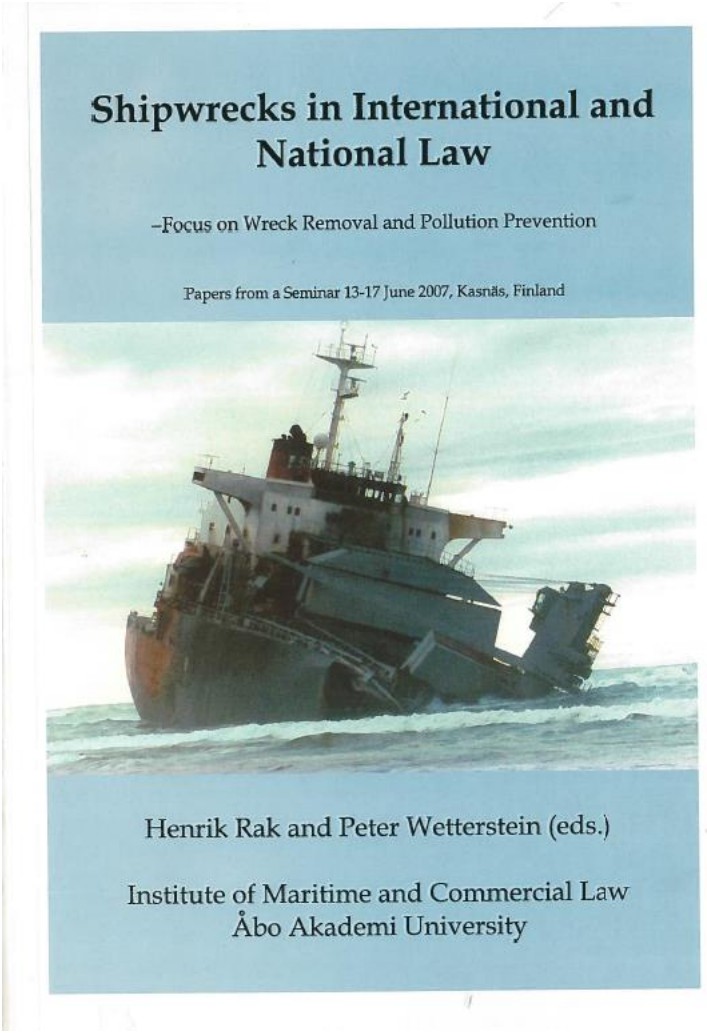
SEMINAR Objectives and Focus

- The focus is on the rights and obligations of the various parties involved in these operations in practice.
- This includes discussions on the requirements, limits and guidance placed by international law, national legislation and the national or local authorities as well as questions relating to distribution of costs and responsibilities between authorities, flag States, other owners and coastal States.
- The aim of the seminar is to shed light on the regulation of shipwrecks, highlight the existing problems, try to find solutions to them and improve the cooperation between different parties.



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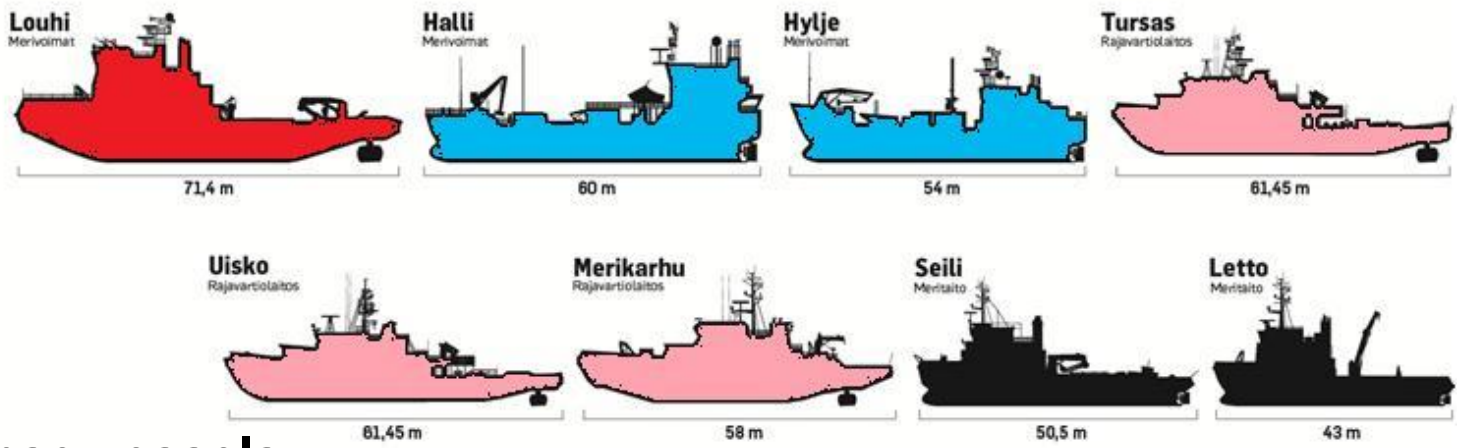
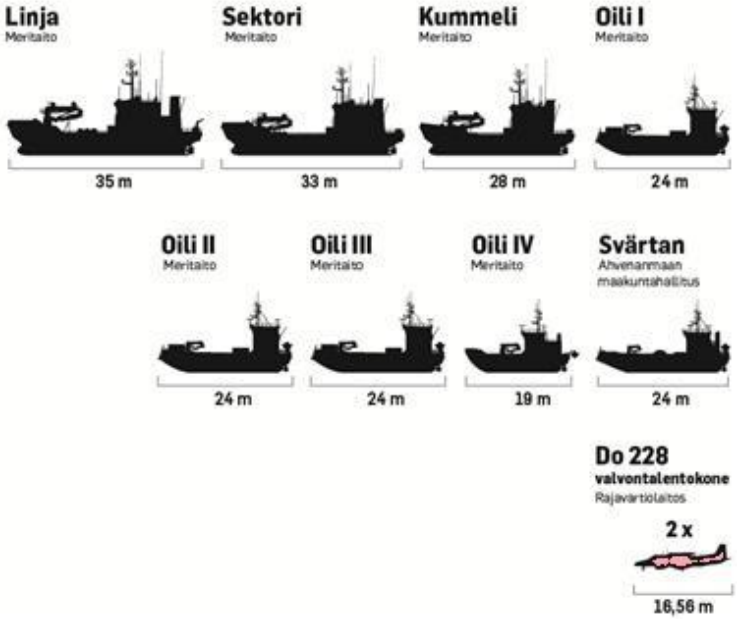
Pollution response preparedness 2015



