

ALIEN SPECIES ISSUE, GFCM,11.Session .Malta

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The Mediterranean Sea, rich but sensible

1 % of the marine areas in the world

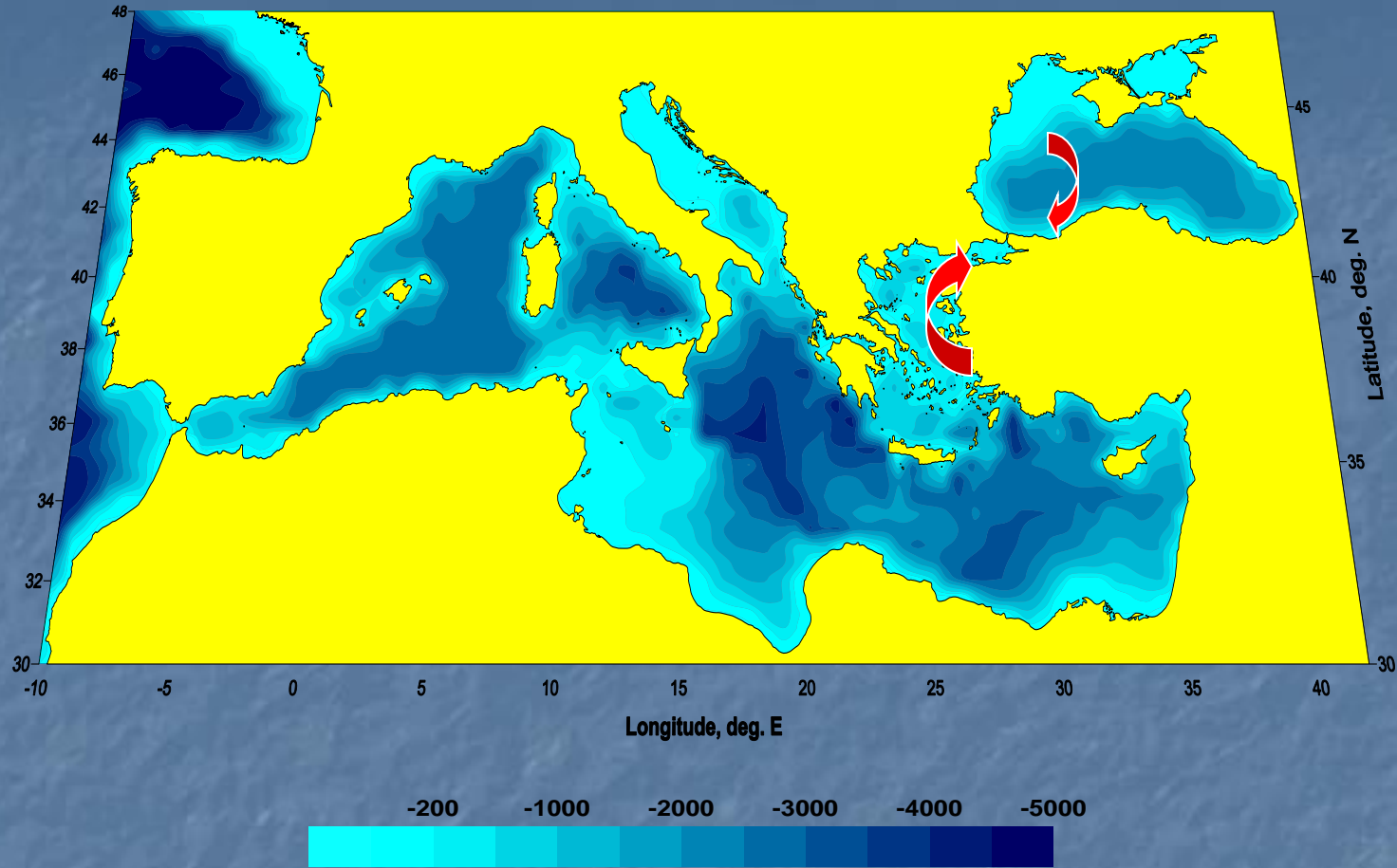
A unique enclosed Sea

10 % of the world biodiversity

30 % of the petroleum sea-traffic



Interactions of the Black and Mediterranean Seas



The fresher water from the Black Sea enters the Aegean basin through the Turkish Straits partly determining conditions for the surface layer and deep convection in the Aegean, whereas the saltier water from the Aegean intrudes into the Black Sea setting intermediate and deep water stratification. The Black Sea is an integral part of the Aegean and Med.Seas.

