Movements of *Pomatamus saltatrix (L.,1766)* in artificial reef area: preliminary results

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Introduction

Bluefish

http://www.ntv.com.tr/arsiv/id/25225850/

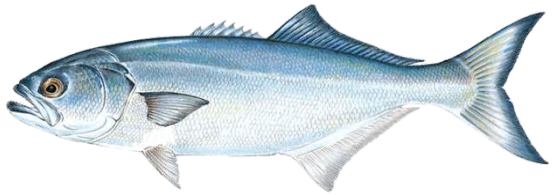
- Migratory pelagic species
- Temperate and tropical marine waters
- Oceanic and coastal waters
- Ecologically and economically important species

http://www.zaman.com.tr/gundem_bogazda-lufer-bollasinca-fiyati-yariya-dustu_2022701.html

Bluefish population and migration

Miralles et al., (2014) identified three main genetic units of Bluefish:

1) American (West Atlantic waters),
2) Spanish (East Atlantic–Western Mediterranean regions)
3) Turkish (Eastern Mediterranean, Marmara, and Black seas)



According to morphometric and meristic variations, Turan et al., (2006) detected differences between:

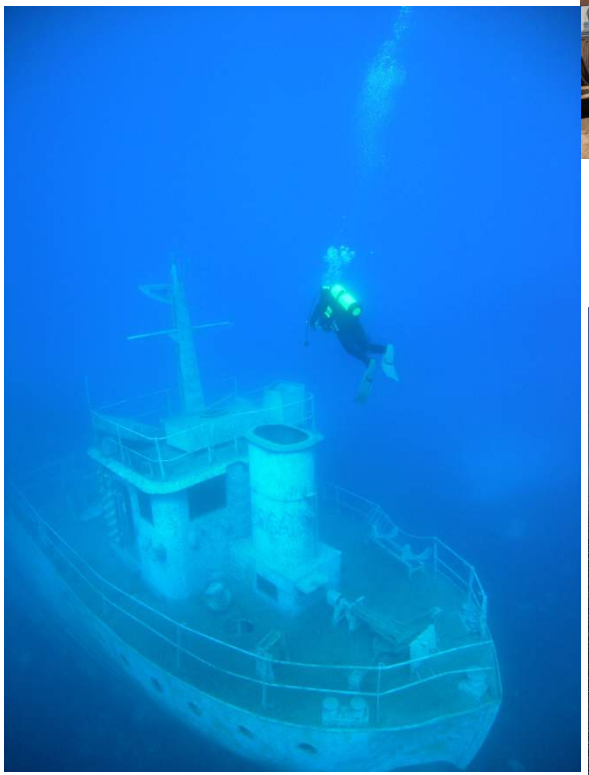
1) Eastern Black Sea
2) Western Black Sea, Marmara Sea, Aegean Sea (highly migratory population)
3) Northeastern Mediterranean

Bluefish migration

- In autumn migrate to south from Black Sea to Aegean Sea
- At the end of spring migrate to the Black Sea for feeding and spawning

