



**S**trategies for **M**arine  
**L**itter and **E**nvironmental  
prevention of sea pollution in coastal areas



# Valutazione dei rifiuti antropici nell'ambiente marino



Fabrizio Serena



Agenzia Regionale per la Protezione Ambientale della Toscana  
Regione Toscana





# **S**trategies for **M**arine **L**itter and **E**nvironmental prevention of sea pollution in coastal areas



## **Quattro tipologie di rifiuti:**

- 1. Rifiuti spiaggiati**
- 2. Rifiuti sul fondo**
- 3. Rifiuti nella colonna d'acqua**
- 4. Rifiuti in superficie**



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## Rifiuti spiaggiati

Stazioni di campionamento



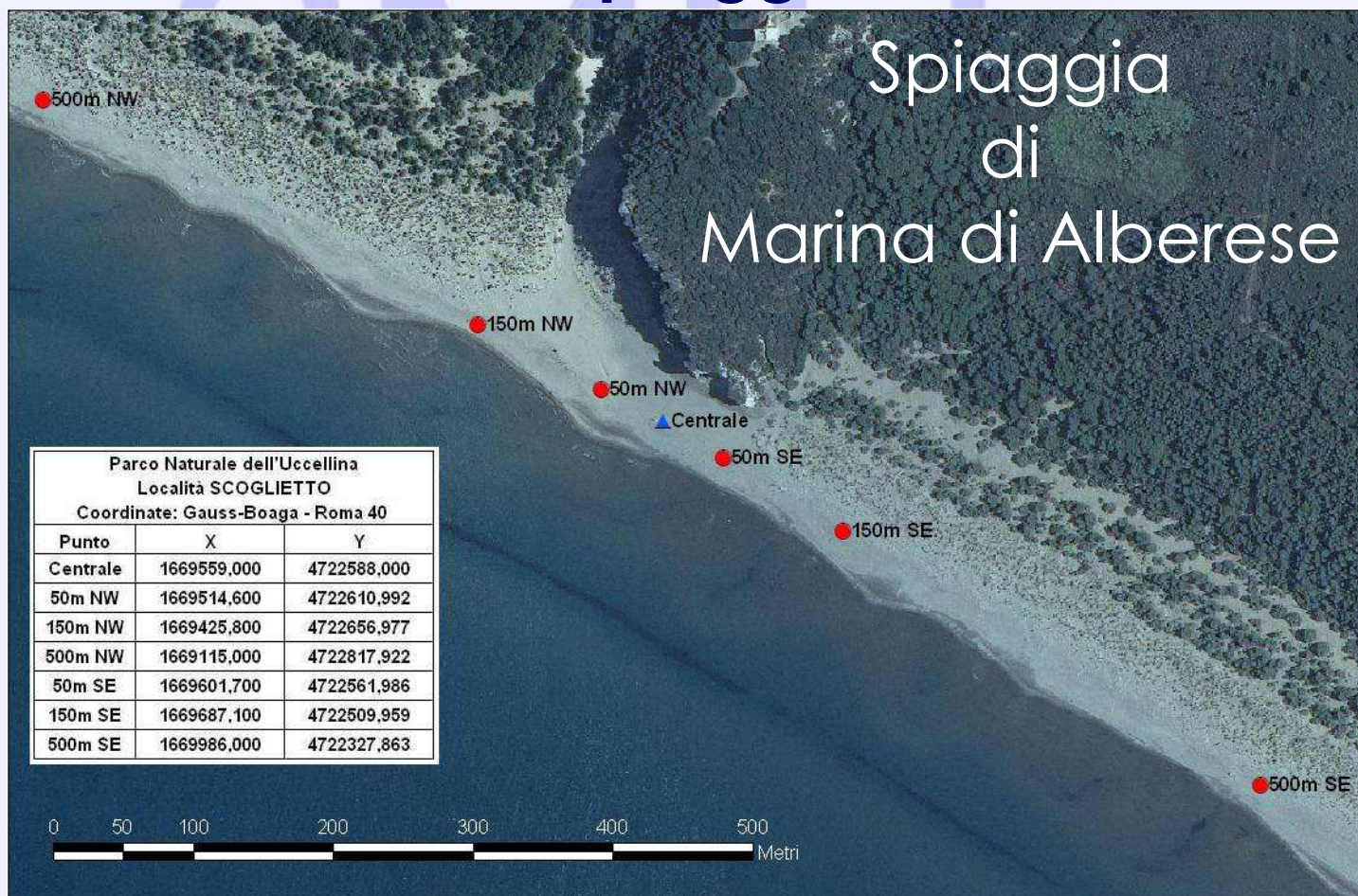




# Strategies for Marine Litter and Environmental prevention of sea pollution in coastal areas



## Rifiuti spiaggiati



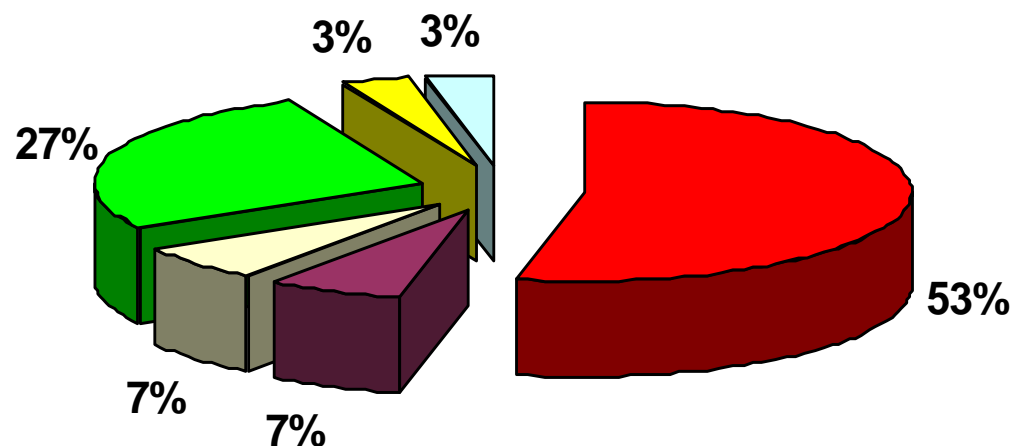


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## Rifiuti spiaggiati

Tipologie di rifiuti spiaggiati  
Marina di Alberese



■ Plastica ■ Gomma ■ Tessuti ■ Legno ■ Metallo ■ Vetro

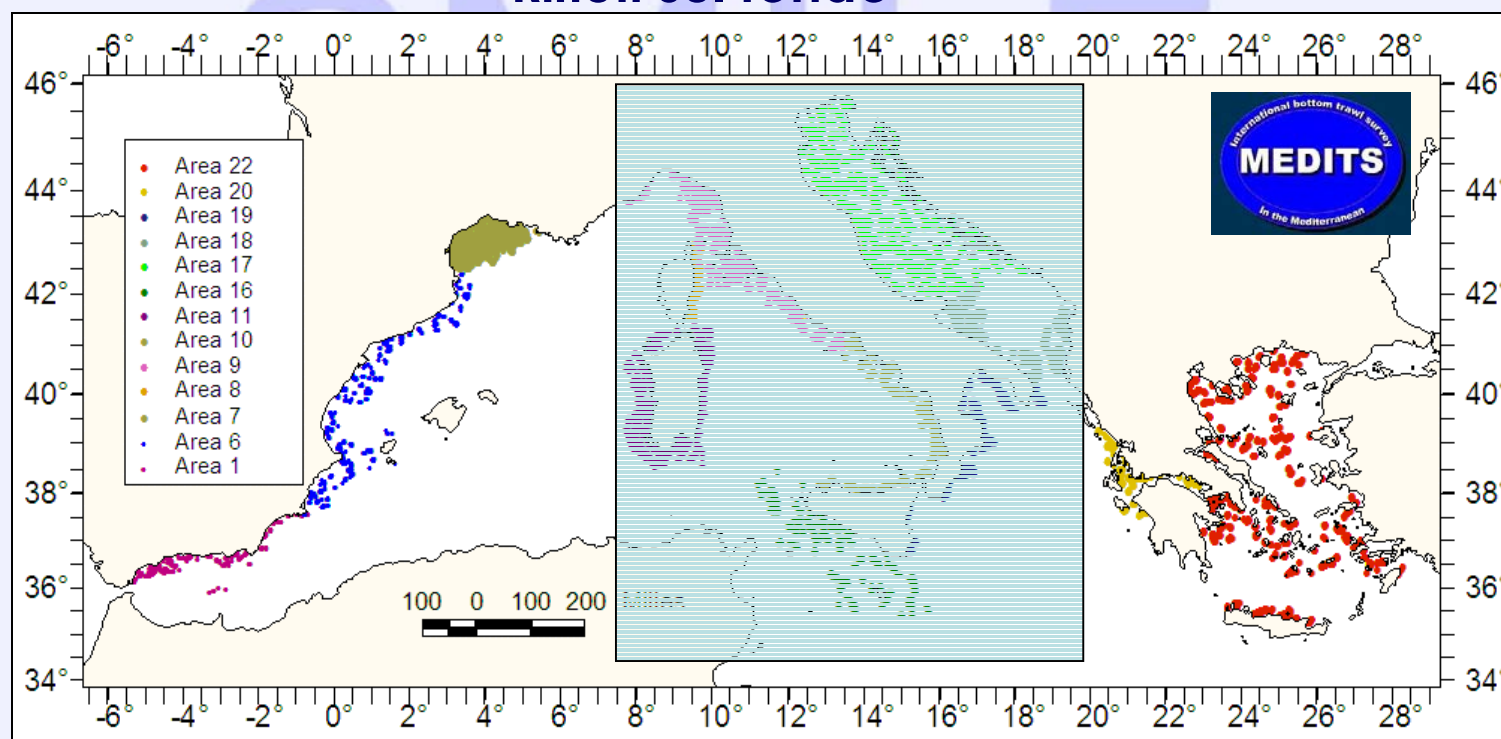




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## Rifiuti sul fondo



1976 Progetto Finalizzato Oceanografia e Fondi Marini



