

Launch of the Regional Aquatic Animal Health Network for North Africa (RAAHN-NA)

25 – 27 April 2023 Tunis, Tunisia



Role Of **Research Institutes** In Mapping Knowledge On Prevalence Of **Fish Diseases And** **AMR** In North Africa Aquaculture

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- Launched in June 2017 in conjunction with the World Aquaculture 2017. *Formally established in November 2018*
- Chapter formation supported by the Government of South Africa
- Partnership with Aquaculture Association of Southern Africa (AASA) and other organizations
- Secretariat hosted by the Africa Union Development Agency (AUDA-NEPAD) in South Africa

Why WAS African Chapter

- Africa now joins the United States, Korea, Asia-Pacific, and Latin America and Caribbean as a fully-affiliated chapter of WAS.
- Forming the Africa chapter will provide the much-needed forum to address Africa's diverse and growing aquaculture sector.
- Chapter will increase exposure of aquaculture activities across the continent and provide opportunities for future collaborations.
- Chapter is new approach, expected to bring in continental networks under one umbrella with support from an apex organization (eg Africa Union)



1st Aquaculture Africa Conference



AQUACULTURE AFRICA 2021
Alexandria Egypt, Dec. 11-14, 2021

1st NORTH-WEST AFRICA (MAGHREB REGION)



1-5 February 2023, AGADIR, MOROCCO



"Resilient value chains in the blue economy"

AQUACULTURE AFRICA 2023

Lusaka, Zambia

November 13-16, 2023

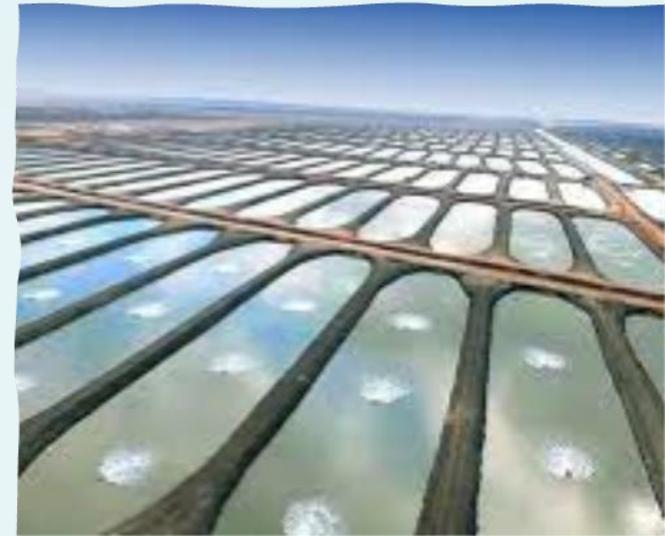
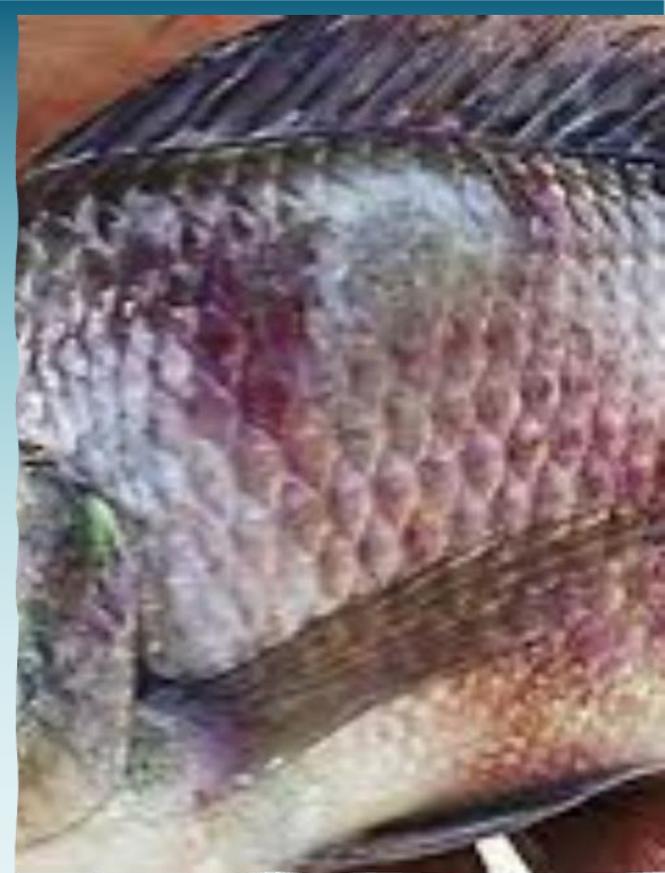
The 2nd Annual International Conference & Exposition
of the African Chapter
of the World Aquaculture Society (AFRAQ2023)

North Africa has a long history of aquaculture, which has become an important sector for the region's economy, food security, and employment.

As for trends, North Africa's aquaculture industry is growing rapidly, with an increasing demand for fish and seafood in the region. The region is also experiencing a shift towards more sustainable aquaculture practices, such as integrated multi-trophic aquaculture (IMTA) and recirculating aquaculture systems (RAS). Additionally, the development of new technologies and the increasing use of automation and digitization in aquaculture are expected to further boost the sector's growth in the coming years.