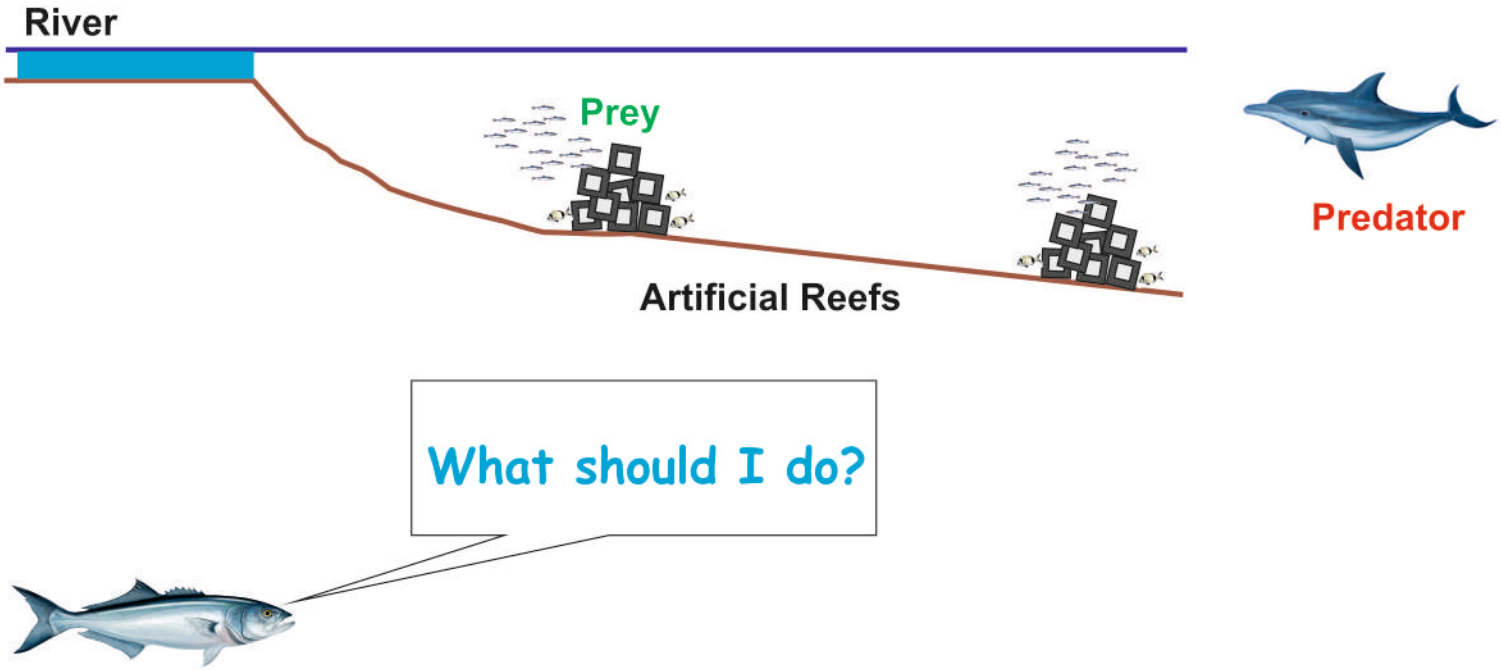
Artificial reefs

An artificial reef is one or more objects of natural or human origin deployed purposefully on the seafloor to influence physical, biological, or socioeconomic processes related to living marine resources (Seaman and Jensen, 2000).