1985 GRUND (GRUppe Nazionale risorse Demersali)



1994 Data Collection Framework (MEDITS-MEDiterranean Trawl Survey)



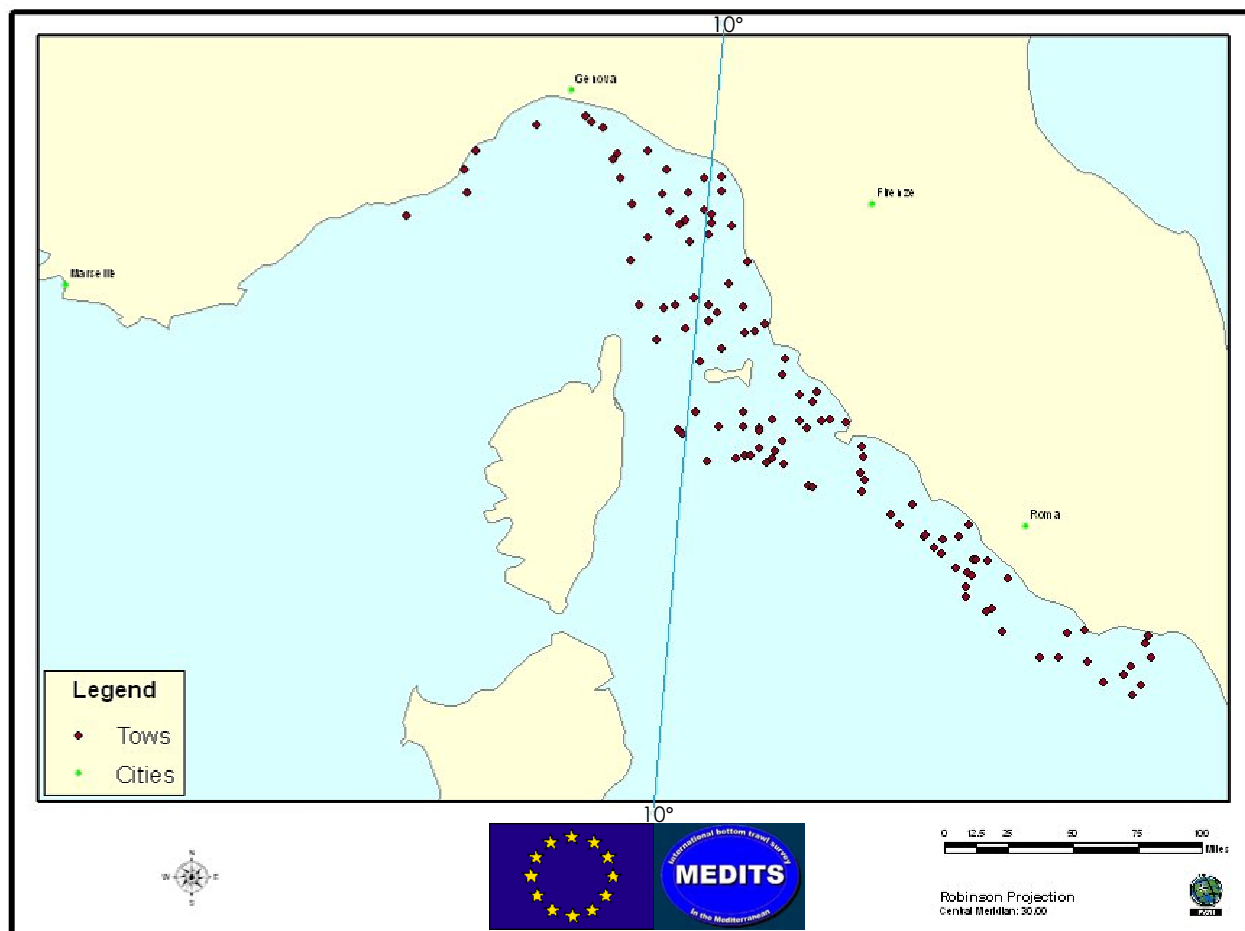


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## Rifiuti sul fondo

Le cale  
della GSA 9  
campagna 2013

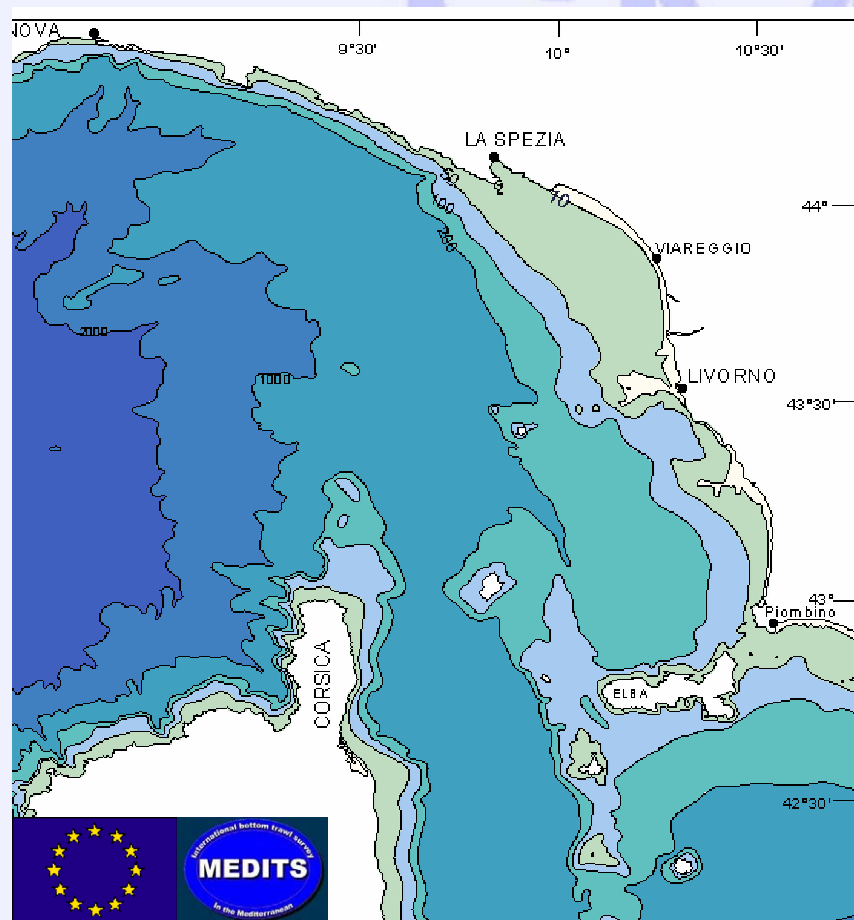




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## Rifiuti sul fondo



## Disegno di campionamento random stratificato su cinque strati batimetrici

<b>A</b>	Da 0 a 50 m
<b>B</b>	Fino a 100 m
<b>C</b>	Fino a 200 m
<b>D</b>	Fino a 500 m
<b>E</b>	Fino a 800 m



