

## Balloon effects in global fisheries: Shifting paradigms

**NEOPS**  
New Ocean Paradigm  
on Its Biogeochemistry, Ecosystem and Sustainable Use

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The University of Tokyo



# Today's presentation

## Structure

Part 1: Research on destabilizing "balloon effects"

Part 2: DDI typology (DDI: Displacement, Diffusion and Intensification)

Part 3: Question and answer session

Part 1:

Research on destabilizing “balloon effects”

# Displacement (Balloon) Effects

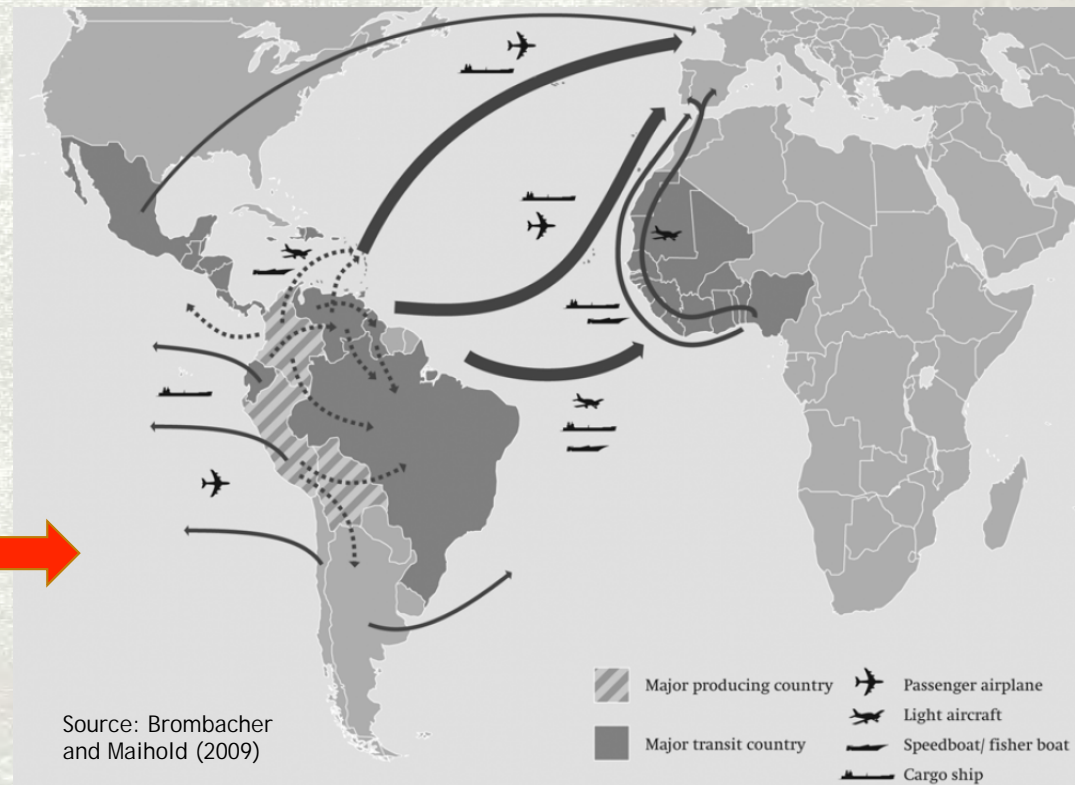


## Increasingly globalized world:

- Greater mobility of goods/services
- Crucially dependent on variation across nations
- Variability in regulatory/ governance/ monitoring levels can drive both legal and illegal activities
- Increased regulation, new legislation, etc. can create pressure that causes activities to be displaced