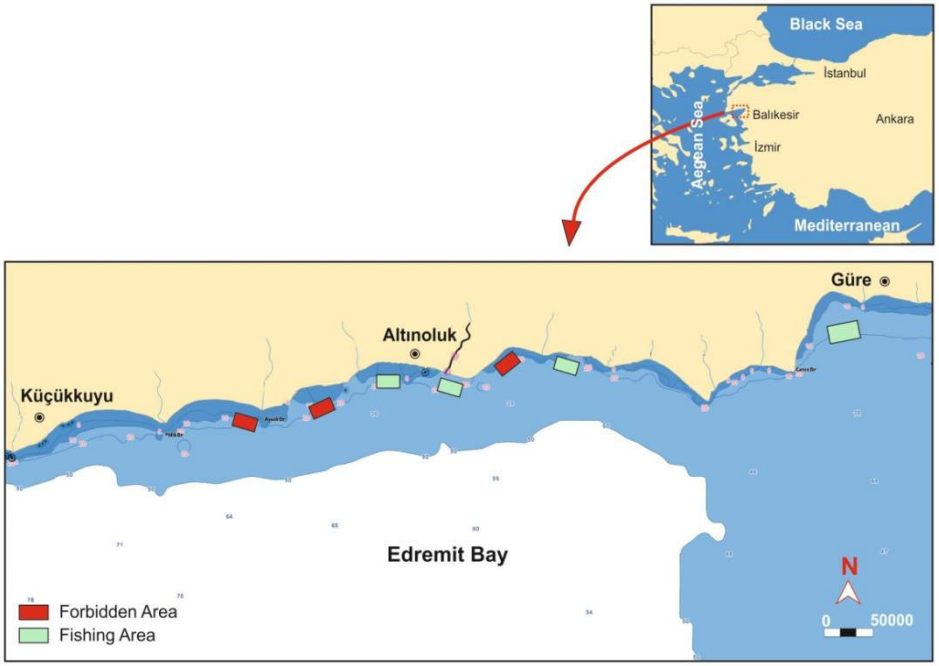
The aim of study

To identify habitat use and movements patterns of adult bluefish in artificial reef area.

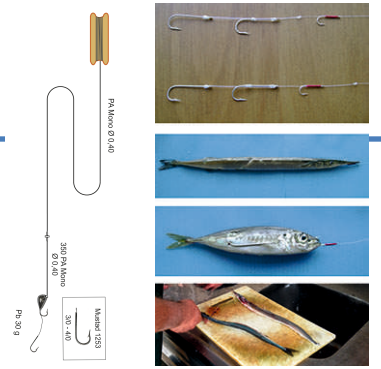


Study area

- Gulf of Edremit in northern Aegean Sea of Turkey.
- Total artificial reef bulk volume is 25 000 m³.
- Artificial reef complex consist of 7 rectangular areas.
- Each rectangular area has 30 artificial reef sets.
- Each artificial reef set has 30 units
- The largest artificial reef complex in Mediterranean together with Marseille, France.



Tagging methods



Bluefish individuals were caught with fishing line.

Fish were anaesthetized in a 25 L tank, with 0,5 ml/L fenoksietanol (2-phenoxyethanol, Sigma, USA, ≥99%, d=1.107 g/ml).

Total length and weight were measured.

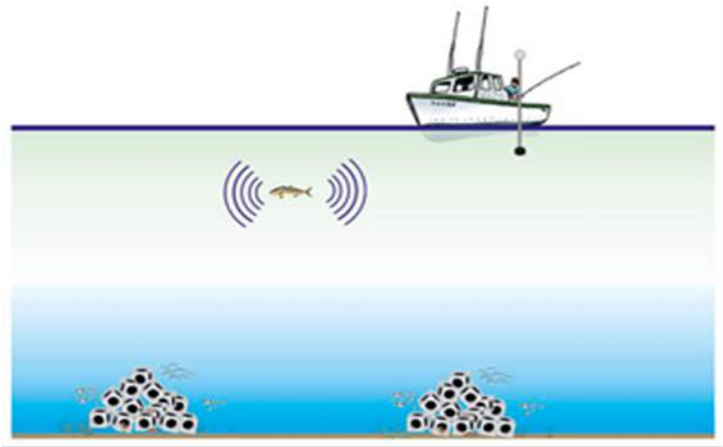
Transmitter	Diameter x length (mm)	Estimated tag life (d)	Weight (g) in air	Weight (g) in water	Power output (dB re 1uPa@1m)
V9-2H*	9 x 29	25	4.7	2.9	151

*Vemco model number

They were released in the place where they had been caught.

Tracking methods

Mobile tracking from a boat utilized a directional VH110(Vemco) hydrophone wired to VR100 receiver.