**BIOMART fino a 2000 m**







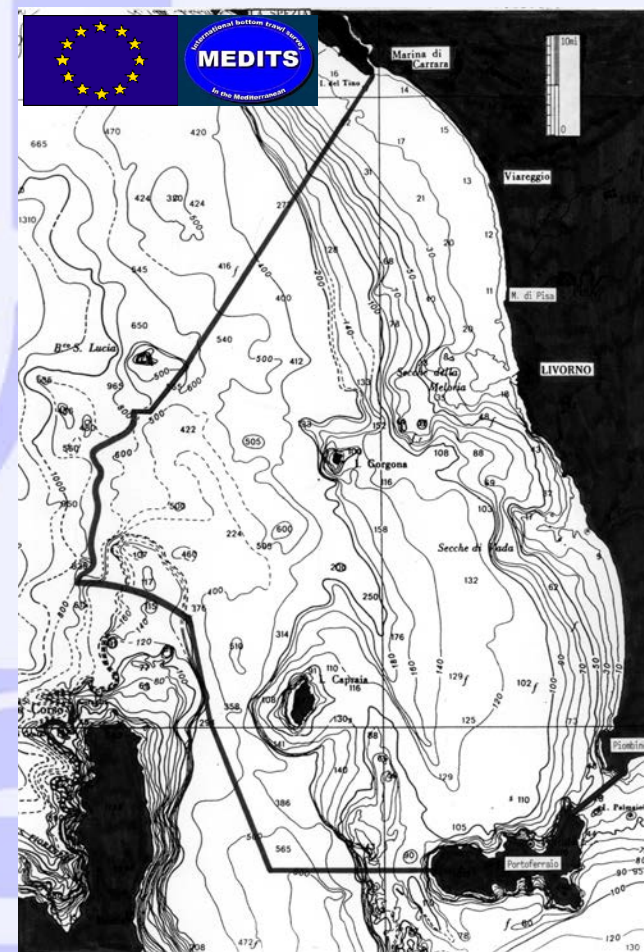
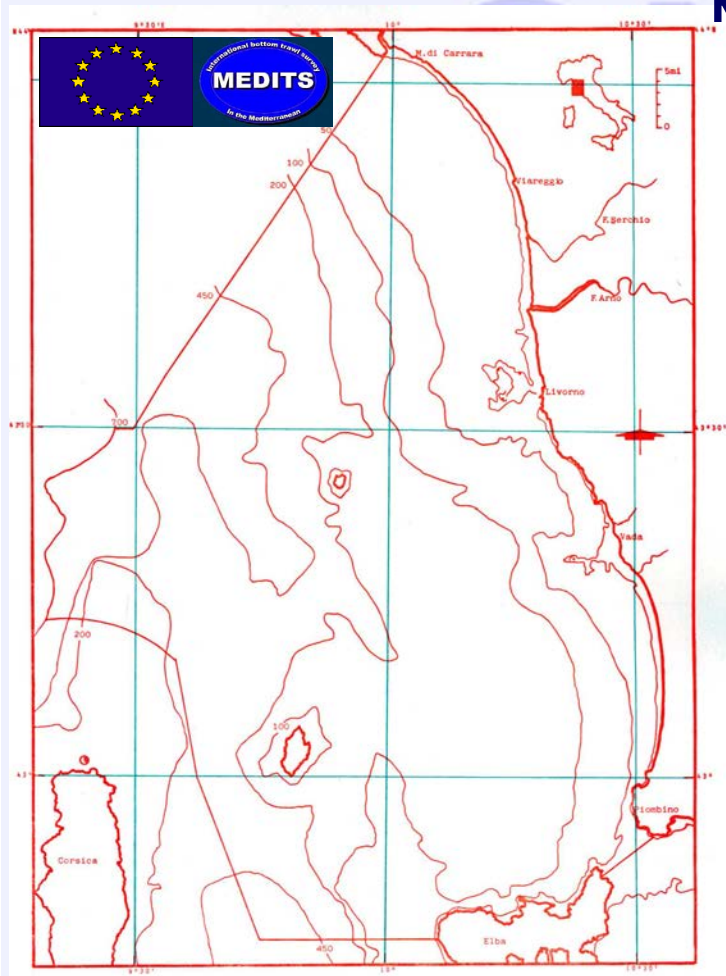
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## Rifiuti sul fondo

Le  
batimetriche

Area di studio  
(circa **10 mila km<sup>2</sup>**) Toscana  
nord







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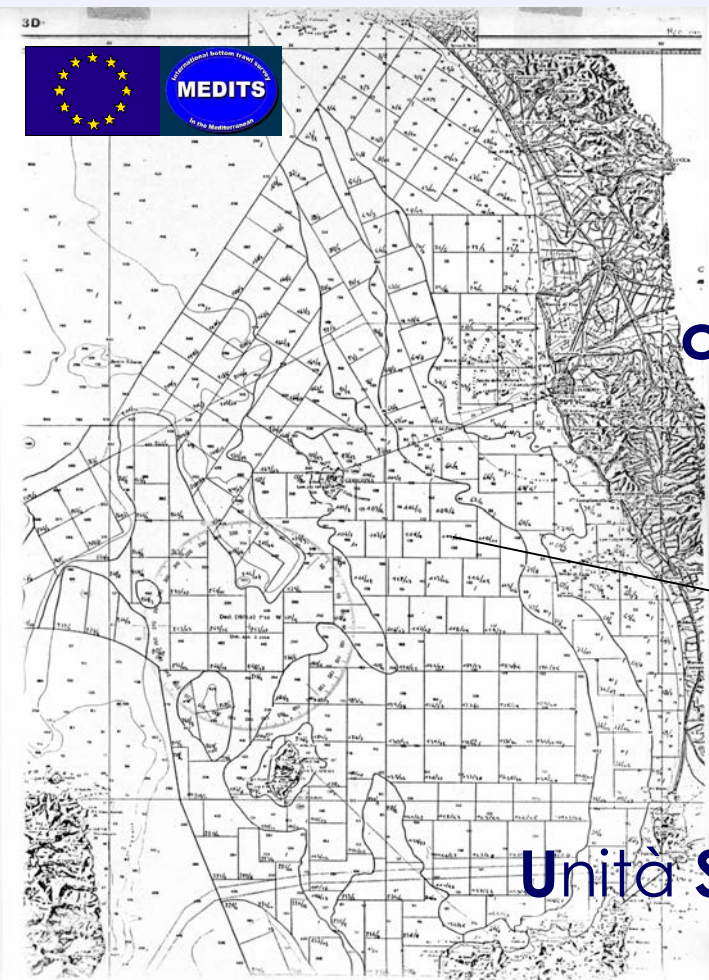
Rifiuti sul fondo