# Examples of balloon effects in other disciplines

- Carbon leakage
- Wildlife trafficking
- Drug trafficking

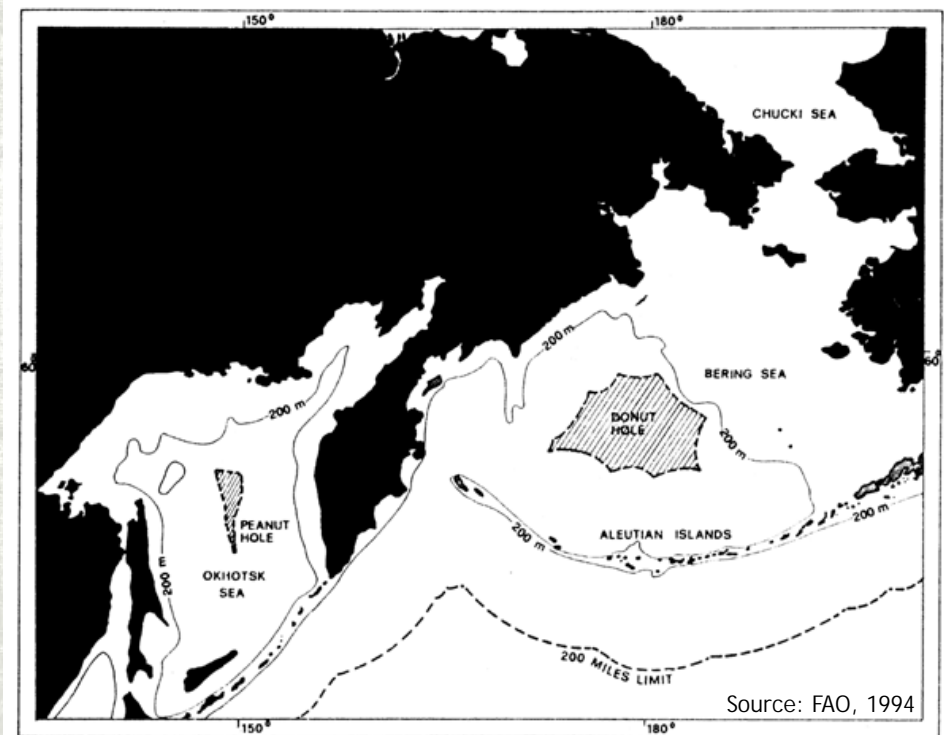
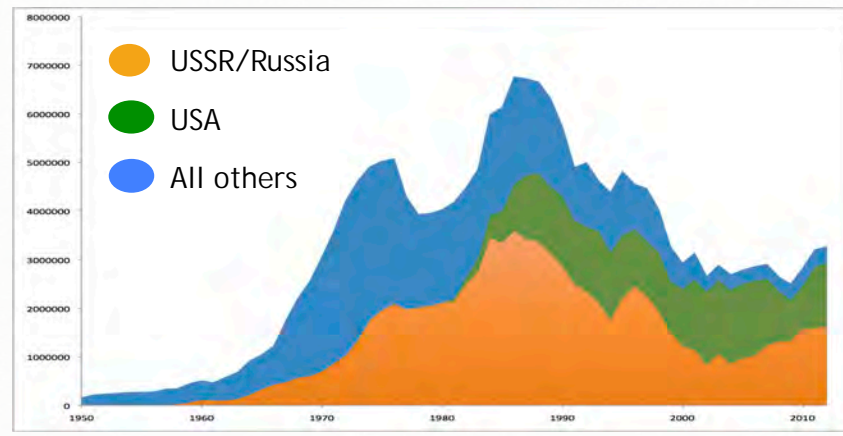


# Balloon effects in global fisheries management

## Alaska Pollock (Donut Hole)

Formalization of EEZ under UNCLOS → fishery largely contained in the EEZ of two players

Distant water fleets (DWF) squeezed into international waters of “donut hole”



