

U.S.-RUSSIA ENERGY WORKING GROUP

WORKSHOP ON OIL SPILL PREVENTION AND RESPONSE
December 4.-5-2003

Working Panel N4. International organizations and
Agreements

Oil Spill Prevention and Response in the Baltic Sea Area



Kalervo Jolma

Finnish Environment Institute

SYKE

Baltic Sea

sensitive sea

vulnerable semiarctic Nature
slow degradation of substances
and exchange of water (25-30
years) - with the result that any
harmful substance discharged
will remain in the Baltic Sea for
a long time



The Baltic is in many respects an exceptional sea.

Its salinity is low and tides are negligible.

Thus land plants grow right to the water's edge.

**COOPERATION IN OIL SPILL RESPONSE
BETWEEN RUSSIA AND FINLAND**

**СОТРУДНИЧЕСТВО В ОБЛАСТИ
ЛИКВИДАЦИИ РАЗЛИВОВ НЕФТИ
МЕЖДУ РОССИЕЙ И ФИНЛЯНДИЕЙ**



S Y K E

CONTENT

- **TRANSPORT AND THREATS**
- **OIL SPILL RESPONSE AND ITS SHORTCOMINGS**
- **COOPERATION OF RUSSIA AND FINLAND**
- **MARITIME SAFETY**
- **FUTURE**



S Y K E

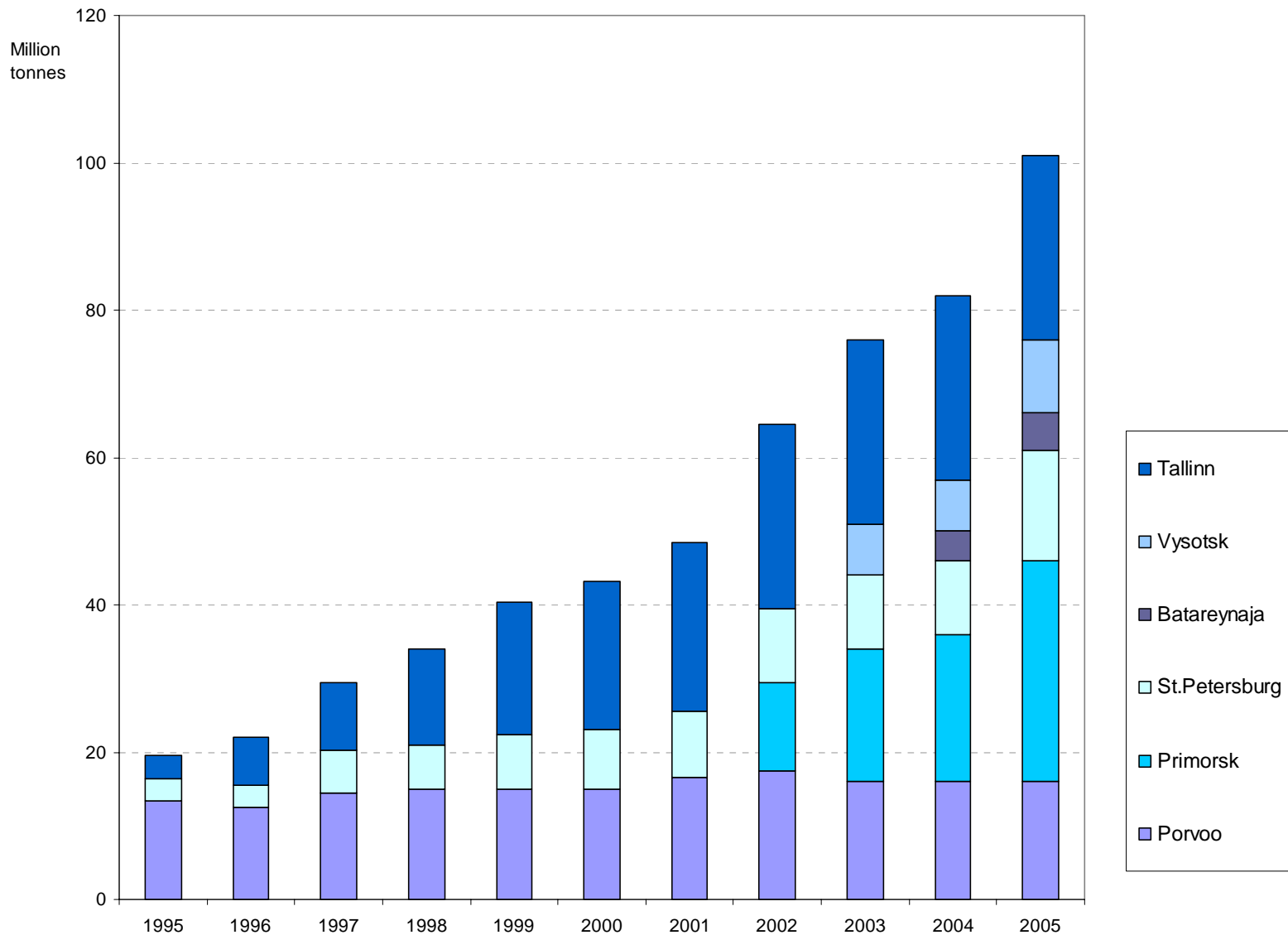
Содержание

- **Транспорт и связанные с ним риски**
- **Ликвидация разливов нефти и связанные с этим проблемы**
- **Российско-финляндское сотрудничество**
- **Безопасность мореходства**
- **Будущее**



S Y K E

**OIL TRANSPORTATION IN THE GULF OF FINLAND THROUGH MAIN OIL PORTS
OIL TRANSPORTATION IN YEARS 1995-2002 AND ESTIMATED DEVELOPMENT 2003-2005
ОБЪЕМЫ ПЕРЕВОЗОК НЕФТИ ЧЕРЕЗ ОСНОВНЫЕ НЕФТЯНЫЕ ТЕРМИНАЛЫ
ФИНСКОГО ЗАЛИВА ЗА 1995 - 2002 ГГ., ОЦЕНКА ДИНАМИКИ РАЗВИТИЯ
ПЕРЕВОЗОК НЕФТИ ЗА 2003 - 2005 ГГ., МИЛЛИОНЫ ТОНН**



Point	v.2000
1	23388
2	34692
3	46476
4	58500
5	75696
6	85296

Table 26. Numbers in the six projections.