Disegno  
di  
campionamento

276 ESU

3nm x 3nm

Unità Statistiche Elementari



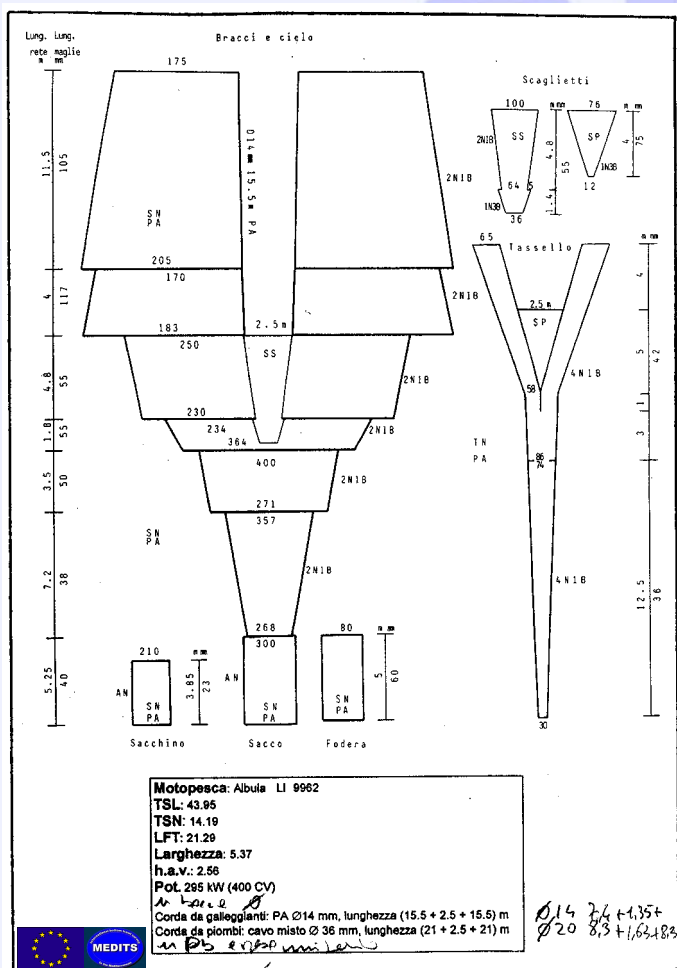


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## Rifiuti sul fondo

## Lo Strumento campionario



COMUNE  
DI PIETRA LIGURE







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## Rifiuti sul fondo

Metodo dell'area strascicata







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## Rifiuti sul fondo



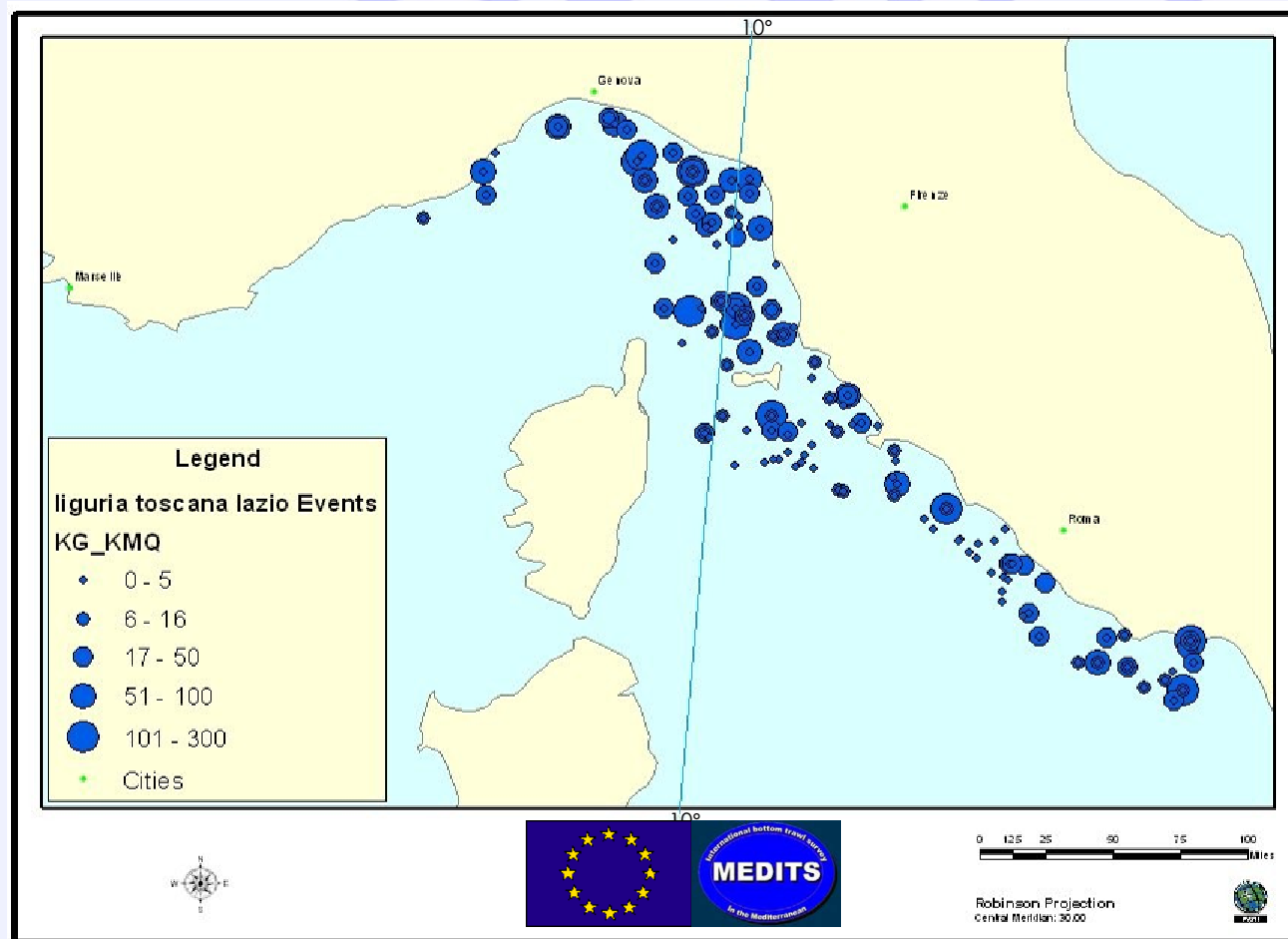


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## Rifiuti sul fondo

Quantitativi  
nella GSA 9  
 $\text{Kg/km}^2$









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## Rifiuti sul fondo

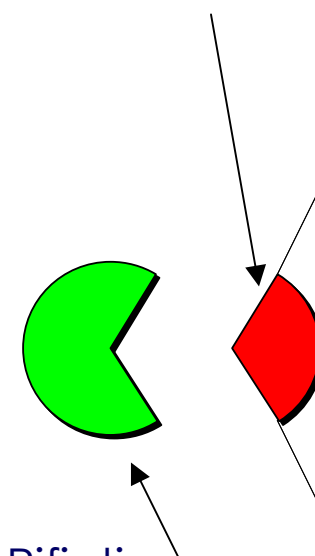
 	ARPAT	CIBM	Univ. Roma	Univ. Genova	Totale
numero di cale	31	32	40	15	<b>118</b>
numero di items (records)	118	72	122	50	<b>362</b>