# Balloon effects in global fisheries management

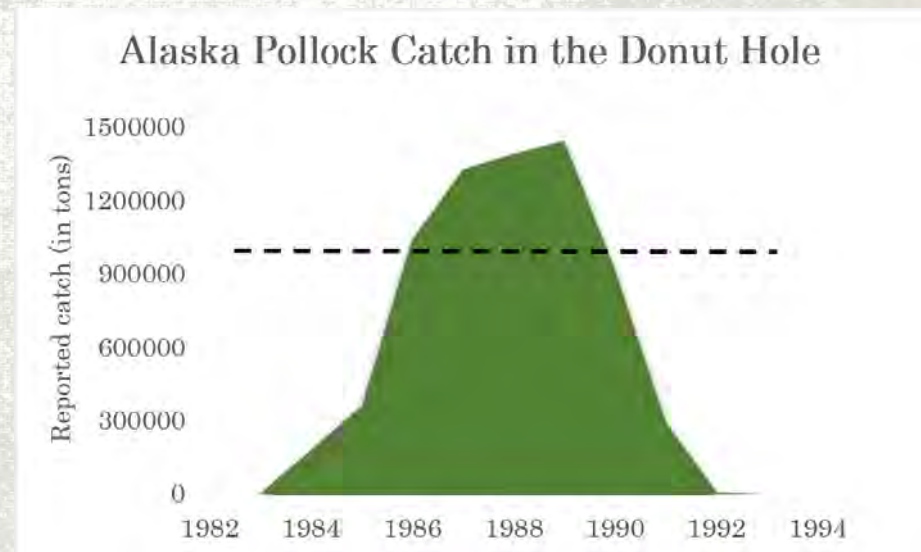
## Alaska Pollock (Donut Hole)

Fishery split into two parts:

- Stable two-player game (within EEZ)
- Unstable multi-player game (beyond EEZ)

Decrease in annual catch from 1 million tons (late 1980s) to 22,000 tons in 1992 (beyond EEZ)

Moratorium declared in August 1992, but most of biomass has disappeared (Munro 1993)



# Balloon effects in global fisheries management

## Atlantic Mackerel

Quotas set by scientists at International Council for Exploration of the Seas (ICES)

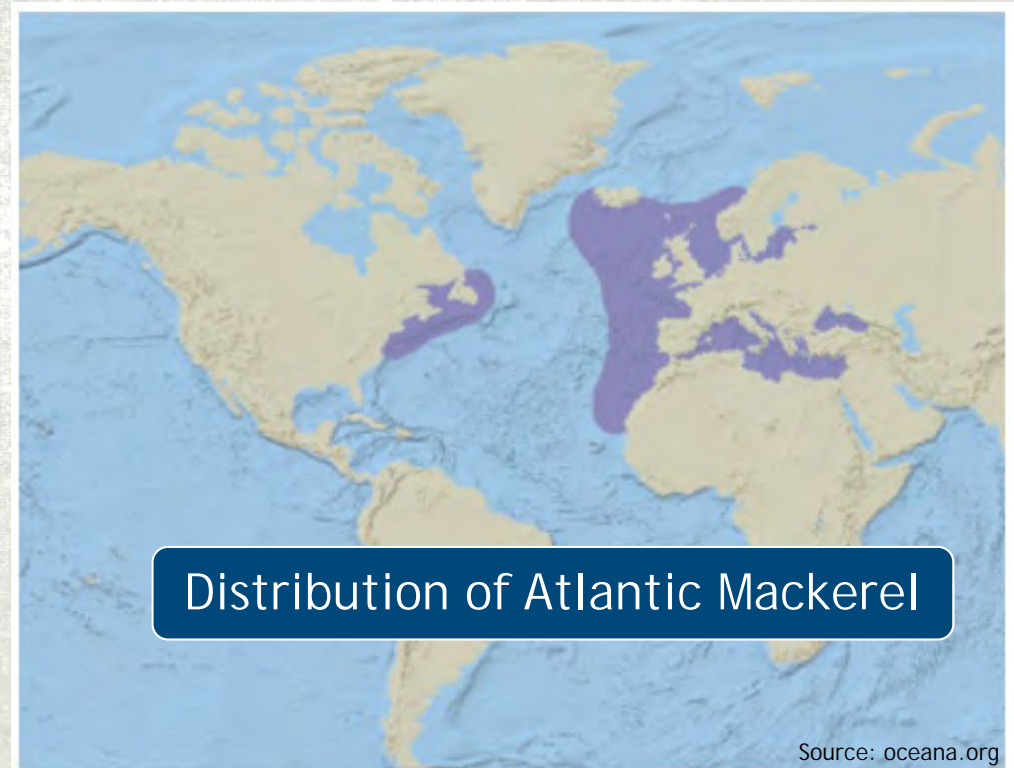
(Climate change?) causing pole-ward shift in stocks

Share of Iceland increased in 2009 → unilaterally increased catch level from 115,000 to 130,000 tons