Results

Eight bluefish were tagged

Fish	Fork length (cm)	Weigth (g)	Frequency	Release date and time	Release coordinate	
Bf-1	30.5	249.0	ID_84 kHz	11.02.2014 15:50	39.553920°	26.747970°
Bf-2	28.5	172.8	ID_81 kHz	11.02.2014 14:50	39.560580°	26.751110°
Bf-3	30	204.4	ID_63 kHz	28.03.2014 07:29	39.563550°	26.749040°
Bf-4	30	212.8	ID_75 kHz	27.03.2014 17:34	39.560570°	26.746500°
Bf-5	29.6	250.5	ID_63 kHz	28.11.2014 16:00	39.561150°	26.751210°
Bf-6	30.2	273.5	ID_78 kHz	24.04.2015 19:37	39.562420°	26.751450°
Bf-7	33.2	345.5	ID_81 kHz	24.04.2015 19:37	39.562420°	26.751450°
Bf-8	32.6	330	ID_84 kHz	24.04.2015 19:37	39.562420°	26.751450°

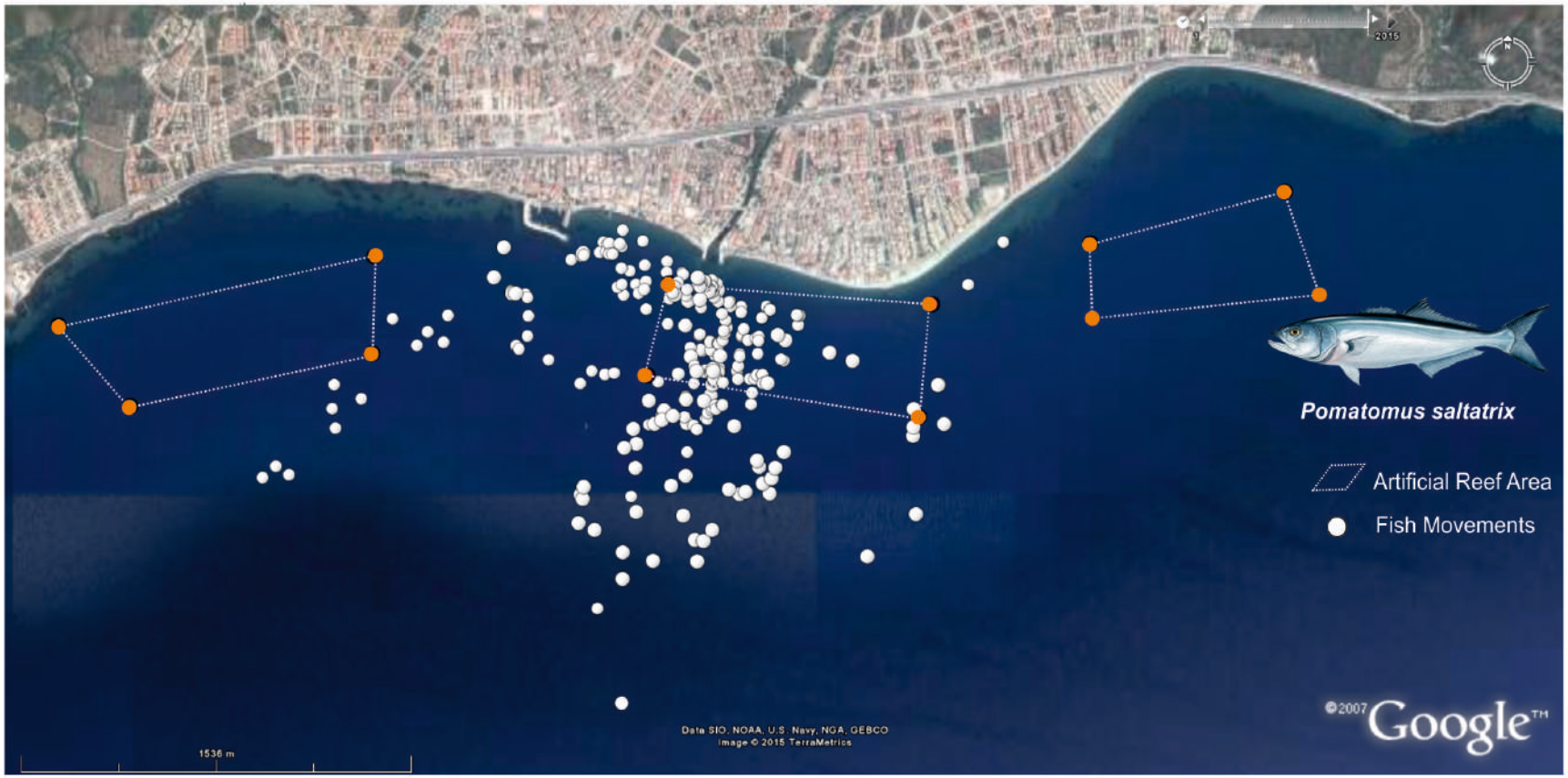
Results - Durations

Fish	First detection time	Last detection time	Total tracking duration (h)
Bf-1	11.02.2014; 15:50	12.02.2014; 07:22	16
Bf-2	11.02.2014; 14:50	12.02.2014; 06:30	16
Bf-3	28.02.2014; 07:30	29.02.2014; 07:22	23
Bf-4	27.02.2014; 17:34	28.02.2014; 18:52	25
Bf-5	28.11.2014 16:00	28.11.2014 22:13	6