THE MAIN THREATS FOR FISHERIES IN THE MED. SEA

- POLLUTION
- EUTROPHICATION
- COASTAL DEVELOPMENT
- INVASIVE SPECIES

ALIEN SPECIES TERMINOLOGY

- **Alien species:** According to the World Conservation Union (IUCN) (2002), an alien species (exotic, non-native, non-indigenous) is a species, a sub-species or a lower taxon occurring outside of its natural range (past or present) and dispersal potential (i.e. outside the range it occupies naturally or could not occupy without direct or indirect introduction or care by humans). It includes any part, gametes or propagule of such species that might survive and subsequently reproduce.
- **Alien invasive species:** An alien species which becomes established in natural or semi-natural ecosystems or habitat, is an agent of change, and threatens native biological diversity. However, there is no uniform terminology for the alien species and some organizations use different definition such as the United Nations Environmental Programme (UNEP), the International Council for the Expolaration of the Sea (ICES) or the United States Environmental Protection Agency (EPA).

ALIEN SPECIES TERMINOLOGY

- **Lessepsian migrant:** term used for the first time by Por (1969, 1971) to define the Red Sea origin species which had passed through the Suez Canal and settled in the Eastern Mediterranean.
- **Lessepsian migration:** Unidirectional migration of the Red Sea species to the Mediterranean via the Suez Canal.
- **Anti-lessepsian:** Contrary migration to the lessepsian migration, i.e. from the Mediterranean Sea to the Red Sea.

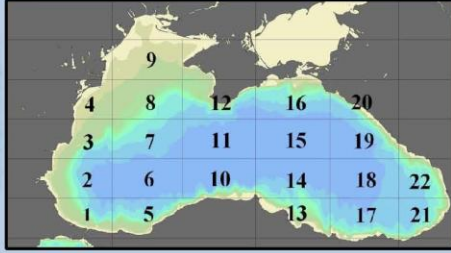
WAYS OF INTRODUCTION



With Ships: Ballast water, Fouling, Ballast Sediment Tanks
By Straits and Suez Channel



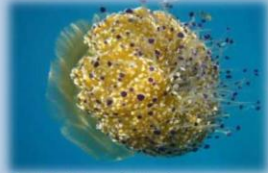
Pelagia noctiluca



Chrysaora hysoscella

KARADENİZ ISINIYOR, DENİZ ANALARI ARTIYOR MU?

İklim değişikliği bir çok canlı türünün yayılım alanının genişlemesine neden oluyor. Deniz anaları da bunlardan biri. Bu deniz analarını nerede gördüğünüzü bize bildirmenizi bekliyoruz.



Cotylorhiza tuberculata



Cassiopea andromeda



Rhizostoma pulmo



Aurelia aurita (Bu türle ilgili ihbar göndermeyiniz)

Kırmızıyla yazılanlar zehirlidir !

Aşağıdaki bilgileri bize ulaştırarak yardımcı olabilirsiniz:

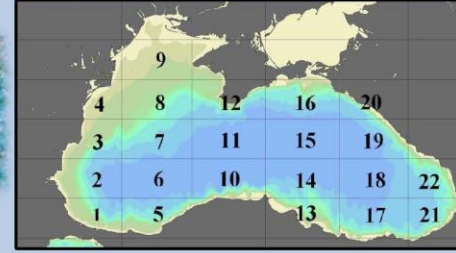
- Gördüğünüz tür yukarıdakilerden en çok hangisine benziyor?
- Gözlem tarihi
- Bölge numarası (yukarıdaki haritaya göre)
- Gözlenen hayvan sayısı
- Denizde canlı olarak mı yoksa karaya vurmuş olarak mı gözlediniz?

Bu program, Karadeniz'in Kirliliğe Karşı Korunması Komisyonu Daimi Sekreteryası işbirliği ile TÜDAV tarafından yürütülmektedir.