Faroe Islands then tripled quota up to 85,000 tons

Has caused conflict across mackerel fishing states and illicit retaliatory behavior from fishers in other countries

Partial agreement reached earlier this year (Iceland excluded) - total announced quotas = 156% of ICES recommendation

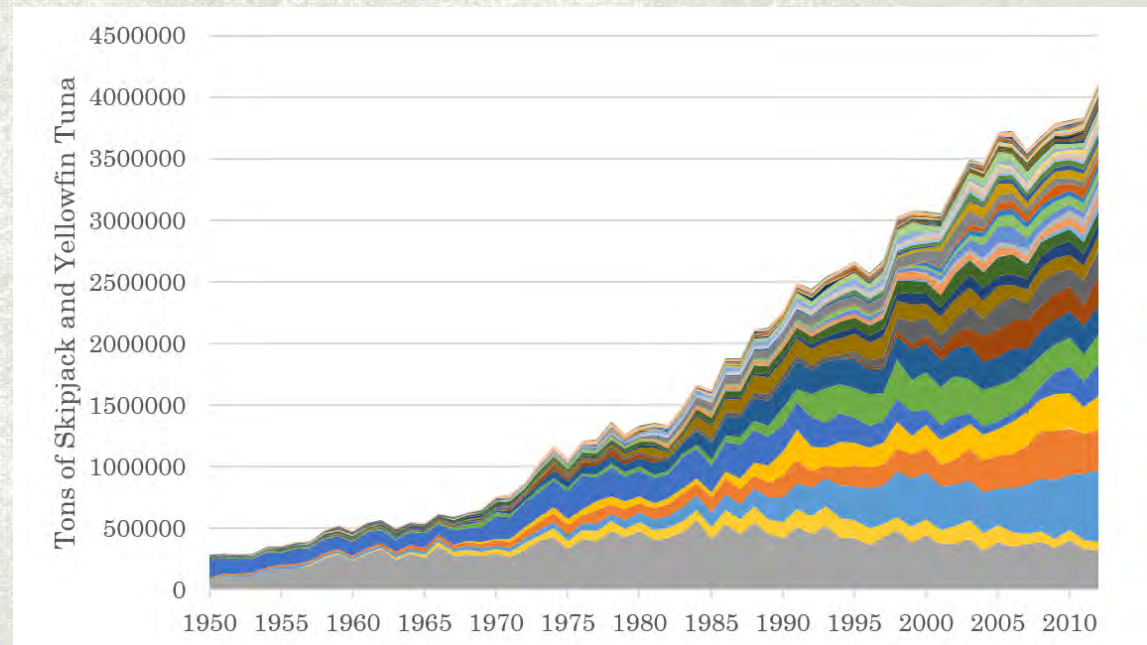




# Balloon effects in global fisheries management

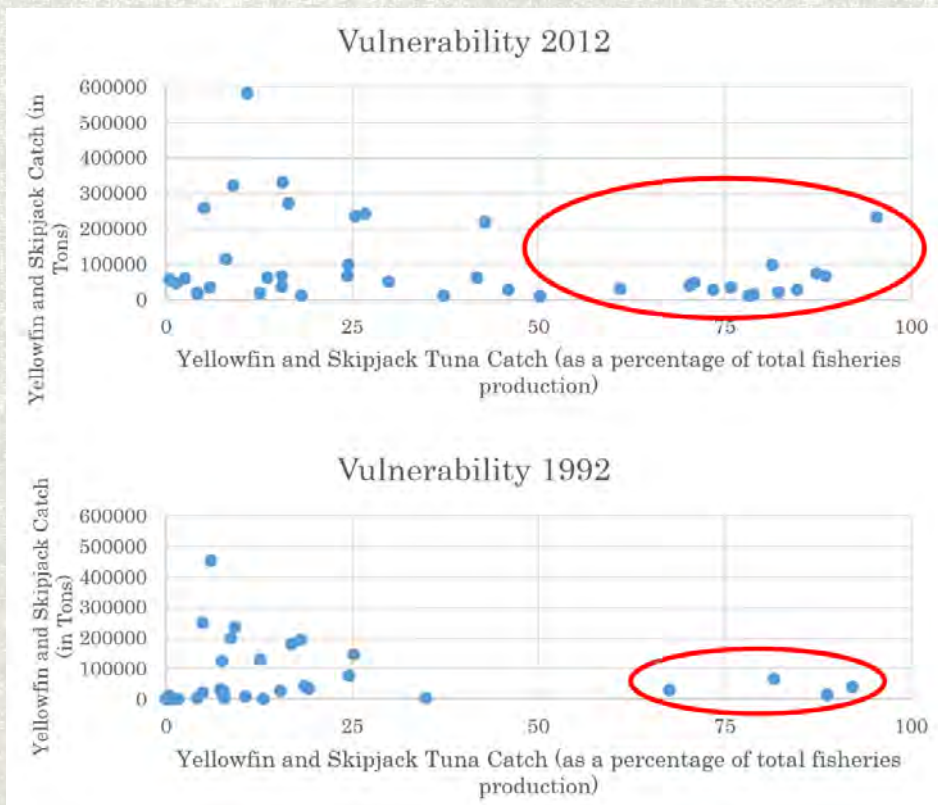
Balloon effects contributing to greater vulnerability?

