

Cetaceans and Sea Turtles: improved knowledge on distribution and abundance

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Adriatic Cetacean species

Two species considered native

- common bottlenose dolphin (*Tursiops truncatus*)
- short-beaked common dolphin (*Delphinus delphis*)

Unknown status of one species

- striped dolphin (*Stenella coeruleoalba*)

Several other species occurred

- fin whale, humpback whale
- sperm whale, Cuvier's beaked whale, long-finned pilot whale, false killer whale, Risso's dolphin



Cetacean „conservation“ in the past

Documented organised eradication campaigns

Dolphins - „pest deserving systematic extermination“

Culling - acute in mid 20th century

- 788 dolphins killed, 1955 – 1960
- 1964 and 1978 for display in captivity

Targeted mostly common dolphins

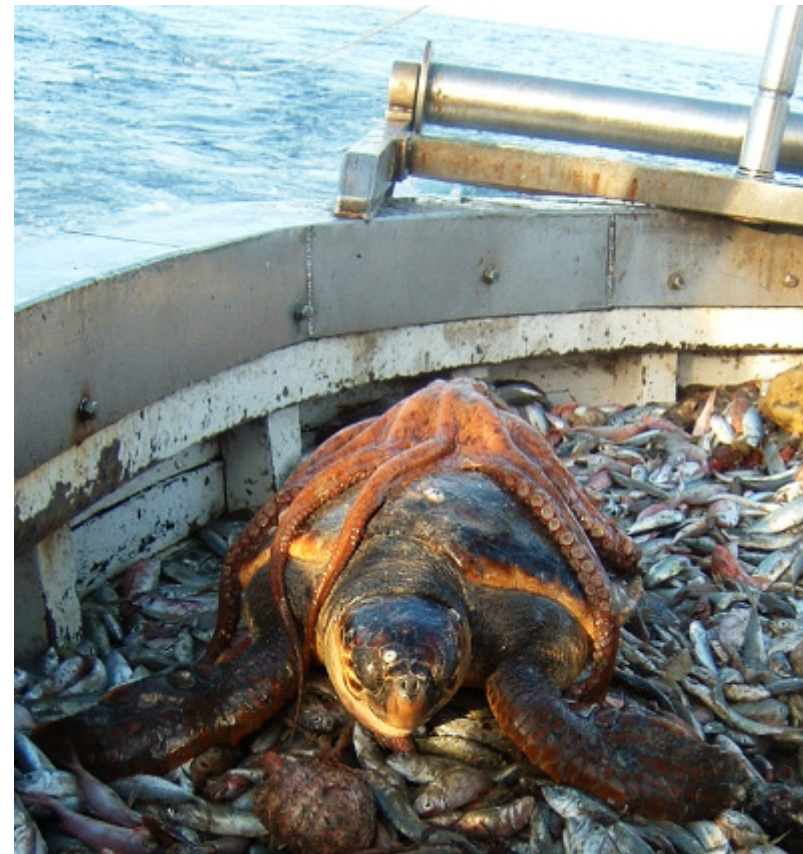
Late 80's – almost complete disappearance of *D. delphis* from the northern Adriatic

Can we prevent disappearance of some other species before it is too late?



Sea Turtles in the Adriatic

- Loggerheads: neritic habitat of Mediterranean importance
- Greens: possible importance of southern Adriatic waters
- Leathebacks: visitors
- Adriatic: habitat shared by juveniles and adults loggerheads
- >11.000 incidental catches/year
- No conservation actions or plan
- No monitoring



Network for the Conservation of Cetaceans and Sea Turtles in the Adriatic

to carry out coordinated monitoring activities to better understand the main threats posed by human activities and to provide a first assessment of the status of the sea turtle and cetacean populations at the scale of the Adriatic basin



Key actions in the work package 4

Action	1	2	3	4
Activities	Monitoring of cetacean & sea turtles stranding along the Adriatic coasts	Satellite tagging of loggerhead and green sea turtles	Aerial survey of abundance and distribution of cetaceans and sea turtles in the Adriatic	Boat based photo ID surveys of local bottlenose dolphins populations

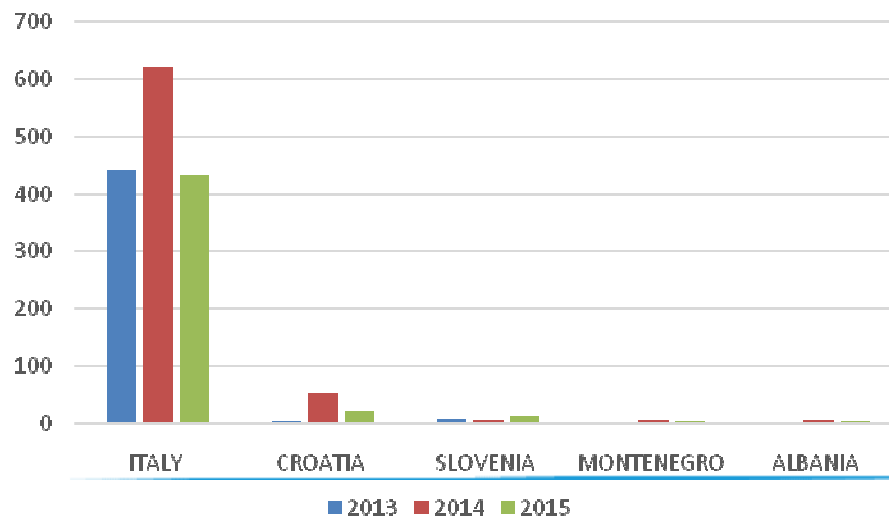




Results

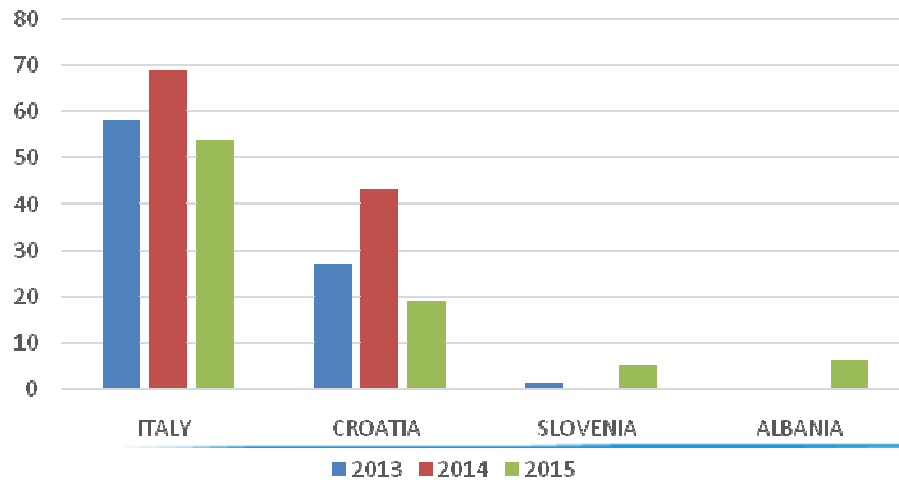
Stranded animals recovery: sea turtles

	2013	2014	2015
ITALY	442(81)	621(70)	431(51)
CROATIA	3(5)	52(20)	19(13)
SLOVENIA	7	4(8)	11
MONTENEGRO	1(6)	5(3)	2(1)
ALBANIA	1	4(2)	3(2)



