



## Stream 4 - Supporting Human Life Community-Based Natural Resource Management (CBNRM)

### Case Study: "Supporting the Management of Important Marine Habitats, Species and fisheries in Lebanon"

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# Interactions between Lebanon's Marine Protected Areas Proposed Network And Fisheries Management

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# Introduction

- The Lebanese coastal zone extends about 225 km, covering 162000 hectares of coastal plains and hills (16% of Lebanon's surface area) where 2.6 millions inhabitants live (70% of the Lebanese population).
- Lebanon's economic activities are concentrated in this zone which contributes about three quarters of national income.



# Lebanese coastal zone situation

- Urban areas stretch over 50 km of the coastline (21%)
- Beaches and dunes cover a total length of about 49 km (20%)
- Bare rocky outcrops about 11km (4.7%)
- Fruit trees on wet soil (primarily citrus groves) border the coastline over 34 km
- Large industrial or commercial units occupy about 24 km (10%)
- Tourism resorts about 18 km (7.5%)
- Ports about 13 km (5.3%)



Image © 2012 GeoEye

Google earth

# *Lebanon Marine Environment*

- The Lebanese marine environment supports a wide variety of ecosystems, such as coralligenous bottoms, seagrass meadows, vermetid reefs, and deep marine canyons.
- Over eight species of whales (sperm whale, fin whale, Cuvier's beaked whale) and dolphins (short beaked common dolphin, long-finned pilot whale, Risso's dolphin, striped dolphin, bottlenose dolphin) can be found in Lebanese waters.
- There have been irregular sightings of the once common Mediterranean monk seal .

# Lebanon Marine Environment

- Loggerhead and green turtles are commonly found in Lebanese waters in addition to the occasional leatherback turtle and Nile soft-shelled turtle.
- Most of these animals are considered endangered or critically endangered in the Mediterranean or worldwide.
- Fifty seven species of sharks and rays are sporadically found in the Lebanese waters and at least 450 bony fish species, out of which about 300 species are common in Lebanese waters.
- Moreover, there are hundreds of seaweeds and thousands of marine invertebrates such as sponges, cnidarians, molluscs, crustaceans, echinoderms and many other marine organisms, and new species are regularly being discovered.



# International Agreements and Commitments:

The Barcelona Convention for the protection of the Mediterranean sea against pollution (signature by GOL in 16/2/1976, accession in 30/6/1977 through legislative decree No.126) and its protocols, and its amendments ( Adhesion by the GOL in 16/10/2008 through law No.34).

The Convention on Biological Diversity (CBD) (signature by the GOL in 1992 and ratification in 11/8/1994 through Law No. 360).

The United Nation Convention on the Law of the Sea that was signed and ratified in 1995.

The Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat (Adhesion by the GOL in 1/3/1999 through Law No. 23)

# International Agreements and Commitments:

The African - Eurasian Migratory Water Birds Agreement (AEWA)  
( Ratification by the GOL in 13/6/2002 through Law No. 412).

The Agreement on Conservation of Cetaceans of the Black Sea,  
Mediterranean Sea and Contiguous Atlantic area ( ACCOBAMS)  
( Adhesion by the GOL in 5/2/ 2004 through Law No. 571).

The UNESCO Convention on the Protection of Cultural and Natural  
Heritage (Adhesion by the GOL in 30/10/1990 thorough Law No 19).

# IUCN/MoE project Objectives:

- Develop initial design of a **network of Marine Protected** Areas in Lebanon.
- **Restoring** impacted marine habitats and species in Lebanon.
- Initiate the development of **decision-support systems** to aid in adaptive management and monitoring of marine protected areas and other ecologically sensitive sites.
- Develop a **monitoring program** for 3 ecologically significant or sensitive habitats and procedures for its implementation.

# Network design and approach

- In Lebanon , there are two marine nature reserves : **Tyre Coast Nature Reserve** and **Palm Islands Nature Reserves**.
- The objectives of Lebanon MPA network are :
  - (1) to conserve marine biodiversity and natural resources and
  - (2) to address local marine resource management needs.

# Lebanon marine environment stakeholder

- National Centre for Marine Research
- Universities
- Ministries
- NGO
- Fishermen
- Private sectors
- Diving centers
- Others.



Report

# Network design and approach

- The project defined potential sites in Lebanon to be declared as marine nature reserves through:
  1. A literature scientific assessment of biodiversity values.
  2. Extensive surveyed through various field trips which included land inspection (supplemented by satellites images), snorkelling (tide pools and shallow areas of less than 5m depth) and SCUBA diving (5-20m depth) whenever appropriate. Interviews and discussions with local community or fishermen from various areas were particularly instructive and relevant.