Since 1990, statistically significant correlation between state governance level and expansion of tuna fisheries



Combined global catch of Skipjack and Yellowfin Tuna

# Balloon effects in global fisheries management



Global demand also creating pressure towards fisheries specialization.

Between 1992 and 2012, number of states dependent on tuna fisheries for majority of fisheries production has tripled (excluding new entrants)

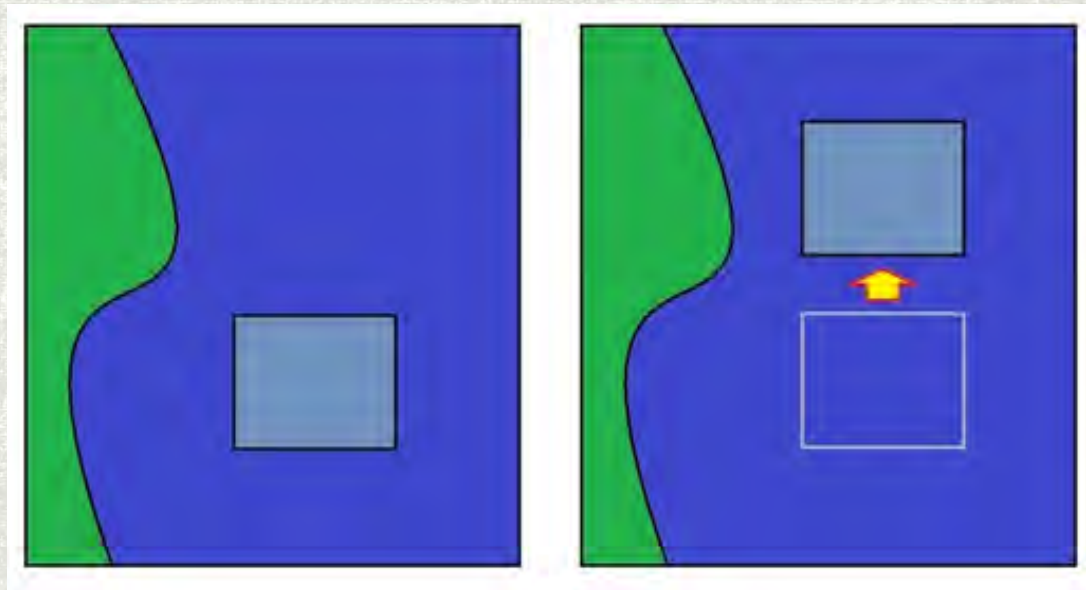
## Conclusions (and why is this useful?)

1. Balloon effects recognized in other disciplines, and seem to exist in international fisheries as well.
2. Sudden displacement of fishing activity can lead to unsustainable exploitation of marine resources.
3. Governance/cooperation mechanisms require flexibility to rapidly adjust to changing conditions.
4. Control/regulation/sustainable management efforts by one nation may lead to unintended consequence of displacing rather than solving problems.