somma di kg	92	41	95	113	<b>342</b>
somma di num	482	362	465	487	<b>1796</b>
somma di kg/km <sup>2</sup>	1441	668	1424	1452	<b>4985</b>
kg/cala	3,0	1,3	2,4	7,6	<b>2,9</b>



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Rifiuti antropici



Rifiuti non antropici



- foglie e legno naturale
- oggetti metallici, bidoni, latte vernici e pezzi meccanici
- altro (da specificare)
- altra plastica (scatole ...)
- vetro
- bottiglie di plastica
- sacchetti spesa di plastica
- guanti di gomma, stivali, scarpe
- altre attrezzature da pesca
- reti da pesca

## Rifiuti sul fondo

Due tipologie di rifiuti sul fondo  
Secondo il protocollo MEDITS:

a) Rifiuti antropici

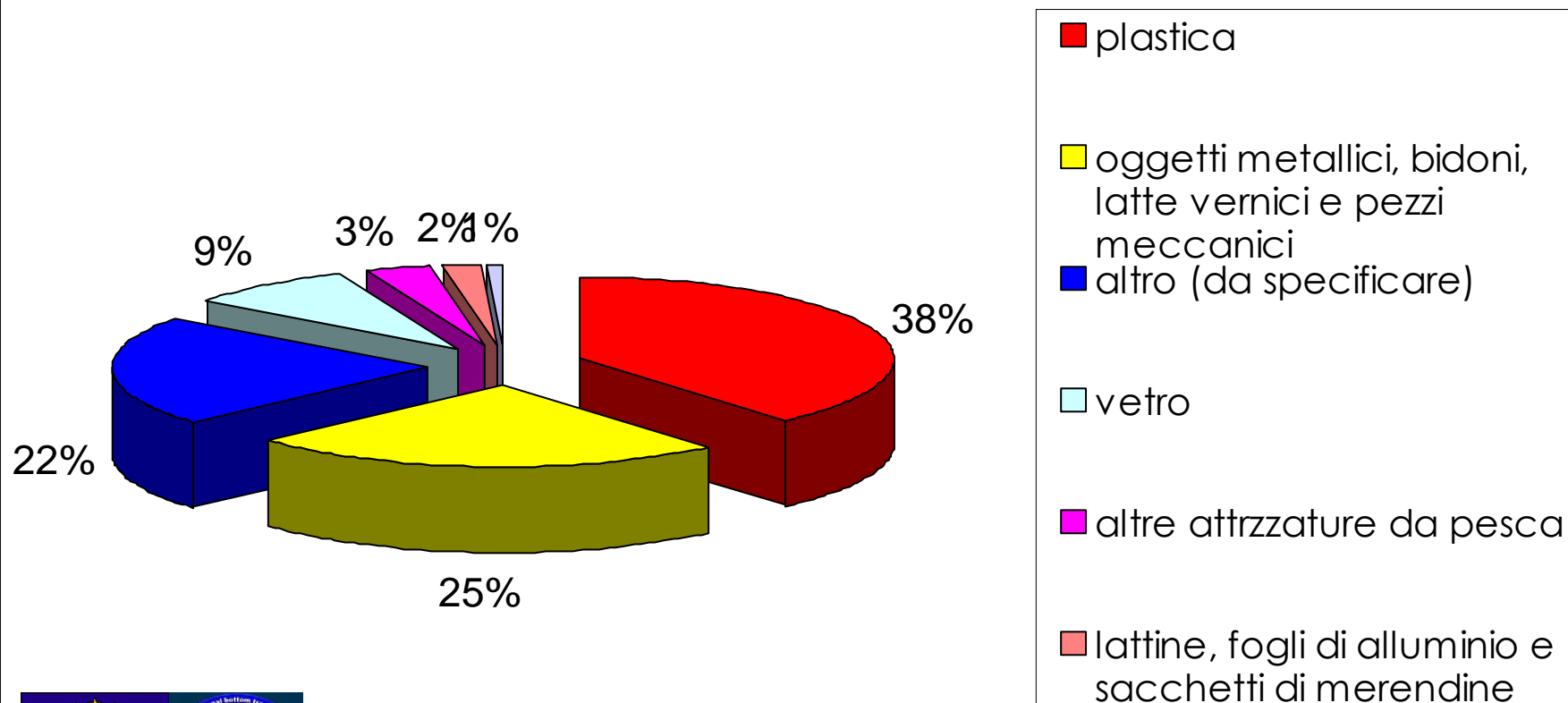
b) Rifiuti non antropici



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## composizione in peso dei rifiuti antropici