Stranded animals recovery: Cetaceans

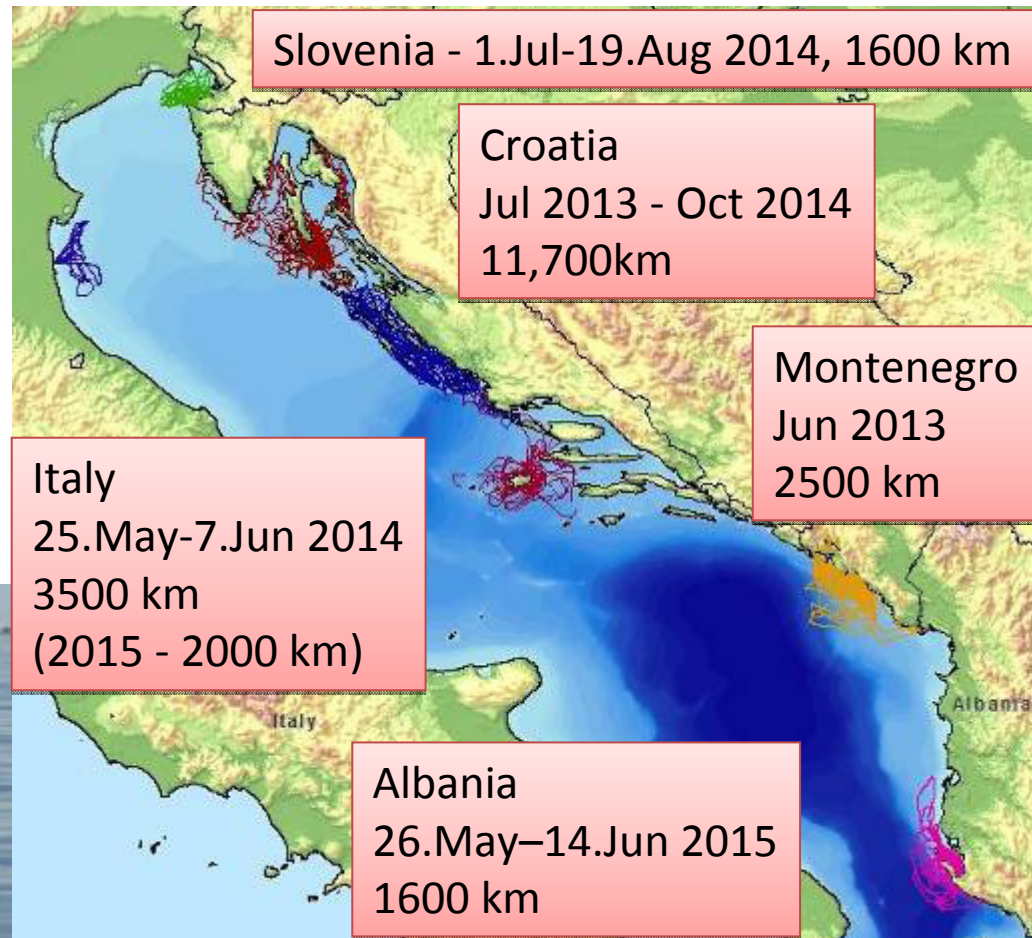
	2013	2014	2015
ITALY	58 (1)	69 (5)	54
CROATIA	27(2)	43(12)	19(10)
SLOVENIA	1	1	5
MONTENEGRO	0	0	0
ALBANIA	0	0	6(1)



PhotoID – research effort

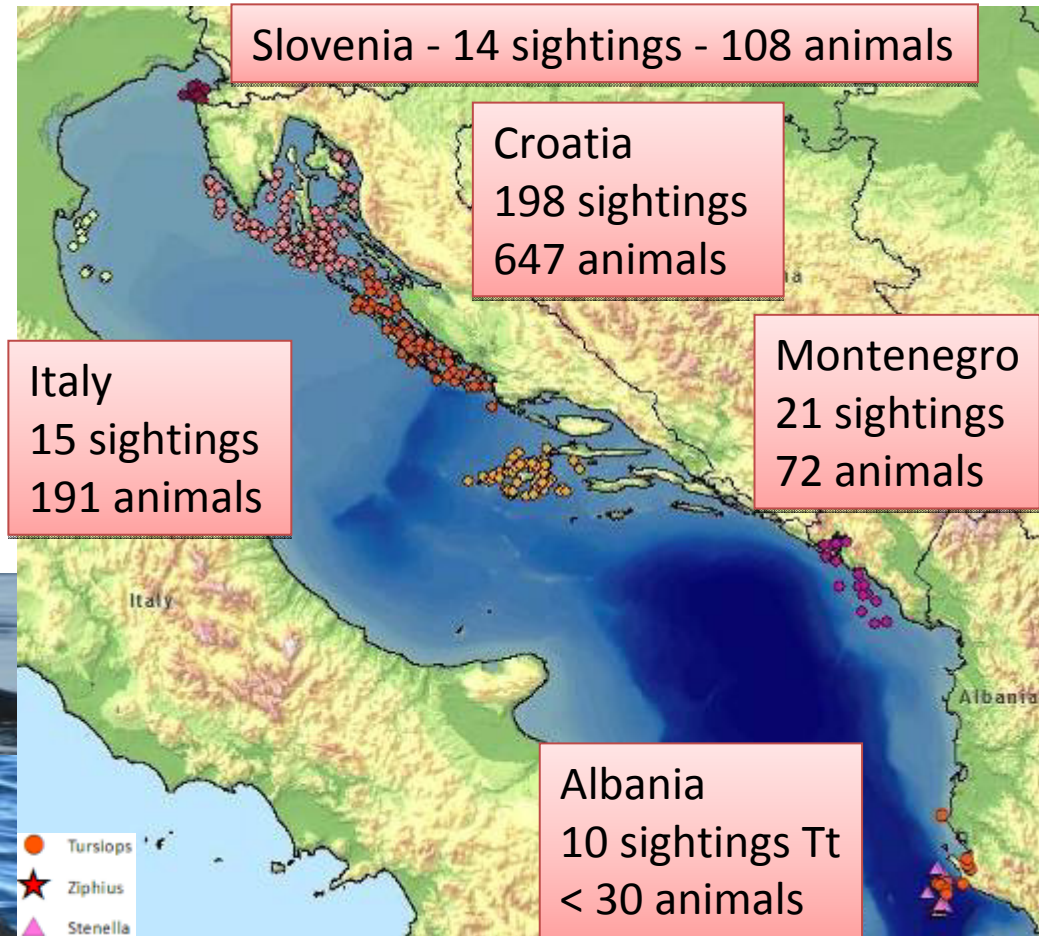
7 locations (HR, IT, MN, SI, AL)
surveys carried out between
2013-2015

goal - identify local
populations and transfer
knowledge between
partner organisations



PhotoID – results

Standard PhotoID method
T. truncatus on all locations
Southern Adriatic (Albania)
large groups of *S. coeruleoalba* & one sighting of *Z. cavirostris*





Aerial survey



Aerial survey: design & research effort

Distance sampling

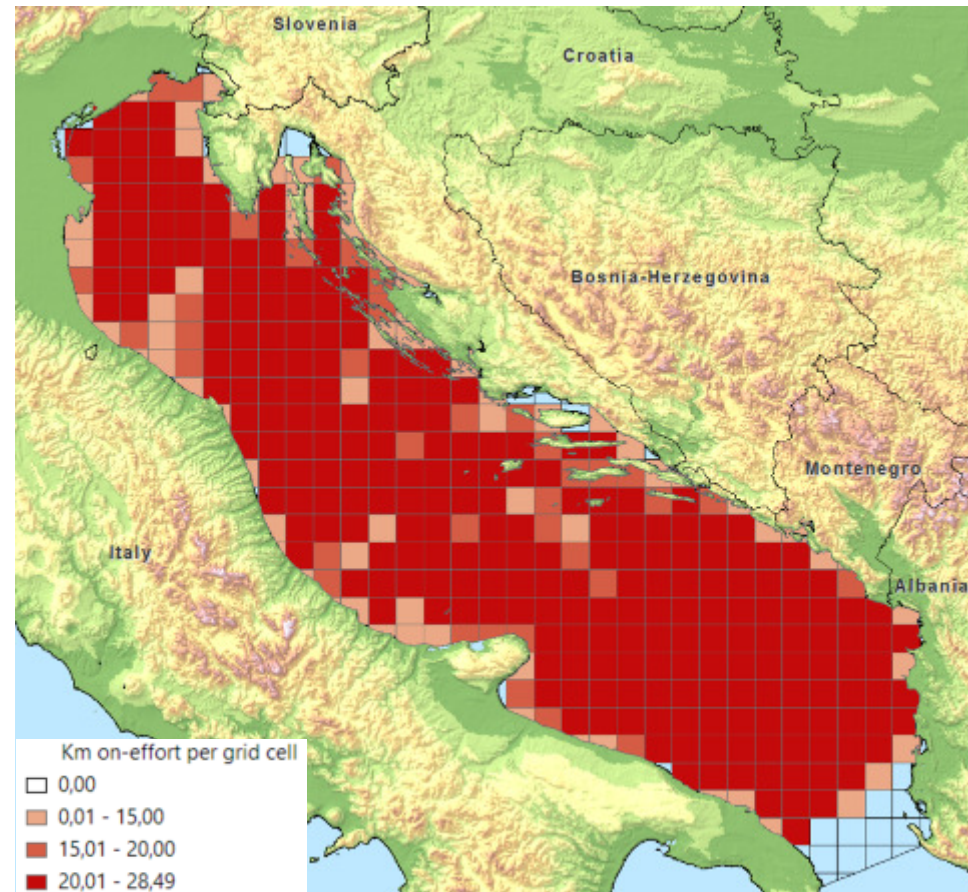
53 (49) parallel lines with 15 km spacing