İhbarlarınızı varsa fotoğraflarıyla birlikte aşağıdaki e-posta adresinden bize ulaştırabilirsiniz.
E-posta: info@tudav.org
Web: www.tudav.org
Tel: 0216 424 07 72



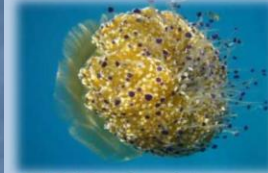
Pelagia noctiluca



Chrysaora hysoscella

IS THE NUMBER OF JELLYFISH INCREASING AS THE BLACK SEA IS WARMING UP?

Climate change causes expansion in the range of most species. Jellyfish are among them. Please inform us where you see these jellyfish species.



Cotylorhiza tuberculata



Cassiopea andromeda



Rhizostoma pulmo



Aurelia aurita (Please don't send information about this species)

Those typed in red are venomous !

You can help us by sending us the below information:

- Which one of those species above looks most like the one you saw?
- Date of observation
- Region number (based on the above map)
- Number of animals observed
- Was the species observed alive in the sea or dead and stranded?

This programme is run by TUDAV in cooperation with the Permanent Secretariat of the Commission on the Protection of the Black Sea Against Pollution.

Please send us information about your observations, with photos where possible, via the below email address.

E-mail: info@tudav.org
Web: www.tudav.org
Tel: +90 216 424 07 72

Rapana venosa

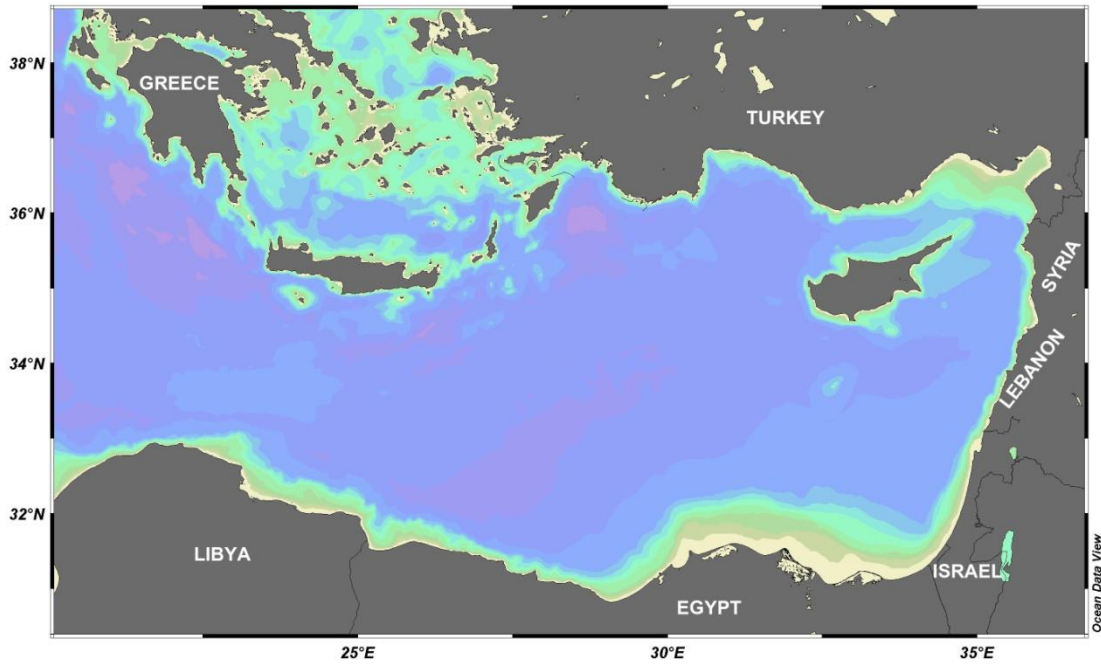


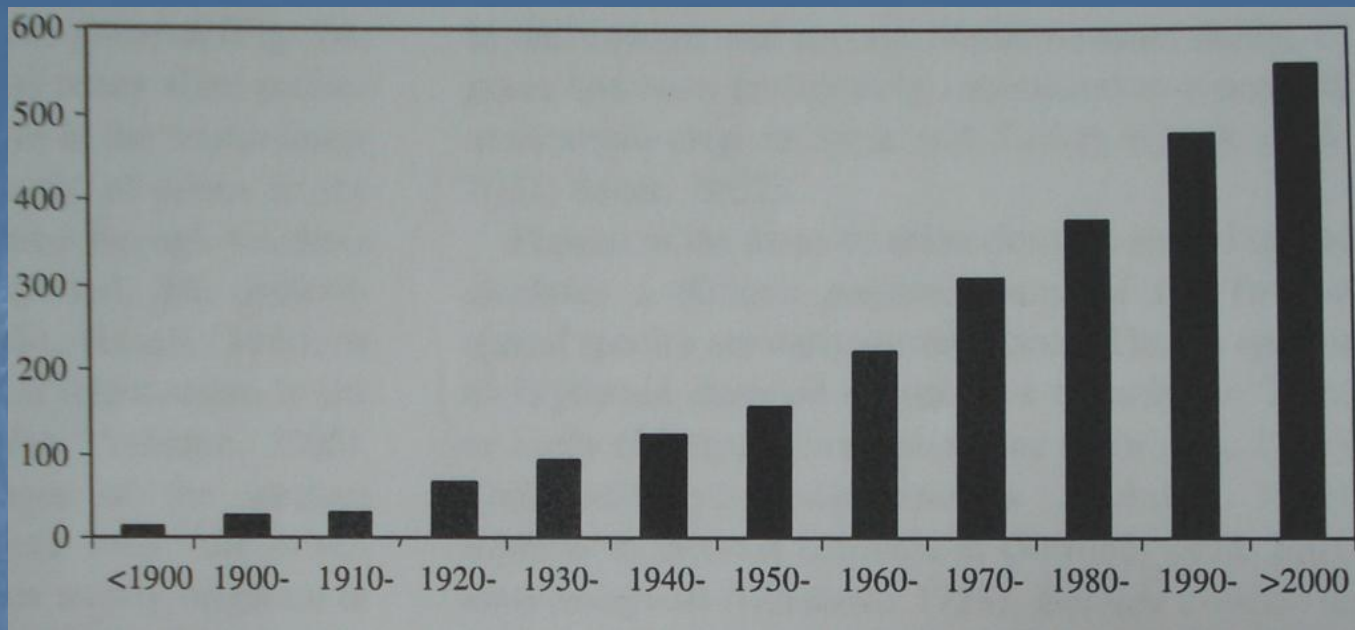
1969

Novorossiysk (1947), Crimea (1949), Romania (1955), Bulgaria (1957), Istanbul (1960), Marmara (1966), Aegean (1969), Giresun (1955), Trabzon (1962).

At present, it is distributed to the whole Aegean Sea as well as the Adriatic Sea.