Response vessels

- **Oil and Chemical recovery: two vessels (TURVA excluded here)**
- **Oil recovery with basic personnel protection for military tasks: 2 vessels**
- **Oil recovery and Chemical response: 3 vessels**
- **10 other oil recovery vessels**




OTAVA


STELLA
© Jarmo Vehkakoski
MarineTraffic.com


COAST GUARD
TURVA


NIMI
KOTKATAMA
NIMI
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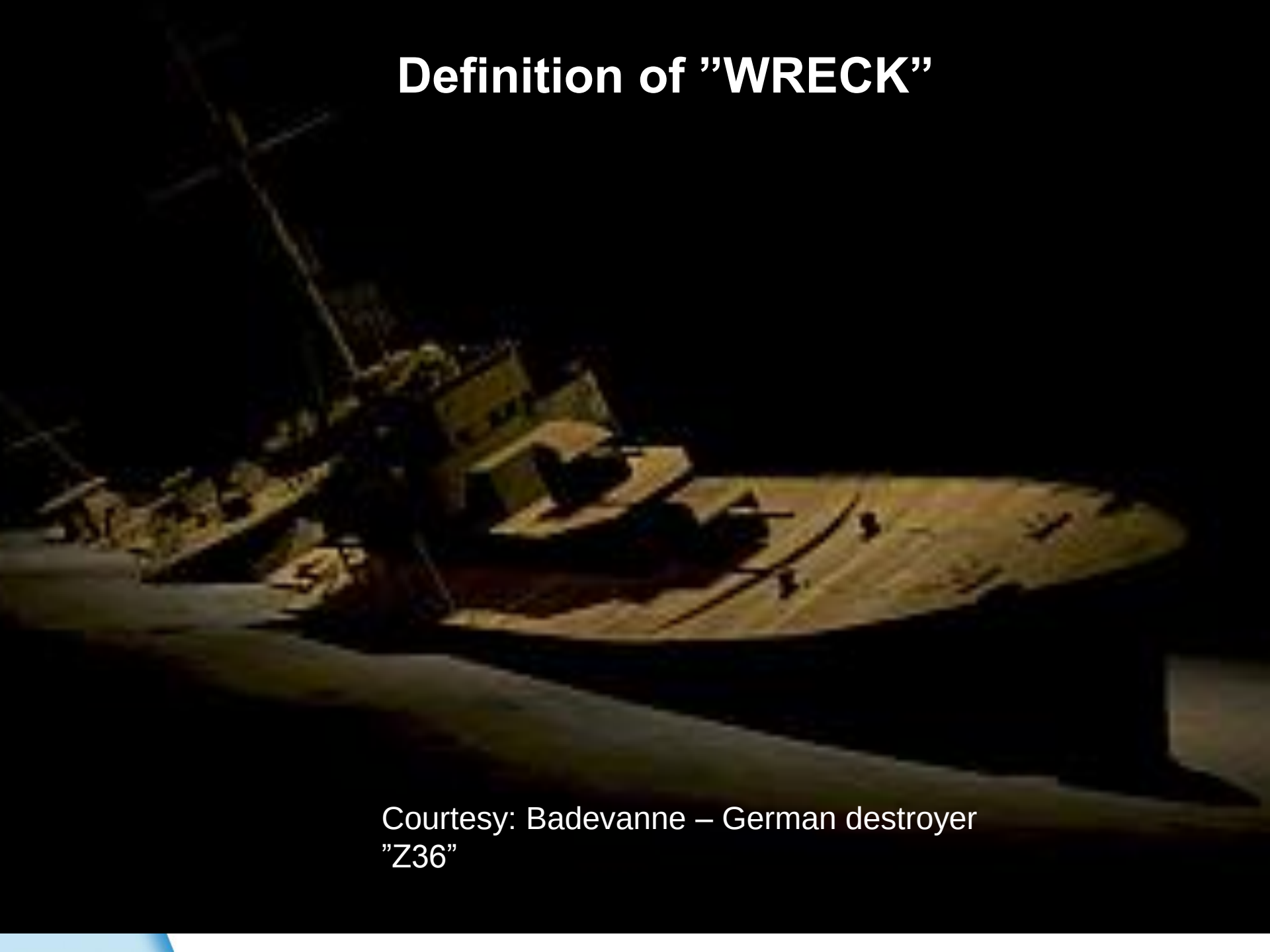
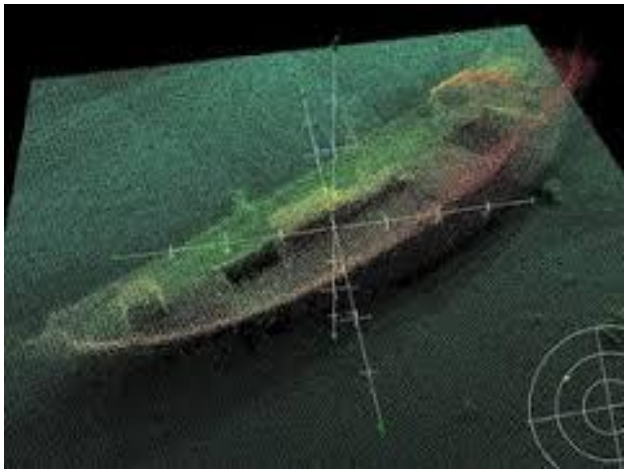
8.12.2017

Definition of ”WRECK”



Courtesy: Badevanne – German destroyer ”Z36”

Wrecks – risk for oil pollution ?



