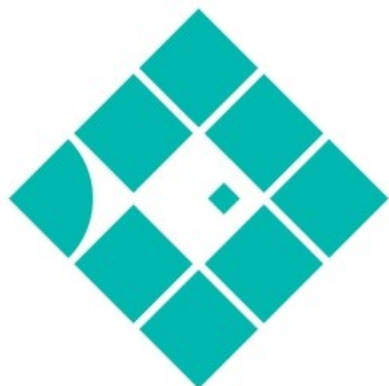




# The DeFishGear project

## - results and outlook



Andrej Kržan

National Institute of Chemistry, Ljubljana, Slovenia

# DeFishGear

Derelict Fishing Gear management  
system in the Adriatic Region



The Project is co-funded by the European Union,  
Instrument for Pre-Accession Assistance (IPA)



## Full title:

Derelict Fishing Gear Management System in the Adriatic Region

**Evolution** during project preparation:

Derelict Fishing Gear

>>

Macro litter

Microplastics

Derelict Fishing Gear

# Adriatic sea



DeFishGear

- North-eastern part of Mediterranean sea



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# Adriatic sea

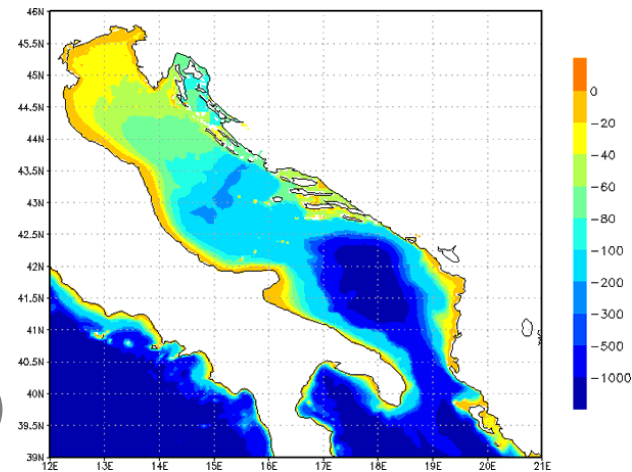


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- Approx. 200 x 800 km
- Semi enclosed sea (strait of Otranto 72 km)



- Average depth 250 m (decreasing N)