15-31 Jul & 31. Aug-6.Sep 2013

Over 100 hours of flight

Over 14.000 km covered

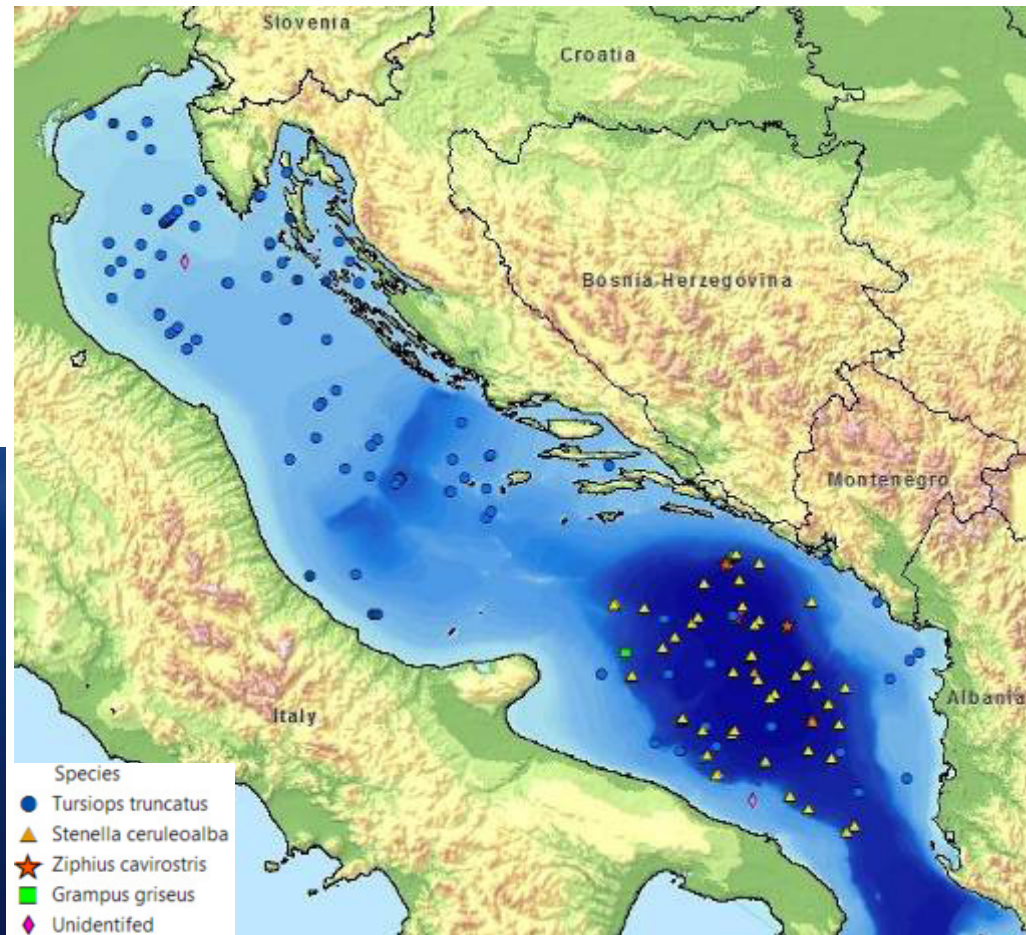
Total 7.854 km in good conditions



Aerial survey: Cetacean sightings

Total - 182 sightings

- 114 *T. truncatus*
- 62 *S. coeruleoalba*
- 4 *Z. cavirostris*
- 2 *G. griseus*

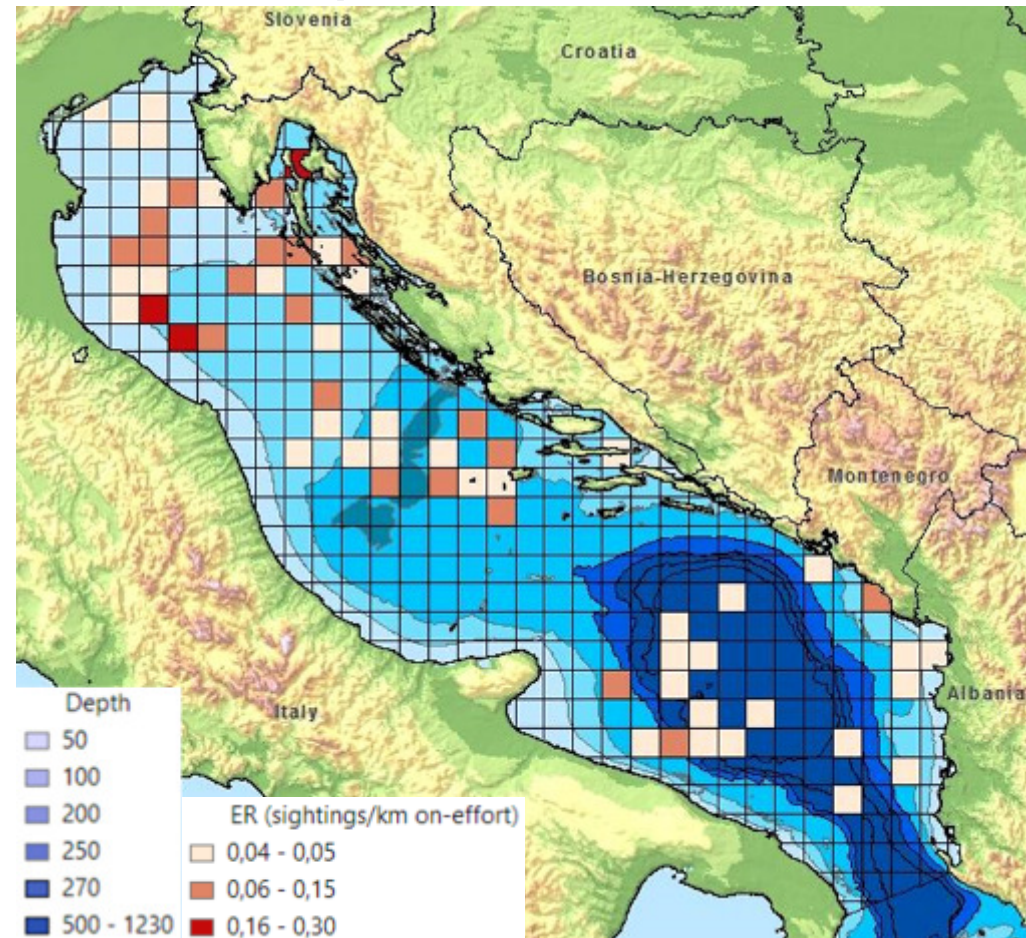


Bottlenose dolphins: Distribution & relative density

114 sightings, mostly along
continental shelf areas
group size 1-40 animals
(mean 3,6)