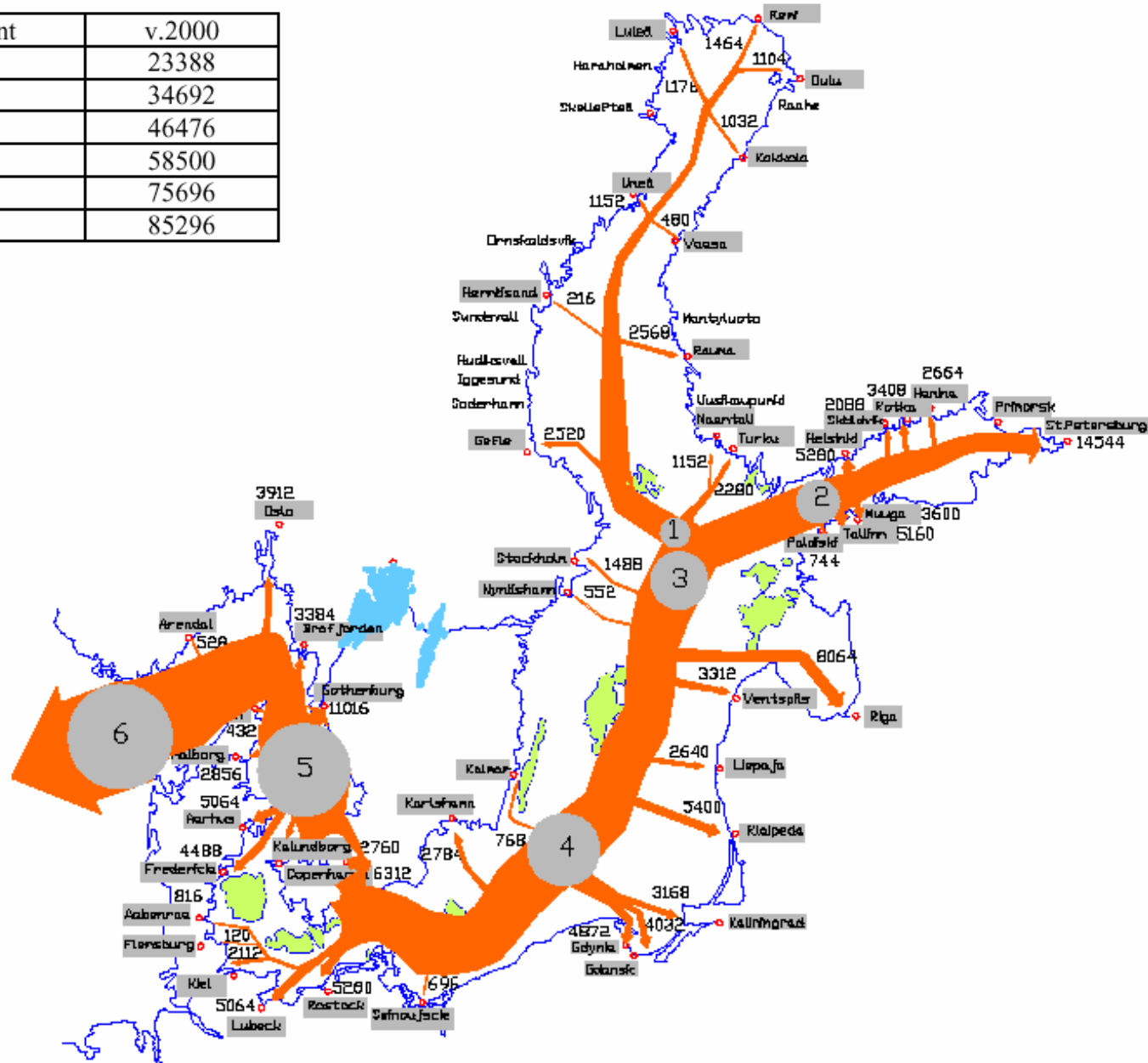


Figure 42. The total transport figures of the Baltic Sea in 2000.

Point	v.2000	v.2015
1	23388	31600
2	34692	70100
3	46476	83700
4	58500	105300
5	75696	121100
6	85296	136500

Table 38. Traffic volumes in Figure 49.



Figure 49. Forecast for the ship movements in 2015. Note: the passenger traffic is excluded.



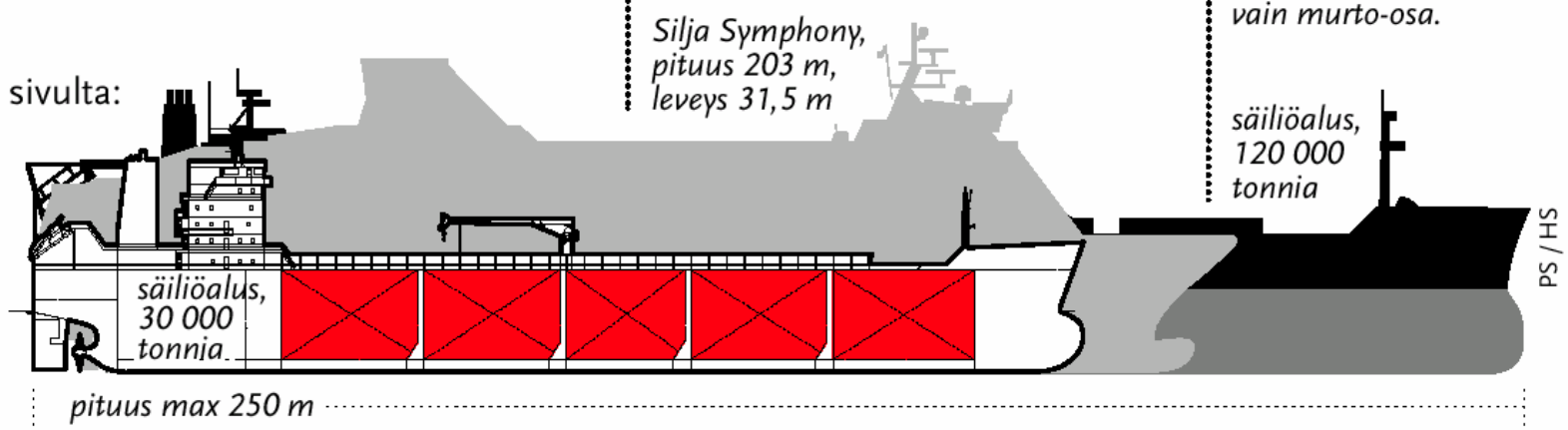
Major oil incidents in the Baltic Sea, 1980 - 2001

11/18/01

Year	Name of ship	Quantity of Oil Spilled (tons)	Place of Incident
1980	Furenas	200	The Sound, Sweden
1980	Eva Oden	250	Gothenburg, Sweden
1980	Furenäs/Karnen	200	The Sound, Denmark
1980	Lloyd Bage	130	Helsinki, Finland
1981	Jose Marti	1000	Dalarö, Sweden
1981	Serif	375	Öland, Sweden
1981	Globe Asimi	16000	Klaipeda, Lithuania
1982	Sivona	800	The Sound, Sweden
1984	Eira	200	Vaasa, Finland
1984	Ibn Roch	300	Great Belt North, Denmark
1985	Sotka	350	Åland Sea, Sweden
1986	Thuntank 5	150-200	Gävle, Sweden
1986	Jan	320	Aalborg Bight, Denmark
1987	Antonio Gramsci	580	Porvoo, Finland
1987	Okba Bnou Nafia	120	Malmö, Sweden
1987	Tolmiros	250	West Coast, Sweden
1990	Volgoneft	1000	Karlskrona, Sweden
1995	Hual Trooper	180	The Sound, Sweden
1998	Nunki	100 m ³	Kalundborg Fjord, Denmark
2001	Baltic Carrier	2700	Kadetrenden, Denmark

 öljyä

► Säiliöalus sivulta:

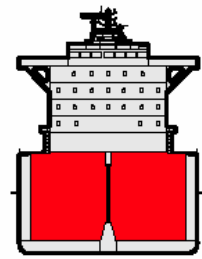


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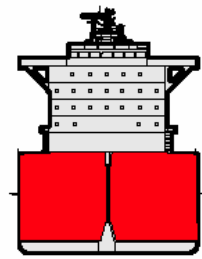


► Säiliöalustyytit edestä:

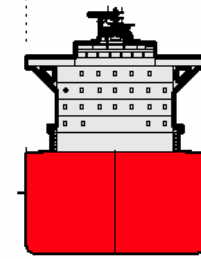
leveys
max 50 m



kaksoisrunko



kaksoispohja

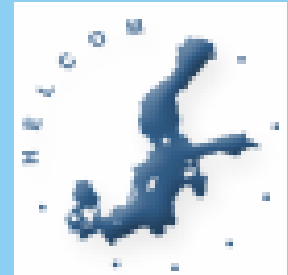


yksinkertainen
runko

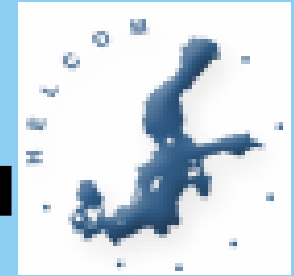
 öljyä

HELCOM RECOMMENDATIONS on oil spill response

- national ability
- drifting forecast models
- aerial surveillance
- minimum requirements for oil ports
- preference to use mechanical recovery
- emergency capacities