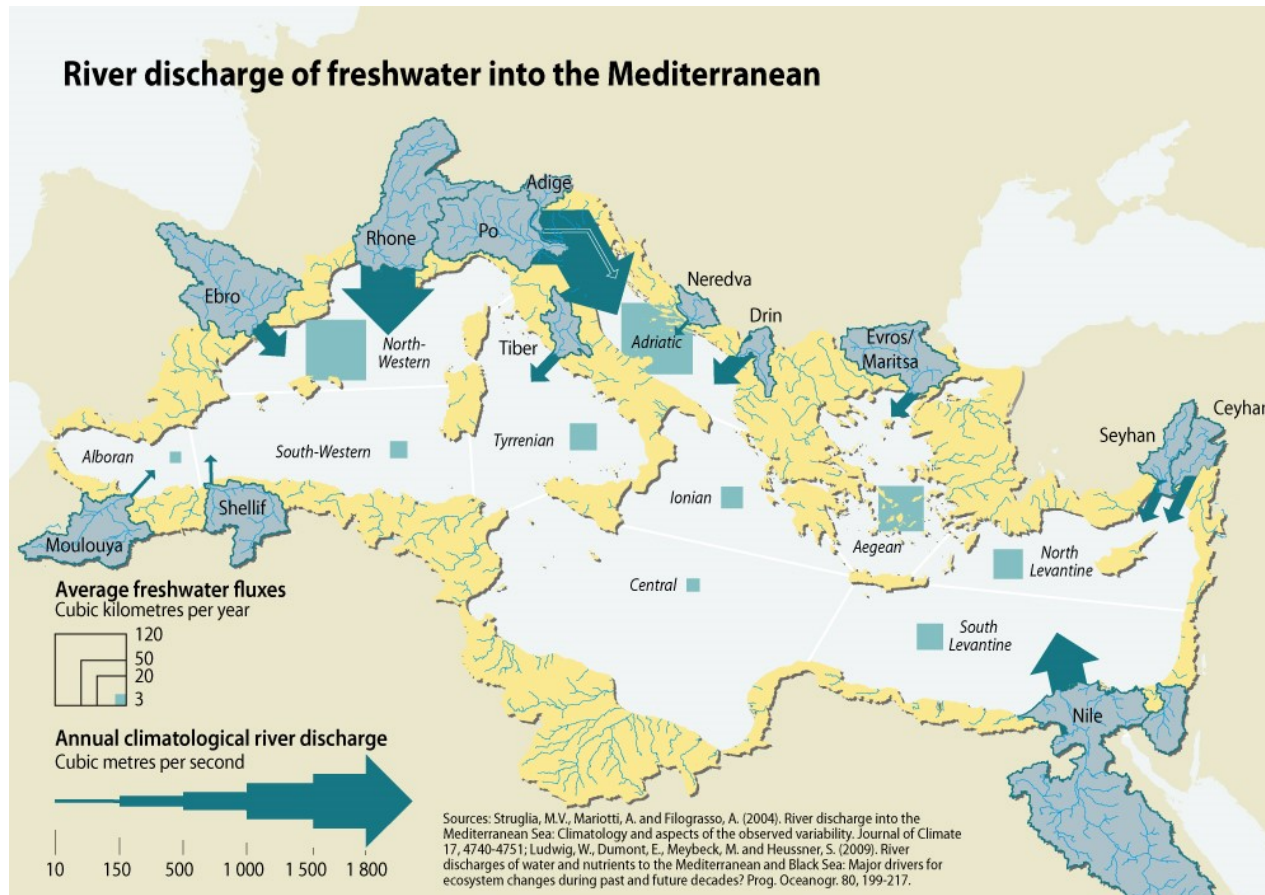


# Adriatic sea



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- Receives 30 % freshwater entering MED (Po 28 %)
- Water exchange 3,4 years

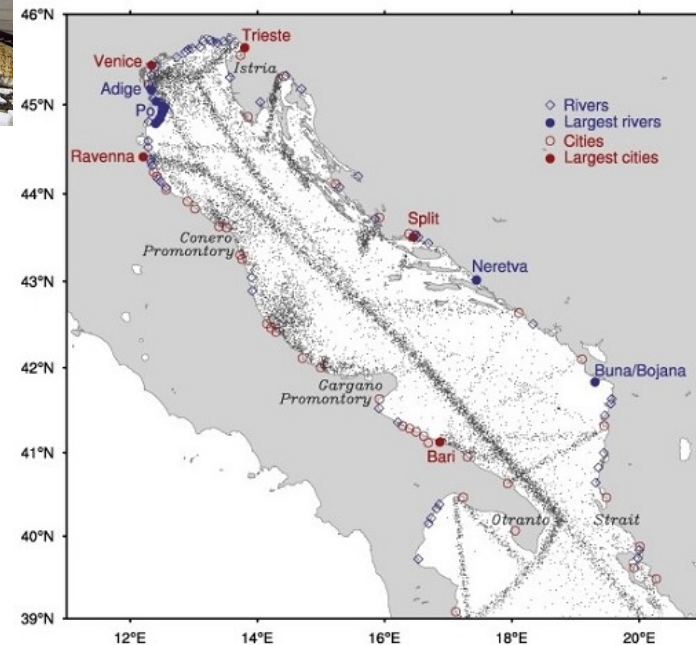


# Adriatic sea



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- Surrounded by 7 countries, 3,5 million people
- Shipping, tourism, fishing...