uncorrected estimate
over 10.000 animals

higher ER in northern and
central Adriatic

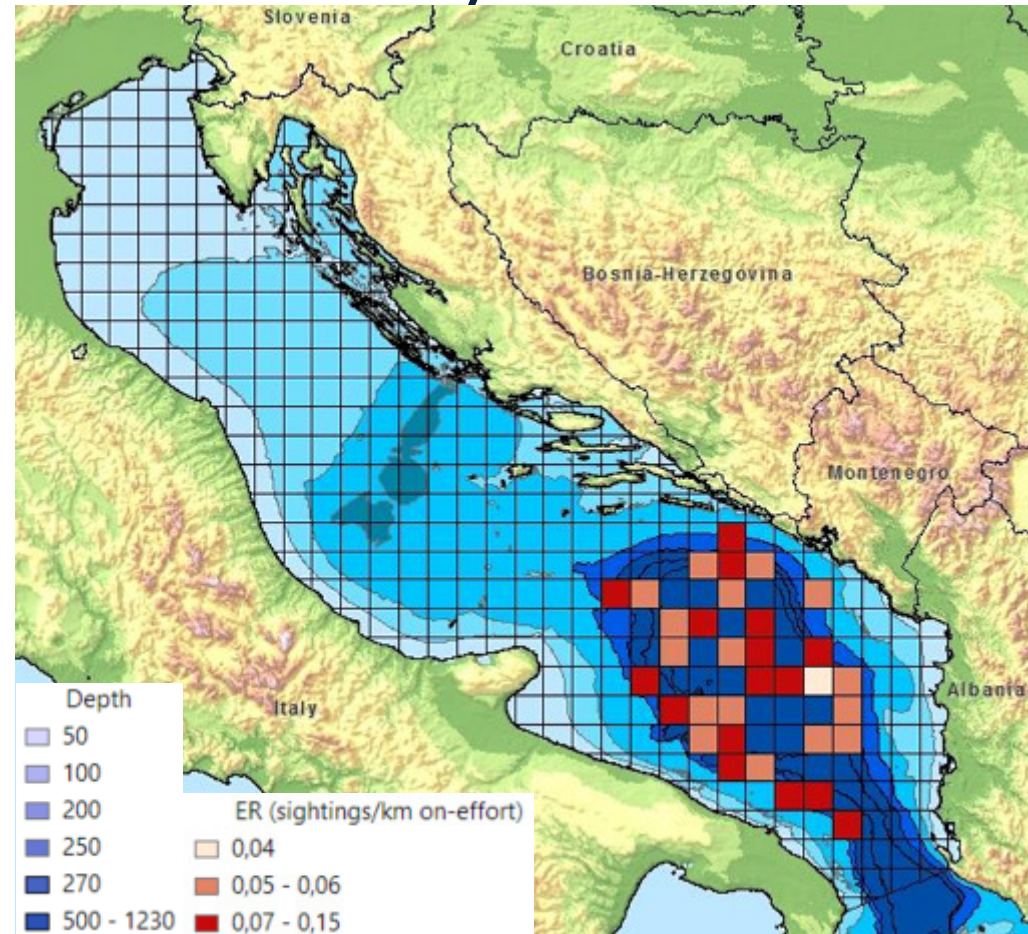


Striped dolphins: Distribution & relative density

61 sightings, pelagic areas of southern Adriatic

Group size 2-200 animals
(mean 20,5)

Uncorrected estimate
over 40.000 animals



Other Cetacean species

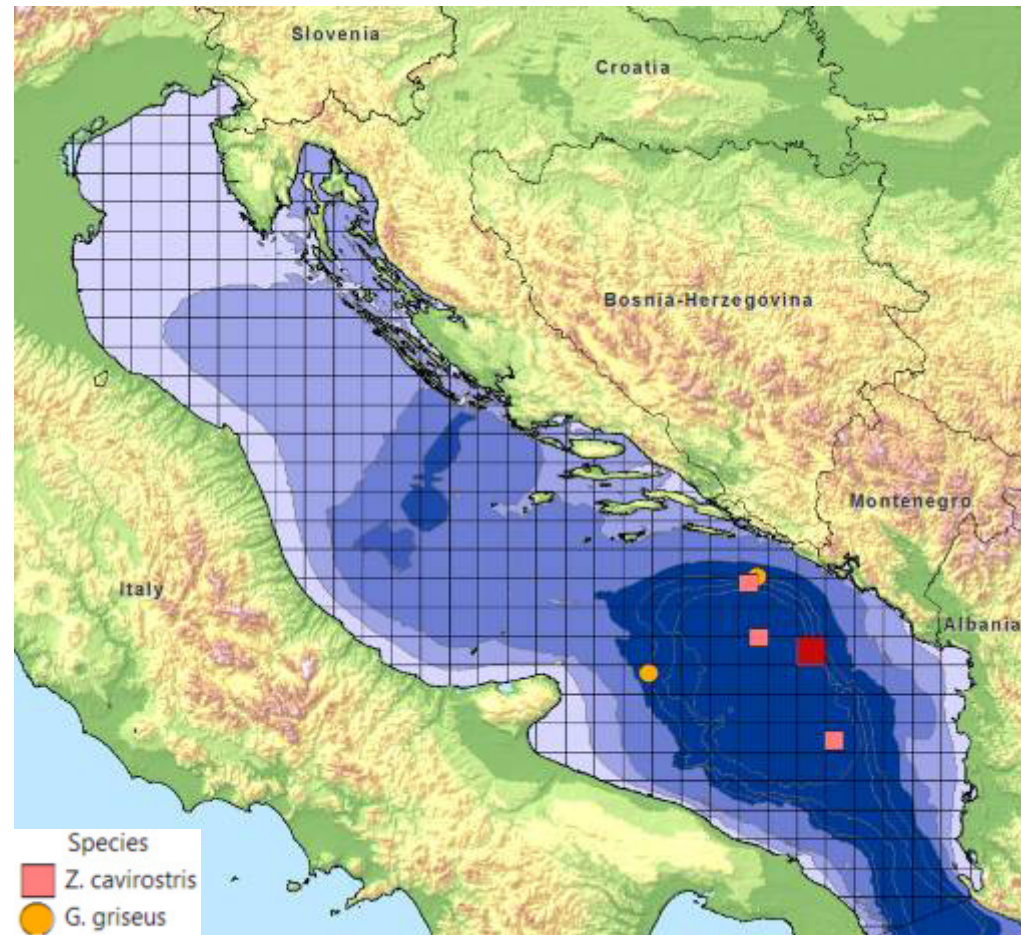
Risso's dolphin

2 sightings (off-effort)
group size 6 and 12

Cuvier's beaked whale

4 sightings (3 off-effort)
group size 1 – 5 (mean 1,9)