Courtesy: WWF

FINLAND, VTT 1999

Wreck Class	Description	pcs.	Percentage of surely identified wrecks
I	Wreck contains, with relatively high probability, over 100 tonnes of oil or it is in some other respect similarly dangerous to the environment.	22	32 % 68 %
II	Wreck may contain over 100 tonnes of oil because of the size, type or other structural feature of the vessel.	24	21 % 79 %
III	Wreck may contain 10-100 tonnes of oil.	68	n.a
0	Wreck contains less than 10 tonnes of oil.	306	n.a

Merenkulkulaitos

Merikartoitus

KMm_Kohde_GOF6

KUVAUS MERENPOHJAN KOHTEESTA "GOF6", MEA SUUNTA, 2005

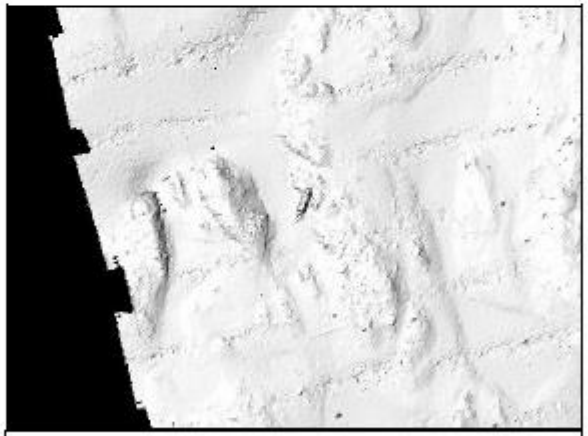
Sijainti:
KKJ:ssä

3.kaistan xy-koordinaatit	maantieteelliset koordinaatit
x = 6651480.00	lat = 59° 58.2832'
y = 3442998.00	lon = 25° 58.7618'

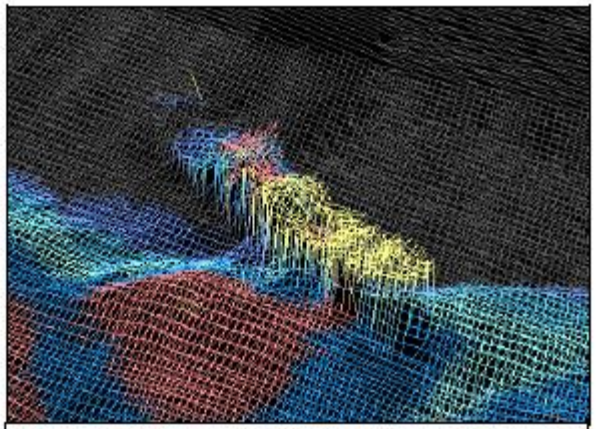
S2: **GOF057mQ**

Koko ja muoto:
Kohteen pituus on n. 67 metriä ja leveys n. 9 metriä ja korkeus n. 7-10 metriä pohjan tasosta. Kohteen muoto ilmenee tarkemmin olevista kuvista Kohde_GOF6_kuva1 ja Kohde_GOF6_kuva2.

Alueen topografia (ja morfologia):
Kohteen keulaosa sijaitsee n. 42 m:n syvyydessä, ja perätosa 61 m:n syvyydessä, ympäristön syvyyden vaihdellessa välillä 55-63 m välillä. Kohteen ympäristön topografia on vaihtelevaa hylyn sijaitessa jyrkänkössä, länteen vietättävässä rinteessä.



Kohde_GOF6_kuva1: "Pohjamuotokartta", jossa hylky erottuu keskellä.



Kohde_GOF6_kuva2: "Pohjanmuotokartta", jossa voidaan erottaa hylyn keulaosa ja peräosa.

Merimuseon tietoja kohteesta:

"ss. Ulf Jarl" (vedenalaislöytöjen rekisterissä kohde 2501), Porvoon edusta/talousvyöhyke

Merenkulkulaitoksen kohde GOF6
Ajoitus: 1900-luku. Ajoituskriteeri: hylky on tunnistettu tarkastussukelluksen yhteydessä. Kohdetta ei ole luokiteltu muinaisjäännökseksi.
Rahtilaivan hylky, jonka pituus on noin 67 metriä ja leveys noin 9 metriä. Korkeus pohjan tasosta 7-10 metriä. Lastiruumassa on laatikkolautoja ja vaneria. Komentosillan oikealla puolella on telineillään laivavene. Aluksen potkuri ja peräsin ovat paikoillaan.
Hylky on löytynyt Merenkulkulaitoksen tekemässä merenpohjan kartoituksessa vuonna 2005. Jussi Kaasisen sukeltajaryhmä teki hylylle tarkistussukelluksen heinäkuussa 2007 ottaen valokuvia ja videota. Ryhmä identifioi hylyn norjalaiseksi höyrylaiva Ulf Jarliksi, joka upposi 21.9.1924 ajettuaan miinaan. Onnettomuudesta ei tullut kuolonuhreja. Aluksen lastina oli vaneria ja laatikkolautoja.