## Part 2:

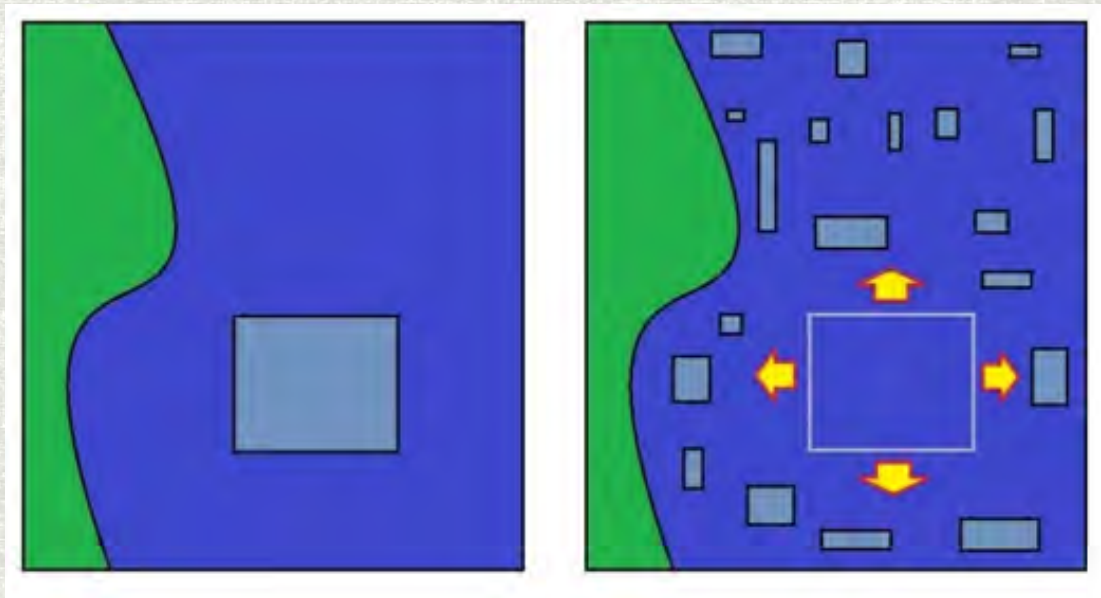
DDI typology (DDI: Displacement, Diffusion and Intensification)

# DDI Typology - Displacement



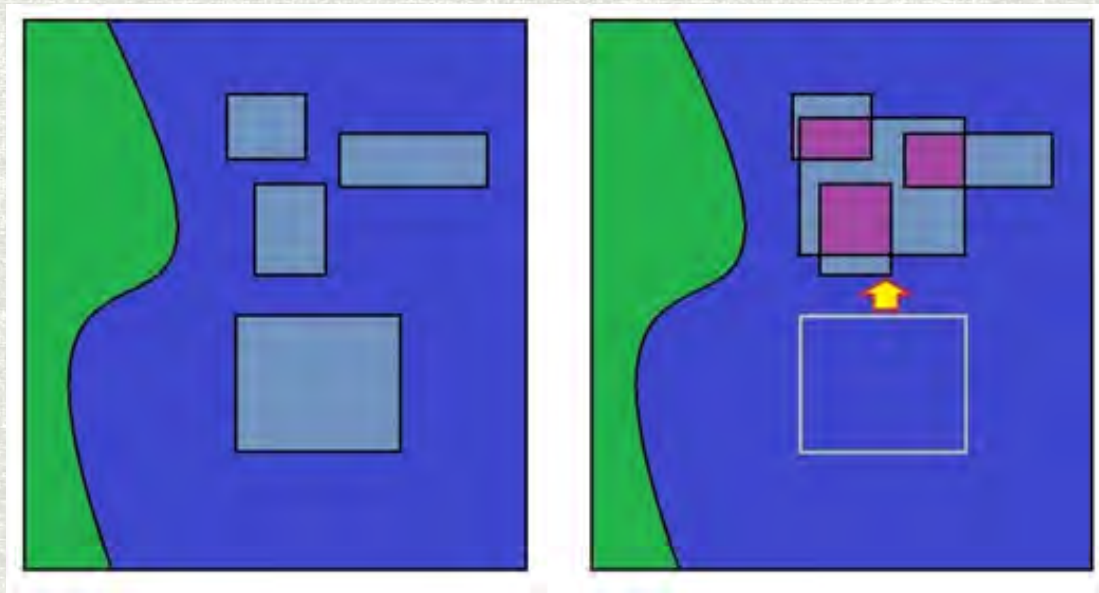
One-to-one movement of fishing activities from one area to another (e.g. due to establishing of marine protected area, no-take zone, etc.)