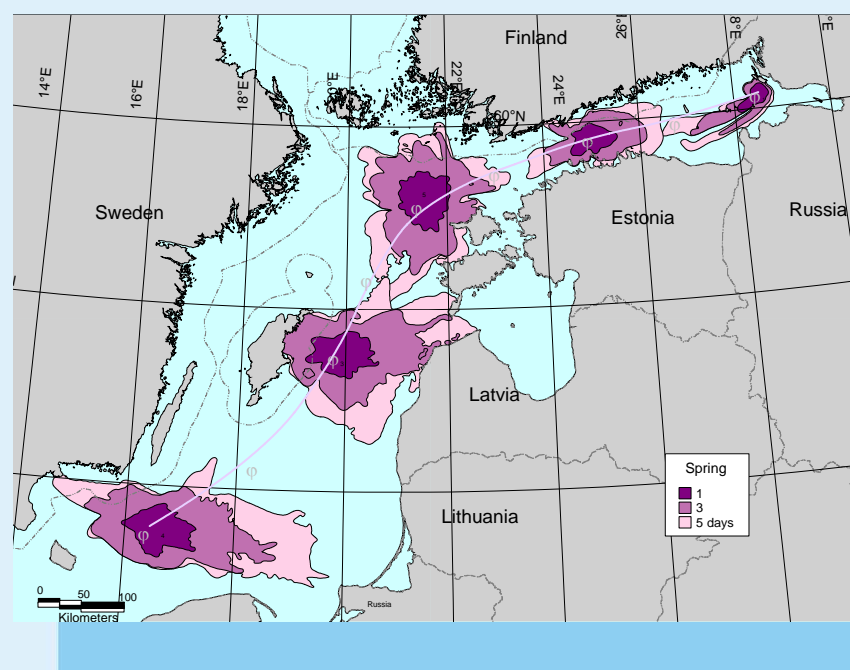


Рекомендации ХЕЛКОМ по ликвидации разливов нефти

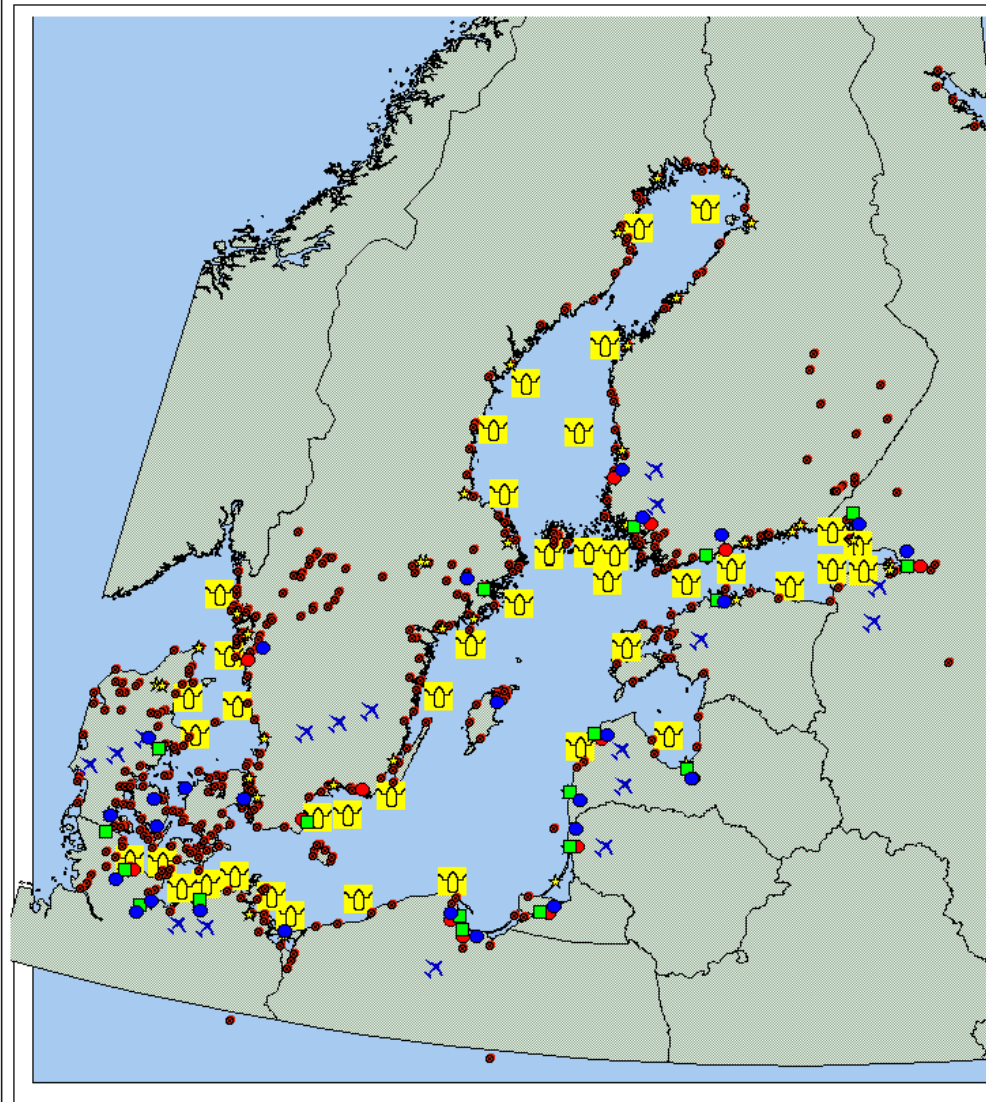
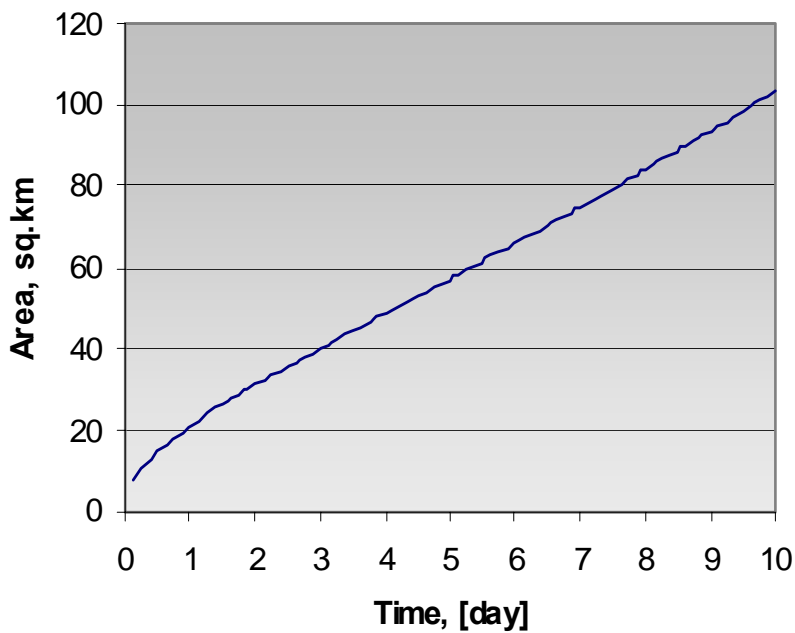


- Национальные мощности по ликвидации разливов нефти
- Модели распространения нефти
- Авиаконтроль
- Минимальные требования в нефтяных портах
- Запрет применения химикатов и прочих нетехнических методов
- Мощности аварийного буксирования