Fresh water Aquaculture Specificities

- **Main species:**
- Truite de mer (*Salmo trutta*);
- Truite arc-en-ciel (*Oncorhynchus mykiss*);
- Anguille européen (*Anguilla anguilla*);
- Brochet du nord (*Esox lucius*)
- Carpe commune (*Cyprinus carpio*);
- Carpe herbivore (*Ctenopharyngodon idellus*);
- Carpe argentée (*Hypophthalmichthys molitrix*);
- Achigan à grande bouche (*Micropterus salmoides*);
- Tilapia du Nil (*Oreochromis niloticus*);
- Écrevisse à pieds rouges (*Astacus astacus*).



Marines Aquaculture specificities

- Two main species (seabass – seabream)
- Minor species (Meagre, sole, turbot,...)
- Commercial size from 250g to 1.5kg
- several harvesting cages
- Pregrowing unit at sea
- Most fish sold fresh not processed
- Live transport only of juveniles
- Concentration of the production with larger units or companies



Balance of Juvenile Production

Marine Juvenile Needs
(1.102M)

Marine Juvenile Production
(1.272M)

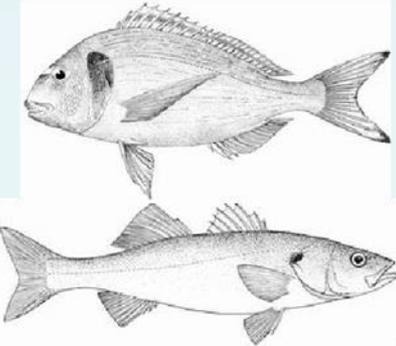
Seabass (527M)

Seabass
(548M)

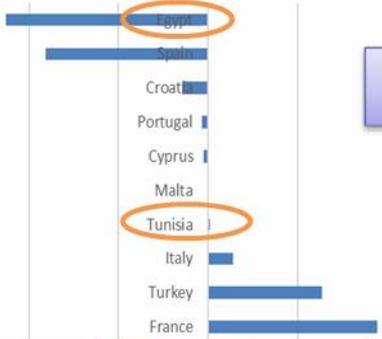
Seabream
(582M)

Seabream
(725M)