# Marine Protected Area Strategy:

This Strategy defines the following goal:

**The establishment of a network of marine protected areas, established and managed within an integrated marine management framework, that contributes to the health of Lebanon's sea and marine environment.**



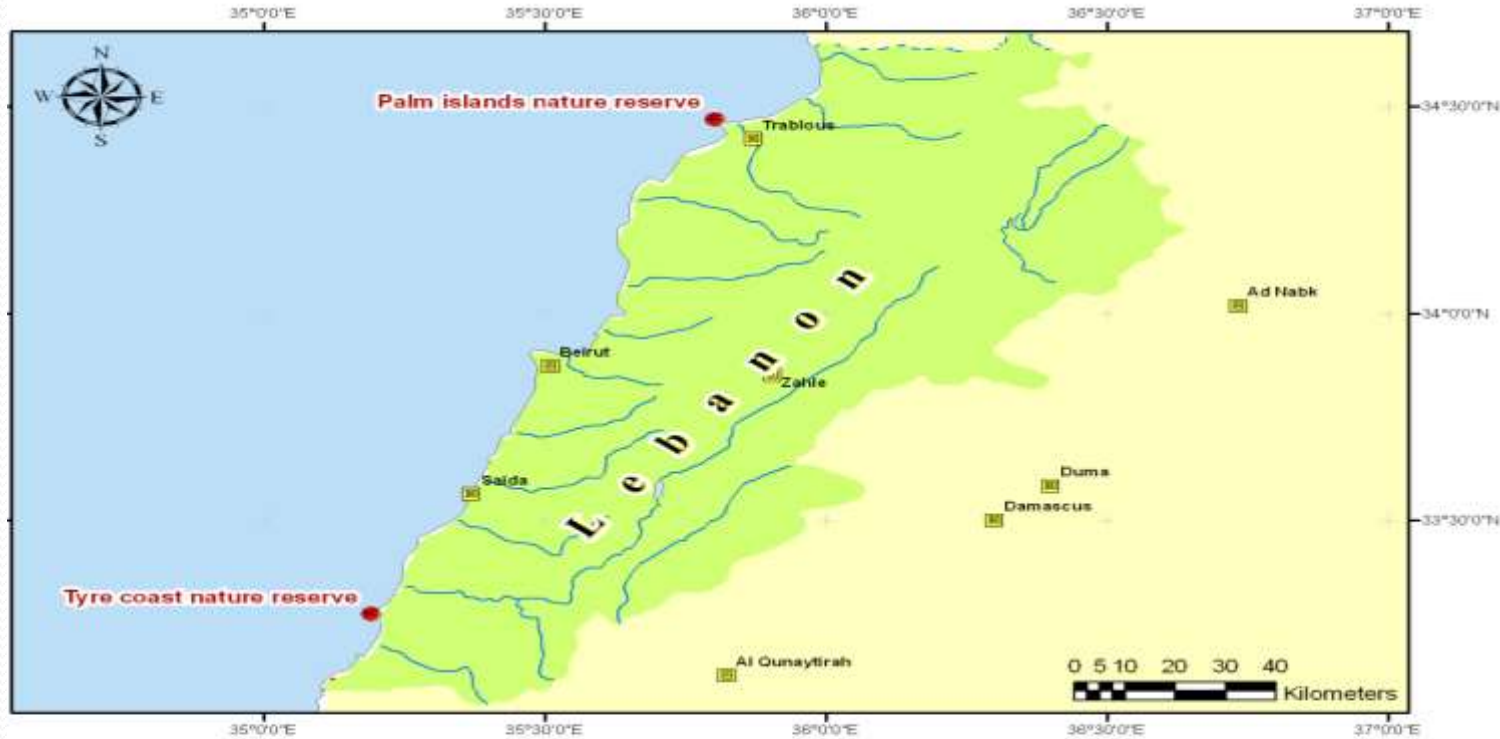
The marine protected areas strategy contains three areas:

1. Strengthening institutional capacity and MPA management.
2. The contribution of MPAs to resource management and sustainable development.
3. Scientific research in MPAs.