## DDI Typology - Diffusion



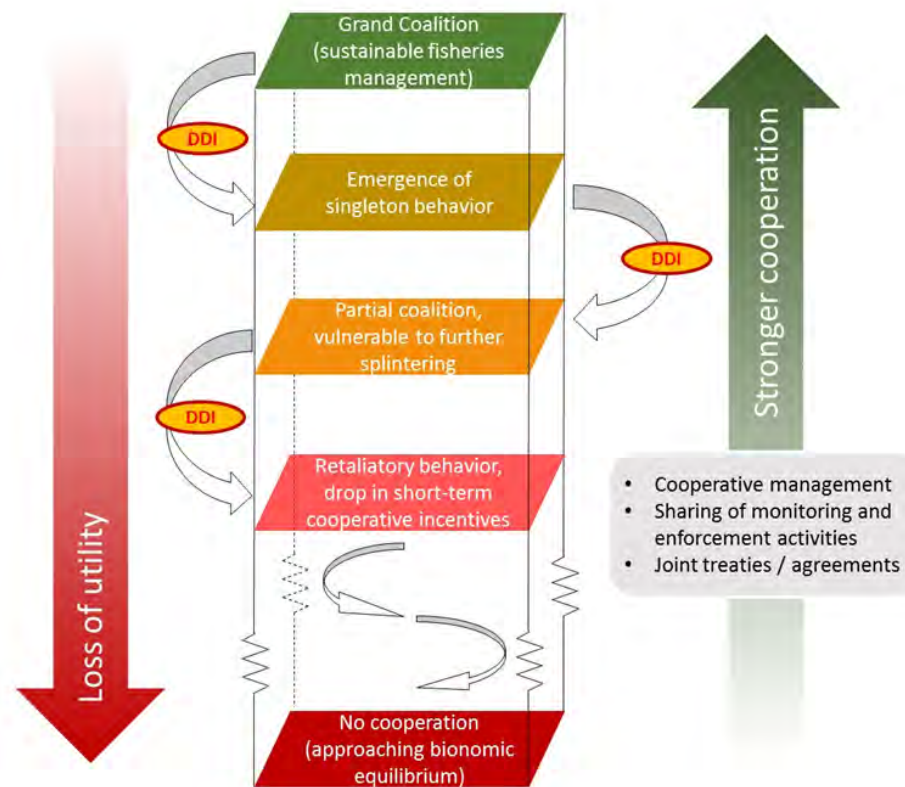
Diffusion of fishing activities from one area into a broad array of new areas. For instance as a result of more intensive monitoring of IUU (illegal, unreported and unregulated) fishing

# DDI Typology - Intensification



This example shows intensification resulting from displacement - can result in over-exploitation of stocks that may have previously been under sustainable management.

# Destabilizing Outcomes of DDI Effects





## Conclusions (and why is this useful?)

1.

Typologies allow for greater comparability across diverse contexts.

2.

Under climate change models, major changes in stock distribution and size are expected - may result in DDI effects.

3.

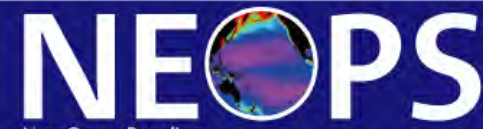

Early recognition of DDI effects can signal the need for greater efforts and investment in cooperation.

## Journal articles introducing research outcomes

**Blasiak, R., Yagi, N. and Kurokura, H. (2015)** Impacts of Hegemony and Shifts in Dominance on Marine Capture Fisheries, *Marine Policy* 52: 52-58.

**Blasiak, R. (2015)** Balloon Effects Reshaping Global Fisheries, *Marine Policy* 57: 18-28.

**Blasiak, R., Doll, C.N.H., Yagi, N. and Kurokura, H. (2015)** Coalitional Instability Generated by Displacement, Diffusion and Intensification (DDI) in Marine Fisheries, *Environmental Science & Policy* 54: 134-141.



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