FAO, FEAP, APROMAR and Personal Communication. 2018

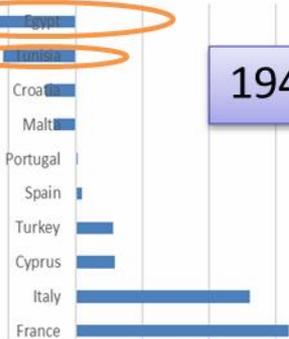


Balance Seabass

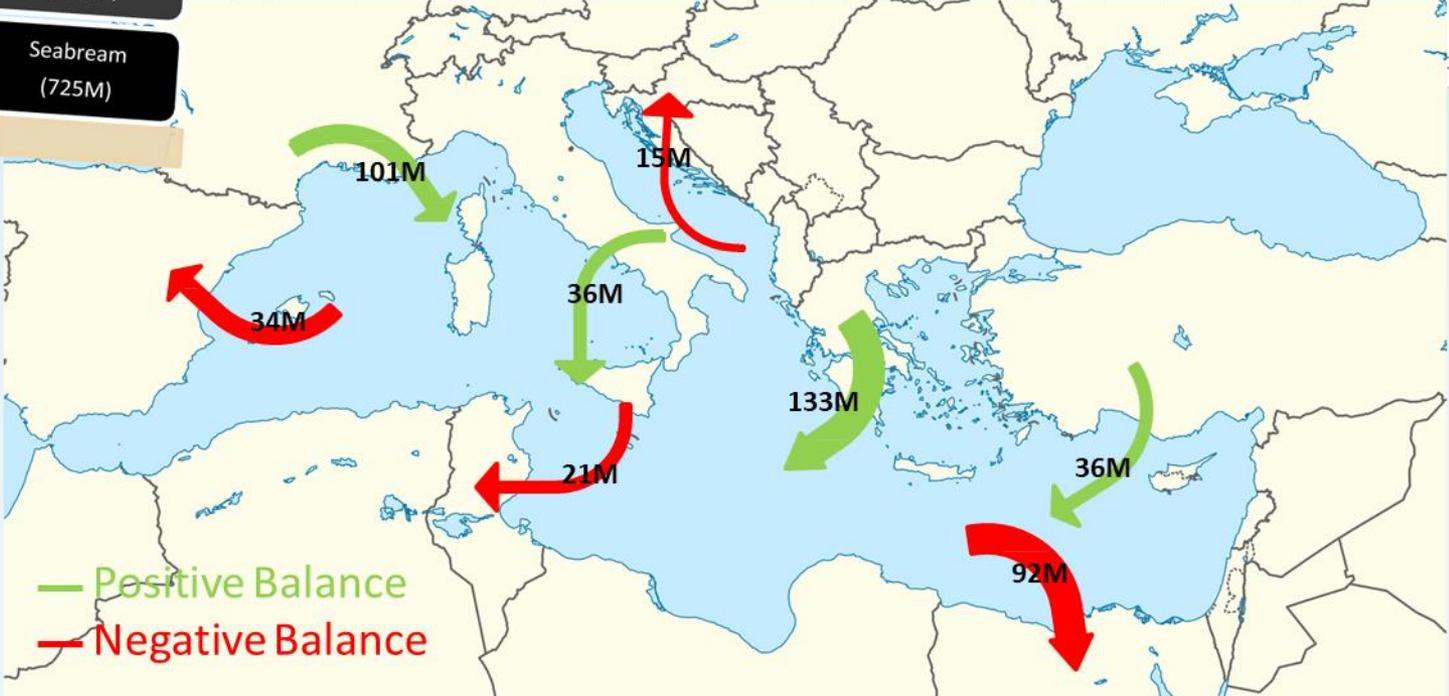


176 KTm

Balance Seabream



194 KTm



— Positive Balance
— Negative Balance

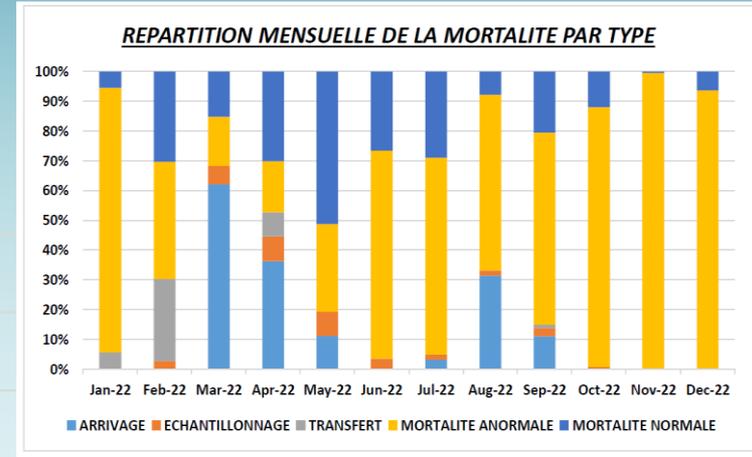
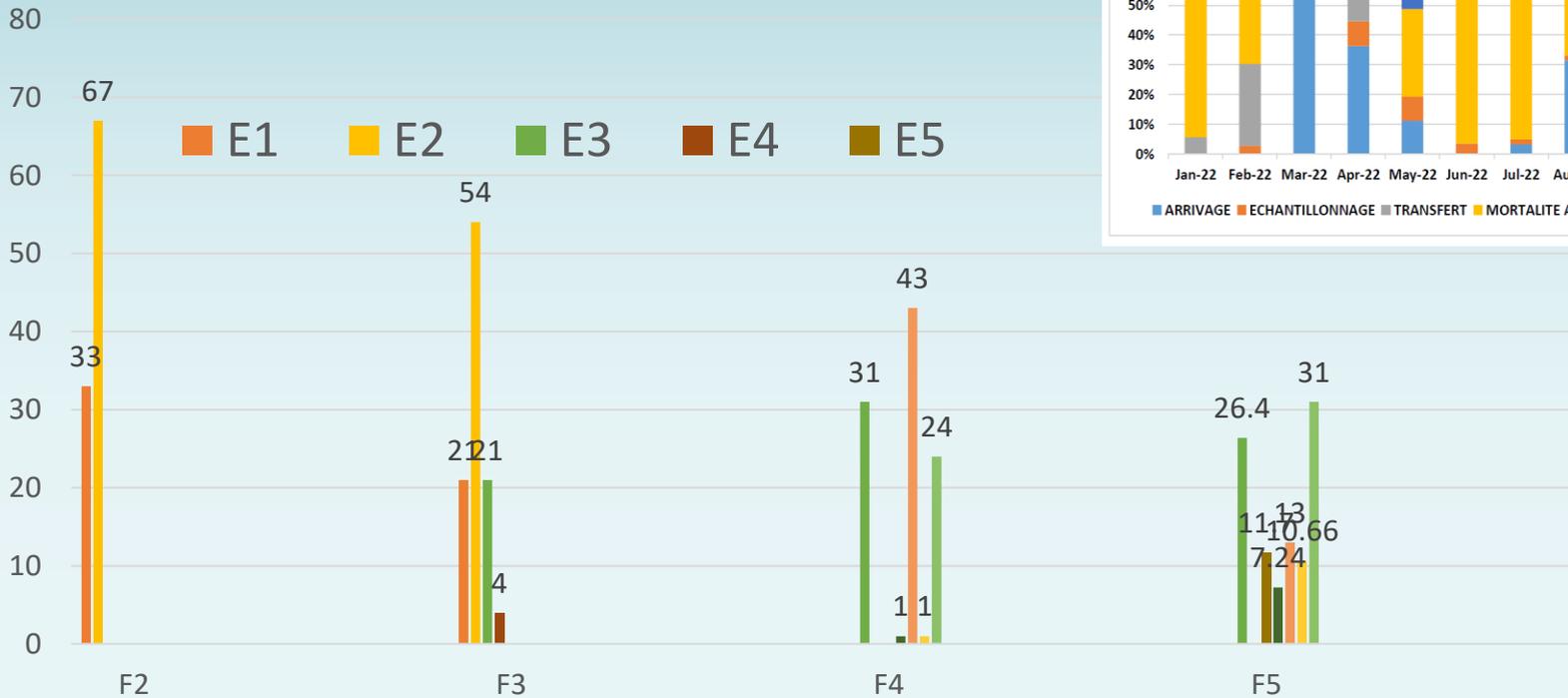
Juvenile Movements