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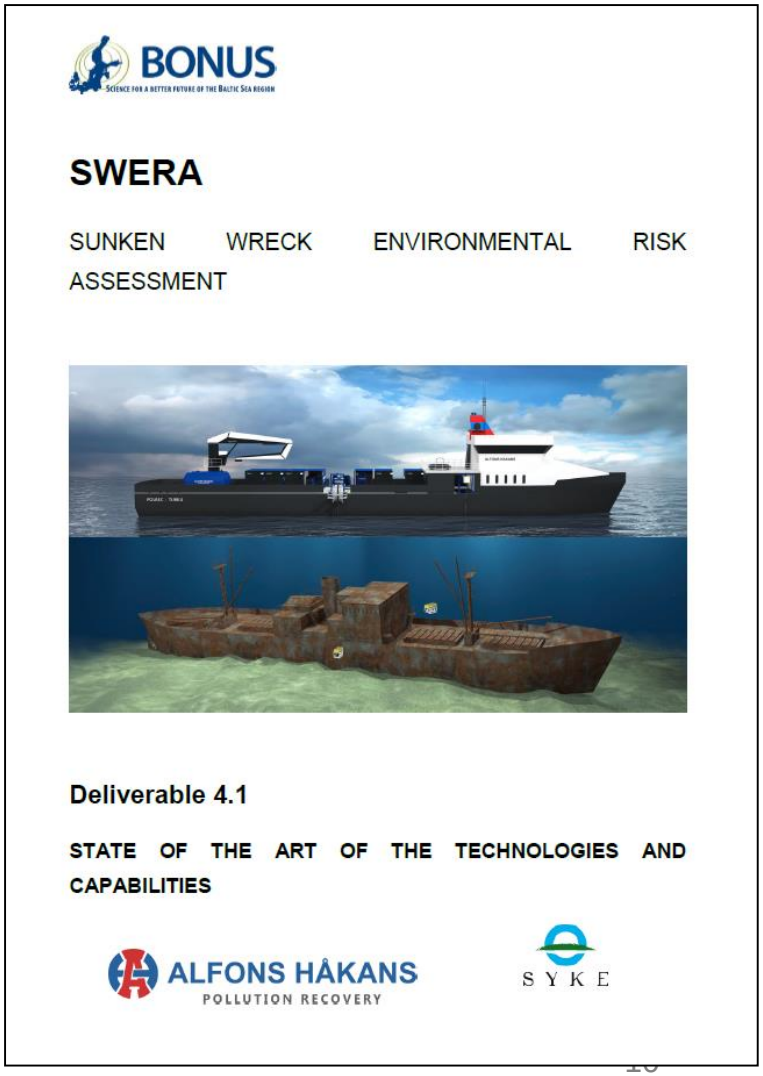
Oil Removal Operation – Basic Tools



BONUS

SCIENCE FOR A BETTER FUTURE OF THE BALTIC SEA REGION

SWERA

SUNKEN WRECK ENVIRONMENTAL RISK ASSESSMENT

Deliverable 4.1

STATE OF THE ART OF THE TECHNOLOGIES AND CAPABILITIES

ALFONS HÅKANS POLLUTION RECOVERY

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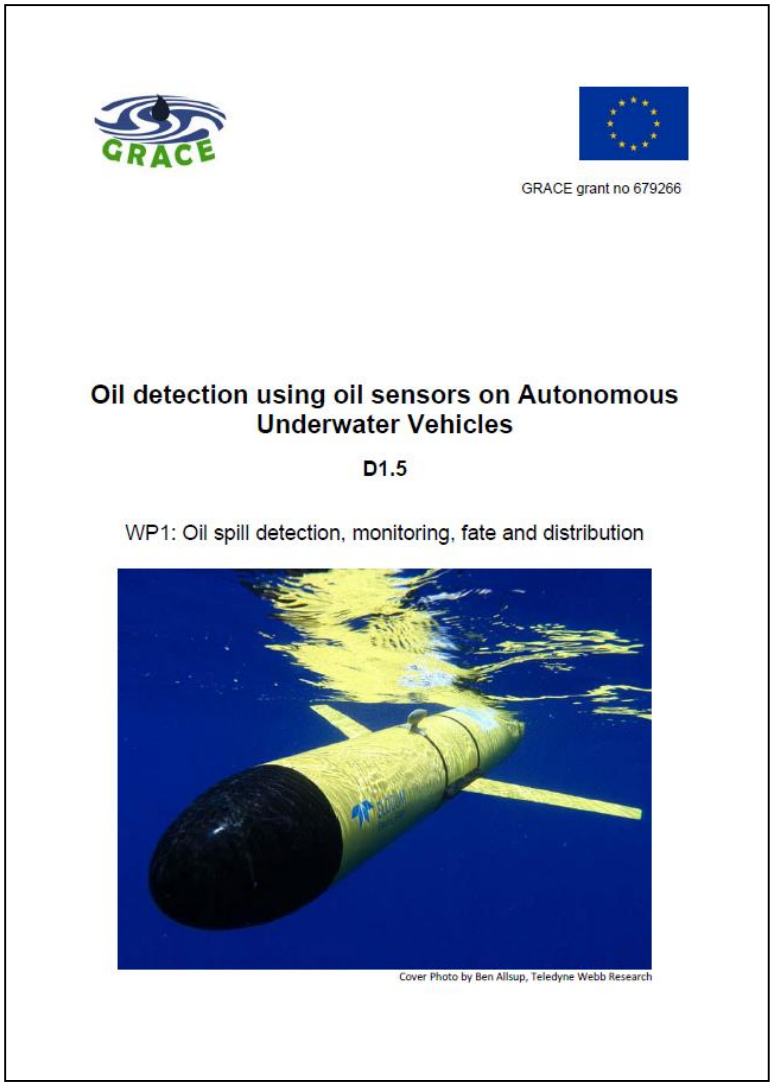
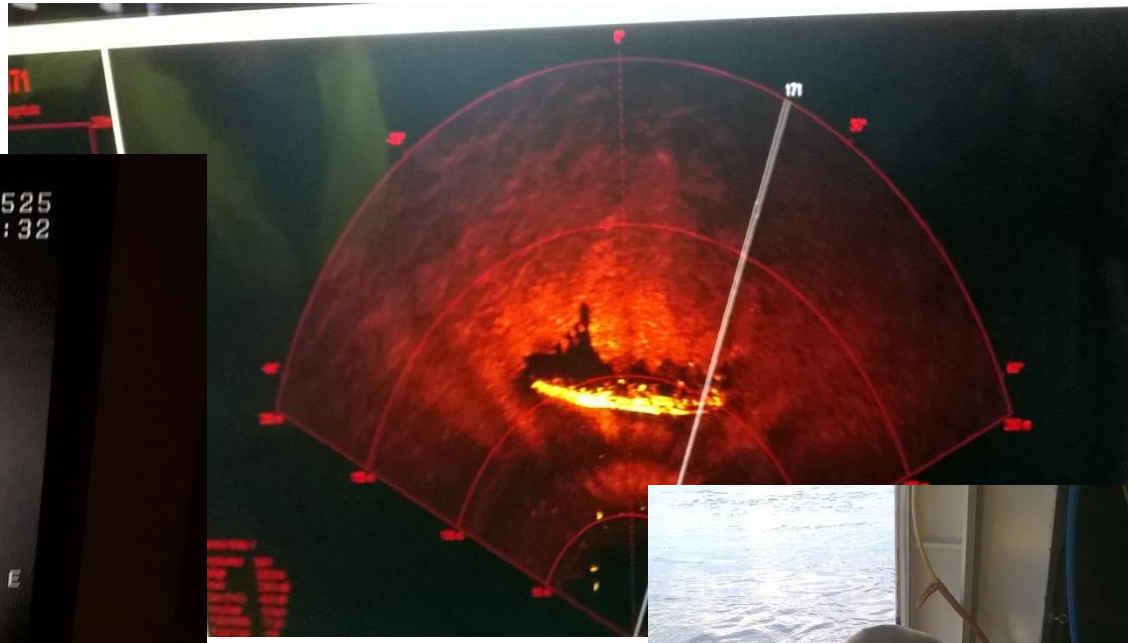
Underwater surveillance actions