# Current Marine Protected Areas in Lebanon:

1. Act No. 121, issued March 9th, 1992 . 2. Act No. 708, issued November 5th, 1998



Current marine protected areas in Lebanon

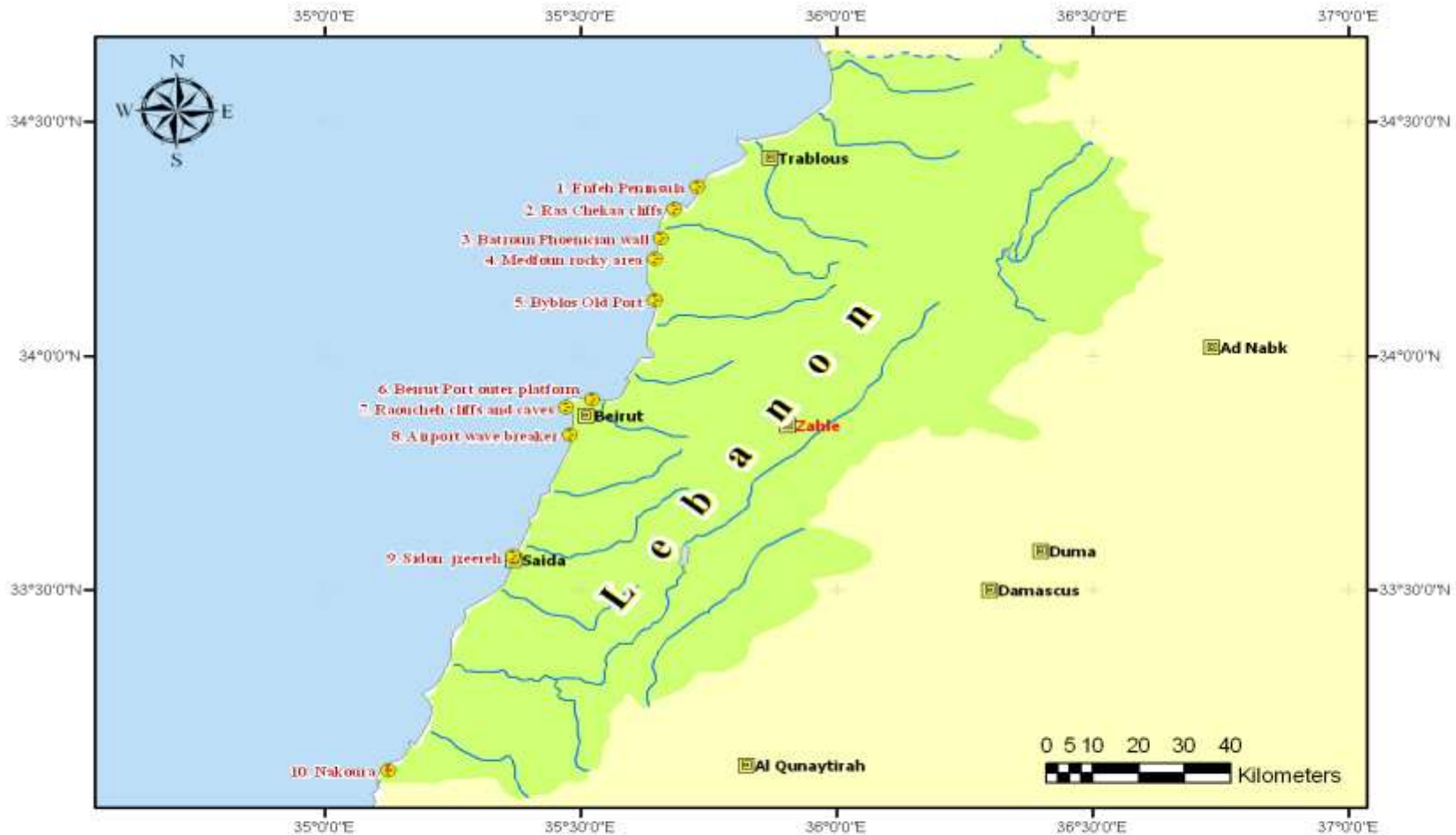
● Existing\_MPA



Project  
"Supporting the Management of Important Marine Habitats and Species in Lebanon"