# Starting point and goals

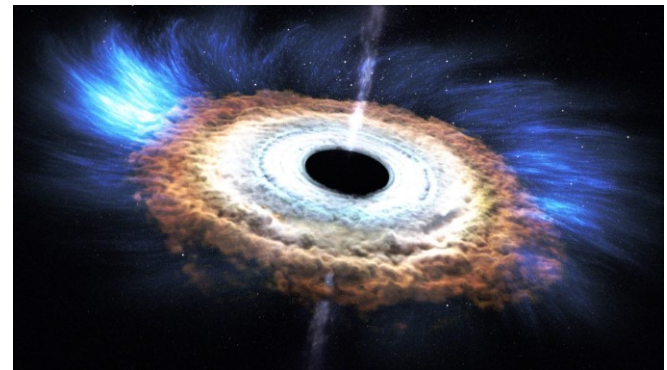


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**2012:** No information on marine litter in the Adriatic

## Goals

- Harmonized assessment
- Regional capacity creation
- Strategic management proposal
- **Regional action** pilot project



# Partnership



DeFishGear

## Slovenia

National Institute of Chemistry - **LB**

Institute for water of the Republic of Slovenia - **FB5**

University of Nova Gorica - **FB6**

PlasticsEurope AISBL - **ASS1**

Ministry of Agriculture and the Environment - **ASS2**

## Italy

ISPRA - **FB1**

Ca' Foscari University of Venice - **FB2**

Mediterranean Consortium - **FB3**

ARPA Emilia Romagna - **FB4**

Euro-Mediterranean Center on Climate Change (CMCC) - **FB15**

Italian Ministry of Environment, Land and Sea- **ASS3**

Fishing League - **ASS5**

## Croatia

Institute for Oceanography and Fisheries - **FB7**

Public Institution RERA s.d. For coordination and development of Split Dalmatia County (RERA) - **FB14**

Croatian Environment Agency- **ASS4**

## Bosnia and Herzegovina

Hydro-Engineering Institute of the Faculty of Civil Engineering - **FB8**

Agency for watershed of Adriatic Sea Mostar- **ASS6**

## Montenegro

University of Montenegro, Institute of marine biology - **FB9**

## Albania

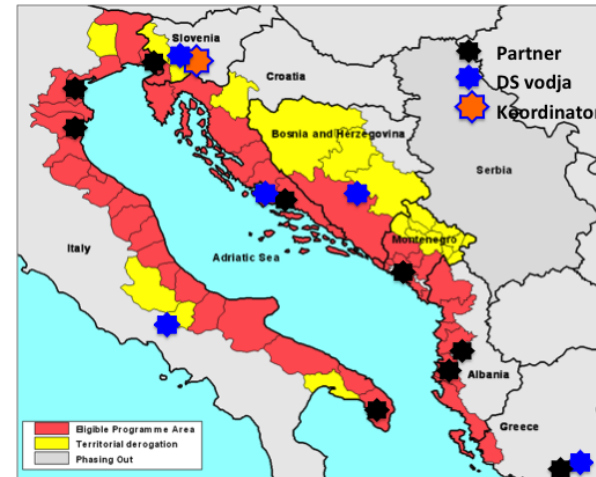
Agricultural University of Tirana, Laboratory of Fisheries and Aquaculture - **FB10**

Regional Council of Lezha - **FB11**

## Greece

Mediterranean Information Office for Environment, Culture and Sustainable Development - **FB12**