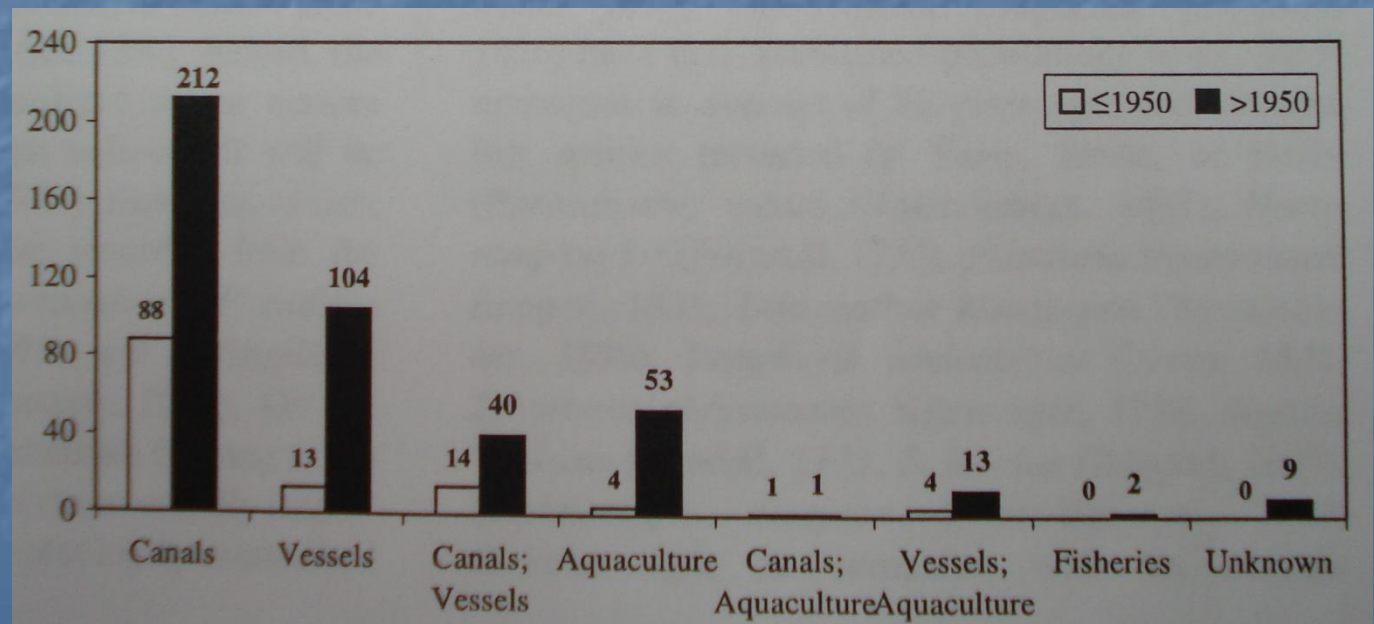
The Suez Canal facilitates Lessepsian migration.





Cumulative number of alien species recorded in the Mediterranean Sea 1900-2007

Number of alien species in the Mediterranean Sea, presented by means of introduction, before and after 1950



Lessepsian Fishes

Saurida undosquamis



Alectis alexandrinus



Siganus rivulatus



Lagocephalus suezensis



Stephanolepis diaspros



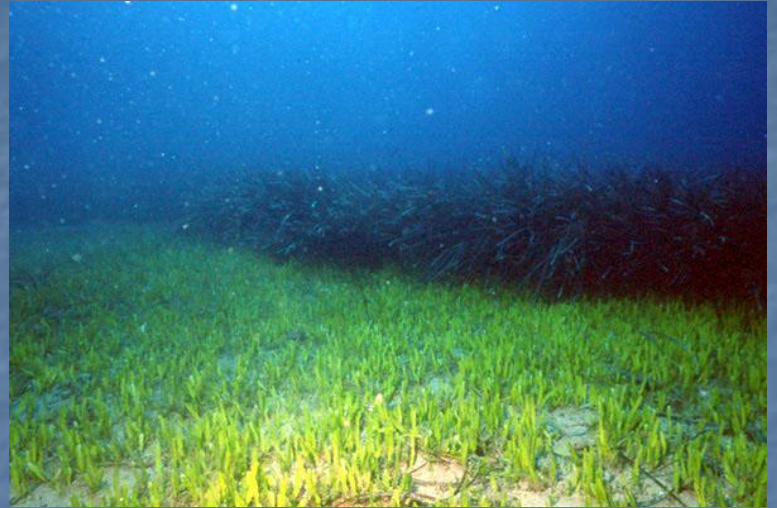
Siganus luridus



Lagocephalus scleratus



Caulerpa taxifolia and *C. racemosa*



IMPACTS OF THE ALIEN SPECIES

- FISHERIES
- SOCIO-ECONOMICAL FACTORS
- BIODIVERSITY
- HEALTH
- OTHERS

Harmful effects of the alien species on fishing gears in the Mediterranean Sea

(net damages, mesh clogging, fouling, extra labour for cleaning and fixing nets)

	Longlining	Beach net	Gillnet	Trawling	Purse seining	Fish farming cages	Buoys
<i>Caulerpa taxifolia</i>	-	+	+	-	-	-	-
<i>Macrorhynchia philippina</i>	-	+	+	-	-	-	+
<i>Ropilema nomadica</i>	-	+	+	+	+	+	-
<i>Diadora setosum</i>	-	+	-	-	-	-	-
<i>Callinectes sapidus</i>	+	+	+	-	-	-	-
<i>Synaptula reciprocans</i>	-	+	+	-	-	-	-
Pufferfish species	+	+	+	-	-	-	-
<i>Serpulids polychaetes</i>	-	-	-	-	-	+	+

Net Damage by Alien Jellyfish - extra cost for fishermen



Jellyfish clogging the nets....