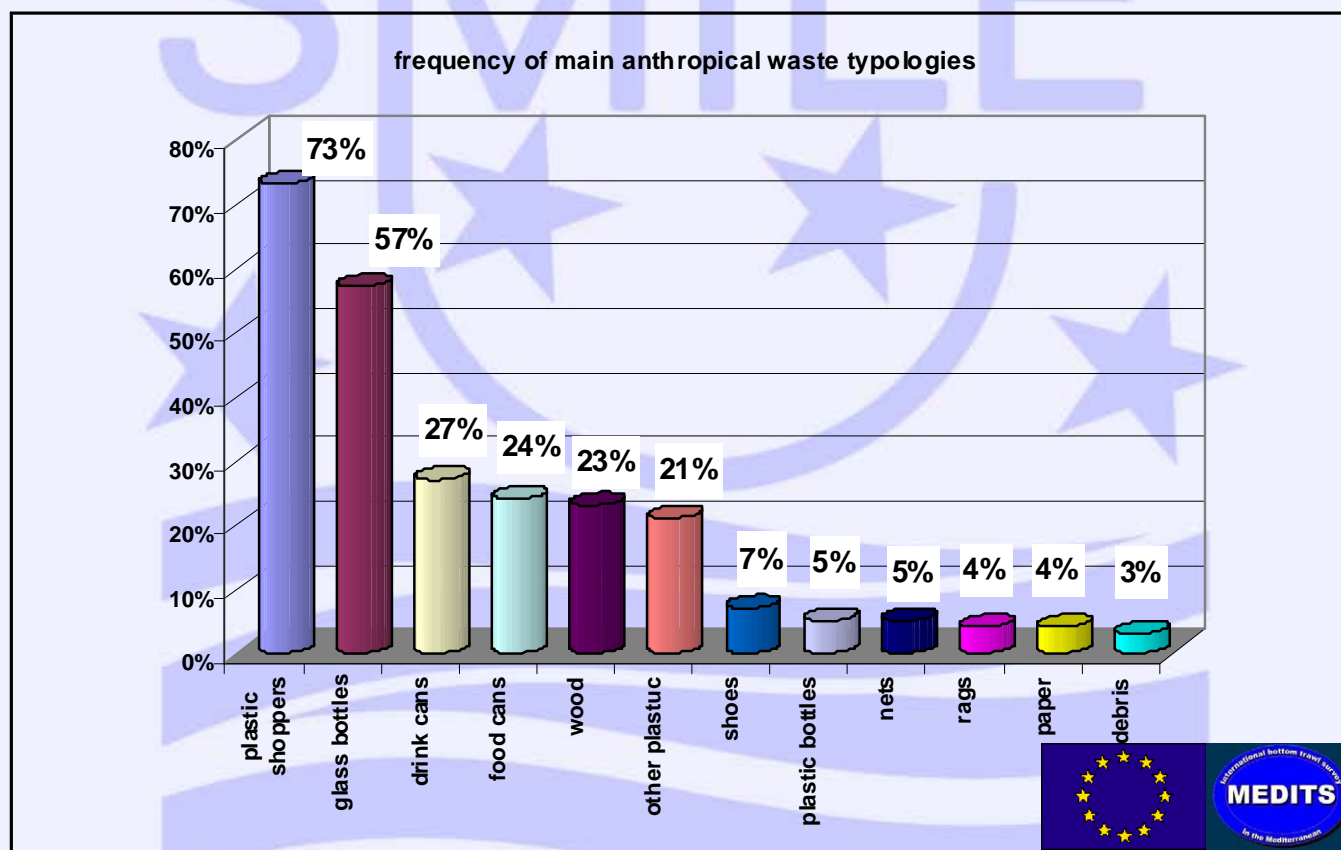




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Frequenza delle principali tipologie di rifiuti antropici nelle acque toscane

