

# **Ordenación pesquera en el Área Marina Protegida de los archipiélagos de Rosario y San Bernardo AMP-ARSB**

**Módulo 4: Pesca responsable, ordenamiento pesquero y  
consumo responsable**

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4.1 Estado actual de la pesca en Colombia y el mundo.

4.2 Impacto de la pesca en los ecosistemas acuáticos (Generalidades; efectos directos e indirectos; Formulación de políticas usando los rankings de severidad de impactos colaterales de los artes de pesca.

4.3 Código de conducta para la pesca responsable de la FAO (Principios generales y objetivos; análisis de la aplicación e impacto desde 1995; análisis de citación del código.

4.4 Ordenamiento pesquero (qué es?, cuales son los principios operativos, quien es el responsable; planes, medidas y estrategias de ordenación; algunas consideraciones principales. Estudio de caso para AMP o AME).

4.5 Eco-etiquetado y Consumo Responsable (Alcance, principios, consideraciones generales, requisitos sustantivos mínimos y criterios para las ecoetiquetas; estudio de caso).



# SHIFTING GEARS

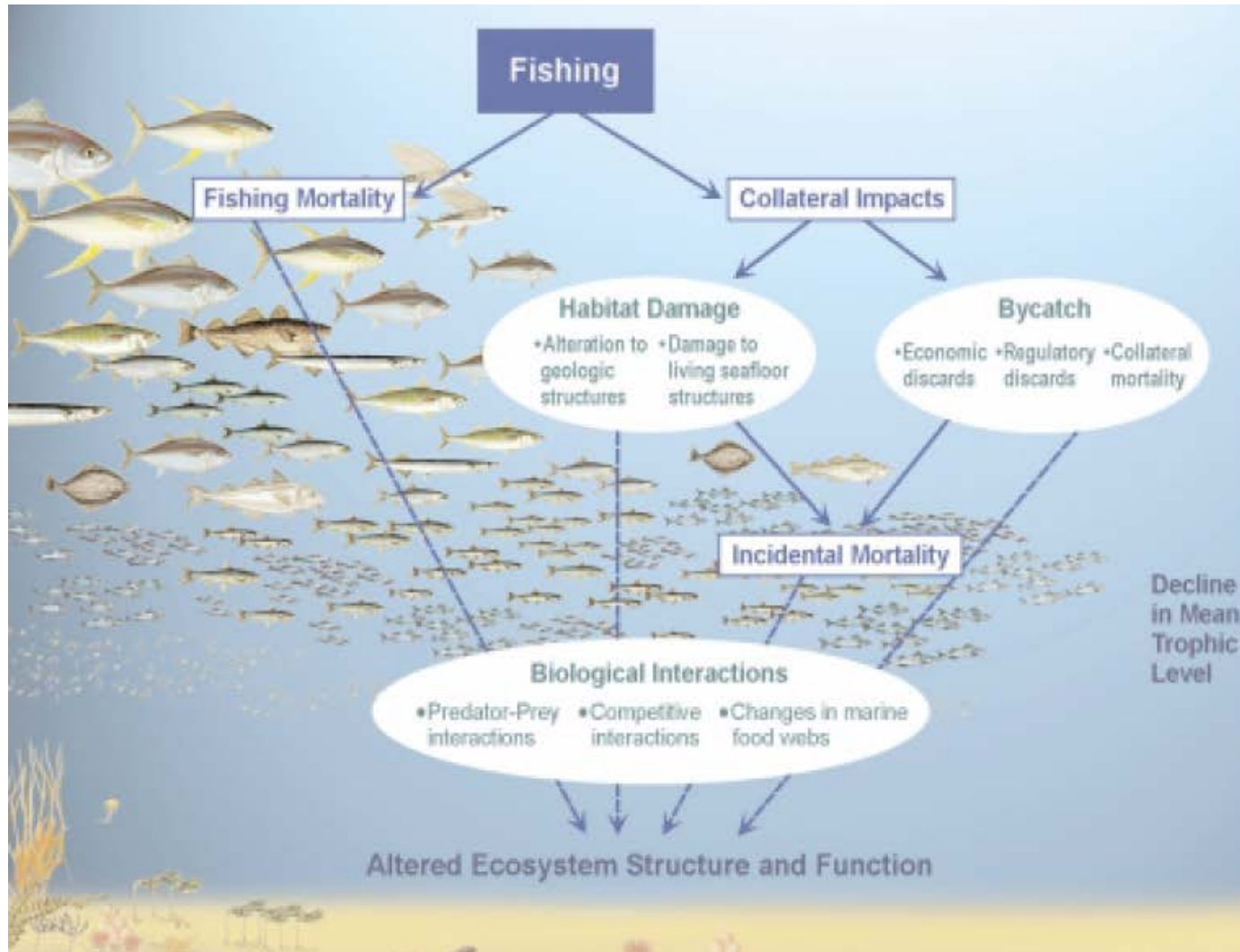
Addressing the Collateral Impacts  
of Fishing Methods in U.S. Waters



