

Small-Scale Fisheries and Nature Protection: The Impact of Illegal Fishing on Marine Ecosystems in the Mediterranean

NOTRE GRAND BLEU INITIATIVE

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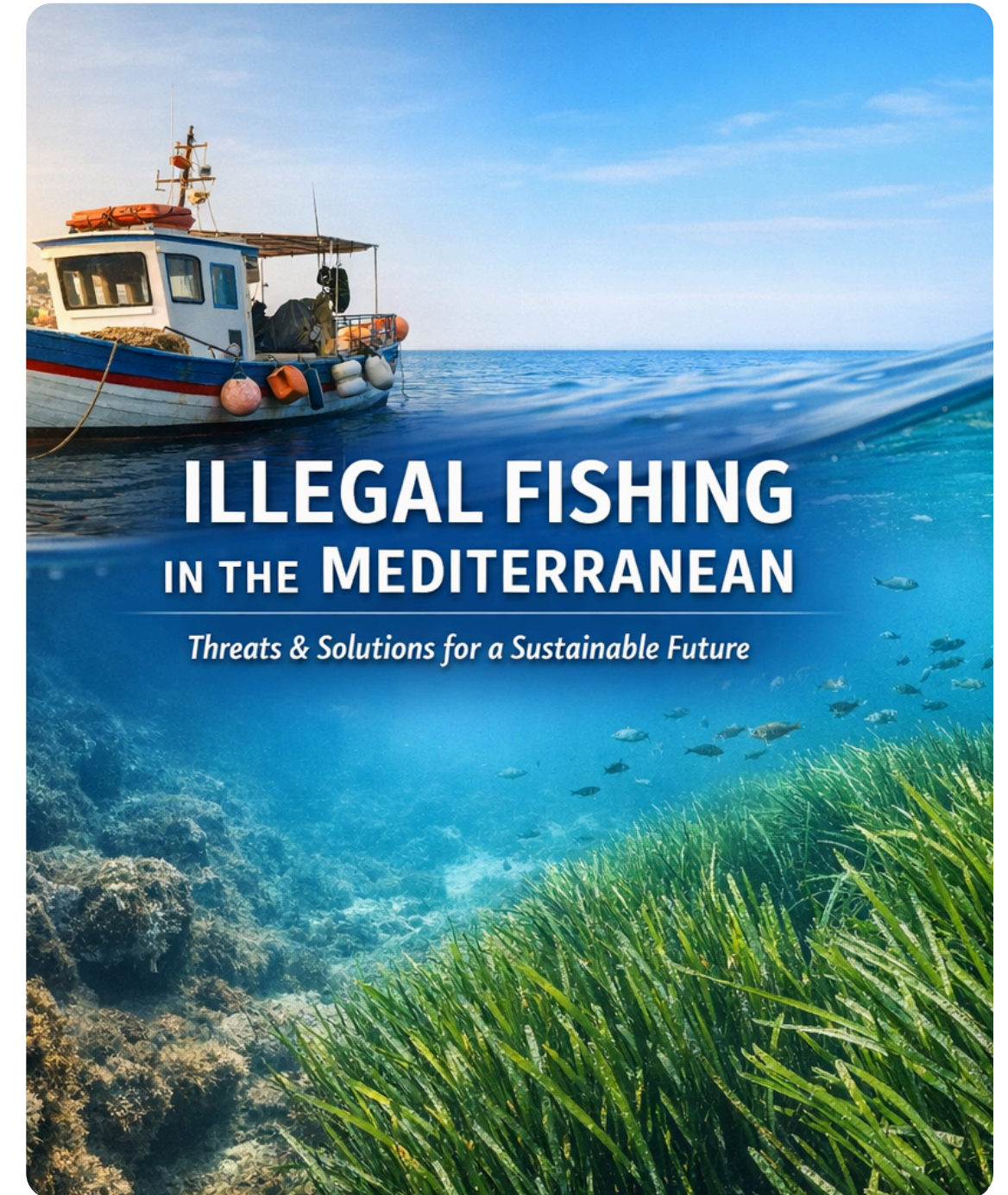
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INTRODUCTION & CONTEXT