Hellenic Centre for Marine Research (HCMR), Institute of Oceanography - **FB13**





# Monitoring



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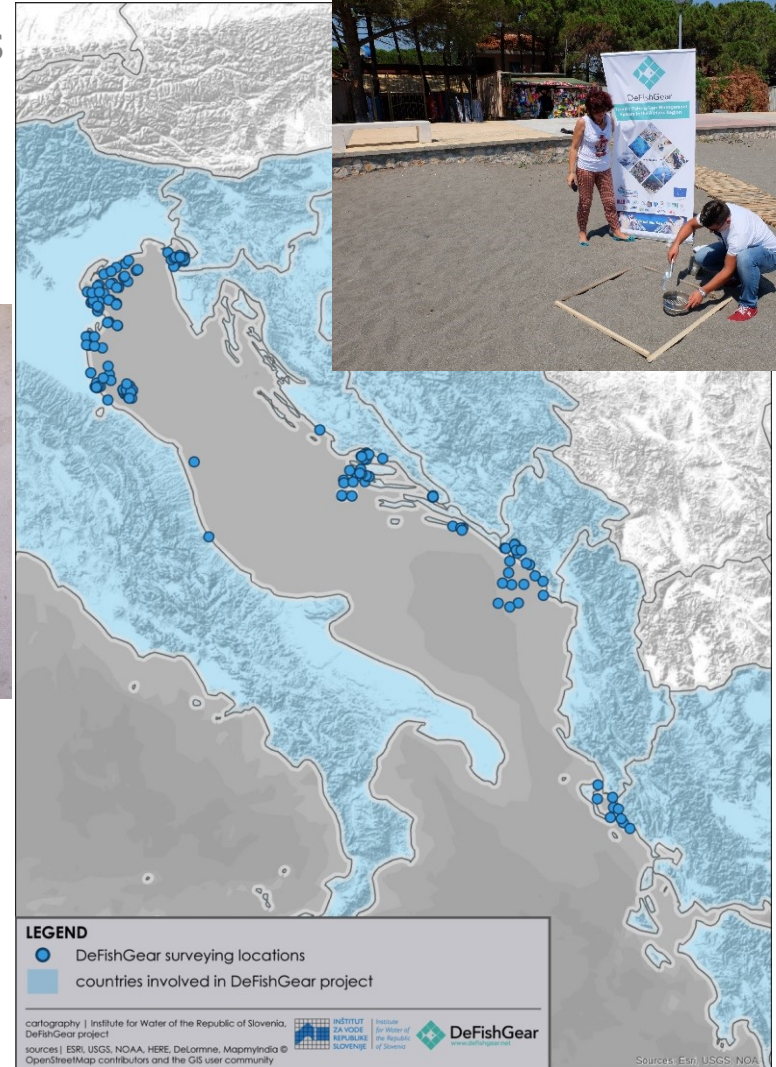
Example: Microplastics  
- sampling in 2 rounds

## Wide geographical coverage

Microplastics  
Macro litter  
DFG

## Many foci:

- Surface
- Beach
- Seafloor
- Biota



# Collection



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## Derelict Fishing Gear?

- Fishing for litter
- Port reception facilities
- Ghost nets



Excess of 100 tons recovered  
(Ancona, IOF)

Cooperation with Healthy seas initiative  
for recycling (<http://healthyseas.org>)

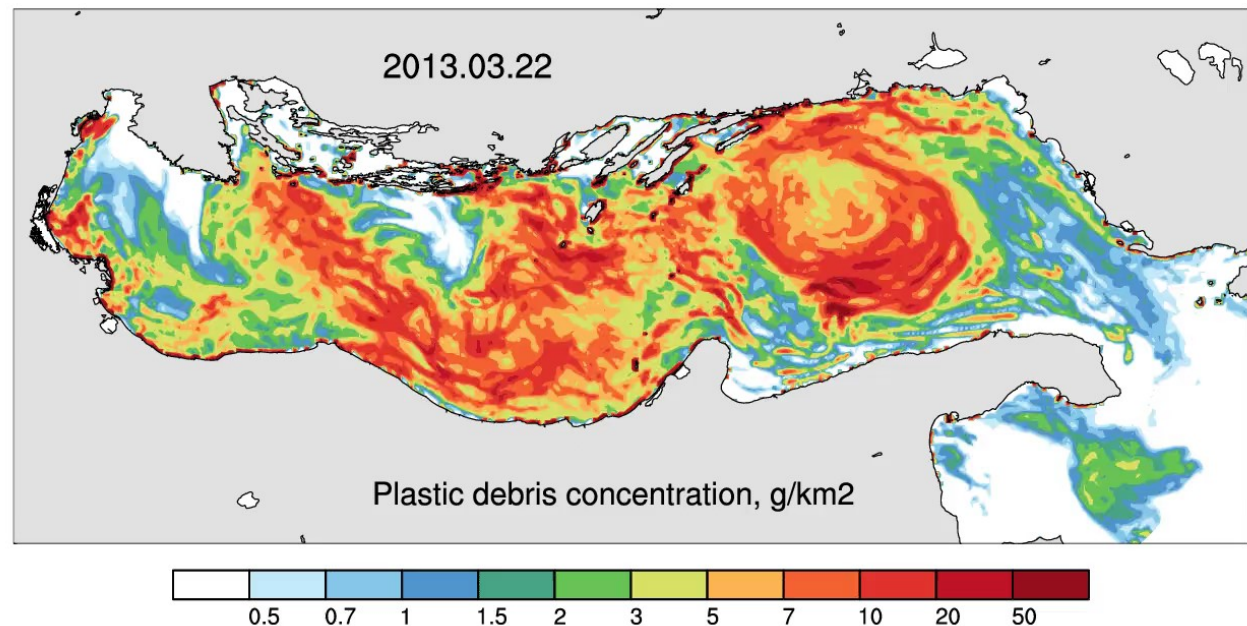


# Occurrence



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- **Marine litter omnipresent in the Adriatic**
- **Concentrations / burdens high**
- **Local and temporal fluctuations**