Maritime emergencies special equipment in Helsinki Convention area



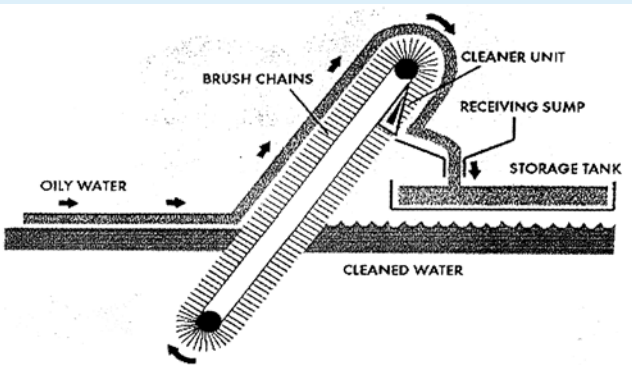
30000 ton



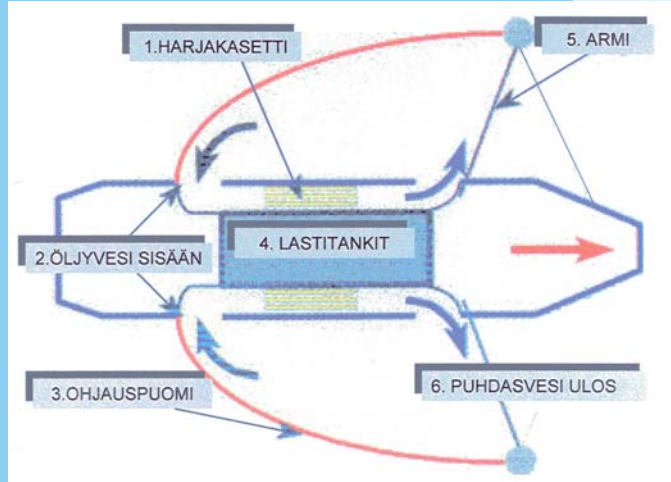
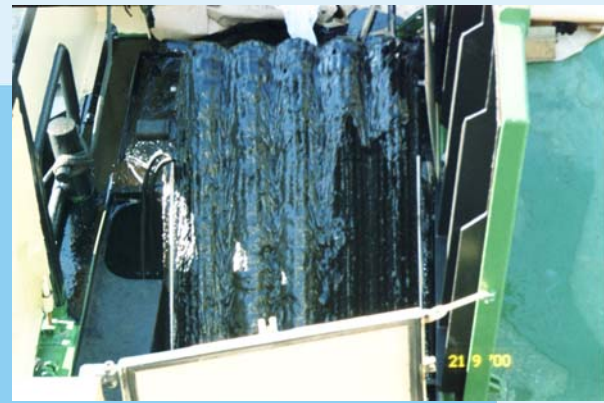
- Towing capacity (Tons bollard pull) > 25
- Storage Capacity (m3) > 200
- Fire Fighting Capacity l/min > 5 000
- ★ Oil harbours
- Harbours
- ✕ Surveillance aircraft
- Oil recovery vessel

0 100 200 Kilometers





The LORI Brush Skimming system



11.5.2004

Oil recovery in ice in the Gulf of Finland 2003



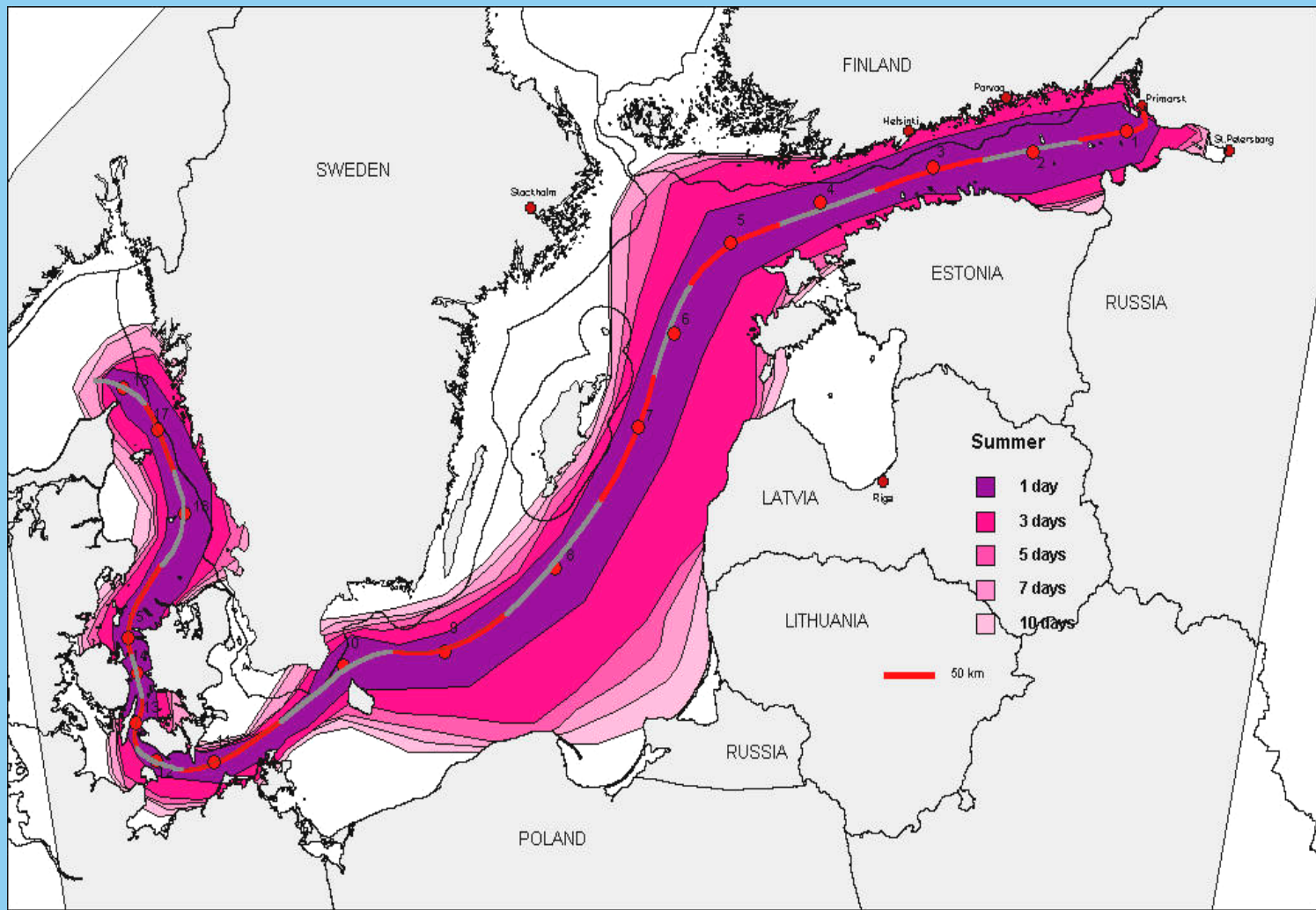
S Y K E

Ликвидация разлива нефти в Финском заливе в ледовых условиях в 2003 г.



Average spreading areas of oil in summer months

Средние зоны распространения нефти в летний период



Improving maritime safety

- Separation schemes in th GF
- Vessel traffic information system
- Double hull requirements
- Unified ice traffic rules
- PSSA
- Escort towing



S Y K E

Повышение безопасности мореходства

- Введение разделения полос движения судов в Финском заливе
- Контроль движения судов
- Ужесточение требований по двойным корпусам
- Единые правила движения в ледовых условиях
- Классификация Балтийского моря как особо чувствительной морской зоны (PSSA)
- Буксиры эскортирования



IMPROVING MARITIME SAFETY OF THE BALTIC SEA

■ TOOLS:

- one way routes
- escort towing by needs
- ice traffic service and its requirements
- structural strength and precautionary measures
- weather limits
- pilotage
- vessel traffic management and information system, VTMIS
- training of the crew
- emergency capacities; ETV, lightering, fire-fighting, places of refuge
- heavy duty response vessels

■ WAYS:

- voluntary schemes of private enterprises
- national regulations and economical sanctions
- trilateral agreements
- HELCOM and EU
- global resolutions, IMO



Separation schemes and VTMIS

Полосы движения судов в Финском заливе



S Y K E

Escort tug of Fortum Gas and Oil



S Y K E

Буксир эскортирования А/О «Фортум»



Developing spill response

- **Bigger and more accurate situated response vessels**
- **More and better equipment**
- **Equipment applicable to ice conditions, too**
- **Engineering of shore line clean up work**



S Y K E

Усовершенствование ликвидации разливов нефти

- **Более мощные нефтесборочные суда, правильная расстановка этих судов**
- **Увеличение числа судов, их техническая комплектация**
- **Требуется техника для ликвидации разливов нефти в зимних условиях**
- **Введение механической очистки берегов**