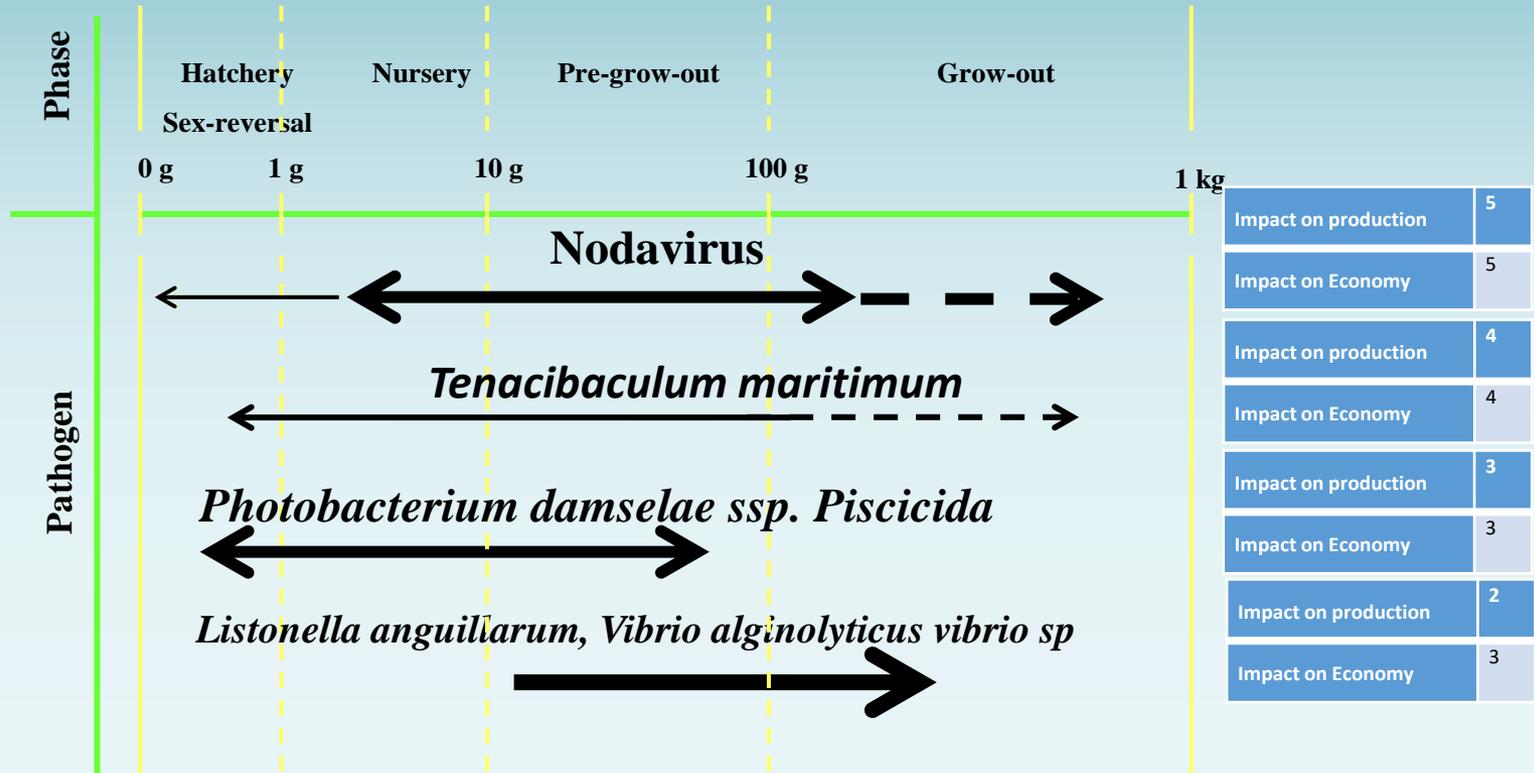
Cross-border movement of live aquatic animals, their gametes and their products is the major risk factor for diseases transmission in the region

Input control: Origine of Juveniles?