# Future vision:



**Future marine protected areas in Lebanon**

Cities
  Future\_MPA

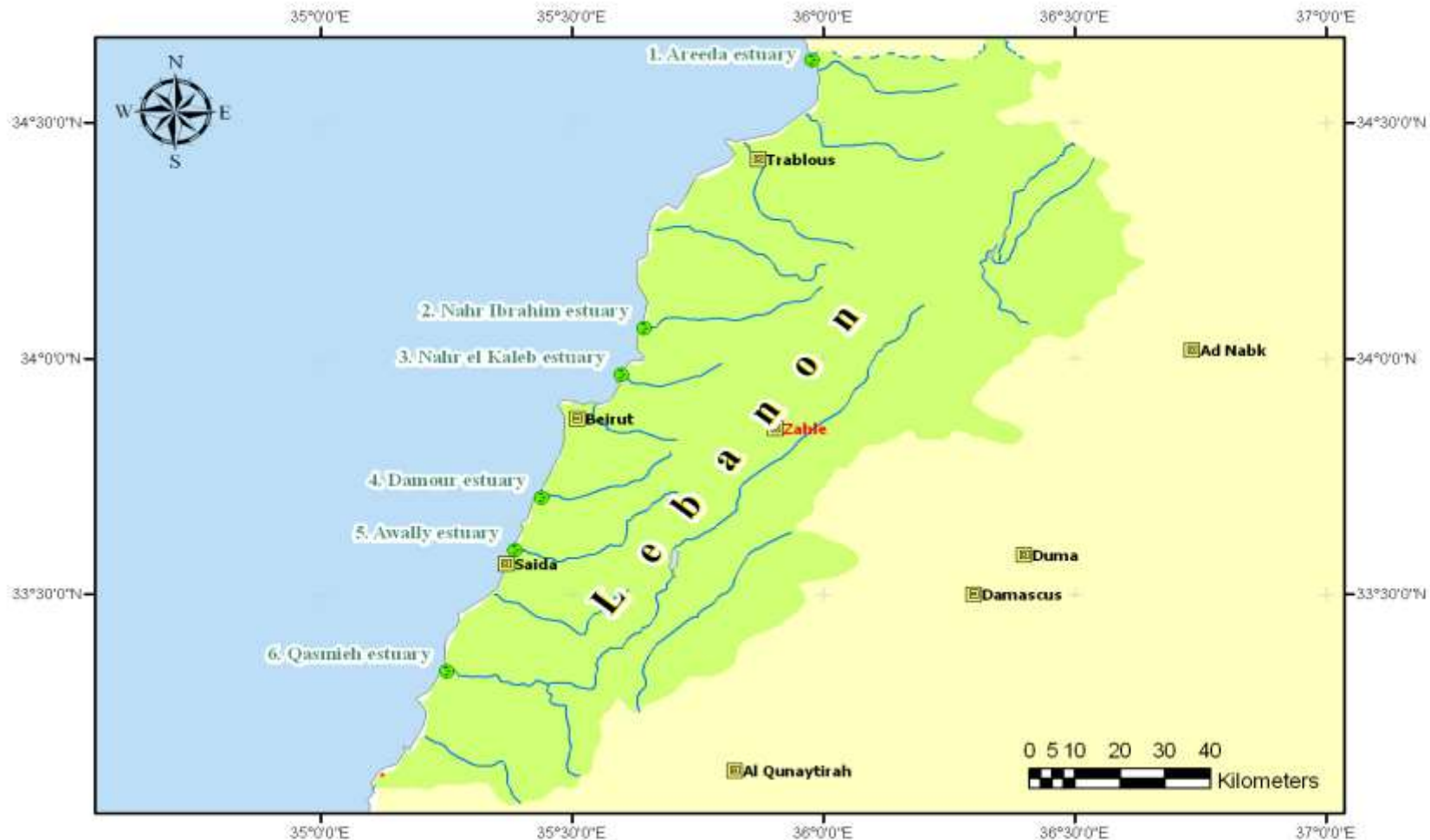


Project

"Supporting the Management of Important Marine Habitats and Species in Lebanon"