S Y K E

New methods and equipment for clean up



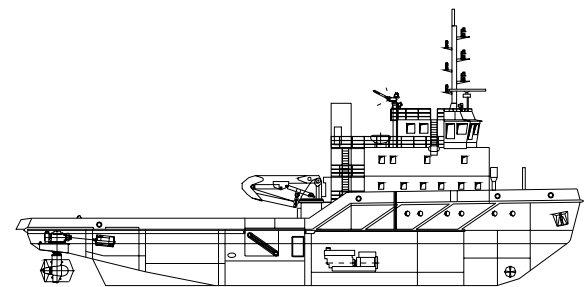
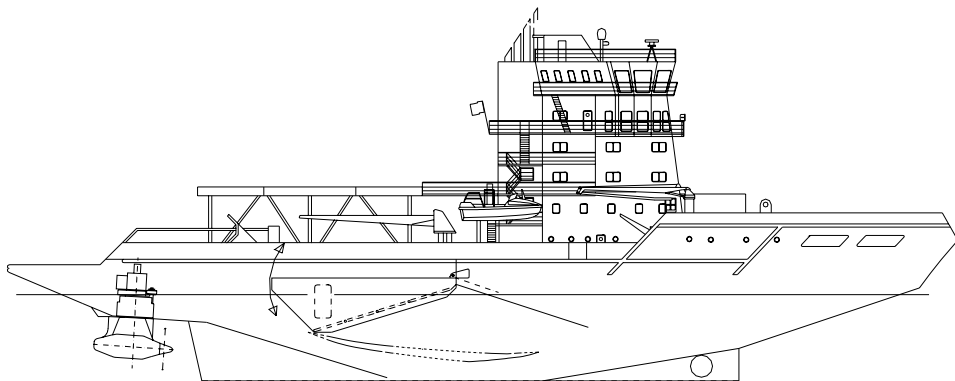
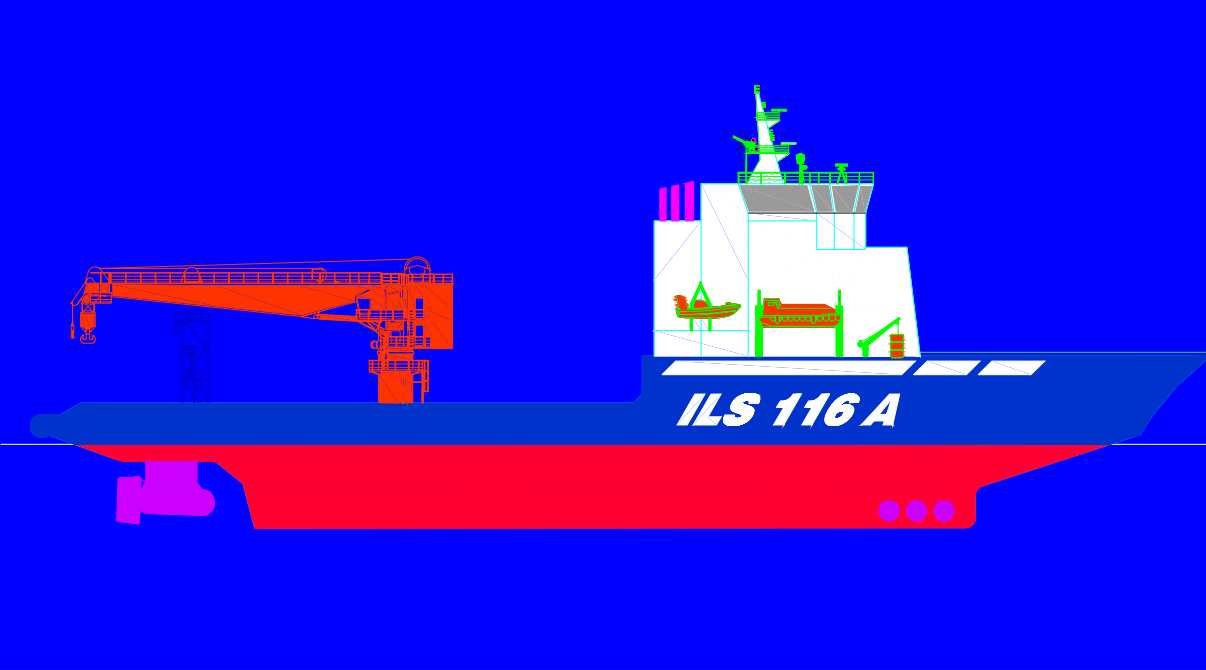
Устройство для сбора нефти с берега



FINNISH ENVIRONMENT INSTITUTE







The finnish ice vibrator

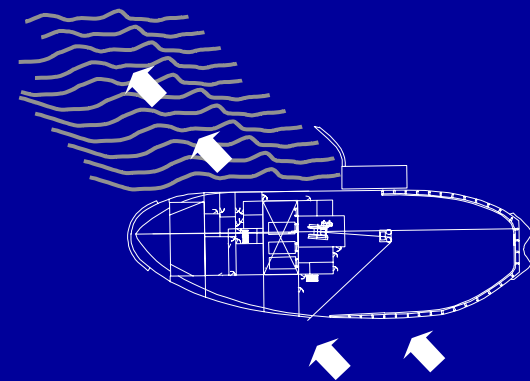


The Finnish Environment Institute has developed and tested a new type of ice cleaning device, which seems to have good potential for further development.

Wide clean-up path

The Kvaerner Masa-Yards new concept is based on the idea of using the width of the vessel to create a wide collecting path into the ice vibrator.

Due to the good icebreaking capability the vessel is also able to reach the spill site in any ice condition, also through the dynamic sea ice structures.



KVÆRNER

Kvaerner Masa-Yards

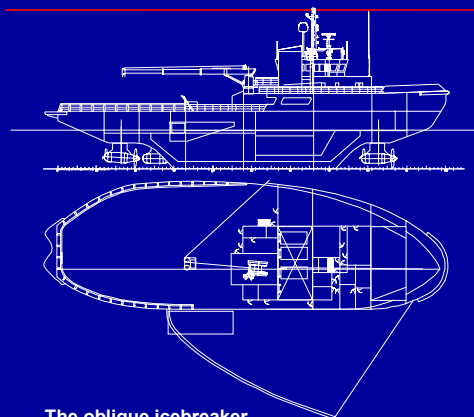
Free choice for direction of full power



Making benefit of the new opportunities Kvaerner Masa-Yards' naval architects created a design with three propeller units for breaking ice by the icebreaker formed side of the vessel.

This hull form simultaneously appeared to be excellent for escort towing purposes and through the asymmetry it also provided plenty of space for collection tanks for oil spills.

The multifunction terminal vessel



The oblique icebreaker

The present solution
Two icebreakers assist one big vessel



The innovation
One "Oblique Icebreaker" breaks channel wide enough for a big vessel



The unsymmetric "oblique" multipurpose icebreaker developed in Finland effectively combines the roles of an escort tug, oil spill combatting unit and an icebreaker in a single hull, able to create a 40 meter wide channel in one meter thick ice by three 3 MW pod drives.