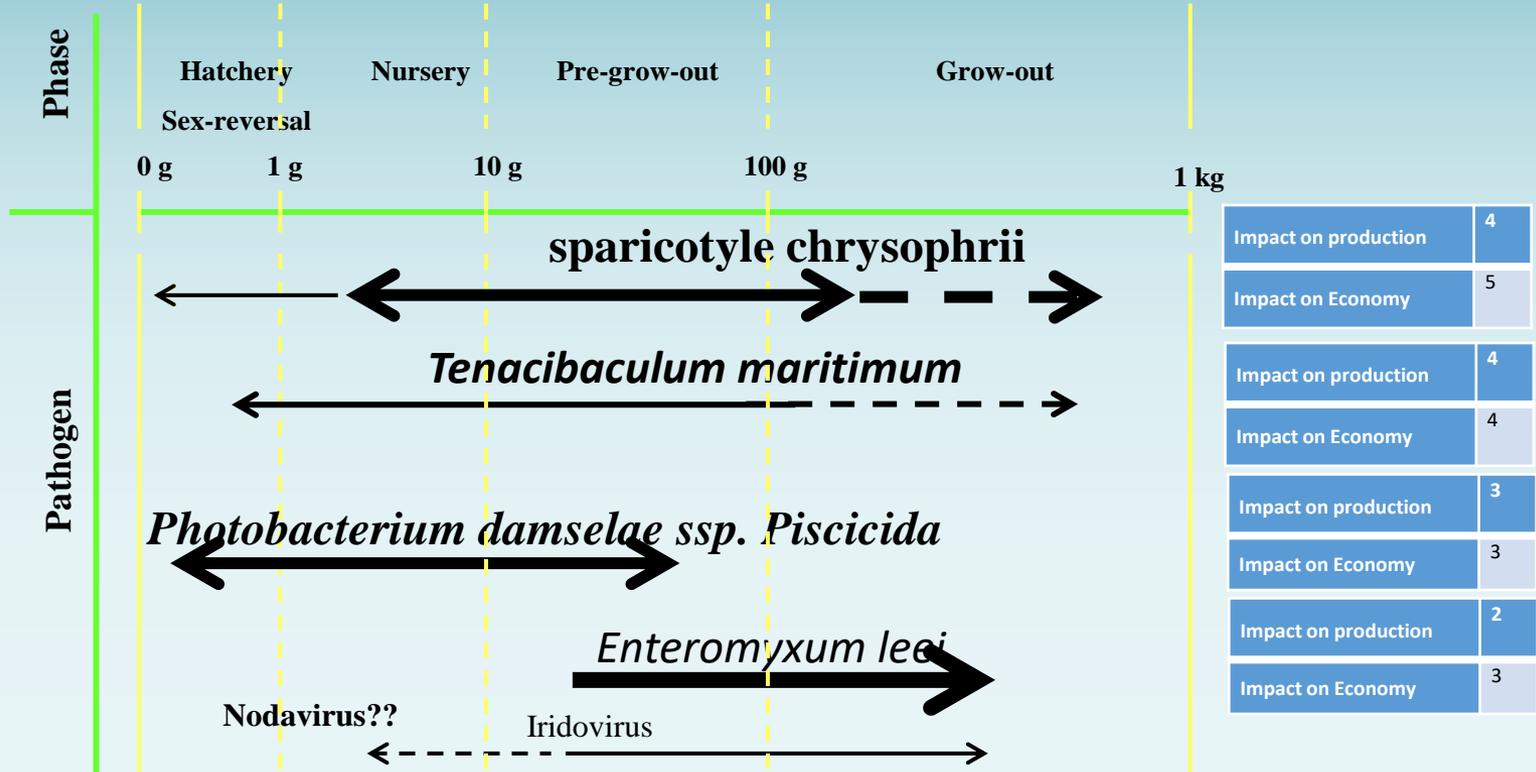
Case study in Tunisia



Major Diseases Affecting *Dicentrarchus labrax* during the Farming Cycle In Tunisia



Major Diseases Affecting *Sparus aurata* during the Farming Cycle In Tunisia



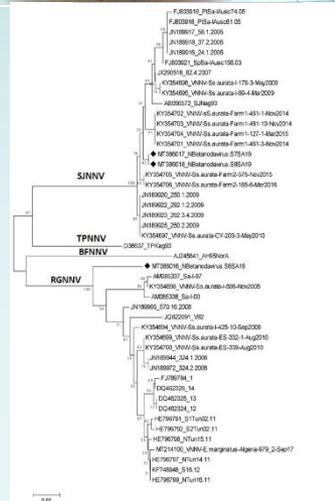
PPP



Alerte on pathogen emergence and reemergence

No specific treatment

2020: Nodavirus RGNN/SJNNV

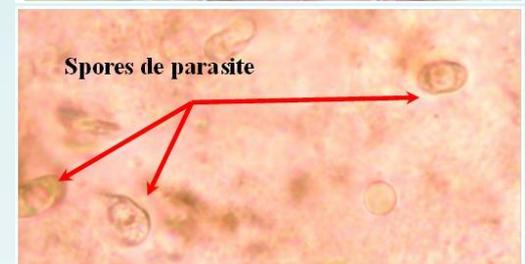


Biosecurity Level

2022: Myxosporidiea Henneguya sp



Taches blanches au niveau des branchies



Spores de parasite

Immuno-stimulants

In Egypt

- Bacterial, fungal, viral and parasitic:
- List of nationally important diseases: Streptococcosis, Motile Aeromonas Septicemia, Vibriosis, Photobacteriosis, Columnaris, Pseudomonas infection, Saprolegniasis, Sea lice infestation, Cryptocarion infection, Isopodiasis, Monogenean worms, TiLV (??)
- List of infrequently diseases: Tenacibaculosis, Branchiomycosis, Eimeria infection, Myxosoma spp, Anisakis spp,

In Morocco

- Bacterial diseases : flavobacter.
- Parasitic diseases : Marteiliose, perkinsiose, Rickettsie, trematodes.

In Algeria

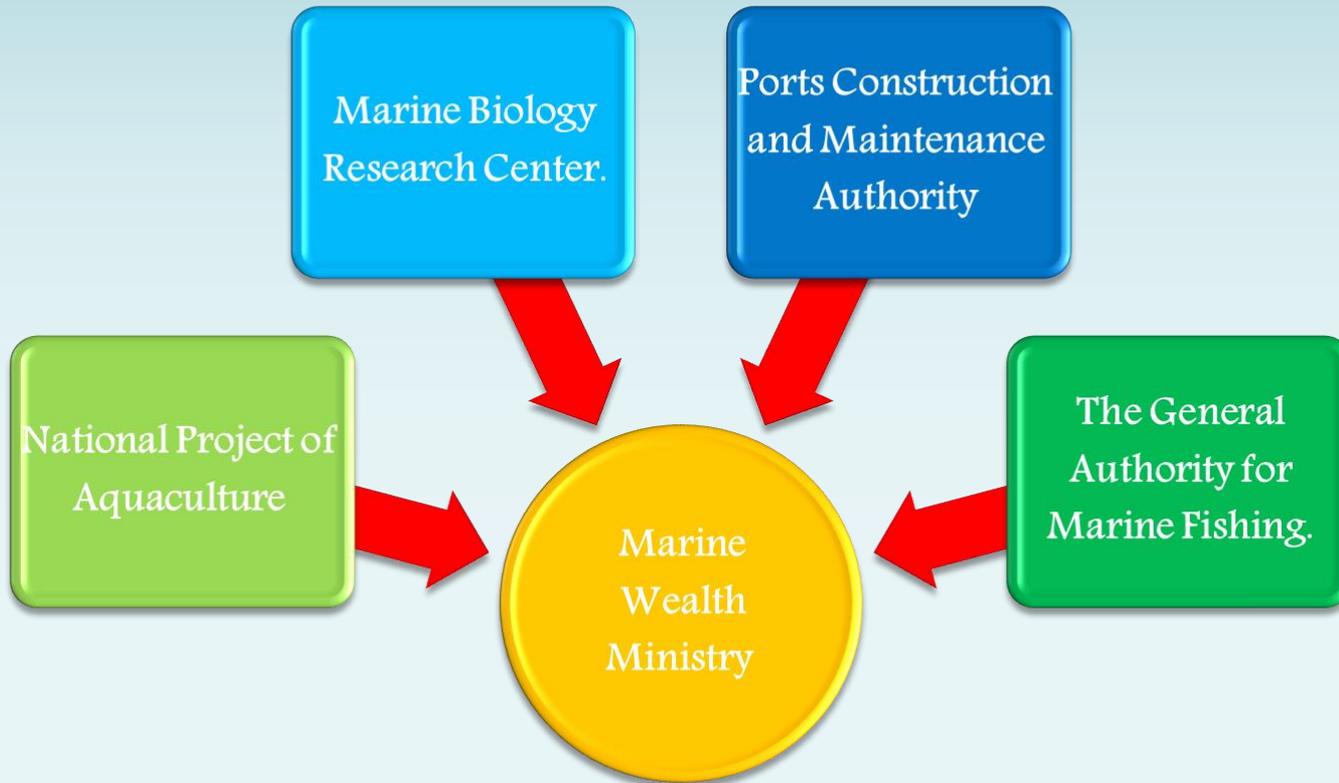
- Mortality due to Nodavirus infection in wild grouper