Harmful Alien Species of Indo-Pacific Origin



Macrorhynchia phillipina



Diadoma setosum



Rhopilema nomadica

Species	Target Groups	Results
<i>R. nomadica, C. andromeda</i>	Tourists, fishermen, divers, sailors, yatchmen	Injury, hospitalized
<i>Macrorhynchia phillipina</i>	Tourist, divers, fishermen	Injury, hospitalized
<i>Diadoma setosum</i>	Tourists, divers, fishermen	Injury
<i>Lagocephalus</i> spp.	Anybody	Hospitalized
<i>Torquigener flavimaculosus</i>	Anybody	Hospitalized

How far has *Mnemiopsis leidyi* gone ?

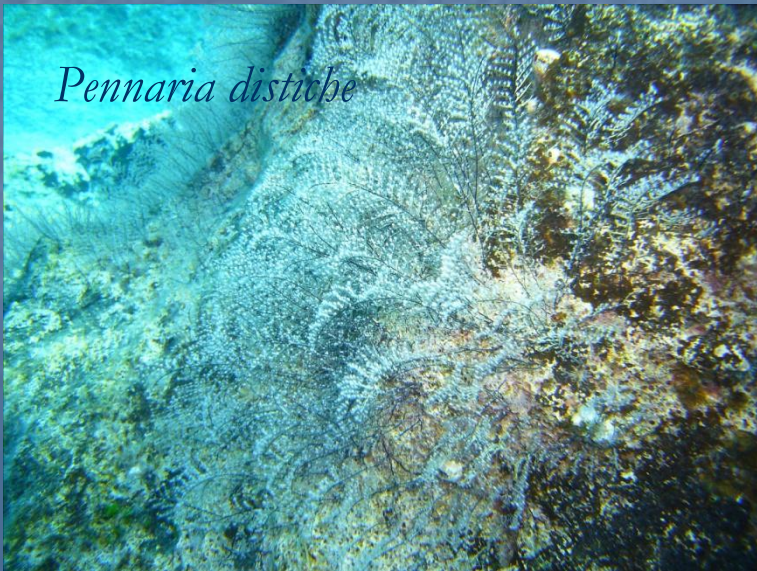


Hydroids

Aglaophenia sp



Pennaria distiche



Macrorhynchia philippina

Poisonous pufferfishes

Species	Turkey	Israel	Greece	Libya	Lebanon	Syria	Egypt
<i>Lagocephalus suezensis</i>	+	+	+	-	+	+	+
<i>Lagocephalus spadiceus</i>	+	+	+	-	+	+	+
<i>Lagocephalus sceleratus</i>	+	+	+	+	+	+	+
<i>Torquigener flavimaglosus</i>	+	+	+	-	-	-	+



(Photo: E. Ozgur)

Public Awareness Materials for Harmful Alien Species

İklim Değişikliği Tehdit Ediyor. Bu Deniz Canlılarından Uzak Durun !



Rhopilema nomadica
(Kızıldeniz Deniz Anası)

Denizlerimize Süveyş Kanalı yoluyla gelen bu tür zehirlidir. Oldukça yüksek üreme potansiyeline sahiptir. Dokunulduğunda başta tatildir, dalgıçlar ve balıkçılar için tehlike oluşturur.



Chrysaora hysoscella
(Pusula Deniz Anası)

Bu tür zehir içerir. Suda bu deniz anasına herhangi bir şekilde temas edilirse, sudan çıktıktan sonra kesinlikle kaşınmamalı ve ovuşturulmamalıdır.



Pelagia noctiluca
(Akdeniz Deniz Anası)

Bu tür zehirli bir deniz anasıdır. Bu hayvana Ege ve Akdeniz kıyılarında özellikle yaz aylarında sıkça rastlanabilir.