# Future vision: Act No. 1/385, issued January 26th, 1997



## Estuaries protected areas in Lebanon

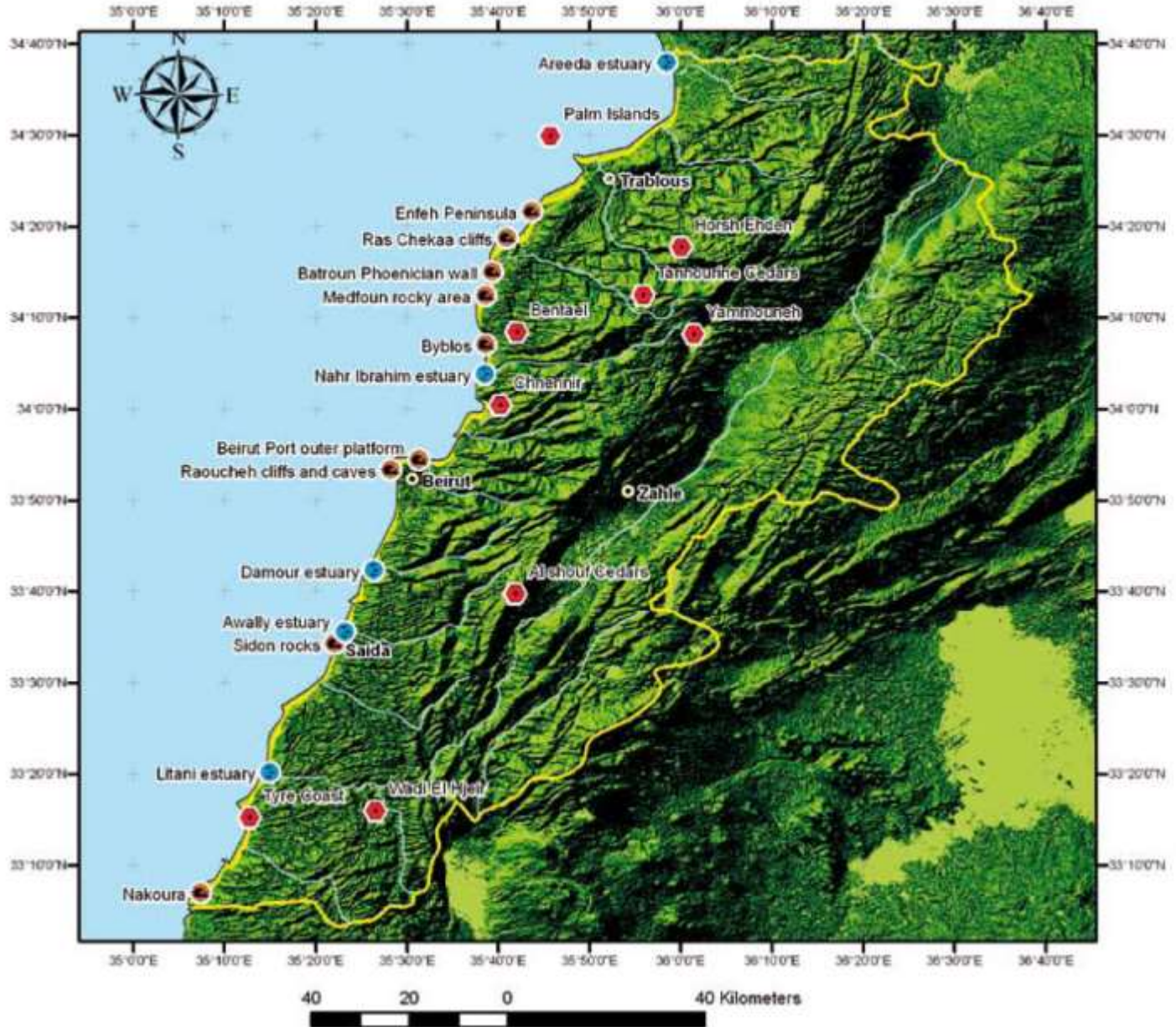
■ Cities    ● MPA\_rivers\_estuaries



Project  
"Supporting the Management of Important Marine Habitats and Species in Lebanon"