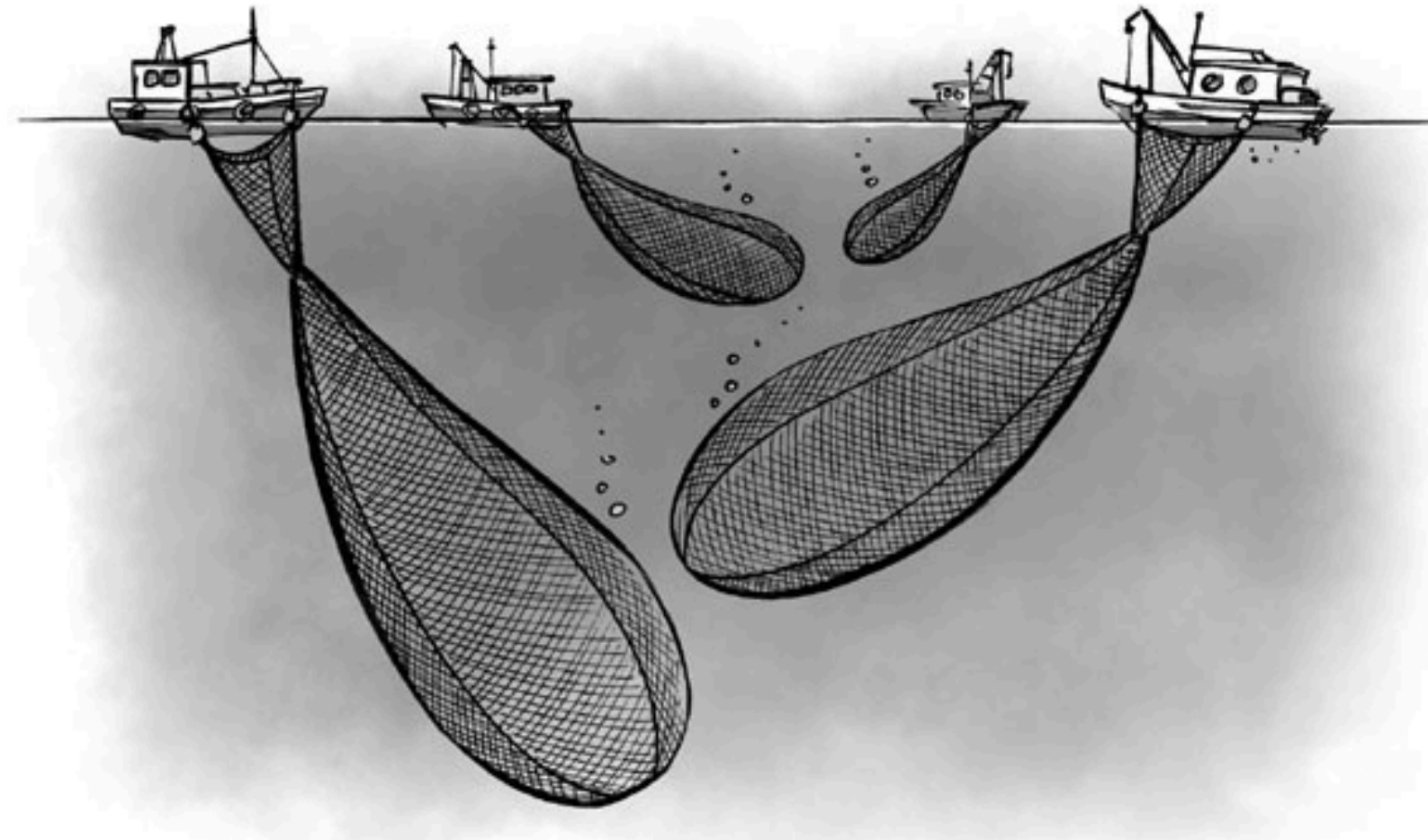


As a semi-enclosed sea bordered by 22 nations, the Mediterranean stands as one of the world's most significant biodiversity hotspots, home to roughly 17,000 marine species—7.5% of the global total. Its waters provide livelihoods and food security through small-scale fisheries that have sustained coastal communities for generations. Yet today, these communities and the ecosystems they depend on face a growing threat: illegal fishing.



Illegal fishing is one of the greatest threats to ocean health, biodiversity, and the livelihoods of small-scale fishers.

To what extent does illegal fishing undermine marine ecosystems and the sustainability of small-scale fisheries?