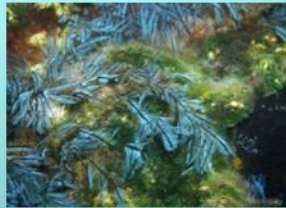
Cassiopea andromeda
(Ters Yüz Deniz Anası)

Bu tür de zehirlidir. Bu türe dokunulduğu takdirde vücutta acıya, deride kızamığa, kaşıntıya aynı zamanda kusmaya ve iskelet ağrılarına neden olabilecek toksin üretir.



Lagocephalus sp.
(Balon Balığı)

Denizlerimize Süveyş Kanalı'ndan gelen bu tür zehir taşımaktadır. Bu balığa dokunulmaması ve yenmemesi gerekmektedir.



Macrothynchia philippina
(Filipin Hidroidi)

Bu tür siğ sularda görülür. Yoğun popülasyonlar oluşturabilir. Özellikle çıplak vücutta acıya, kaşınmaya, yanmaya neden olmaktadır.

ΥΠΟΥΡΓΕΙΟ ΑΓΡΟΤΙΚΗΣ ΑΝΑΠΤΥΞΗΣ ΚΑΙ ΤΡΟΦΙΜΩΝ
ΓΕΝΙΚΗ ΔΙΕΥΘΥΝΣΗ ΑΛΙΕΙΑΣ

ΠΡΟΣΟΧΗ

ΕΠΙΚΙΝΔΥΝΟ ΨΑΡΙ
ΔΕΝ ΤΡΩΓΕΤΑΙ!

Λαγοκέφαλος ή ποντικός (*Lagocephalus sceleratus*)

ΠΡΟΣΟΧΗ

- Το ψάρι είναι δηλητηριώδες, περιέχει στα σπλάχνα και στο δέρμα μία τοξίνη την τετραδοξίνη (tetradoxin TTX) η οποία μπορεί να προκαλέσει θάνατο από μυϊκή παράλυση, αναπνευστικές διαταραχές και ανεπάρκεια κυκλοφορικού συστήματος.
- Ο Λαγοκέφαλος είναι σχετικά νέο άγνωστο είδος που εισήλθε πρόσφατα (2003) στη Μεσόγειο από την Ερυθρά Θάλασσα και έχει ήδη εγκλιματιστεί και αναπαράγεται στις θάλασσές μας.

ΧΑΡΑΚΤΗΡΙΣΤΙΚΑ

- Το σχήμα του είναι ροπαλοειδές, το κεφάλι δεν χωρίζεται από το σώμα και καλύπτεται από δέρμα χωρίς λέπια.
- Τα μάτια του είναι ανοιχτόχρωμα, με μεγάλη μαύρη κόρη και μπροστά τους υπάρχει μία κηλίδα χρώματος ασπρί. Διαθέτει 4 χαρακτηριστικά δόντια (σαν ράμφος), δύο στην πάνω σιαγόνα και δύο στην κάτω που θυμίζουν λαγό.
- Το πάνω μέρος του σώματος έχει χρώμα πράσινο-λαδί-καφέ ή γκρι με χαρακτηριστικές καφέ σκούρες ή μαύρες ομοιόμορφες έντονες κηλίδες. Στα πλευρά έχει δύο φαρδιές ασπόμενιες λουρίδες και η κοιλιά του είναι ασπριδερή, λίγο αδρή χωρίς ακάθια και εξογκώματα και μπορεί να φουσκώνει σαν μπαλόνι.
- Το μήκος μπορεί να φθάσει από 2 έως 60 εκατοστά και σπανίως μπορεί να φτάσει το 1 μέτρο και τα 7 κιλά βάρος, αλλά όπως διαπιστώθηκε στις θάλασσές μας αλιεύεται σε μικρά μεγέθη κάτω των 10 εκατοστών.
- Είναι είδος που ζει σε ρηχά νερά συνήθως από 15 έως 50 μέτρα και σπανιότερα έως 100 μέτρα βάθους σε βραχώδεις βυθούς, κάθετα παράκτια βράχια και υπάλους.

