



**Developing
British Columbia's
Inshore Rockfish
Conservation Strategy**

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Inshore rockfish Sebastes spp.

- rocky reefs to 200 m
- small home range
- piscivorous
- hook & line gear
 - commercial, sport, subsistence
- physoclistic
- long-lived
- late maturing
- sporadic good recruitment



copper



black

quillback



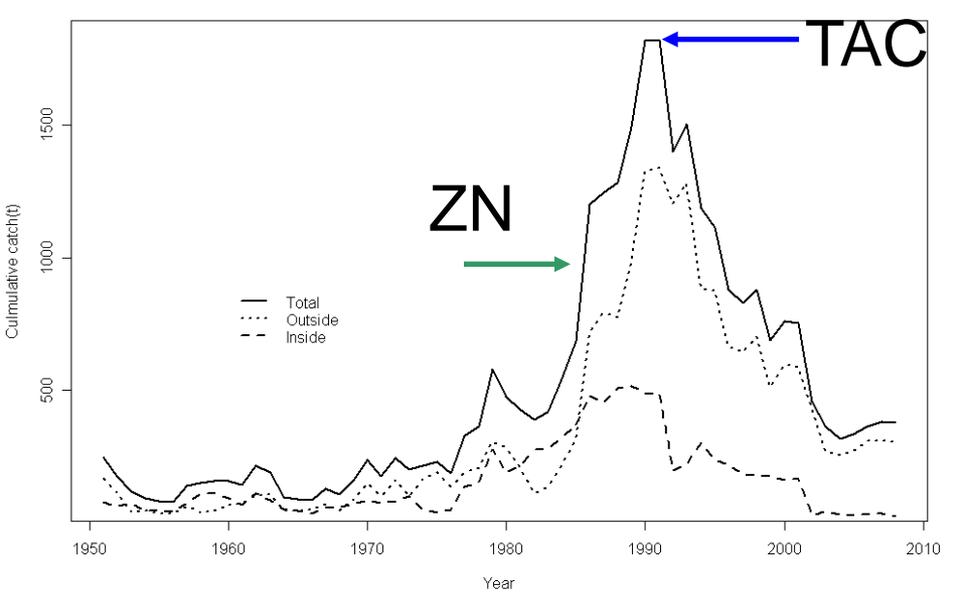
China



tiger

yelloweye





Catch History

Early catches incidental to halibut & lingcod fisheries

1977 – expansion of the commercial fishery

1986 – introduce commercial ZN licence

1991 – set a Total Allowable Catch (TAC)

1992 – reduced TACs

1992/3 – implement limited entry licensing

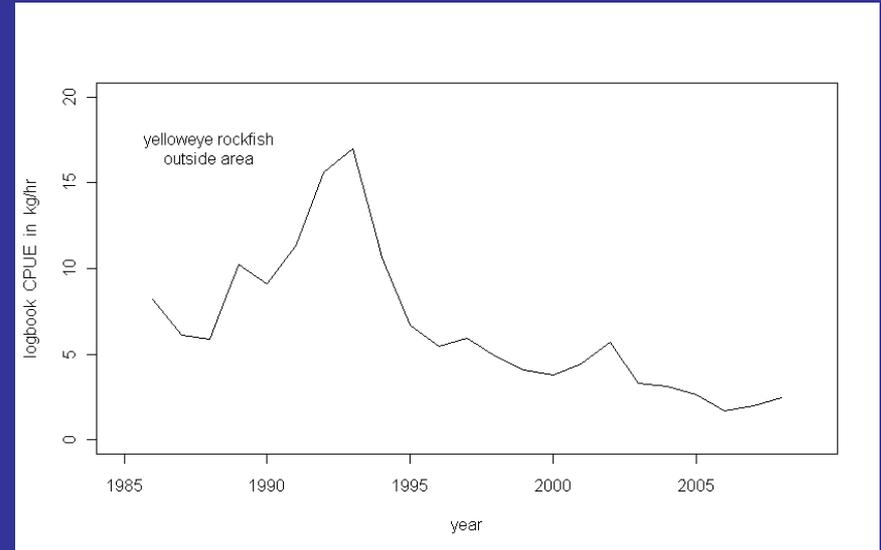
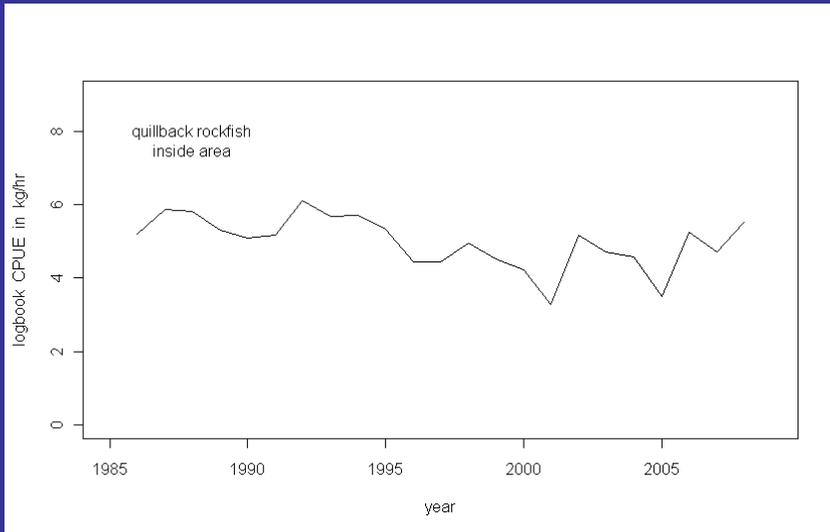
1995 – 100% Dockside Monitoring Program – species id