Lance E. Morgan  
Ratana Chuenpagdee

PEW  
SCIENCE  
SERIES



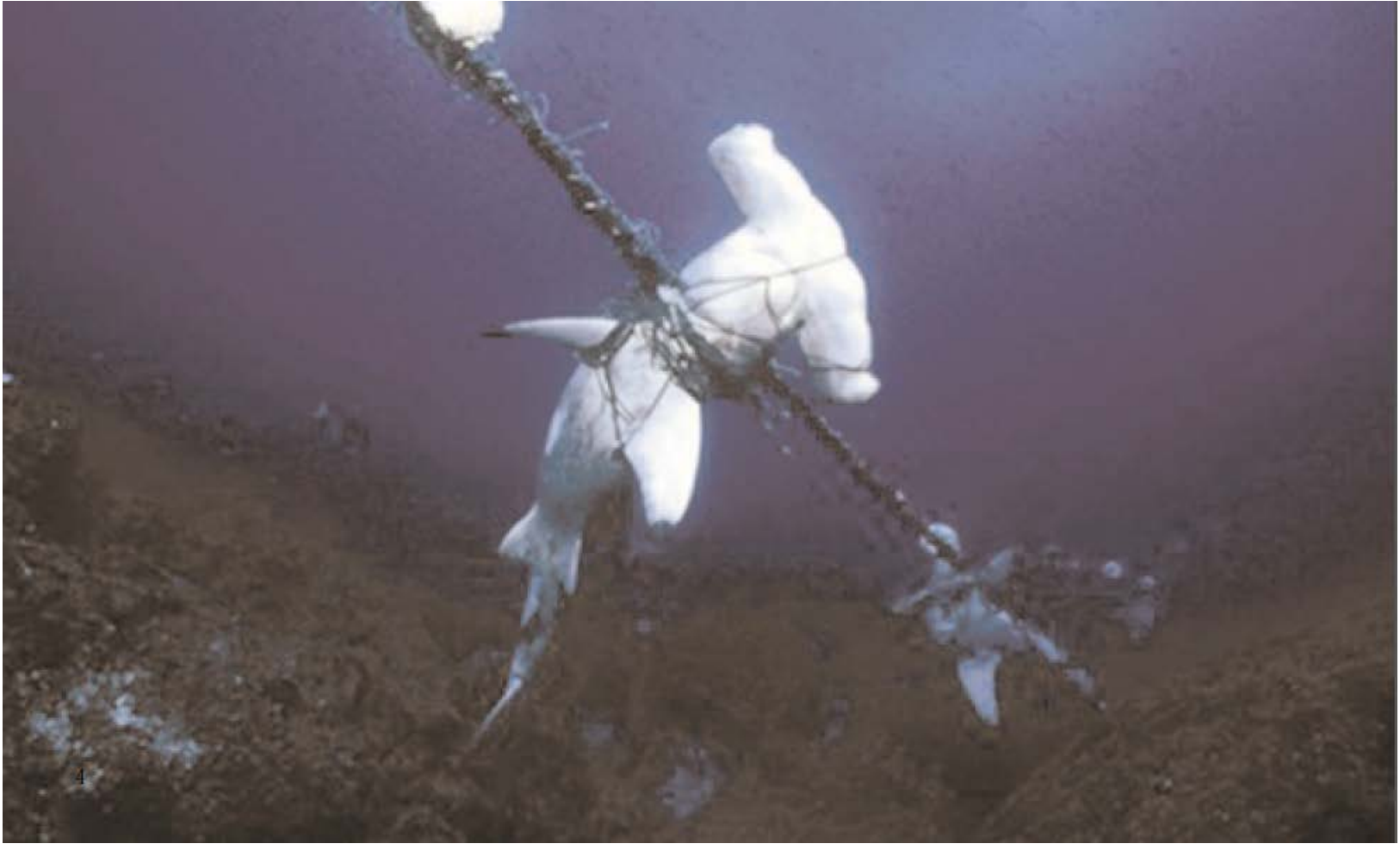


## Ecological Impacts of Fishing

*Fishing reduces the abundance of target and non-target fish populations. Other non-target species can be injured or killed as bycatch. The physical impact of fishing gear on the seafloor harms habitats for important commercial species and other marine life. Together these impacts can lead to habitat damage, reduced biodiversity, changes in food webs, and reduced ecosystem function.*

Adapted from Pauly et al 1998, and Dayton et al 2002.