Only in deep southern
Adriatic over steep slopes
and abisal plain



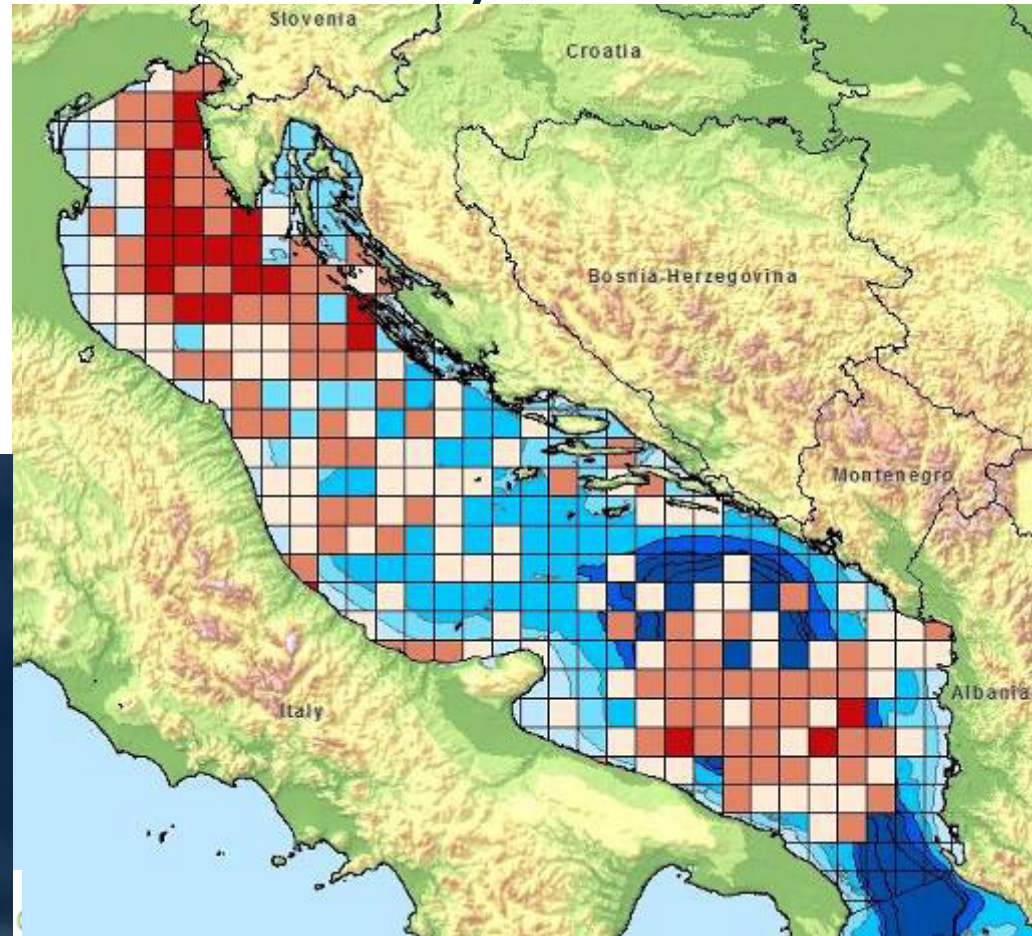
Loggerhead sea turtles: Distribution & relative density

1.094 sightings

Uncorrected abundance estimate

31.051 animals

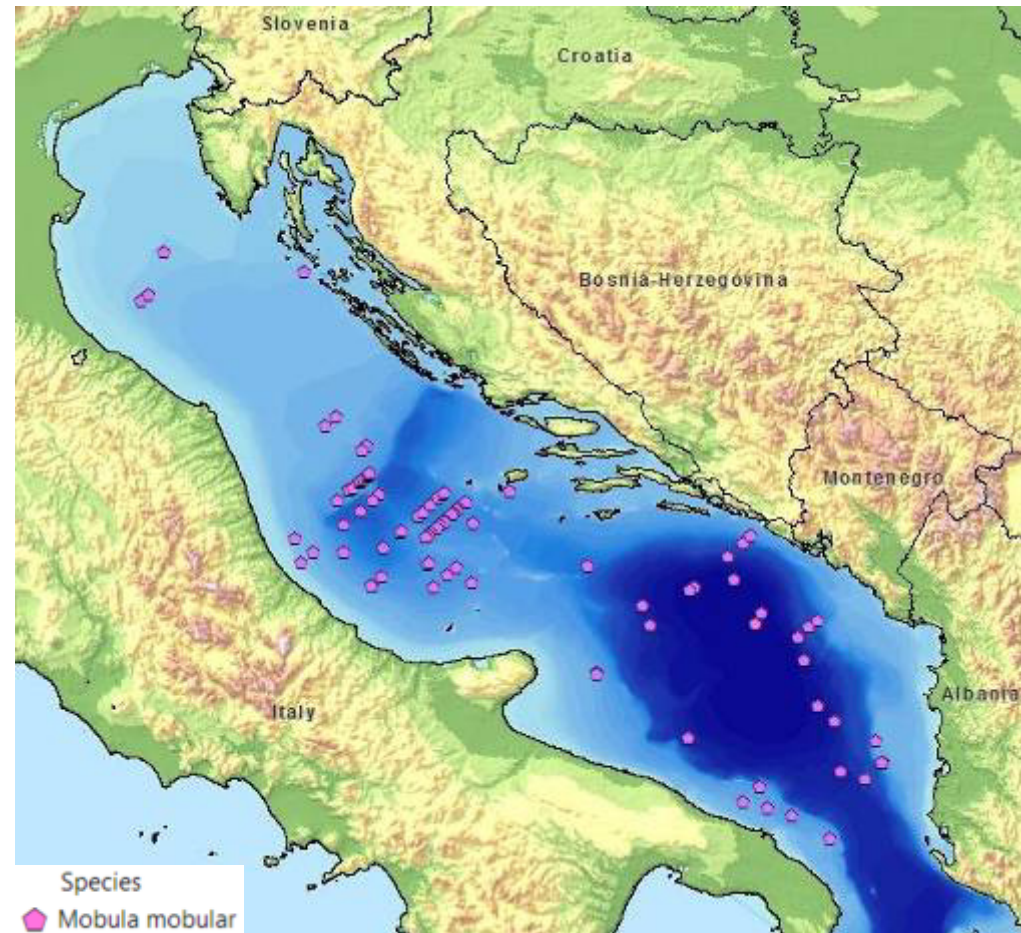
*proportion of green turtles should
not exceed 2%*



Giant devil ray: Distribution

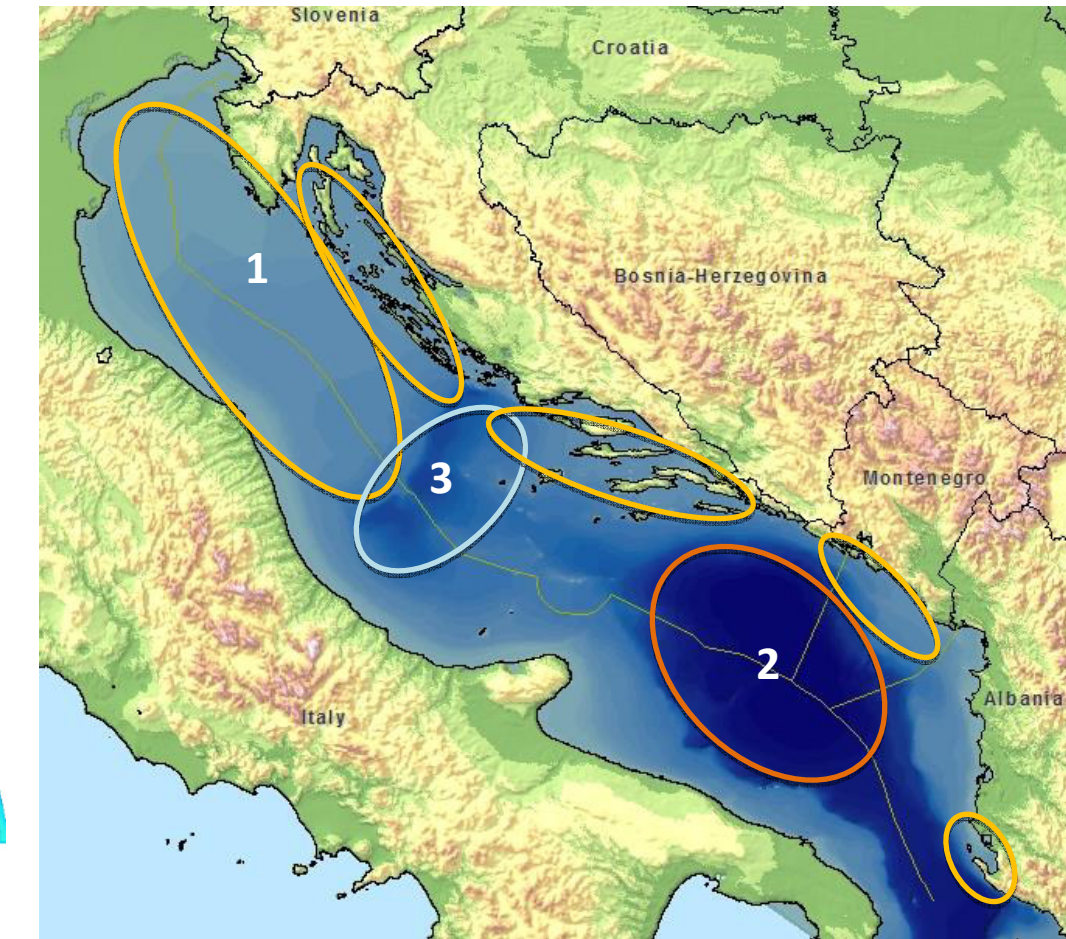
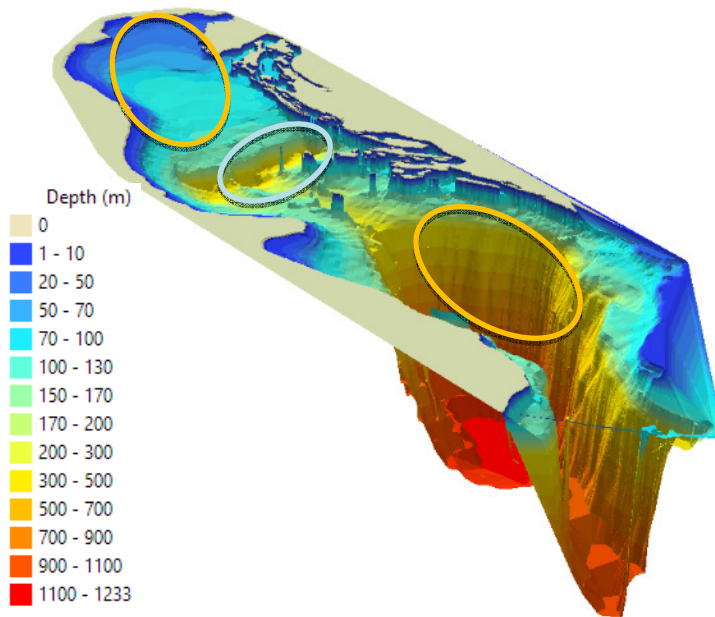
101 sightings