S. Liubartseva et al.  
CMCC Lecce, Italy  
Mar Poll Bull, 2016,  
103, 115-127

# Network / Capacity



DeFishGear

## Harmonized work

Development and use of common guidelines (techniques) leads to comparable data (guideline documents, video guidelines)



## Expert network – shared tasks



GIS database

## Created

Institutional and technical/scientific capacity

## Whole subregion moved ahead! (IPA!)



Methodology for Monitoring  
Marine Litter on Beaches  
Macro-Debris (>2.5cm)



© Thomas Vlachogianni

Prepared by: Thomas Vlachogianni (IMD-82202)  
With contributions from: Vicky Paraskevoudou (L04), Vaggelis Kolomposis (IMD-82202),  
Anastasia Parolinou & Stefan Tröber (W03), Stefania Di Muccio & Luigi Alcaro (IPMA),  
Cristina Mazzanti (J03A), Christina Zari & Bera Kampfer (W04)



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## Numerous events

- **3 conferences** (2014 Athens, 2015 Venice, 2016 Tirana)
- **International seminars**
- **National events**
- **Summer schools**
- **Third party events**
- **Clean-up events**
- **Promotions (schools, communities, fishermen...)**
- **Media coverage**
- **Social media**
- **Youtube channel**

.....

## appearing...

S. Liubartseva, G. Coppini, R. Lecci, S. Creti Regional approach to modeling the transport of floating plastic debris in the Adriatic Sea, *Mar. Pollut. Bull.* 2016, 103, 115-127.

C. Ioakeimidis, K. N. Fotopoulou, H. K. Karapanagioti, M. Geraga, C. Zeri, E. Papanthanasidou, F. Galgani & G. Papatheodorou The degradation potential of PET bottles in the marine environment: An ATR-FTIR based approach, *Scientific Reports* 6, Article number: 23501 (2016) doi:10.1038/srep23501

G. Pasquini, F. Ronchi, P. Strafella, G. Scarcella, T. Fortibuoni Seabed litter composition, distribution and sources in the Northern and Central Adriatic Sea (Mediterranean), *Waste Manag.* 2016 (in press published online)

T. Gajšt, T. Bizjak, A. Palatinus, S. Liubartseva, A. Kržan Sea surface microplastics in Slovenian part of the Northern Adriatic, *Mar. Pollut. Bull.* 2016 (accepted article)





Northern and Central Adriatic Sea - 67 stations /bottom trawl nets.