# Shark bycatch



# Bycatch of fishes and invertebrates



# Habitat damage

**Before**



**After**



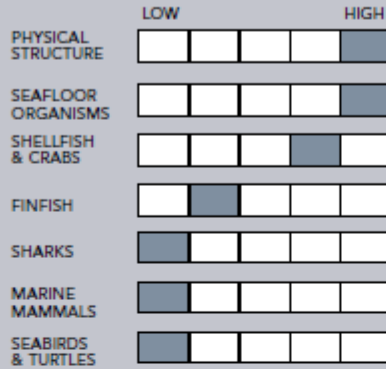
# Ghost fishing





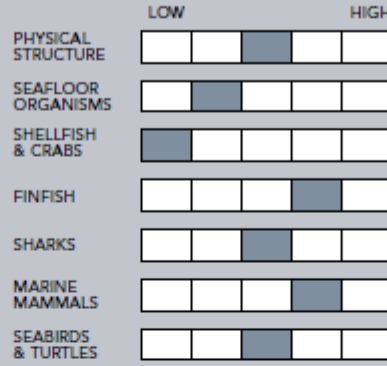
### Dredges

Impacts on:



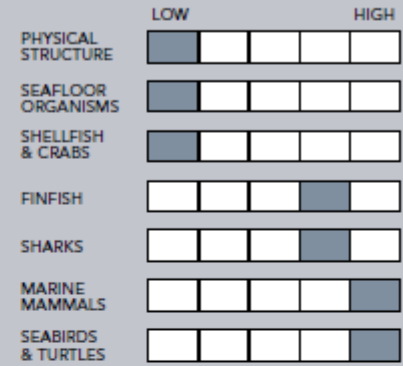
### Gillnets – Bottom

Impacts on:



### Gillnets – Midwater

Impacts on:

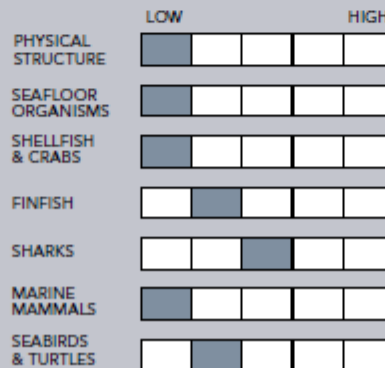


Box 4

Impact Rating  
of Ten Fishing  
Gear Classes  
as Agreed by  
Thirteen Expert  
Workshop  
Participants

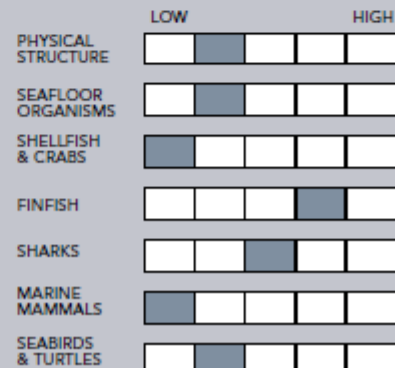
### Hook and Line

Impacts on:



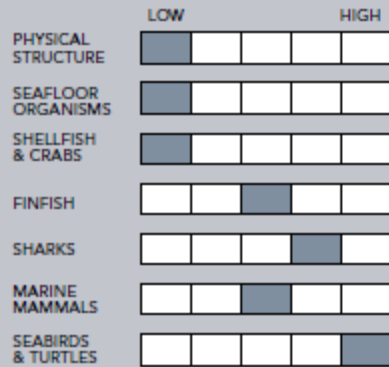
### Longlines – Bottom

Impacts on:



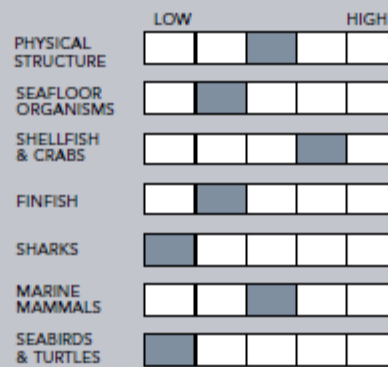
### Longlines – Pelagic

Impacts on:



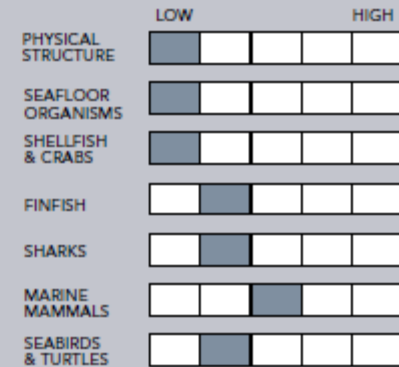
### Pots and traps

Impacts on:



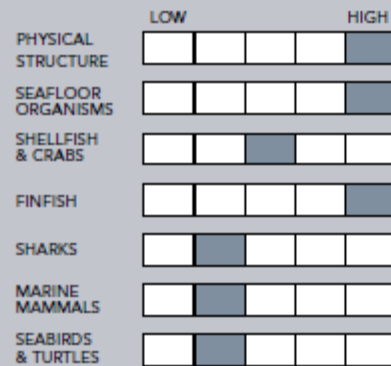
### Purse seines

Impacts on:



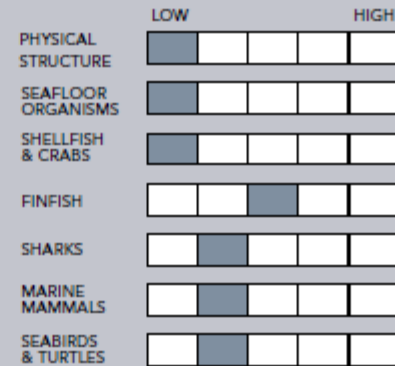
### Trawls – Bottom

Impacts on:



### Trawls – Midwater

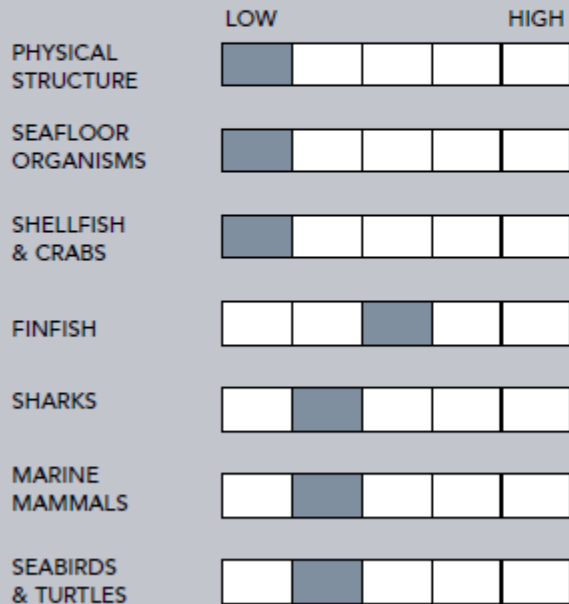
Impacts on:



*An example of paired comparison from the questionnaire:*

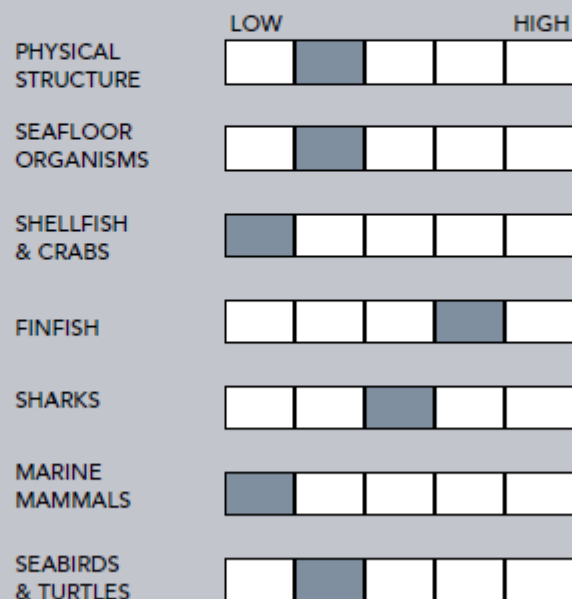
**A**

**Impacts on:**



**B**

**Impacts on:**



In your opinion,  
which of these sets  
of impacts, A or B,  
do you consider  
**ECOLOGICALLY  
MORE SEVERE?**  
(please circle A or B)