Estimated abundance (summer)
over 3000 animals



Important areas for Cetaceans

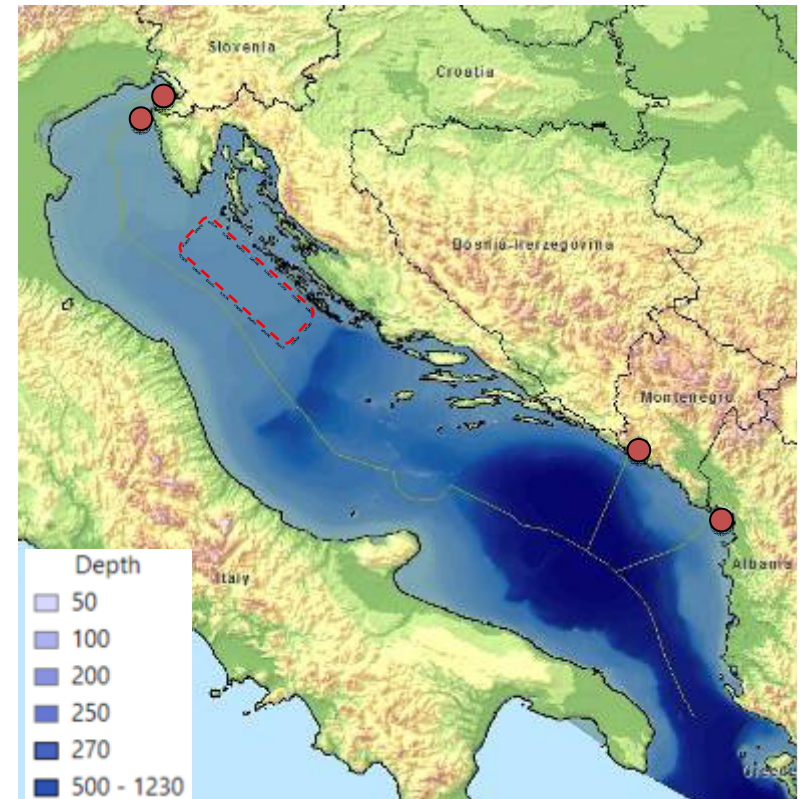
1. Bottlenose dolphins in shelf and coastal areas
2. Pelagic and deep diving cetaceans
3. *Seasonal importance for plancton feeders*



Satellite telemetry of sea turtles

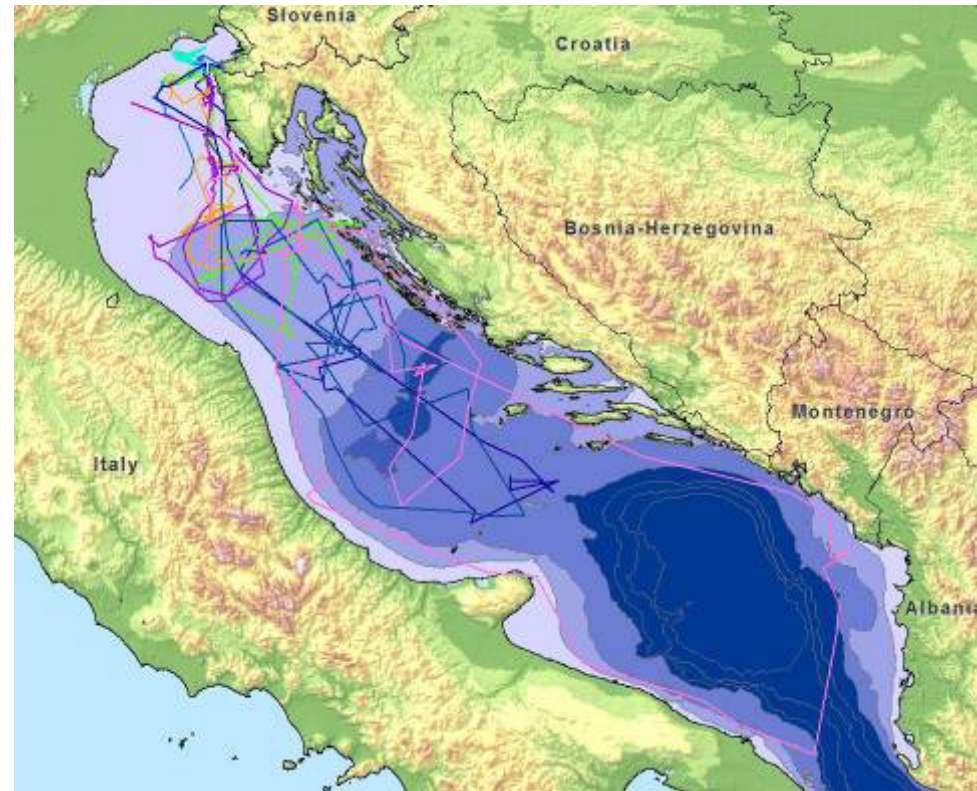
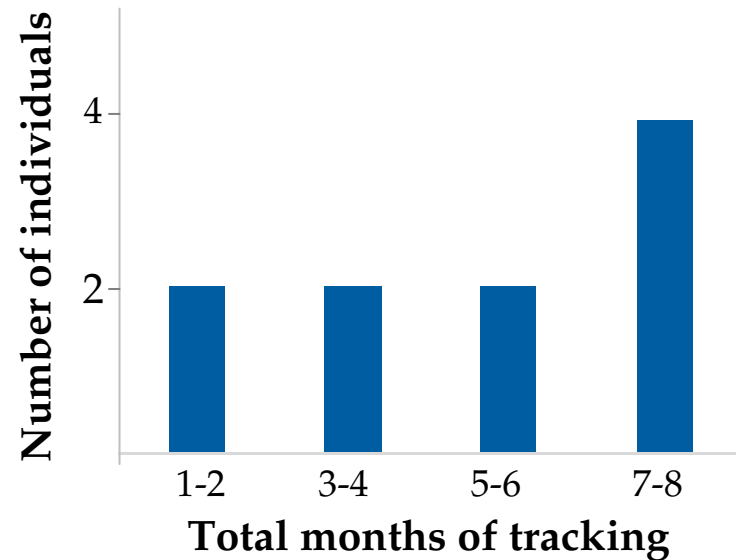
Goals