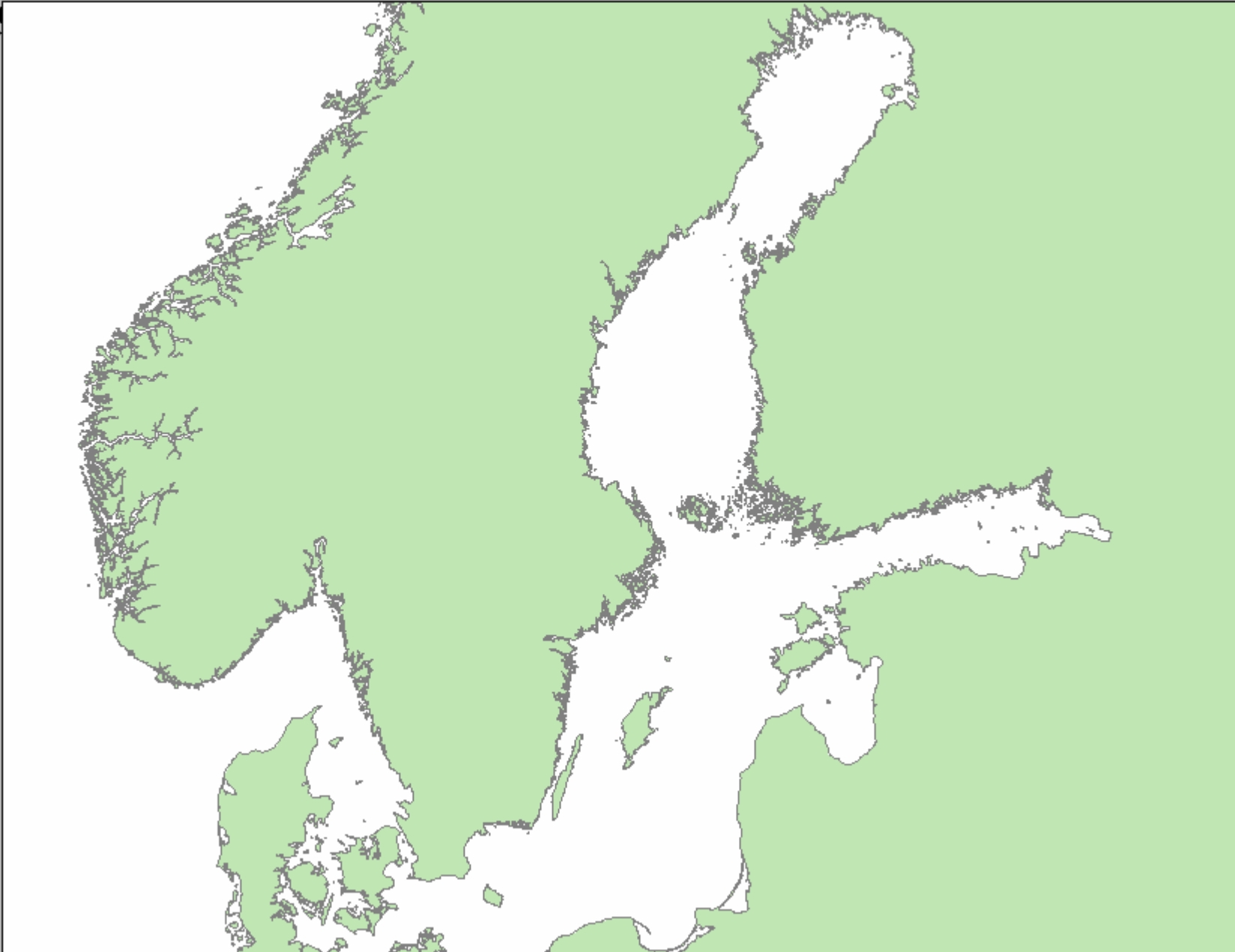
Kvaerner Masa-Yards

KVÆRNER



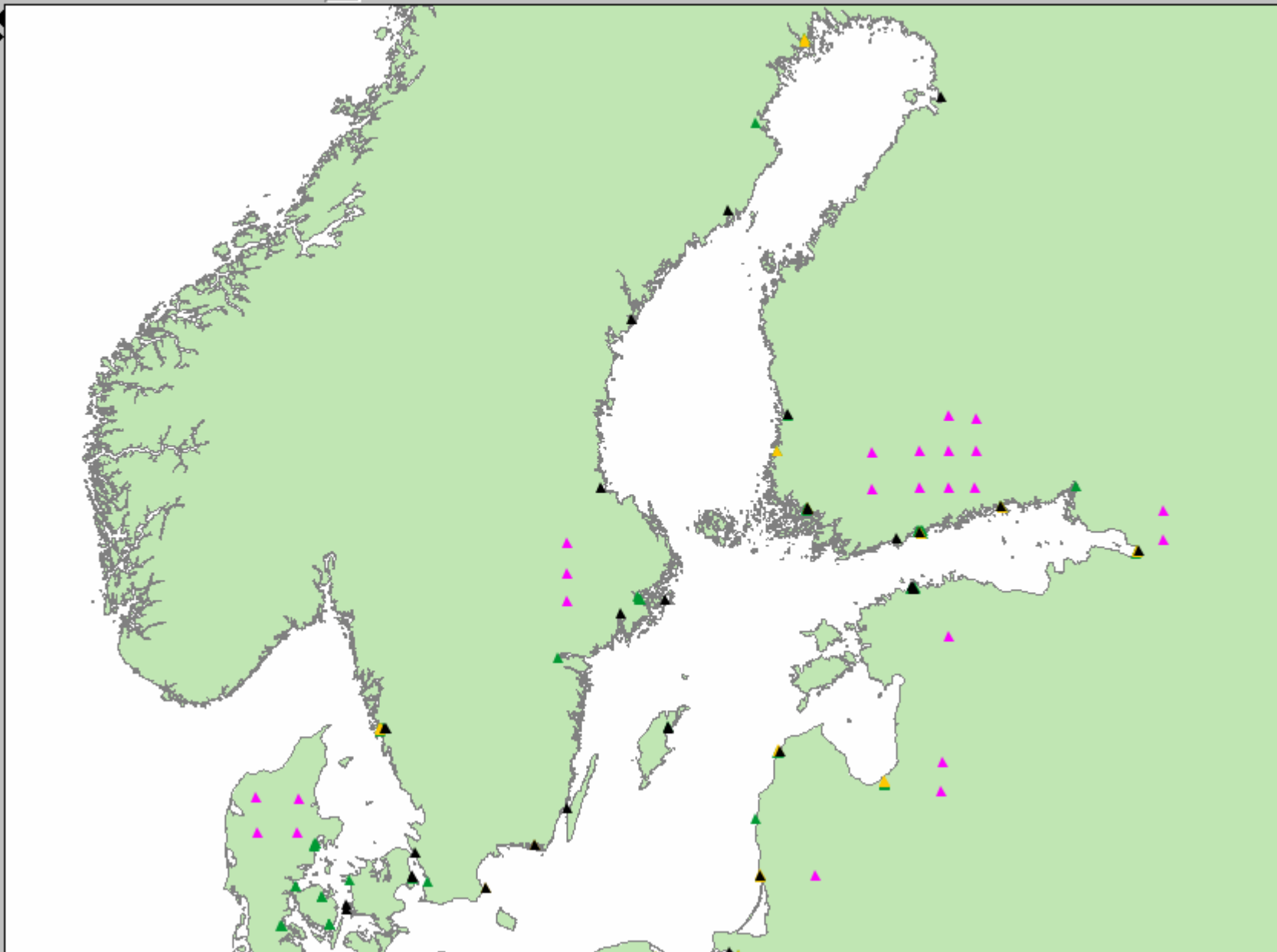


- ResponseVessel
 - ▲
- FireFighters
 - ▲
- StorageCapacity
 - ▲
- TowingCapacity
 - ▲
- SurveillanceAircra
 - ▲
- CombinedCapaci
 - ▲ Fire fighter
 - ▲ Response ves
 - ▲ Storage capac
 - ▲ Towing capaci
 - ▲ airplane
 - ▲ helicopter
- Harbours
 -
- Oil terminals (ove
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- oilTerminals (YEA
 - Less than 6.4
 - 6.4 - 9.5
 - 9.5 - 12.6
 - 12.6 - 15.7
 - 15.7 - 18.8
 - 18.8 - 21.9
 - 21.9 - 25.0
- Accidents00-02