In Mauritania

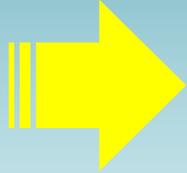
- The total fisheries resources of waters under Mauritanian jurisdiction represent an allowable catch potential of about 1.5 million tons by year.
- No aquaculture exists in the country
- One study of development big project on the rearing of giant freshwater prawn, launching in Boghé 190 miles from Nouakchott
- Creation of an agency for the development of continental fishing and fish farming by the end of 2022

In Lybia

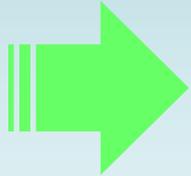
- Foundation of The National Project of Aquaculture in 2021



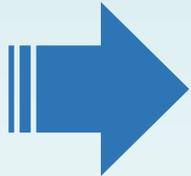
Advancing on AMR in Tunisian Mariculture



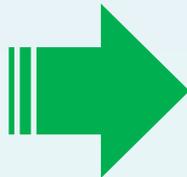
250,000 tons of antibiotics are used annually worldwide. Since 2000 world consumption has increased by 65%)



35 to 45% of antibiotics intended for farm animals

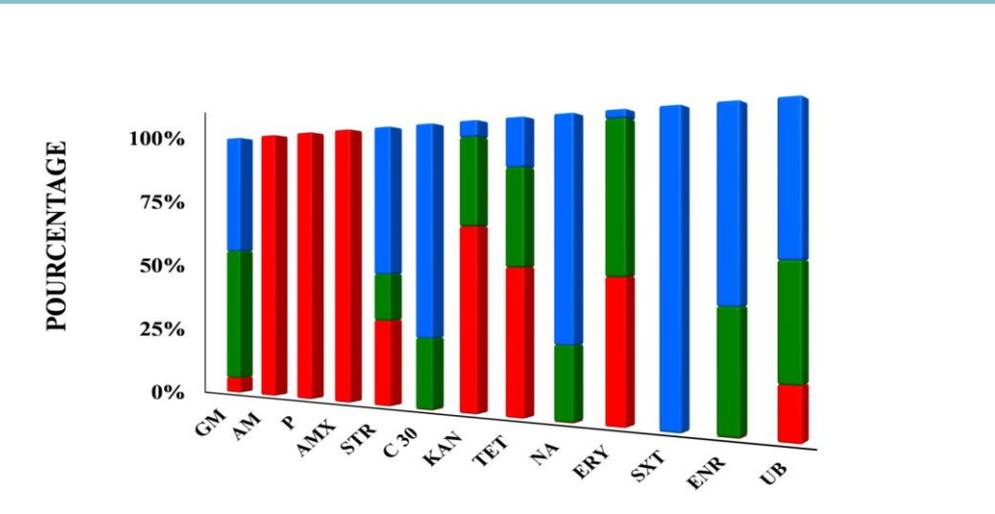


5.6% for aquaculture (0.02 to 0.07% per tone produced)



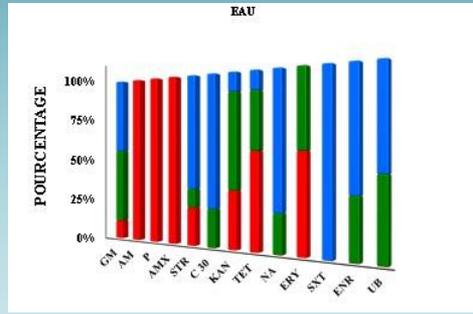
40 antibiotics or 8 families are used in aquaculture (Aminoglycosides; β -lactams; Chloramphenicols; Macrolides, Nitrofurans, Quinolones, Sulfonamides, Cyclins)