- Diver, camera, visual, testing
- ROV
- Autonomous Oceanographic Vehicles (AOV)
- - AUVs; Gliders, autonomous surface vehicles (ASVs)
- fluorometer (Fluoresence detection FLD)
- masspectrometer
- Ships/Ferrybox systems
- Smart buyos with sensors
- Side scan sonars
- 3D visualizing equipments
- Radioactive means etc…



FRESHWATER CENTRE



SYK

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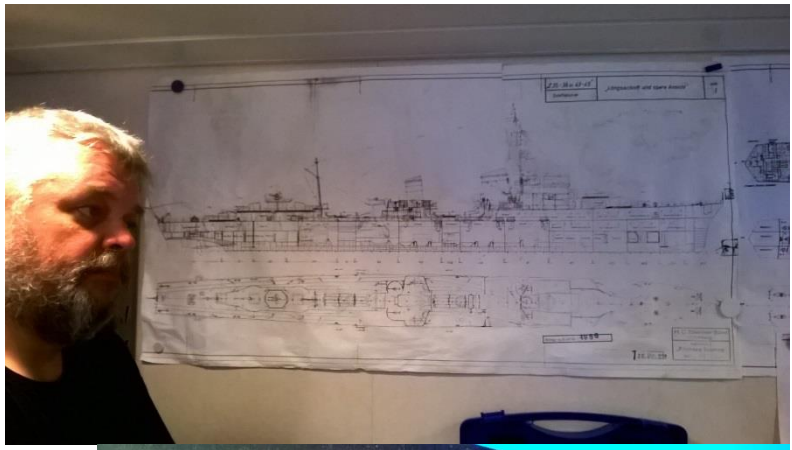
Desicion Making Procedure – Oil Removal

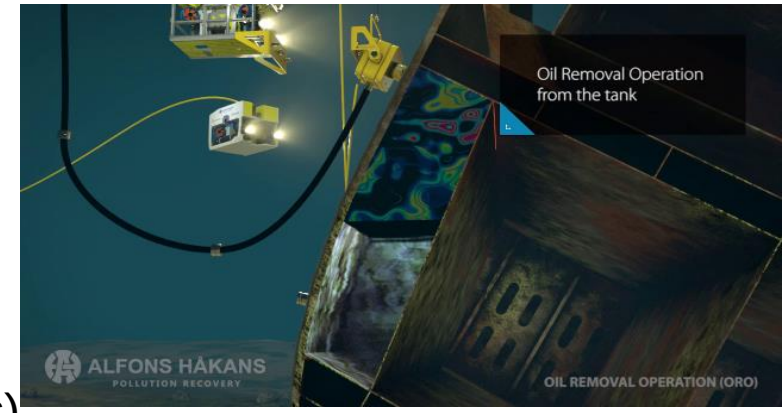
- Water depth as a key parameter affecting on the decision making
- Nationality, type, size and structure of the wreck
- Condition/corrosion of the wreck
- Water depth, temperature and current
- Need for clearing and/or dredging
- Hull/Tank specific amount of oil
- Hull/Tank specific oil quality
- Previous oil spills/leakages
- Sensitivity of the area
- Stability of the seabed/hydrodynamic force
- Explosives around/near the wreck