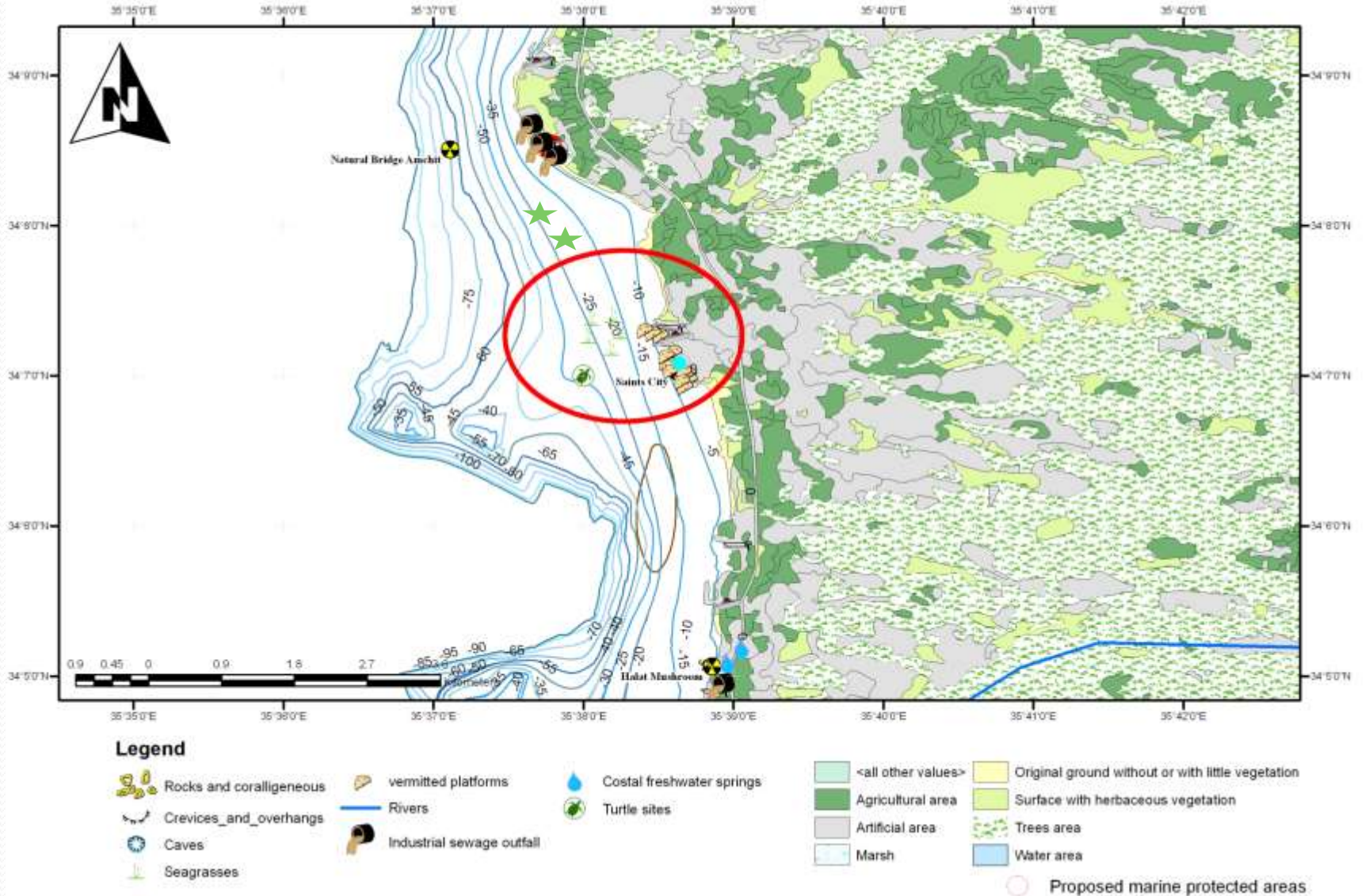


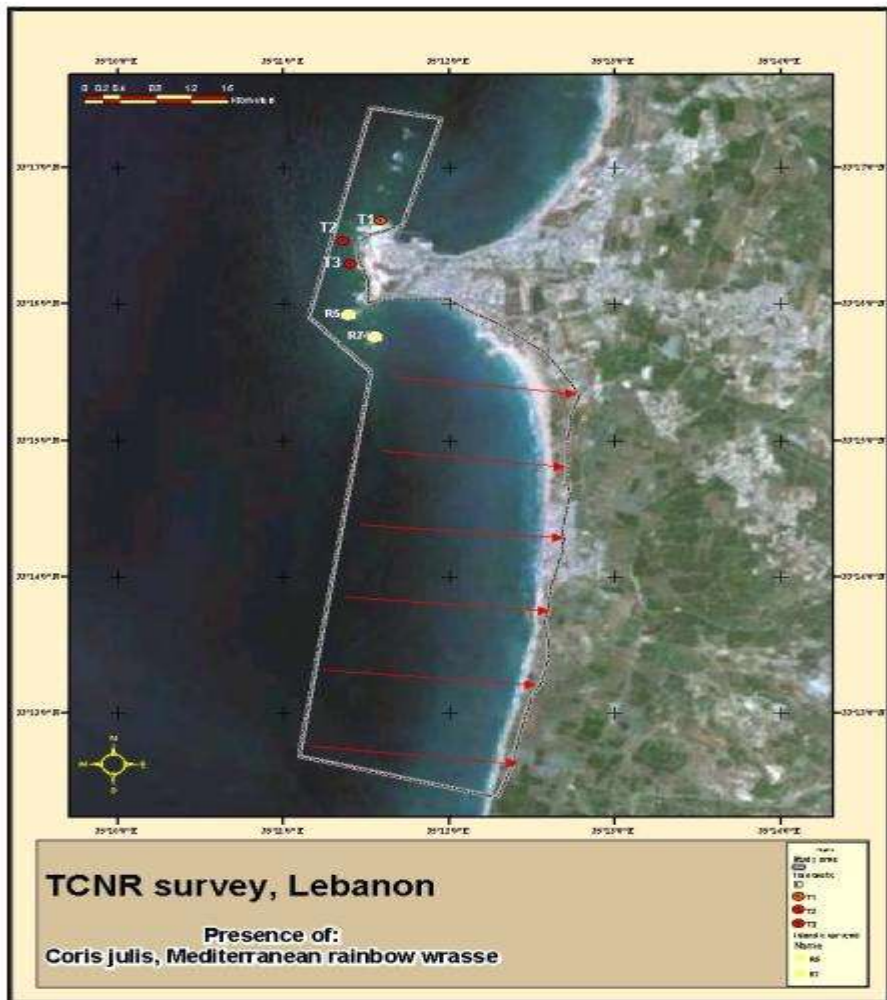
# The proposed marine protected area network