Bf-6	24.04.2015 19:37	25.04.2015 00:51	5
Bf-7	24.04.2015 19:37	25.04.2015 03:25	8
Bf-8	24.04.2015 19:37	26.04.2015 11:10	16

Individual movement patterns

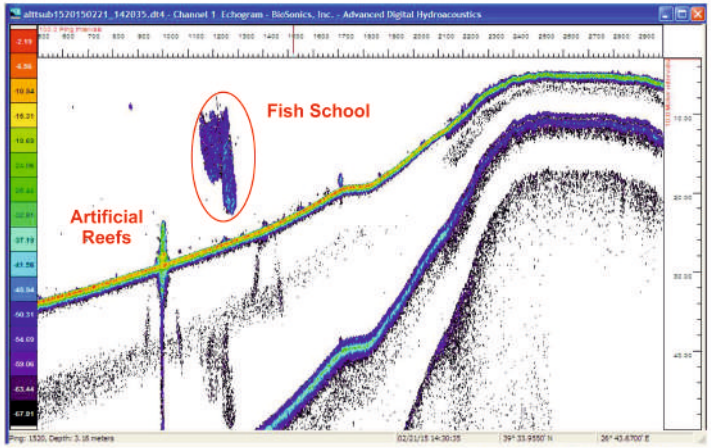
Individual movement patterns

Combined movement pattern for 8 individuals



Discussion and Conclusion

- The presence of artificial reefs might alter the spatial and temporal patterns of bluefish behavior and distribution.
- According to fisherman, bluefish schools remain for longer period in the area after artificial reef deployment.
  - To find prey
  - To avoid from predators



Discussion

- Fisheries closure of the artificial reef areas can be very effective to protect bluefish population according to movement data.

- Mobile tracking method can use around artificial reef area. Passive telemetry methods can provide more detailed data for bluefish movement

Literature cited

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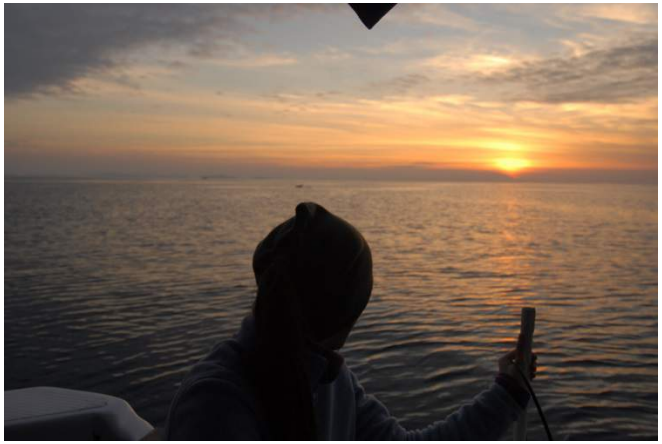

Thank you for your attention