Response of the different isolates to the antibiotics studied in Tunisia

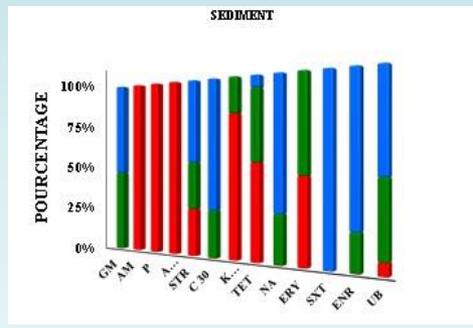


I Intermédiaire
R Résistance
S Sensibilité

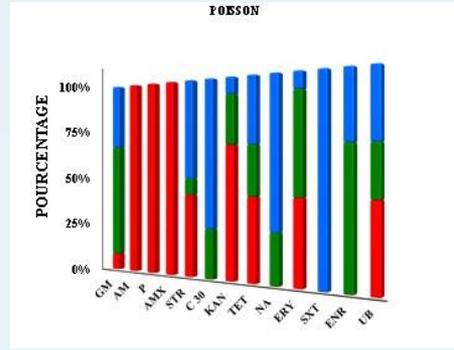
39% resistance; 23% intermediate resistance and 36% sensitivity
 FISH: 49% resistance;
 WATER 39% resistance;
 SEDIMENT 41% resistance;



Fish

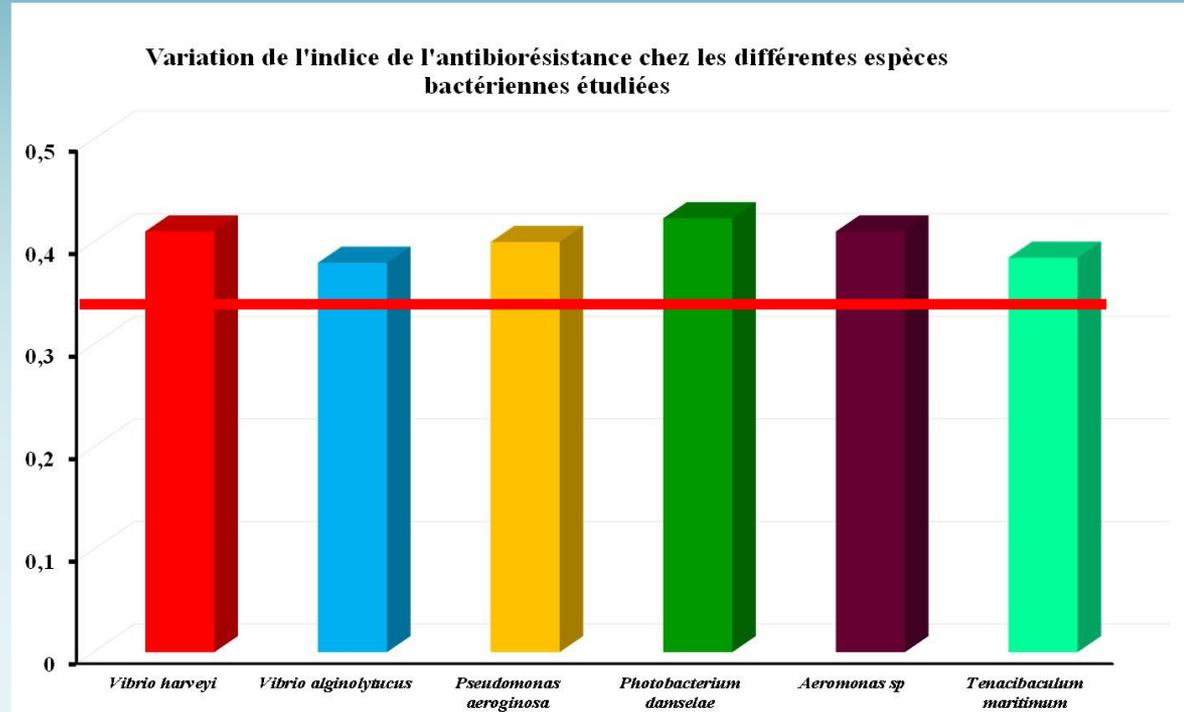
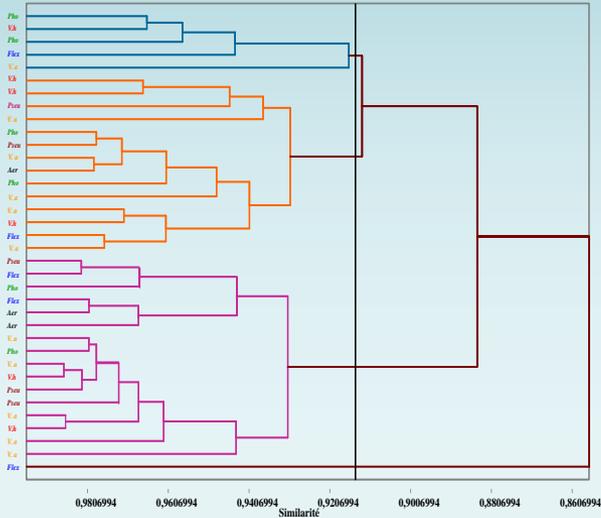


Water



SEDIMENT

Efficacy of the treatment and Hierarchical classification of the different antibiotic isolates studied



The hierarchical classification of the response of the different strains to the antibiotics tested does not show a particularity linked to the species, or there is a similarity between different species which can be explained by the MAR (Multi Antibiotic Resistance index) (mean) which is similar between the different species and in its majority greater than 0.35. Demonstrating that bacterial species have been exposed to antibiotic treatment in their life cycle.

What to learn from the sanitary situation in some North African countries?