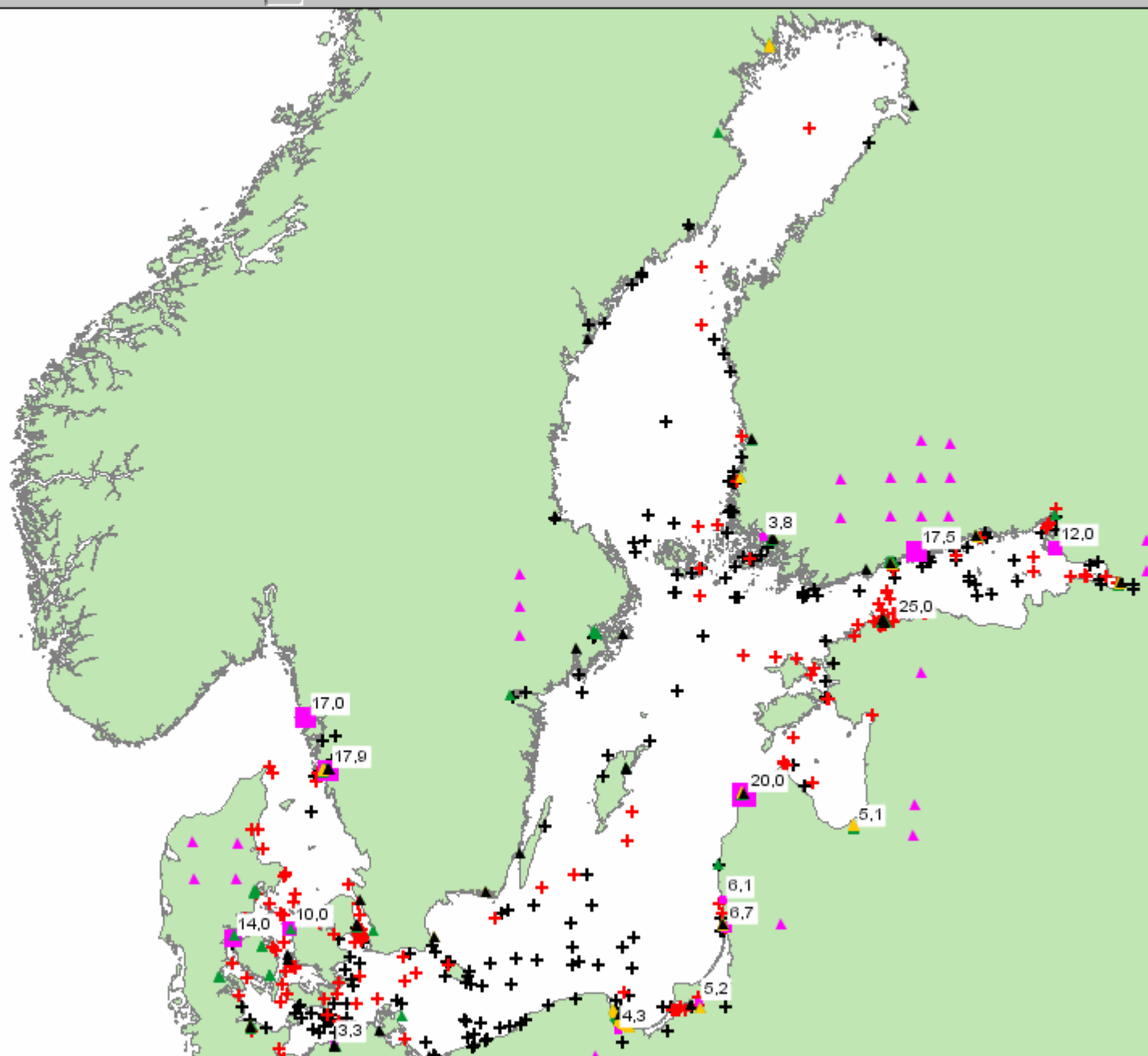


- ResponseVessel ▲
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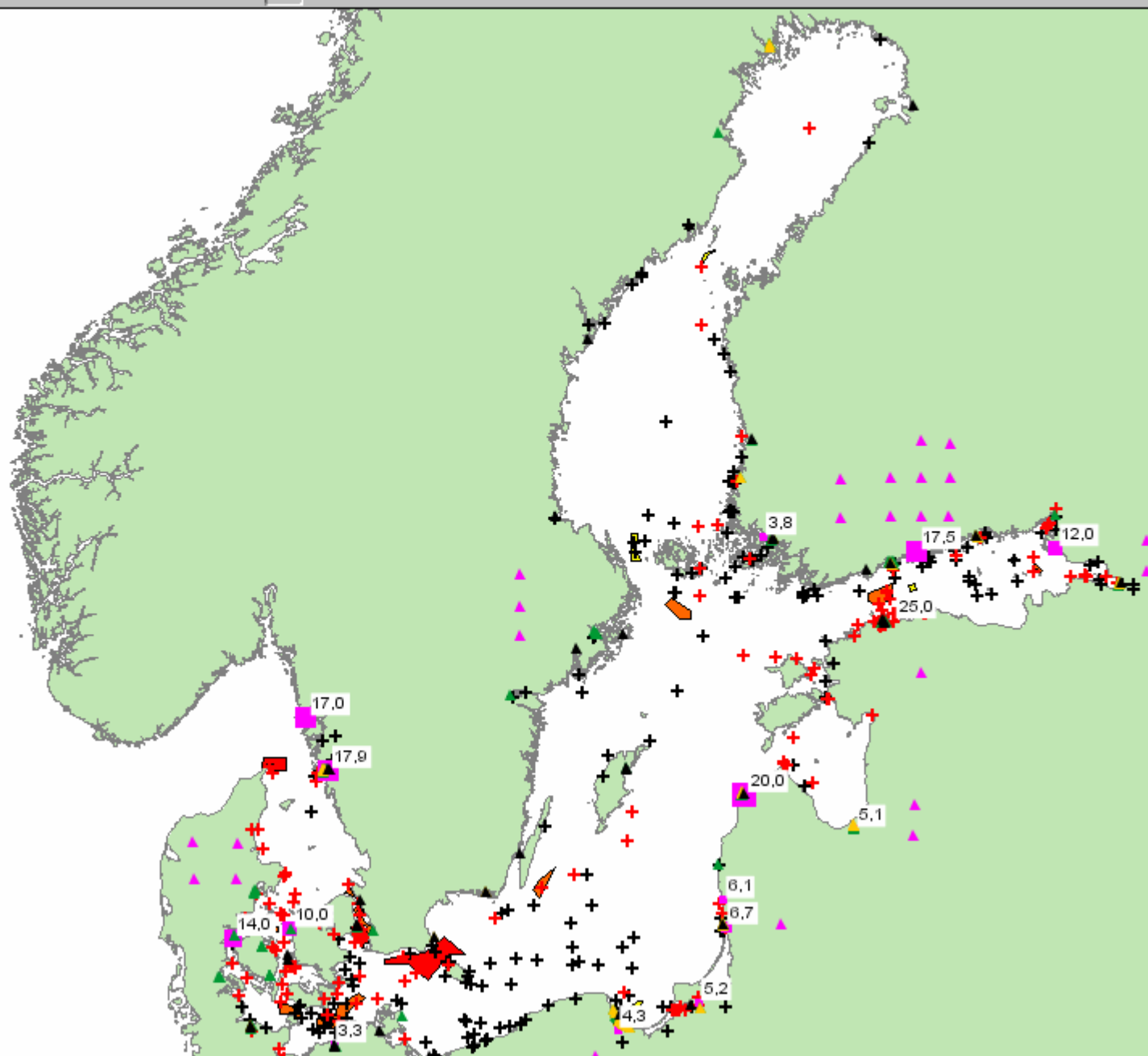


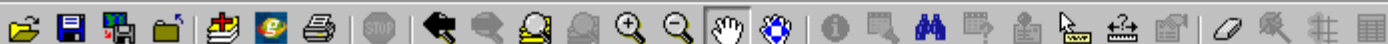
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- Accidents00-02
- Accidents89-99
- AccidentRiskArea
 - High risk area
 - Moderate risk
 - Very high risk
- Unesco biospher
- BSPA (STATUS)
 - Proposed
 - Recommend
- IBA