Overview of Small-Scale Fisheries in the Mediterranean

Definition of Small-Scale Fisheries (SSF): Vessels < 12 meters, artisanal techniques, low-tech gear

- ~80% of the Mediterranean fishing fleet is small-scale
- Over 250,000 fishers directly employed
- Contribution to local economies and cultural heritage

feature description

Vessels

Small boats, canoes, and pirogues (< 12 meters)

Gear

Handlines, gillnets, traps, and traditional fishing methods

Fishing Zone

Coastal and nearshore waters

Purpose

Subsistence and local market sales

Labor

Family-based and community-driven



IMPORTANCE OF SMALL-SCALE FISHERIES

Why Small-Scale Fisheries Matter



Food Security

Small-scale fisheries provide the primary animal protein for over one billion people in developing countries. They deliver essential micronutrients, omega-3, iron, zinc, and vitamin A, that are vital for combating malnutrition in coastal communities.

Economic Contribution

These fisheries sustain some of the world's poorest populations, with women comprising roughly 50% of the processing and trading workforce. They make significant contributions to local economies and national GDP.

Environmental Sustainability

Small-scale fisheries have a lower carbon footprint than industrial fishing and use selective gear that minimizes bycatch. Their traditional ecological knowledge fosters local stewardship and community-based management of marine resources.

IUU FISHING: THE GLOBAL THREAT

What Is IUU Fishing?

Type	Description	Example
Illegal	Fishing conducted without authorization or in violation of national or international laws	Fishing in MPAs, using banned gear, catching protected species
Unreported	Catches that are not reported or deliberately misreported to authorities	Under-declaring tonnage, hiding species composition
Unregulated	Fishing carried out by stateless vessels or in areas without effective management	Fishing on the high seas without RFMO oversight

IUU FISHING: THE GLOBAL THREAT

Common illegal practices:

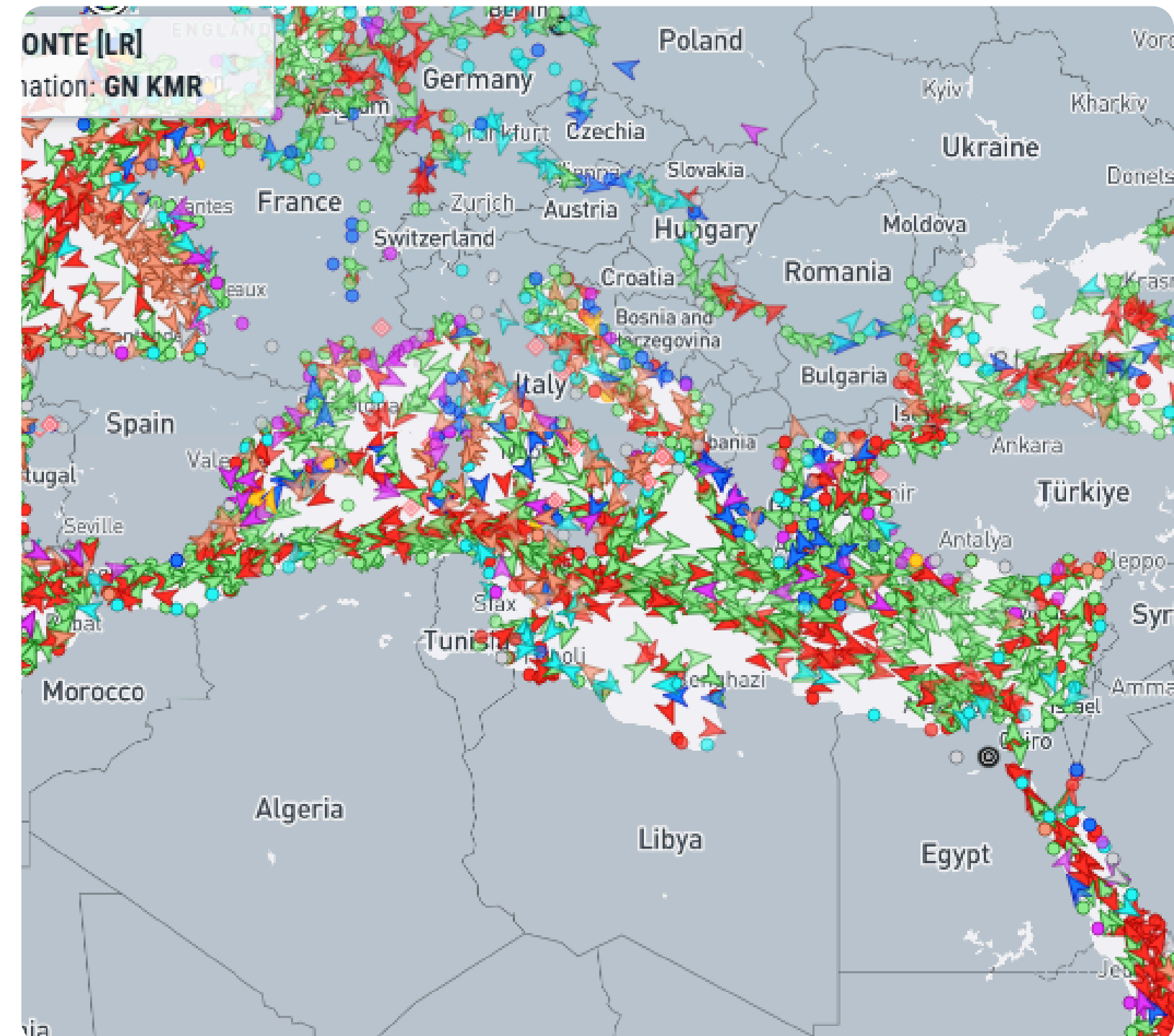
- Use of dynamite/explosive fishing
- Bottom trawling in prohibited coastal zones (within 3 nautical miles)
- Illegal driftnet fishing
- Catching undersized fish / juveniles
- Fishing in Marine Protected Areas (MPAs)
- Ghost fishing (abandoned nets)