# Proposed MPA Map Sample

## Byblos proposed marine protected area





## Presence of Species in Ras Chekaa Proposed Marine Protected Area (PMPA)



### Common two-banded seabream Fish (*Diplodus vulgaris*):

Recorded at a depth of 4 meters, present environments with rock. Size 4 centimeters. Inhabits rocky bottoms down to 100 m depth; may occur in deeper waters on muddy bottoms. Feeds on invertebrates and seaweeds.



#### Data Source:

- Marine Survey on April - May 2011 by Dr. Hany El Shair
- Maps Bathym: Brouce 2005
- Bathymetry Map 5 m depth interval, 1999

#### Projected Coordinates System

WGS84  
Map Design & Production  
May 2011

#### Credits:

"Supporting the Management of Important Marine Habitats and Species in Lebanon." (Dossier PMA) date: 18-4-2009



# Lebanese Fishing Vessels and Fishing Facilities

The first census of fishing vessels, conducted by the Department of Fisheries & Wildlife of Ministry of Agriculture, showed :

the Lebanese fishing fleet is composed of **2,680 vessels** that were predominantly (2,662) operating along the coast from **44 fishing ports** and landing sites.

Almost all (98%) were less than 12m in length (33% less than 6m and 52% we 6-9m ).



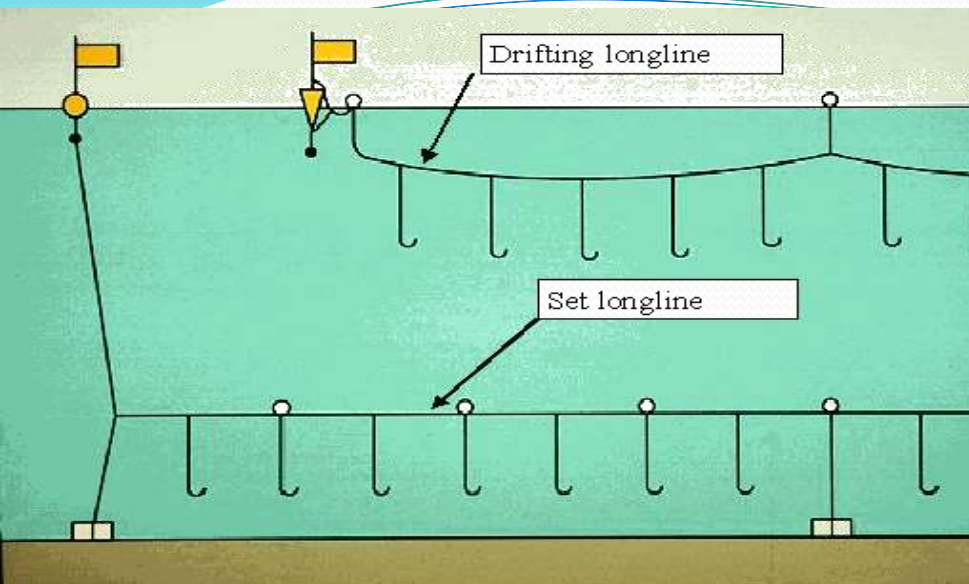
# Fishery Sector in Lebanon

Lebanon has 4,000 fishermen, based in the ports of Tripoli, Byblos, Jounieh, Beirut, Saida, Sarafand, Tyre and a few fishermen in the Naqoura

On average the income per fisherman is US \$100 per month, with such an income the fishermen can neither improve their lifestyles nor their fishing equipment. This income decreases in winter making the fishermen one of the poorest people in Lebanon.