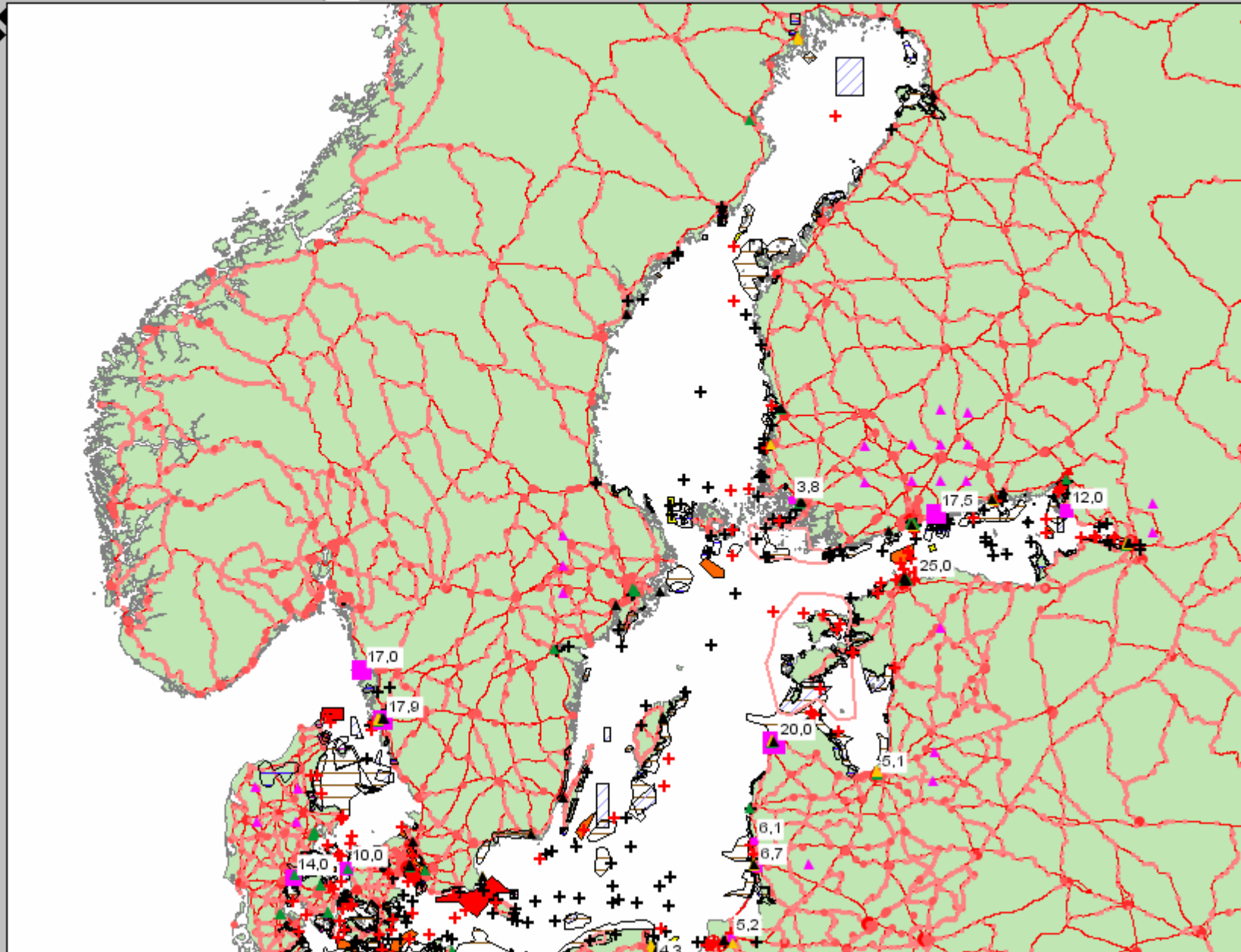


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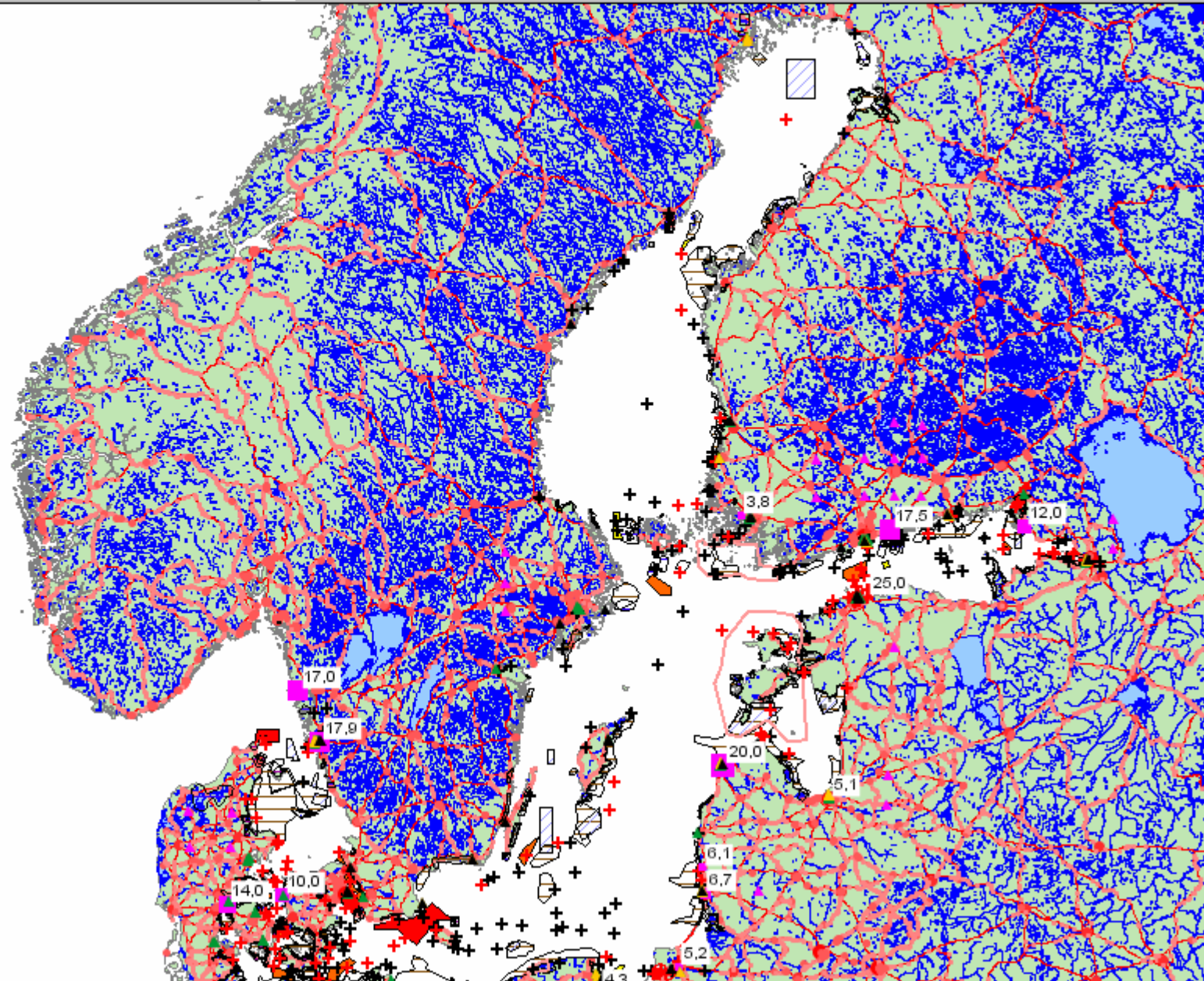


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- Unesco biospher
- BSPA (STATUS)
 - Proposed
 - Recommend
- IBA
- Other bird areas (
 - EU Bird Direct
 - Ramsar site
- NuclearPowerplai
- Settlements (COE)
 - Large city
 - City
 - Town, district
 - Village
- Roads
- UrbanAreas
- FreshWater





- NuclearPowerplai
- Settlements (COE)
 - Large city
 - City
 - Town, district
 - Village
- Roads
- UrbanAreas
- FreshWater
- DrainageBasin
- TerritorialWaters
- EEZ
- BordersOnLand
- AdministrativeUni
- HeightContours
- Countries
- Coastline





- 5
- 6
- 7
- 8
- 9
- 10

- Oil Spill Risk Zone
 - Less than 11.2
 - 11.2 - 22.3
 - 22.3 - 33.4
 - 33.4 - 44.5
 - 44.5 - 55.6
 - 55.6 - 66.7
 - 66.7 - 77.8
 - 77.8 - 88.9
 - 88.9 - 100.01

- Oil Spill Risk Zone
 - Less than 1
 - 1 - 2
 - 2 - 3
 - 3 - 4
 - 4 - 5
 - 5 - 6

- Oil Spill Risk Zone
 - Less than 1
 - 1 - 2
 - 2 - 3
 - 3 - 4
 - 4 - 5
 - 5 - 6

- 15mDepthArea
 -