SYKE

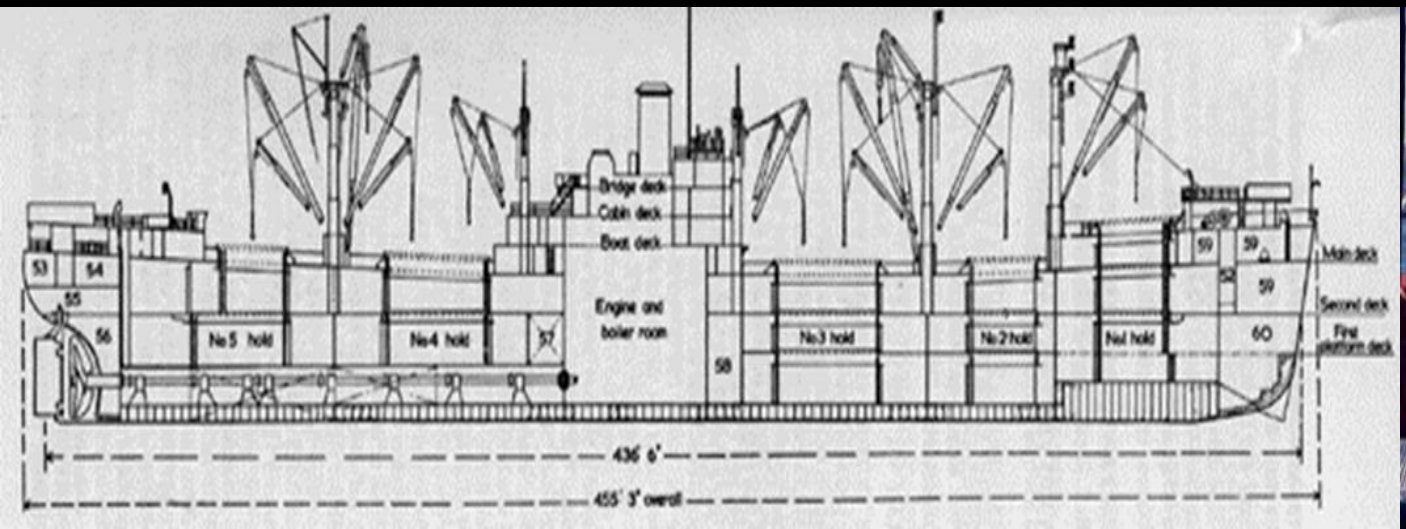
Oil Removal Operation

- Marking penetration points to the hulls
- Risk analysis, safety and security
- Occupational healthy plan
- Underwater visualization
- Oil removal plans
- Operation organization
- Oil removal
- Time schedule
- Operation vessel(s)
- Underwater working plan
- Diving
- Remotely Operated Vehicles (ROVs)
- Autonomous Underwater vehicle (AUVs)
- Technology plan
- Oil storage and disposal plan
- Action plan in case of oil leakages
- Mobilization and Demobilization plan



Case; SS Park Victory

Oil Recovery Operation's working hours 1994-2000;
Oil recovery vessels Halli and Hylje total 5000 h.
Finnish Navy Divers, total 1400 dives and 1200 working hours.
Observation class ROV, 1700 working hours.