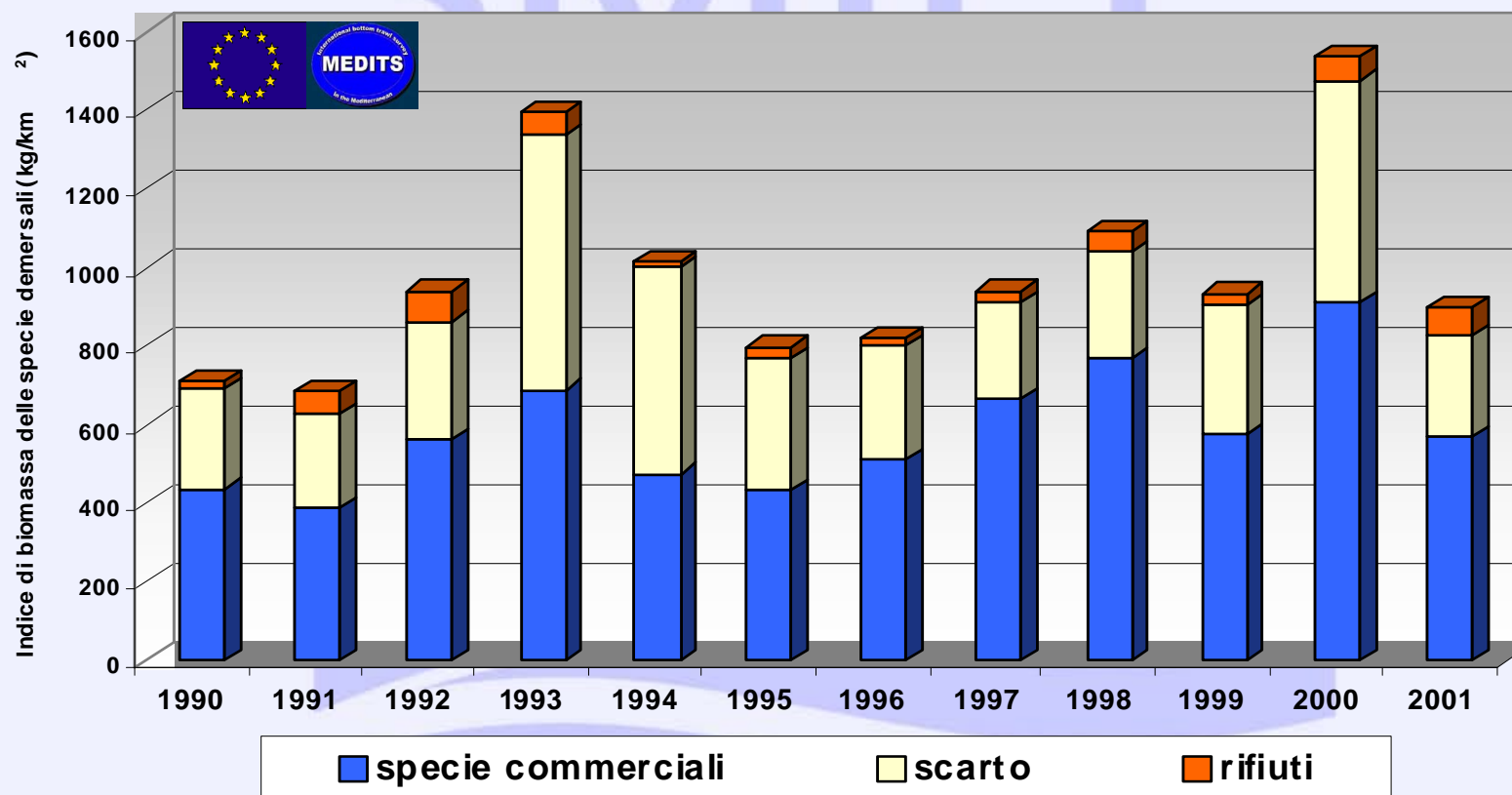




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Quantità di rifiuti antropici (Kg/Km<sup>2</sup>)  
in relazione alle specie commerciali e a quelle scartate



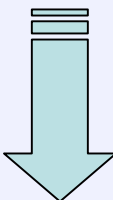


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## confronto tra i programmi

**UE**  
Data Collection Framework  
Protocollo  
MEDITS  
Peso e Numero



Pesanti  
Parti grandi

Categorie  
molto diverse



**MSFD**  
Protocollo  
OSPAR  
numero



Leggeri  
Parti piccole

Valutare a parte il legno





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## Ogive





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## Bombe di aereo







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## Mine





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Container  
Costa  
di San Vincenzo

127 m  
di profondità







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## EMERGENZE Eurocargo Venezia



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MarineTraffic.com



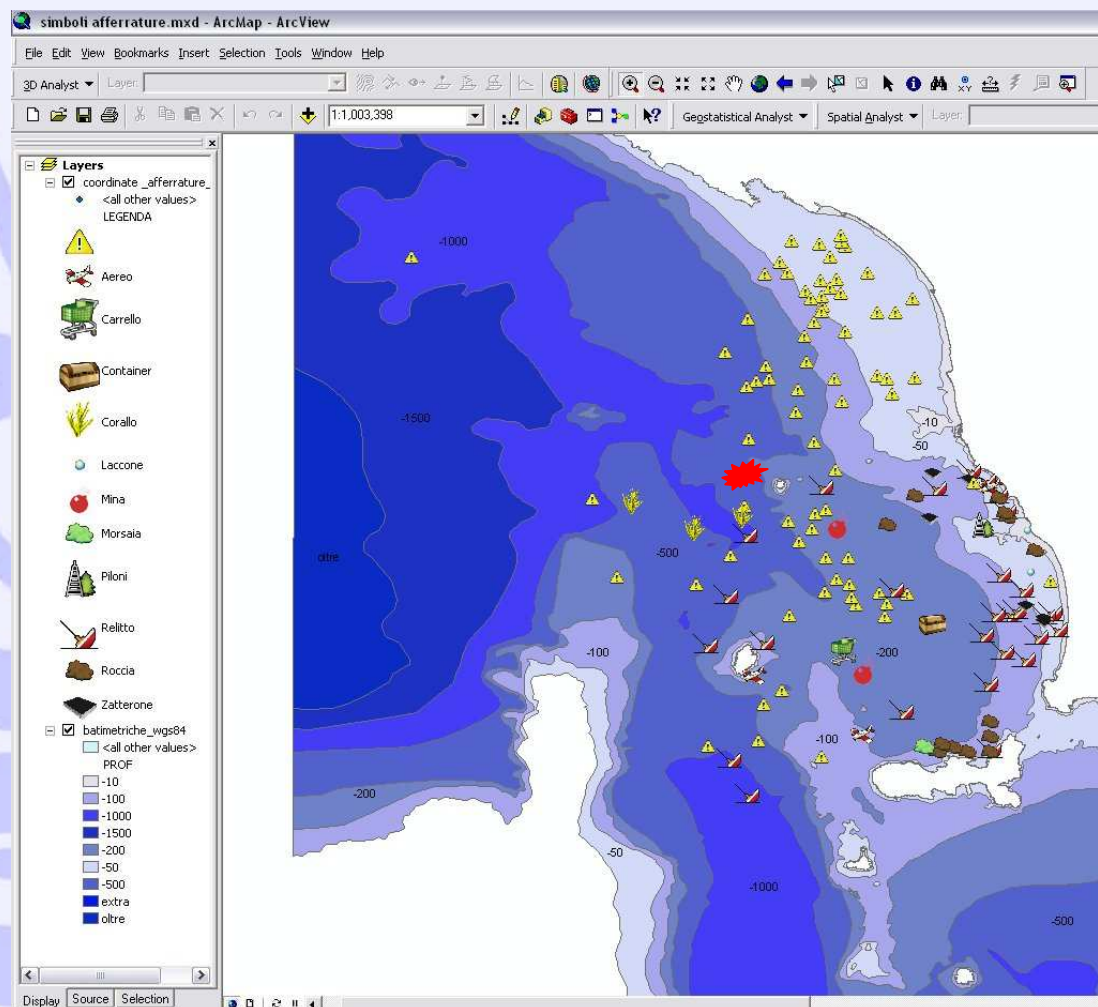




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## Georeferenziazione delle afferrature





# Strategies for Marine Litter and Environmental prevention of sea pollution in coastal areas



## Ringraziamenti:

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