







#### **Decision Aid for Munitions Management**

#### Baltic Sea UXO and DMM – towards solution

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**The Challenges of Unexploded Munitions** 



#### **Chemical munitions sunk at sea**

- 40 000 tonnes sunk in Baltic proper, 150 000 tonnes in Skagerrak
- Natural processes plus enhancing human pressure put environment at risk



#### Situation of Baltic Sea dumped munitions





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**MODUM** TOWARDS THE MONITORING OF DUMPED MUNITIONS THREAT

damon Decision Aid for Marino Munitions

Decision Aid for Marine Munitions









EUROPEAN REGIONAL DEVELOPMENT FUND







### **DAIMON** Outline



Decision Aid for Marine Munitions

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#### **Munition Status**





FUND



1000 1500 2000 2500

## **Contamination of sediments**



# **Degradation Products**

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### Impact on biota



A5.5 - Sublittoral Macrophyte-Dominated Sediment







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### DSS – Decision Support Sysytem

Location	Objects	Chemistry	Biota	Impact		
Habitat	Туре	CWA	Toxicity	Risk algorithm		
hydrography	number	Explosives	Accumulation	Weighing		
oxygen	density	Release	Biomarkers	Cummulative		
bottom	corrosion	Spreading	Bioindicators	impact		
				Weight of Evidence model		
				Confidence level		
Decision Aid for Marine Munitions						

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# Way forward

- DAIMON2: Practical Aplication
  - DSS Deployment
  - Adoption of toolbox
- Project MEMORIAL
  - Early warning system
  - Remediation readiness







#### MEMORIAL

#### **EMFF Blue Labs IOPAN** MBL MUT VERIFIN SYKE AWI Integration Training **UNI KIEL** CNR Neutrongate Chalmers Early Munition **IORAS** Remediation warning status



### Conclusions

• UXO and DMM - real environmental/economy problem Future risk possible • Can be managed • Considerable progres ٠ Readiness level •

1) 'The research work was fund by the European Union (European Regional Development Fund) under the Interreg Baltic Sea Region Programme 2014-2020, project #R013 DAIMON'

2) 'The research work was financed by the Ministry of Science and Higher Ed 2019 science funding allocated for the implementation of international co-financed project Decision Aid for Marine Munitions