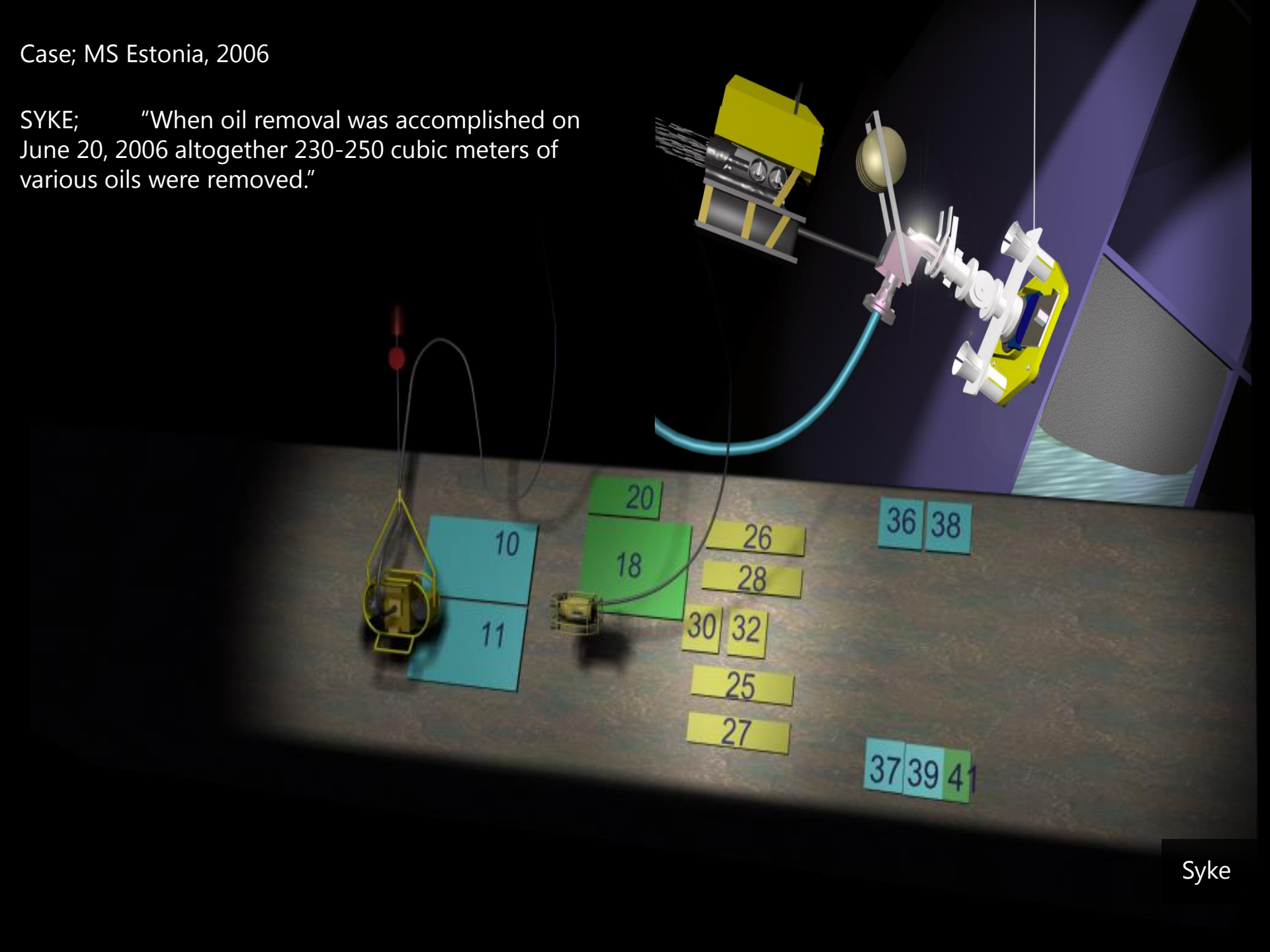
Syke

Brita Dan, wrecked 7.11.1964

- SYKE conducted the oil removal operation in 2003 and removed remaining heavy fuel oil of 20 tons during May-June in 2003.
- The preparatory operation and investigations were conducted in 2001 and 2002 based on the received information about detected oil leakages from the wreck.
- The operation was made from support vessels Hylje and Oili. Divers were used for drilling and investigations. ROV was also used for underwater operations.

Case; MS Estonia, 2006

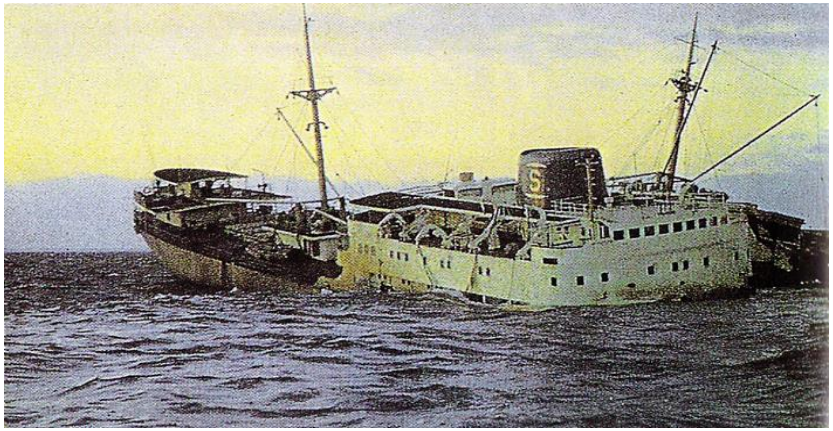
SYKE; "When oil removal was accomplished on June 20, 2006 altogether 230-250 cubic meters of various oils were removed."



Syke

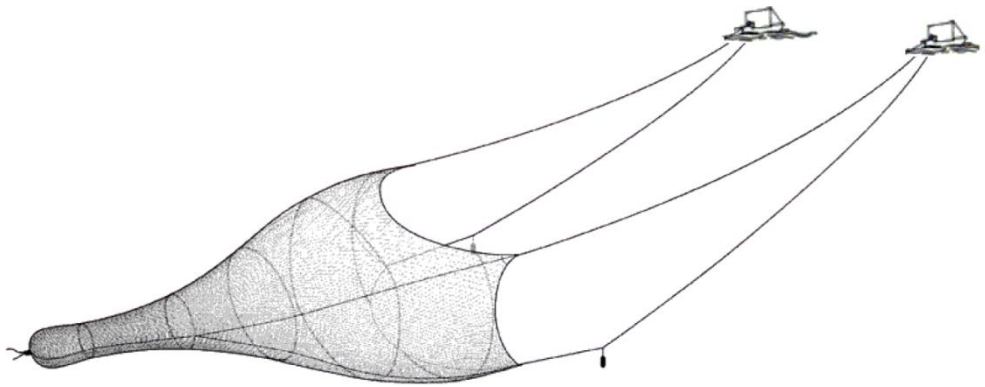
Coolaroo, grounded 27.10. 1961, sank 8.12.1961

- SYKE started the first investigations in 2001. The reason for the investigation was the expected large amount of heavy fuel oil on-board the ship
- Investigations were carried out in several years, up to 2006 annually, usually in August due to the suitable environmental conditions
- Support ships:Hylje, Halli and Mursu .
- Diving operations were performed with ROV and supporting crane operations.



Trawler Bärbel 2015

- Safety Investigation Authority's Report 8/2015
- Trawlers Bärbel and Huovari were pair trawling for Baltic herring in the Archipelago Sea on the 19th of January 2015. When loading the catch into Bärbel, it capsized at 16.40, and sank at 16.50.



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Near Miss cases 2017

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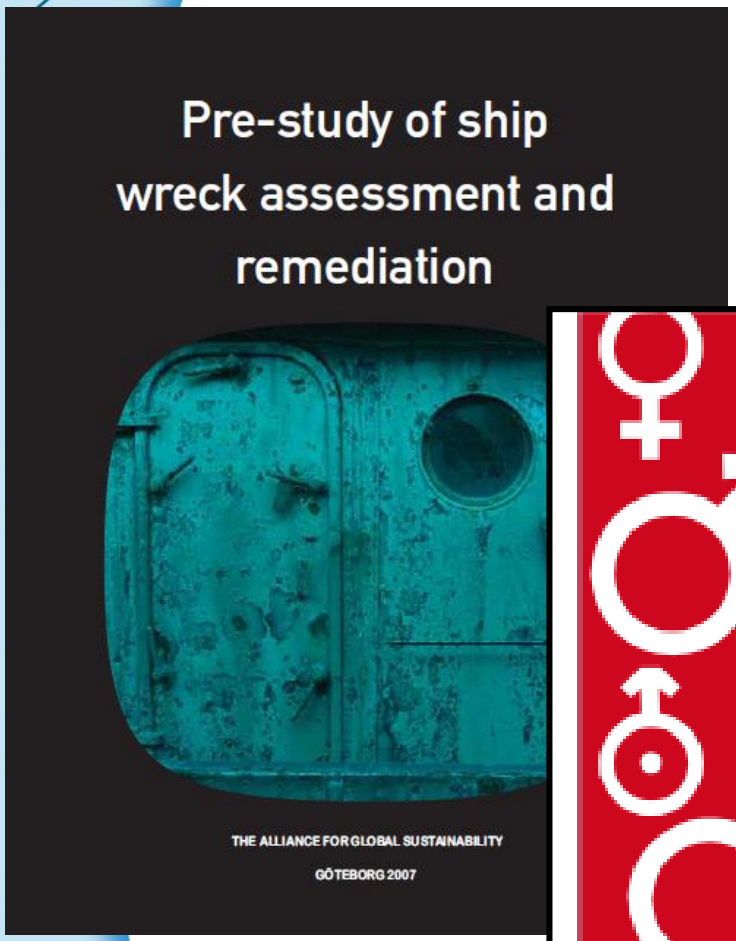
Main Objectives / Results