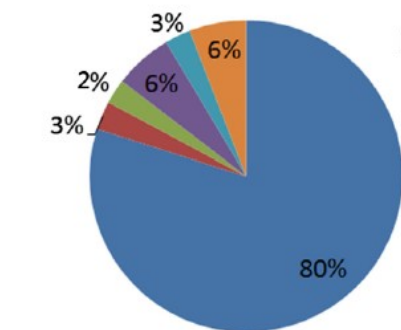
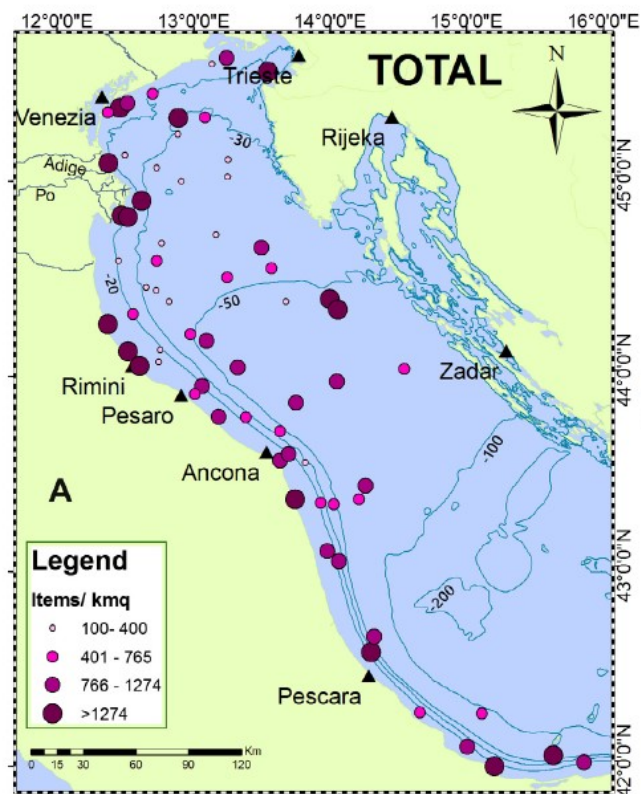
**Average benthic litter density 913 ± 80 items/km<sup>2</sup>**, ranking the Adriatic as one of the most polluted basins worldwide.

**Plastic dominant:** 80% numbers, 62% weight (bags, sheets and mussel nets).

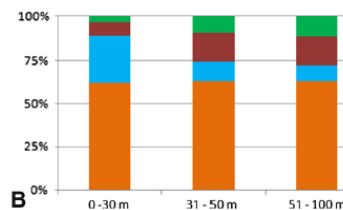
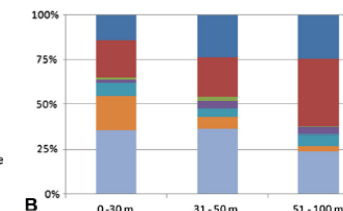
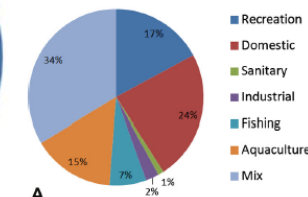
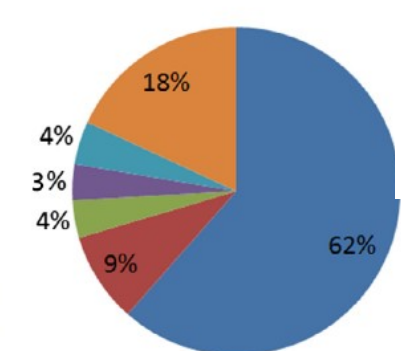
**Higher quantities: coastal areas:** river mouths, coastal cities and mussel farms.