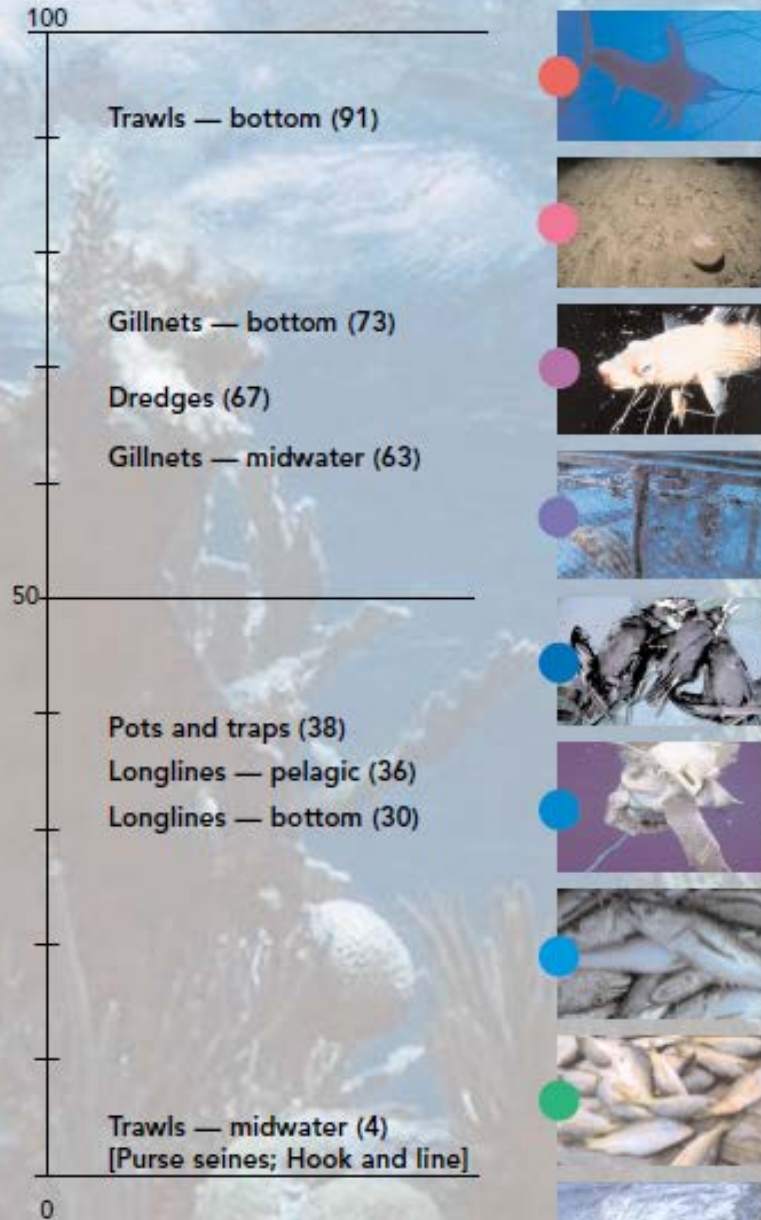
Figure 4 ►  
**Severity Ranking  
 (Damage Schedule)  
 of Ecological Impacts  
 for All Fishing Gears,  
 Based on All  
 Respondents**

Box 6

**Important Results  
 of This Study**

- Experts strongly agreed about the levels of bycatch and habitat damage caused by the various fishing methods.
- Survey respondents, including fishers, managers, scientists, and conservationists, strongly agreed on the relative severity of damage caused by given fishing gear classes, based on impact scenarios involving bycatch and habitat damage.
- Survey respondents considered habitat damage to be of greater ecological importance than bycatch.