- 1.) **Wreck survey** – selecting the primary targets (high potential for oil pollution, **New Data Base**
- 2.) **Validation of the wreck model (Vraka)**
- 3.) **Modification** of the existing wreck model to also include the risk assessment of different salvage operation alternatives
- 4.) **Developing innovative technological solutions** for oil removal operations,
- **Salvage Toolbox Development**

SYKE

SELECTED SWEDISH REFERENCES /CHALMERS



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SUNKEN WRECK ENVIRONMENTAL RISK ASSESSTMENT

Photo: Kaimo Vahter / Shipspotting.com

Deliverable 1.2

Case study of typical wreck in Estonian waters

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HELCOM Expert Group on environmental risks of hazardous submerged objects

CONTENTS

- Wrecks in the Baltic Sea
- Former reports
- National activities
- International activities
- Limits and quality of information
- Introduction of wrecks into the Baltic Sea
- Areas of concern
- Hazards related to fuel and cargo oils
- Other hazards related to wrecks

SYKE

HELCOM data and map service

maps.helcom.fi/website/mapservice/index.html

Baltic Sea data and

Provided by HELCOM

HELCOM data and map service

HELCOM map and data service

HELCOM data can be used freely for non-commercial purposes. Users are requested to cite HELCOM as the data source when using downloaded datasets in publications. Use conditions are data layer specific and included in the metadata file of each layer. Note that some datasets in the map and data service are hosted and owned by other organisations. In that case the data is not downloadable from this service. See service description in the layer list for more information.

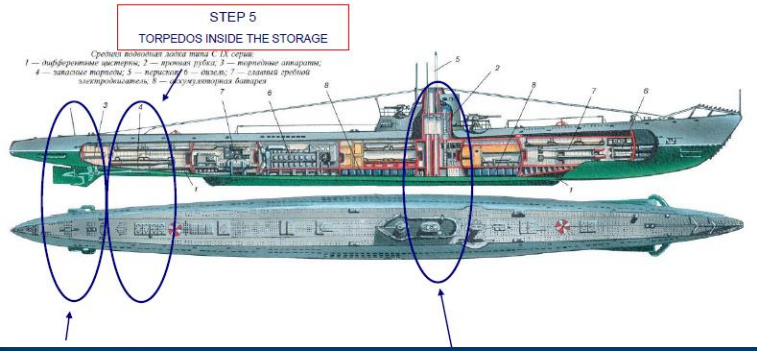
500 km

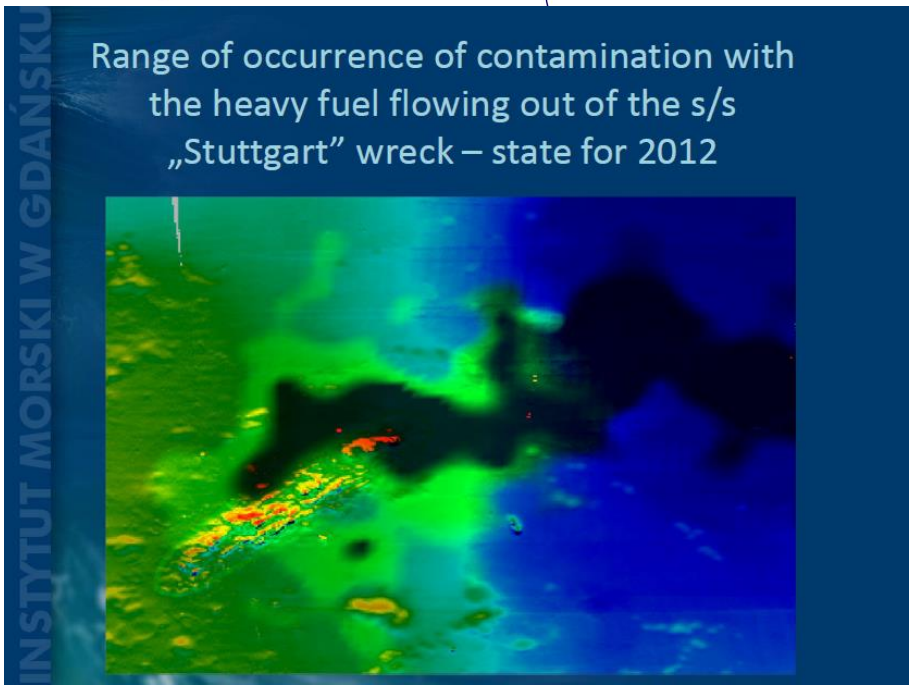
300 mi

Proposal: New joint wreck portal between authorities and wreck divers ?

- **Benefits:**

- Data source
- Observations - both directions
- Warnings
- Tips
- Advice
- Lessons learned
- Networking
- Events: workshops, seminars, full-scale diving events ?





Slides: Finnish Navy (Up) B. Hac (Down)

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More Information

jorma.rytkonen@ymparisto.fi

Coast Guard's TURVA is one of the Finnish ORV's also suitable for diving operations

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