METHODS OF ILLEGAL FISHING

Common Methods of Illegal Fishing

Method	Description	Impact
Dynamite Fishing	Explosives used to stun or kill fish	Destroys coral reefs and kills marine life indiscriminately
Cyanide Fishing	Poison sprayed to capture live fish (often for the aquarium trade)	Kills coral polyps and contaminates surrounding waters
Undersized Nets	Nets with mesh sizes too small, catching juvenile fish	Prevents fish stock regeneration
Illegal Trawling	Bottom trawling conducted in restricted or protected areas	Destroys seabed habitats and benthic ecosystems
AIS/VMS Manipulation	Turning off or manipulating vessel tracking systems	Allows vessels to evade monitoring and enforcement
At-Sea Transshipment	Transfer of catch between vessels at sea	Launders illegal fish into legal supply chains
Flag of Convenience	Registering vessels under countries with weak regulations	Avoids accountability and regulatory oversight



Ecological Impacts on Marine Ecosystems : Habitat Destruction

Bottom trawling damage:

- **Destruction of *Posidonia oceanica* seagrass meadows (endemic to the Mediterranean)**
- **Damage to coralligenous formations and deep-sea coral reefs**
- **Seafloor scarring and sediment disruption**

Ghost fishing

- **Abandoned, lost, or discarded fishing gear (ALDFG)**
- **Estimated 640,000 tons of ghost gear enter oceans annually**
- **Continuous trapping and killing of marine organisms**



Ecological Impacts on Marine Ecosystems : Biodiversity Loss



Overfishing and stock depletion:

- **~75% of Mediterranean fish stocks are overfished (FAO, 2023)**
- **Decline of key species: bluefin tuna, swordfish, hake, red mullet**

Bycatch and non-target species:

- **Endangered species affected: sea turtles (*Caretta caretta*), monk seals, dolphins, sharks, seabirds**
- **Incidental catch of juvenile fish disrupts population recruitment**

Loss of keystone species and trophic cascade effects

Ecological Impacts on Marine Ecosystems : Ecosystem-Level Effects

Disruption of food webs:

- **Removal of top predators → mesopredator release**
- **Trophic downgrading of marine ecosystems**

Jellyfish blooms:

- **linked to overfishing of their predators and competitors**

Algal overgrowth:

- **due to removal of herbivorous fish**
- **Reduced ecosystem resilience to climate change and ocean acidification**



Socioeconomic Consequences

Food security concerns in coastal communities

Economic losses: Estimated billions of euros lost annually in the Mediterranean region