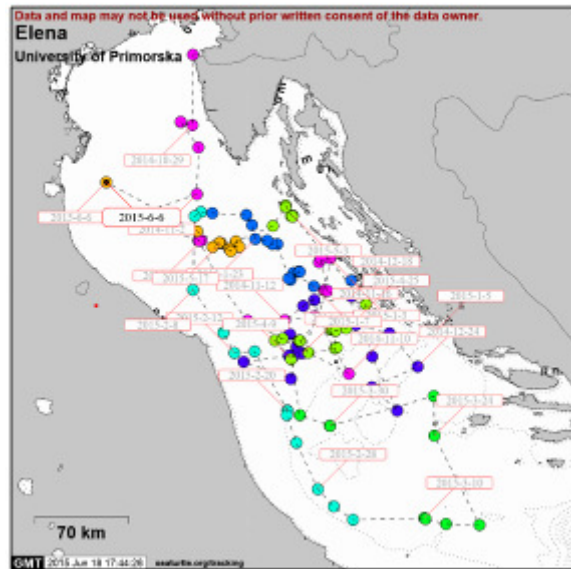
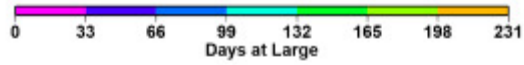
1. Seasonal migrations and habitat utilization of small juvenile loggerhead sea turtles
2. Wintering behaviour of loggerheads and habitat use
Survival of released (rehabilitated) loggerheads from bycatch in bottom trawls
3. Movements of juvenile green turtles in southern Adriatic



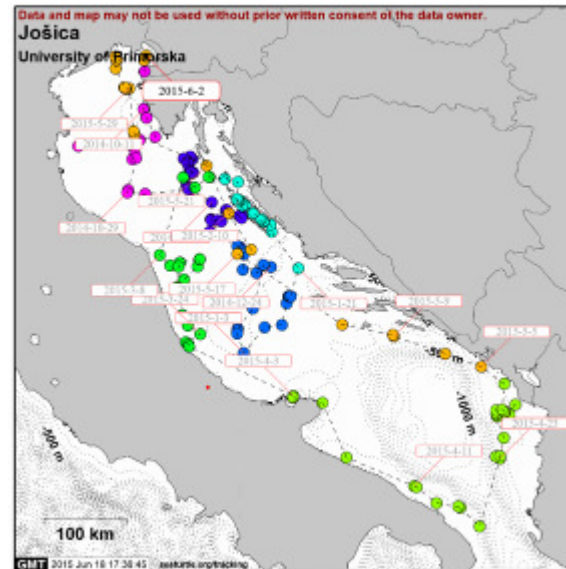
Seasonal migrations and habitat utilization of small juvenile loggerhead sea turtles

N = 10
Mean CCL: 35.5 ± 3.9 cm

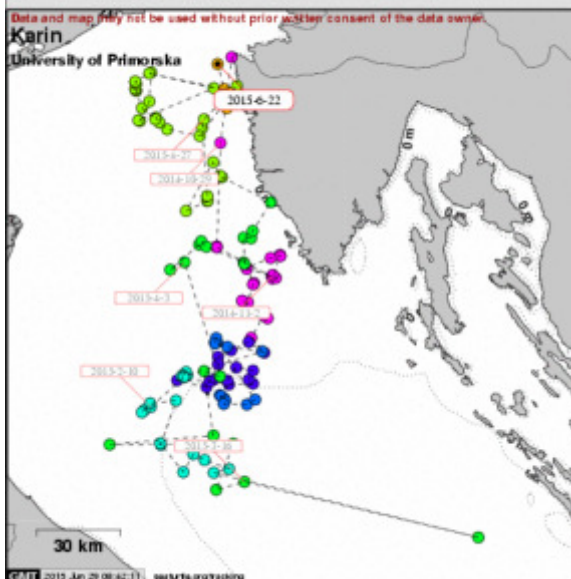
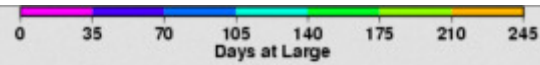




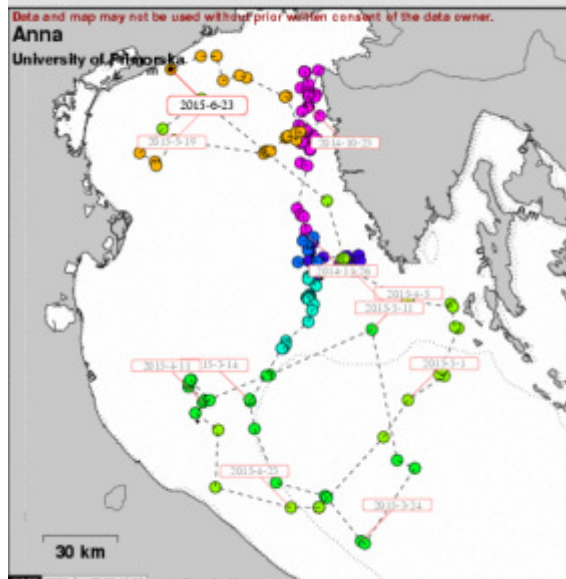
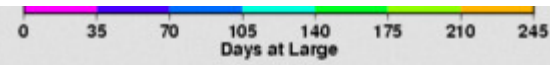
Distance Traveled: 2455 km Straight-line Distance: 76 km



Distance Traveled: 3017 km Straight-line Distance: 62 km



Distance Traveled: 1194 km Straight-line Distance: 28 km



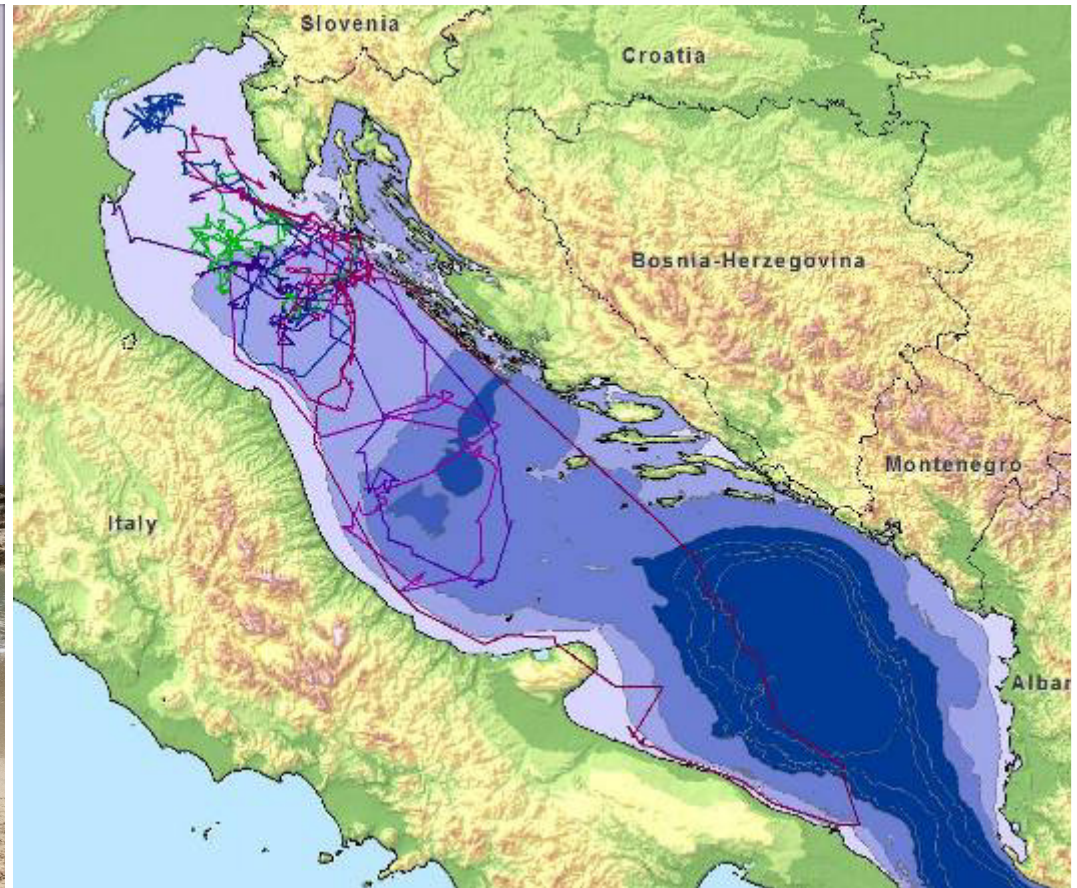
Distance Traveled: 1190 km Straight-line Distance: 56 km