Relative severity of fishing gear classes



Note: 0 = least severe and 100 = most severe. Numbers in parentheses are impact scores, aggregated across all respondents. Impact score for midwater trawls also represents that for purse

Figure 5 Experts' Impact Rating, Survey Severity Ranking, and Policy Implications

GEAR CLASS	HABITAT IMPACTS			BYCATCH				MANAGEMENT CATEGORY (Policy responses)
	Physical	Biological	Shellfish & crabs	Finfish	Sharks	Marine mammals	Sea birds & turtles	
Trawls – bottom	5	5	3	5	2	2	2	HIGH IMPACT (Very Stringent)
Gillnets – bottom	3	2	1	4	3	4	3	
Dredges	5	5	4	2	1	1	1	
Gillnets – midwater	1	1	1	4	4	5	5	
Pots and traps	3	2	4	2	1	3	1	MEDIUM IMPACT (Moderately Stringent)
Longlines – pelagic	1	1	1	3	4	3	5	
Longlines – bottom	2	2	1	4	3	1	2	
Trawls – midwater	1	1	1	3	2	2	2	LOW IMPACT (Least Stringent)
Purse seines	1	1	1	2	2	3	2	
Hook and line	1	1	1	2	3	1	2	

KEY: 5 VERY HIGH IMPACT 4 HIGH IMPACT 3 MEDIUM IMPACT 2 LOW IMPACT 1 VERY LOW IMPACT

## Box 8 Shifting Gears: From Trawls to Traps in the Spot Prawn Fishery



In February 2003, the California State Fish and Game Commission unanimously voted to end the spot prawn trawl fishery. A recent study of the spot prawn fishery in California revealed dramatic differences in bycatch between two types of gear: bottom trawls and traps (Reilly and Geibel 2002). California had failed to restrict the size of bottom trawl gear in the spot prawn trawl fishery despite high rockfish bycatch. Data collected by observers show that in northern California, the weight ratio of total bottom trawl bycatch, including invertebrates, to spot prawn catch was 8.8 to 1.0, whereas in the trap fishery it was 1.0 to 1.0, a nearly ninefold difference. In southern California, the weight ratio of total trawl bycatch, including invertebrates, to spot prawn catch was 20.6 to

1.0, and that of the trap fishery was 2.0 to 1.0.

Of particular importance in this region is the different gears' bycatch of rockfishes, whose populations have been severely reduced by commercial fishing and sportfishing. NMFS has determined that seven rockfish species in California waters are overfished and in need of rebuilding. Bycatch statistics for northern California in the same report show that the weight ratio of rockfish bycatch to spot prawn catch was 2.1 to 1.0 in the trawl fishery and 0.04 to 1.00 in the trap fishery, a fifty-two-fold difference. In southern California, the same ratios were 1.5 to 1.0 for trawls and 0.07 to 1.00 for traps, a twenty-one-fold difference.

This indicates that by shifting from bottom trawl to trap gear in the spot

prawn fishery, fishers can reduce rockfish bycatch by an order of magnitude or more. To rebuild rockfish stocks, prohibiting the directed take of rockfish is essential but not sufficient. Rockfish recovery efforts must also address the rockfish's mortality as bycatch, and the homogenization of its complex habitat by trawls. The National Research Council (NRC 2002) found that low-mobility, long-lived species such as rockfish are more vulnerable to acute and chronic physical disturbance than are short-lived species, and that bottom trawls alter the composition and productivity of fish communities that depend on structurally complex seafloor habitats for food and refuge. Hence, reducing the use of bottom trawls for spot prawns will also reduce damage to the benthic habitat on which rockfish rely.

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Title: Use of traps as an ecologically friendly alternative to shrimp trawl fishery

Article Type: Original Research Paper

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Abstract: Industrial shrimp fisheries in shallow waters of the Colombian Caribbean collapsed in 2005 due to high fuel prices, revaluation of the peso compared to the dollar, low prices for farmed shrimp and a decreased abundance. Small-scale fisheries use beach seines and gill nets in a non-selective manner, catching high rates of bycatch. There are no records of penaeid shrimp captured in traps. The use of plastic traps as an alternative to capture shrimp would play an important role in the combined search for efficiency and "clean" captures. Four experimental fishing campaigns were carried out using Fathom Plus plastic traps. Two types of bait (Atlantic thread herring and cow leather); three distances between traps; two climate periods and two lunar phases were evaluated. Pink shrimp