Social conflicts between communities, sectors, and countries

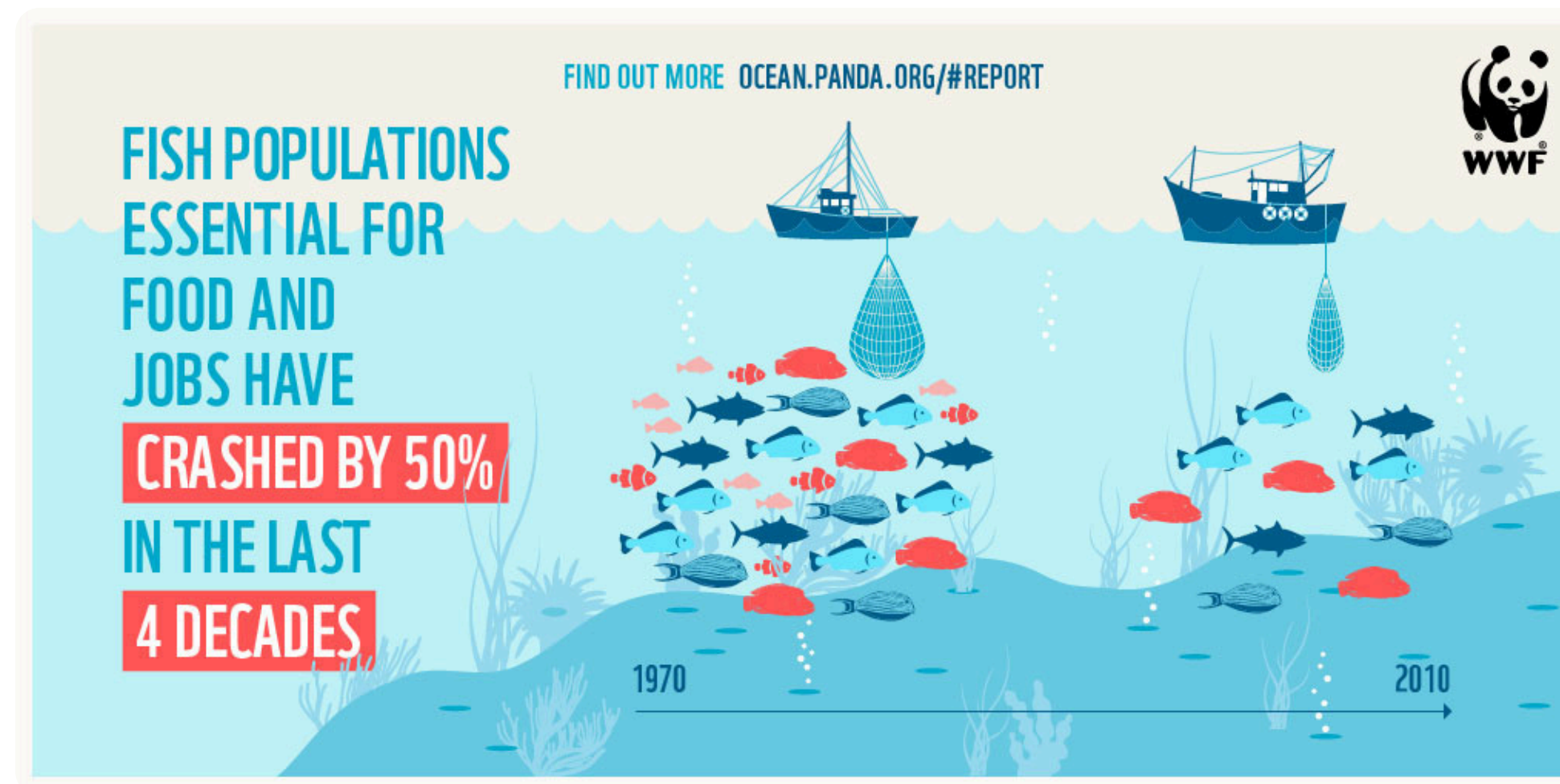
Erosion of trust in governance and management institutions

Impact on legitimate small-scale fishers:

Declining catches and income

Unfair competition with illegal operators

Loss of livelihoods and cultural traditions



Case Study

Illegal Driftnet Fishing in the Western Mediterranean

Context: Driftnets banned by the EU since 2002 and by GFCM

- Continued illegal use targeting swordfish and albacore tuna
- Devastating bycatch: dolphins, sea turtles, sharks
- Enforcement actions and seizures
- NGO investigations (e.g., Oceana, Sea Shepherd)



Case Study



Illegal Fishing in Marine Protected Areas (MPAs)

- Mediterranean has ~1,200 MPAs, but many are "paper parks"
- Illegal fishing documented inside protected areas
- Lack of surveillance, funding, and enforcement
- Impact on conservation objectives



Conservation Strategies and Solutions : Community & Technology

Community-based management:

- Involving fishers in decision-making
- Traditional ecological knowledge
- Fisher cooperatives

Technology and innovation:

- Blockchain for traceability
- AI for detecting illegal fishing patterns
- Low-impact fishing gear development

Public awareness and education campaigns

Citizen science and stakeholder engagement



Artisanal Fisheries in the Mediterranean: Current Status and Challenges



Public Support:

- Strongly encouraged by the State, local authorities, and industry professionals to ensure the sector's continuity.