- Increasing number of new emerging diseases during the last 10 years, initially located in some areas but spreading fast
 - Limited number of veterinary medicines available even if the National Regulation has brought some improvements
(autogenous vaccines - cascade system) No antiparasitic medicines licenced
 - Disease spread – No real epidemiological tools & survey

**All in – all out
Zoning**



➤ Fish transfer and certification

- No WOAHA or EU listed diseases affecting **Marine** Mediterranean production
- Potential transfer of diseases with live juveniles (asymptomatic carriage)
Batch certification from hatcheries or pregrowing units?



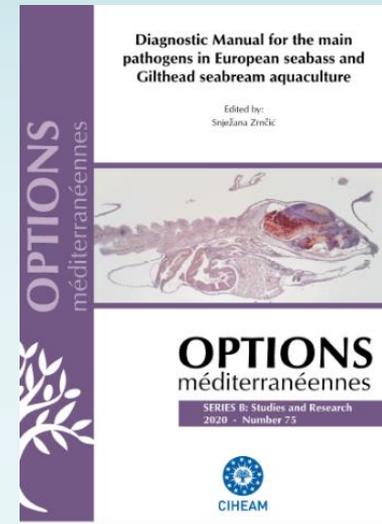
Availability of diagnostic laboratories and standardized methods lacking in some countries

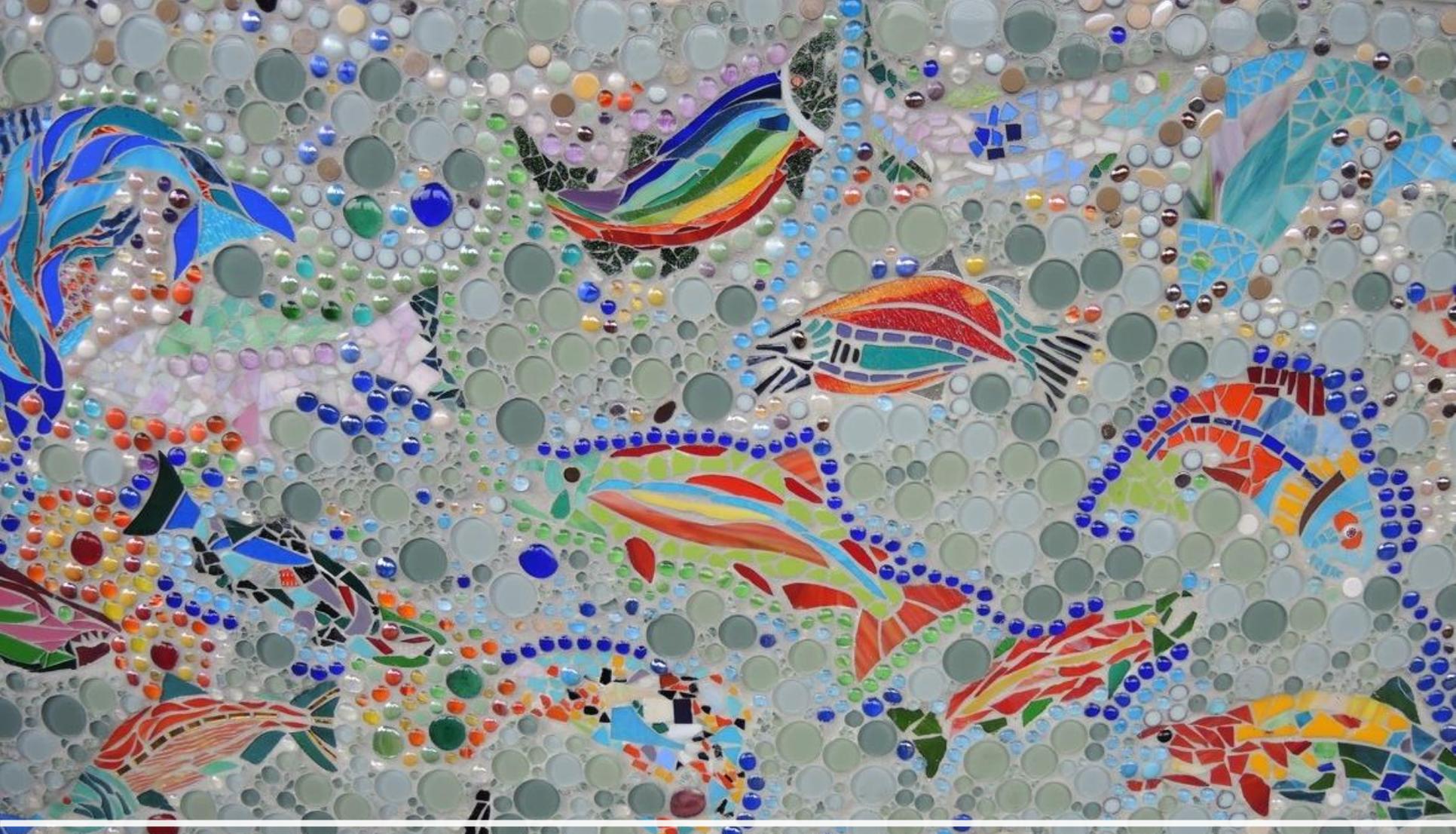
In conclusion we need:

- Continuous building capacity (undergraduate vet students, specialized training, ...)
- Surveillance system (emerging problematics – epidemiology)
- Diagnostic facilities and standardized methods
- Biosecurity at regional level and transboundary level
- Availability in licensed veterinary medicines



Toward ISO 17025 (2017)





Thank you for your Attention