Σε περίπτωση αλίευσης αυτού του είδους ή και άλλων ασυνήθιστων ψαριών παρακαλούμε να ενημερώνετε τις κατά τόπους Νομαρχιακές Υπηρεσίες Αλιείας ή τις Λιμενικές Αρχές.

Biodiversity and Impact of Lessepsian Migration

- 33 fish species categorized as prevalent, common, or very common.
- Significant impacts to the ecosystem and fisheries.
- The most commercially important species *S. undosquamis*, *Upeneus pori*, *Sphyraena* sp. in trawl catch.

Impacts on Native Species



Impacts on Native Species

Synaptula reciprocans



Commercial alien fish species

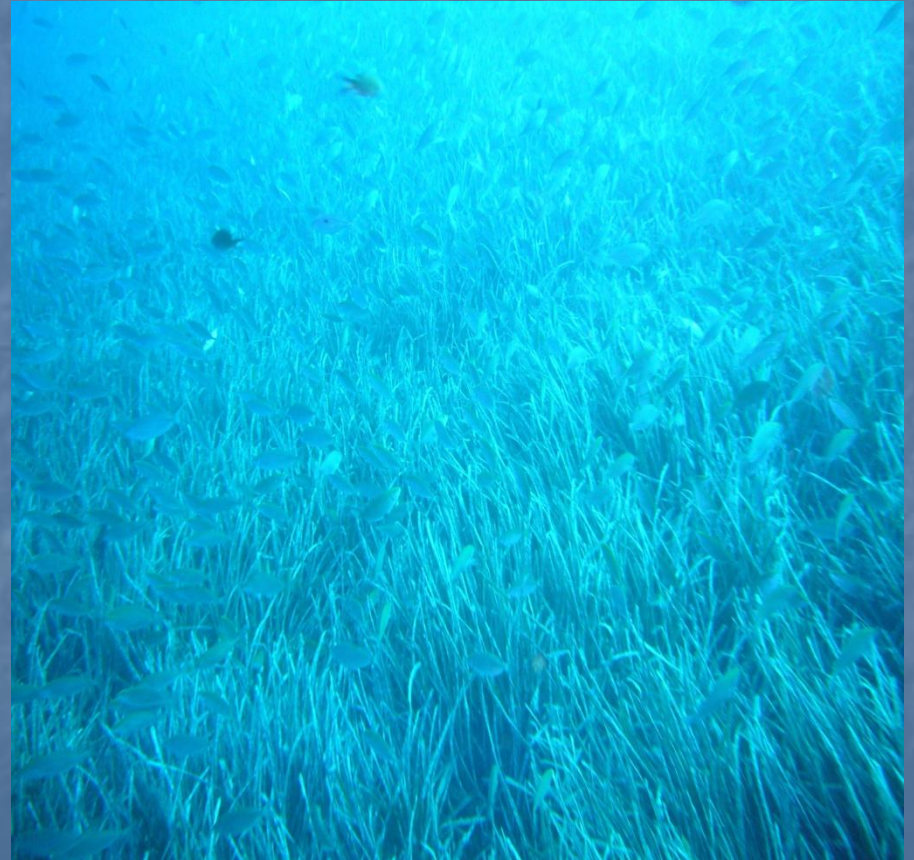


Scomberomorus commerson



Recommendation

P. oceanica habitats should be protected.



Marine Biodiversity Estimation in the Med.

- About 17.000 species , 26% Bacteria and Archea, Eucaryotic marine microbes
- 13.2 % Crustacea , 12.4% Mollusca, 6.6% Annelida , 5.9 % Plathelminthes , 4.5% Cnidaria , 4.1.% Vertebrates , 4% Porifera, % 2.3. Briozaa , 1.3% Tunicates , 0.9% Echinoderms (Coll et al, 2010)
- **Fish diversity , more then 650 species**
- **116 alien fish species** , over 600 metazon species. New Biodiversity , Or Sea with in Sea ?
- Majority of the aine species through the Suez Canal .

Recommendation

Education seminars for fishermen and other stakeholders about alien species.



Recommendation

Regional monitoring studies are needed.





Thank you for your attention....