Deep waters: shipping lanes,

**Driven by local sources!**



■ PLASTIC ■ METALS ■ RUBBER  
■ GLASS ■ NATURAL ■ OTHER



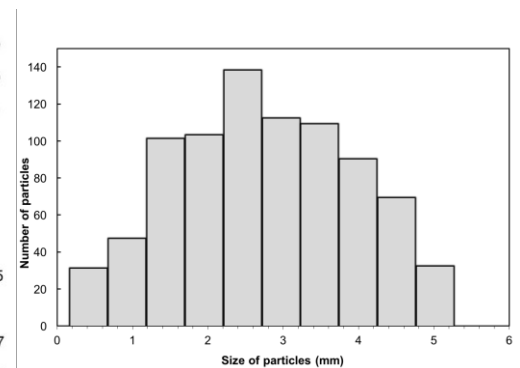
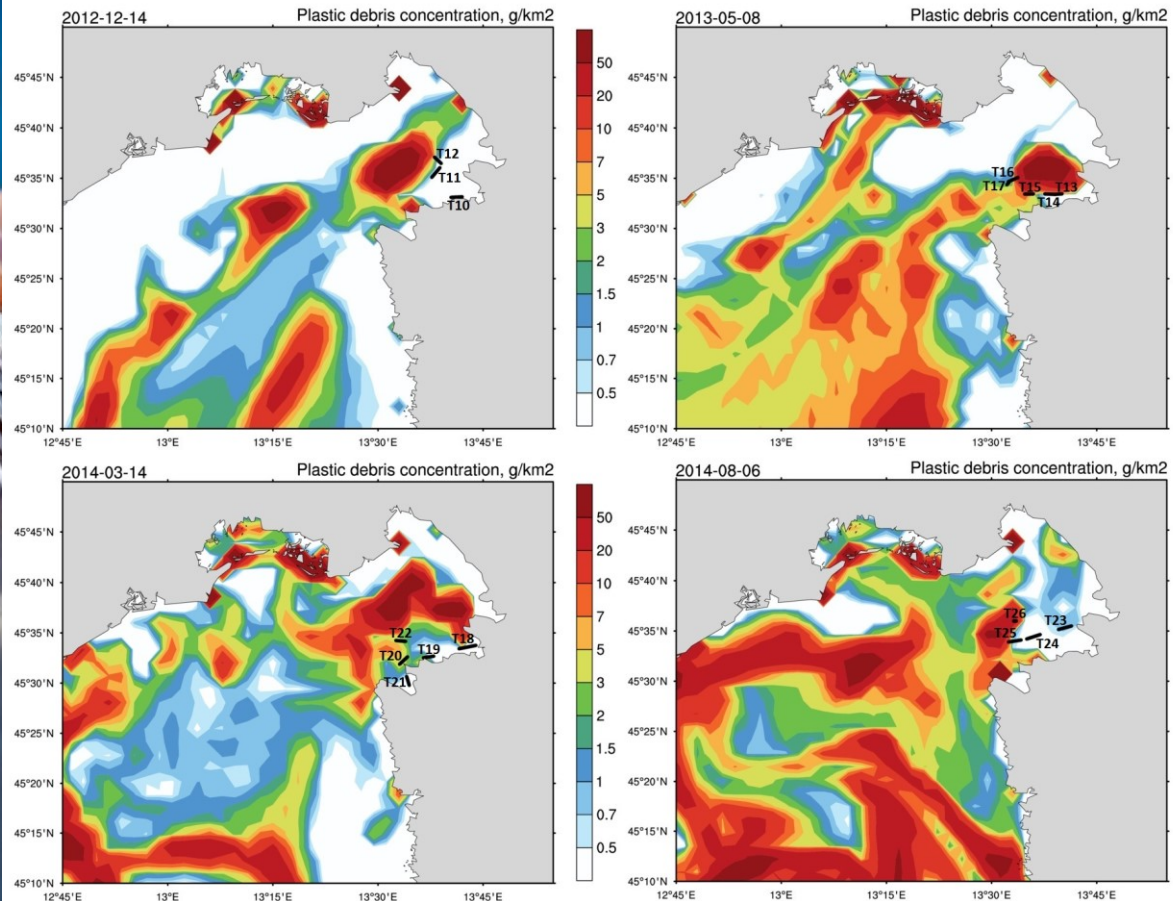




17 sea surface trawls - 20-month period

**high average concentration  $406 \times 10^3$  MP particles/km<sup>2</sup> (=2,1g)!**

**80+ % polyethylene**



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# Conclusions



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**Regional progress has been made (facts)**

**Capacity and a community has been created**

**Awareness has been raised**

**We need sustained effort (national funding!)**

**We can make a difference!**



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# What to do? Simple measures



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- Waste bins at the beach
- Awareness/informing (posters on coast, pre-summer adds on TV?)
- Improving waste water treatment plants
- Ecodesign of products (no free small pieces, biodegradable?)
- Avoid unnecessary use (bags?)
- Stop using unnecessary and harmful products (bags, cosmetics with microplastics)

## **SLO: Financing of research and measures!!!!**

New regulation is not the path.

## **What is the hazard?**



# Bioplastics?



DeFishGear

**Def: Bioplastics: biodegradable and/or biobased**

**biobased ≠ biodegradable**

Biodegradation: need **time** and **conditions**:

(industrial) compostable, home compostable, soil biodegradable, marine biodegradable... (standards!)

**Marine env.: cold, dilute, salty, UV, organisms**

**>> very few polymers degrade, slow degradation...**

**A useful but limited solution, still developed.**



# We are in this together!



DeFishGear



**Andreja Palatinus**  
(IZVRS, ARSO)

## Plastika nima mesta v naravi!



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