Sustainability Progress:

- On track to achieve Maximum Sustainable Yield.
- By 2050, the goal is selective fishing gear and clean engines.

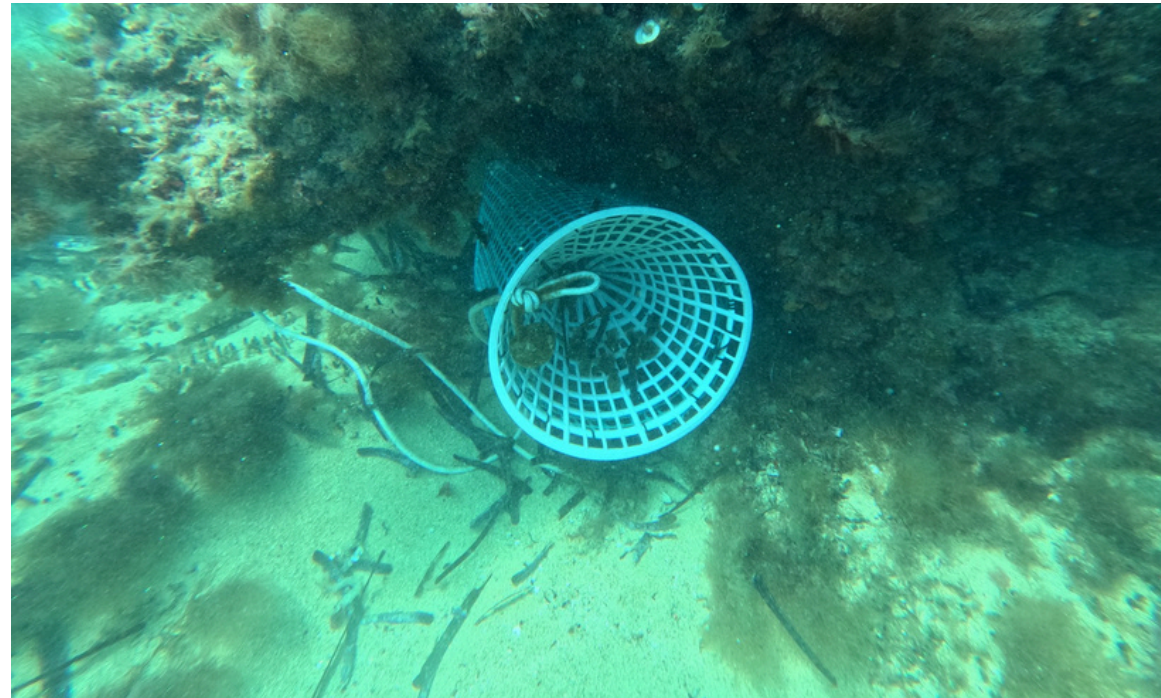
Major Challenges:

- Invasive species – Damage nets and compromise catches
- Resource depletion – Driven by climate change, ocean acidification, and overfishing
- Spatial competition – Offshore wind farms increasingly conflict with traditional fishing zones

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PROBLEM	SOLUTION
Plastic fish traps	Promoting traditional, biodegradable traps
Bottom trawling	Advocating for VMS on all vessels for monitoring
Trammel nets (three-layer nets)	Strengthening governance and gear restrictions
Overfishing	Developing pescatourism as alternative income
Threatened biodiversity	Role of MPA management bodies / Strengthening surveillance, awareness-raising, and fisher involvement



Notre Grand Bleu

Soyons l'Oeil de Sauvegarde de notre grand bleu

présente

Conclusion

Illegal fishing is destroying Mediterranean marine life and the coastal communities that depend on it.

Small-scale fishers are both victims of this crisis and essential guardians of solutions.

Recovery demands stronger enforcement, smarter science, empowered communities, and genuine political will with adequate funding.

Now we need the courage to scale it !

The background is an underwater scene. The top half shows the surface of the water with concentric ripples and light reflecting off them. The bottom half shows light rays filtering down through the water, creating a shimmering, dappled effect on the sandy or rocky seabed.

ThankYou