# Illustration of Drifting and Set longline



# Overfishing: Impacts, Implications, and Resolutions

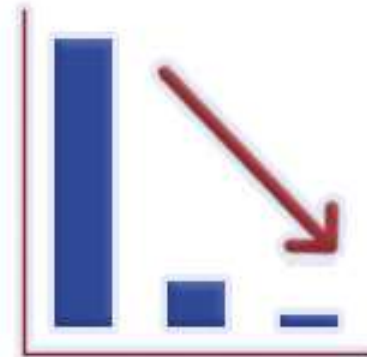
- **Sociology**- in some places people need to fish to survive, in many others they simply want to fish as a mode of recreation.
- **Economics**- individuals and regions can be dependent on fishing as a source of income.
- **Ecology**- natural systems are easily disrupted by intense anthropogenic pressure.

# Problem

**Overfishing: to continuously catch more fish than the system can naturally produce.**

Worldwide about 90% of the stocks of large predatory fish stocks are already gone. Forever.

That includes tasty dinner favourites like **tuna** and **cod**.



**In 1900 our oceans contained at least six times more fish than in 2009.**

# "Sustainable fisheries management for improved livelihoods of the coastal fishing community in Tyre"

## Planned activities

- Biodiversity field surveys , MPA establishment, management plans, Training Program on MPAs, Exchanges between MPAs , Delineate and Demarcate MPAs' Boundaries environmental education and public awareness , Update and Monitor Existing and Business Plans,

### **Enhance the value of MPA fishery resources :**

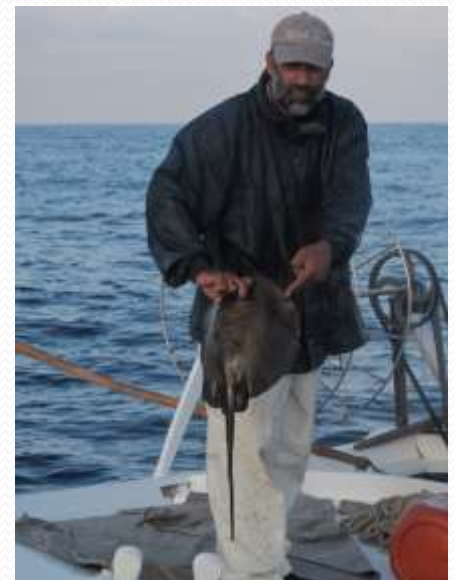
**To address the problem of over-fishing of near-shore marine resources and habitat destruction :** the project will enable coastal stakeholders to develop an effective property management regime for coastal marine resources. This will be undertaken for the selected MPAs, which will serve as a demonstration for other MPAs within the MPA network.

# Solutions

- Marine Protected Areas
  - Effective if:
    - Large enough
    - Protect source populations
    - Effectively enforced
  - Currently well below 1% of marine systems are protected by MPA's
  - Valuable tool but not the silver bullet

# Addressing Current Challenges

- Poor cooperation between fisheries and conservation departments
- Lack of fisheries expertise in conservation planning
- Inappropriate single-species/single-issue approach to fisheries management.
- Lack of Public Awareness





# Most common Fish species in Lebanon



IUCN Red List Status:  
 Least Concern (L.C.)  
 Data Deficient  
 Near Threatened

References:  
 1. <http://www.fishbase.org> 2. Kent E. Carpenter & Gerald R. Allen, 1989. FAO Species Catalogue. Exotic Fishes and Large Eye Brans of the world (Family Euthrinidae). FAO, Rome, VOL.9  
 3. Phillip C. Heemstra & John E. Randall, 1993. Groupers of the World. FAO, Rome, VOL.16

Project: "Supporting the Management of Marine Habitats and Species in Lebanon"

A scuba diver is shown in a blue underwater environment, swimming horizontally. The diver is wearing a black wetsuit, a scuba tank, and yellow fins. They are reaching out with their right hand towards a dark, textured rock formation on the left side of the frame. A thought bubble is positioned above the diver's head, containing the text "Together for Marine Protected Areas". The background is a clear, blue underwater scene with some bubbles visible.

**Together for Marine  
Protected Areas**