Wintering behaviour and habitat use of loggerhead turtles

- *Telonics* platform terminal transmitters
- deployment “on-board”, in wintering habitats (Croatia)
- Survival, H_0 : 100% alive turtles after application of recovery techniques

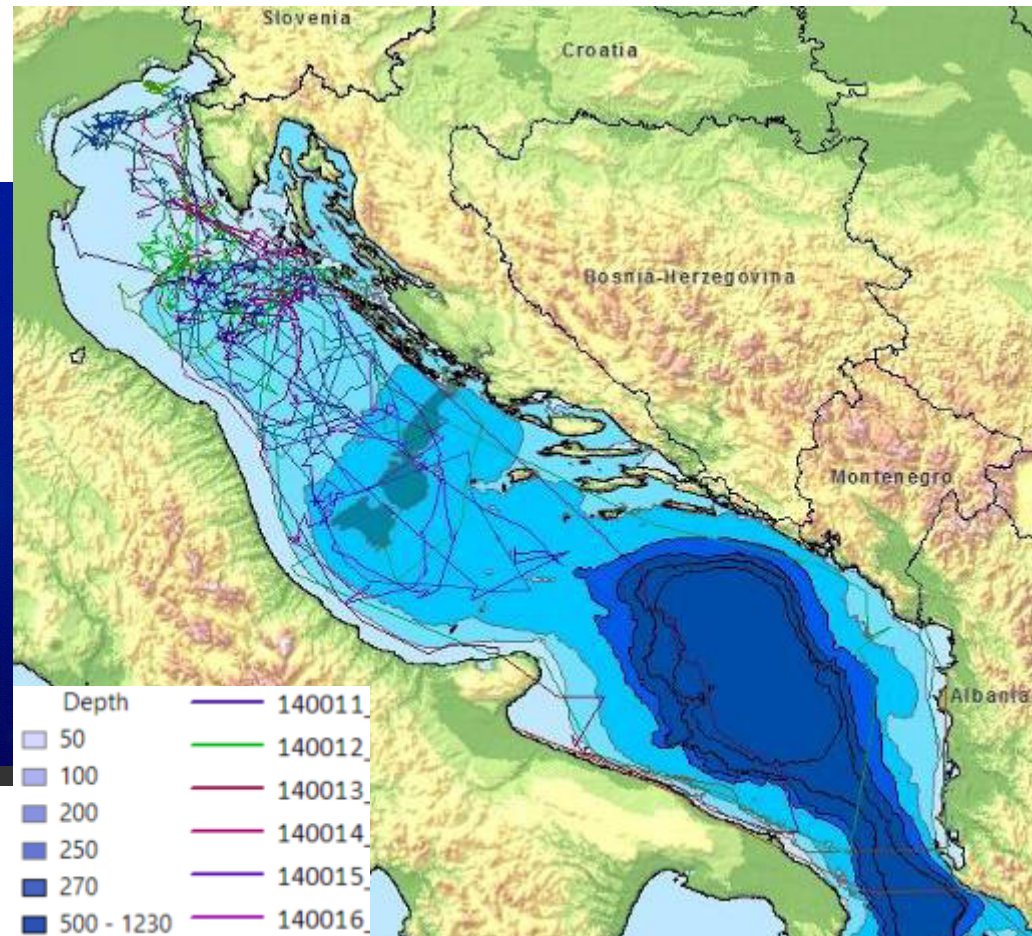


Wintering behaviour and habitat use of loggerhead turtles



Summary

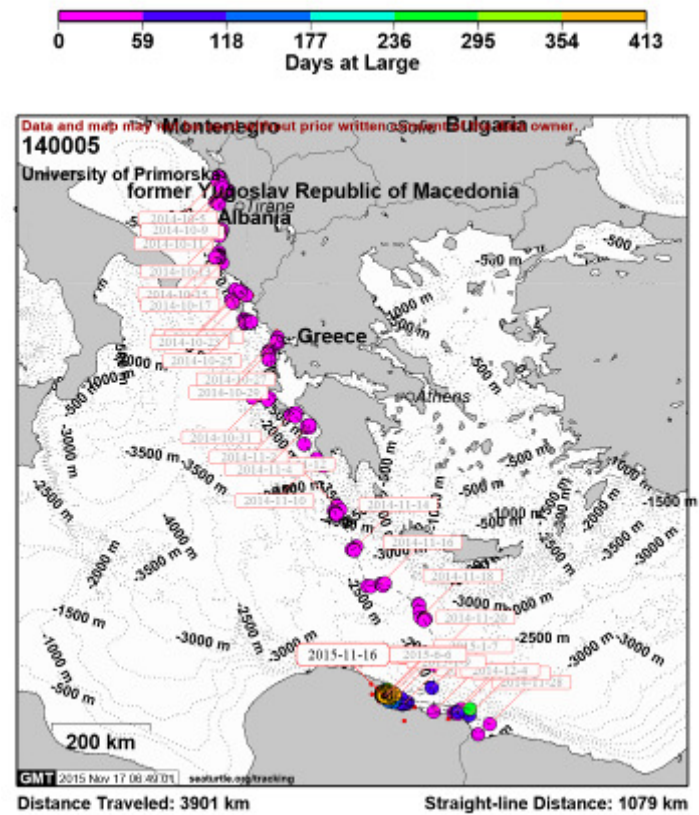
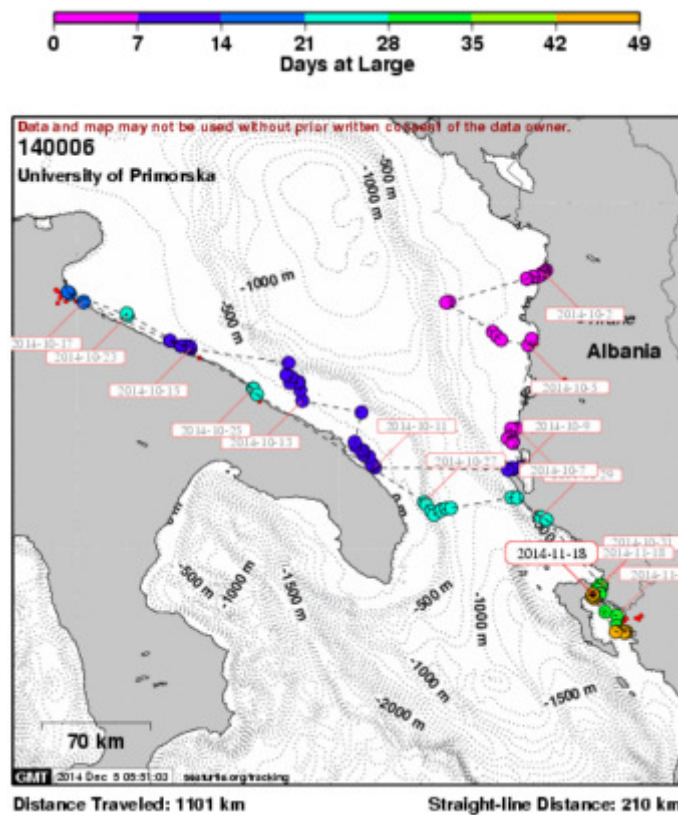
Movements and habitat use of loggerheads



Movements of green turtles



Movements of green turtles



Important areas for sea turtles

1. Summer feeding area
2. Wintering area
3. *Unknown*