1998 – 5% at sea observer

1999 – area closures for directed fleets

Stock Status

Catch per Unit Effort Indices Hyperstable - Declining



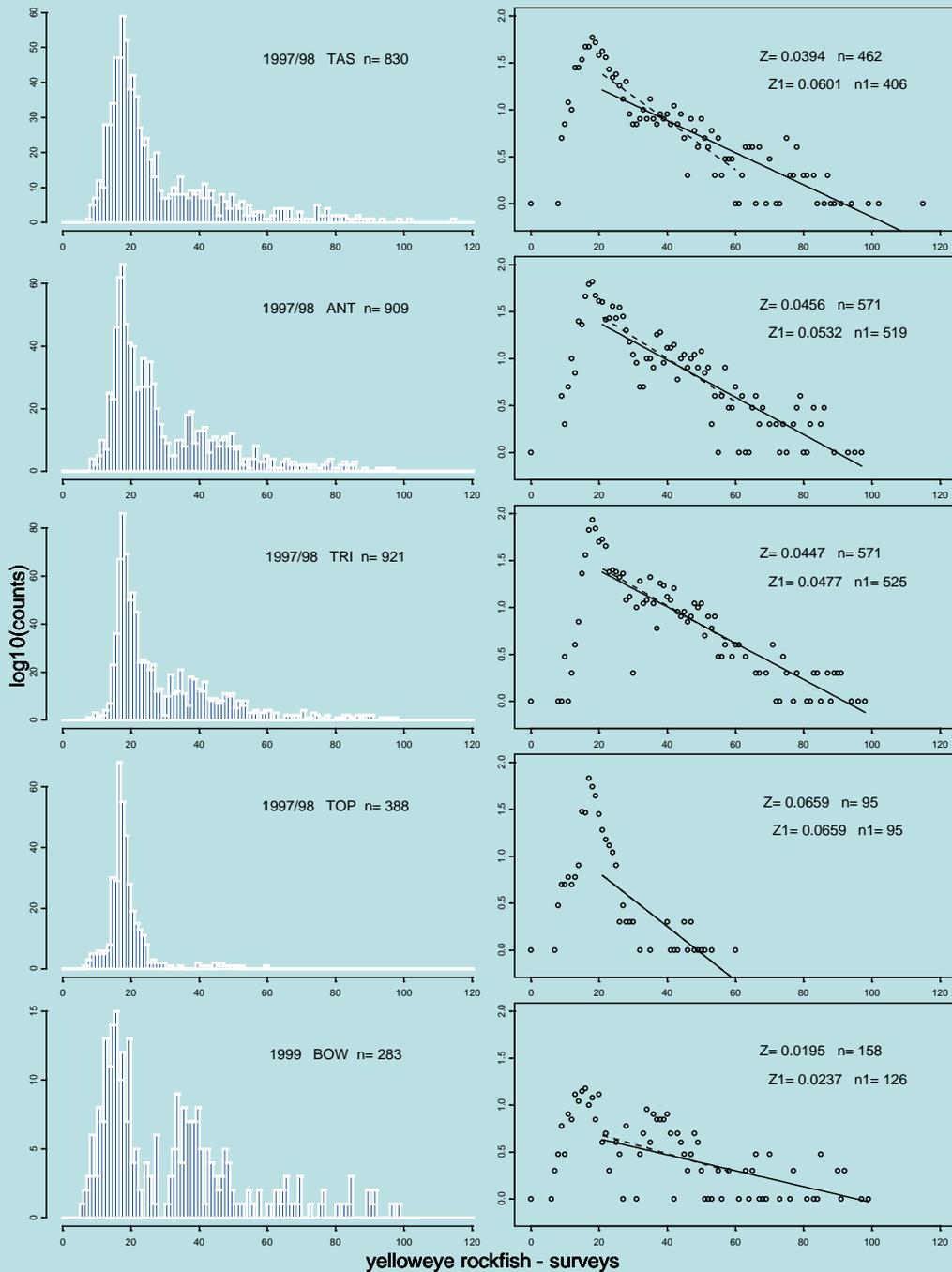
local area depletion

misreporting

declining stocks

high grading

discarding



yelloweye rockfish - surveys

Total Mortality Estimates

Catch curve analysis (Ricker 1973)

Target $F = 0.5 M$

Walters & Parma 1998
 SSC 2001

Current $F \gg 0.5 M$

unsustainable

Inshore Rockfish Conservation Strategy



- account for all catch ???
- reduce fishing mortality ↓ TAC
- establish areas closed to all fishing **where?**
- improve stock monitoring & assessment
- public awareness / education

Multi-stakeholder meeting

- inshore rockfish conservation concern
- introduced the Rockfish Conservation Strategy
- requested input
 - on the Rockfish Conservation Strategy
 - their knowledge to site closed areas
- follow-up meetings with advisory groups

Support for the Rockfish Conservation Strategy

Stakeholders committed to the consultation process

Inshore Rockfish Conservation Strategy



- **account for all catch**
- **reduce fishing mortality**
 - 50 - 75% reduction in TAC
- **establish areas closed to all fishing**
- **improve stock monitoring & assessment**

Closed Areas

- defined as a spatial management tool
- zero mortality of rockfish
- minimize impacts to existing fisheries
- consensus based
- full consultation

Closed Areas

Consultation with stakeholders to site closures

1. identify areas

- *areas important for rockfish

- *areas to conduct other directed fisheries

2. fishery catch data review

- *feedback through advisory groups

- *use of website for comments

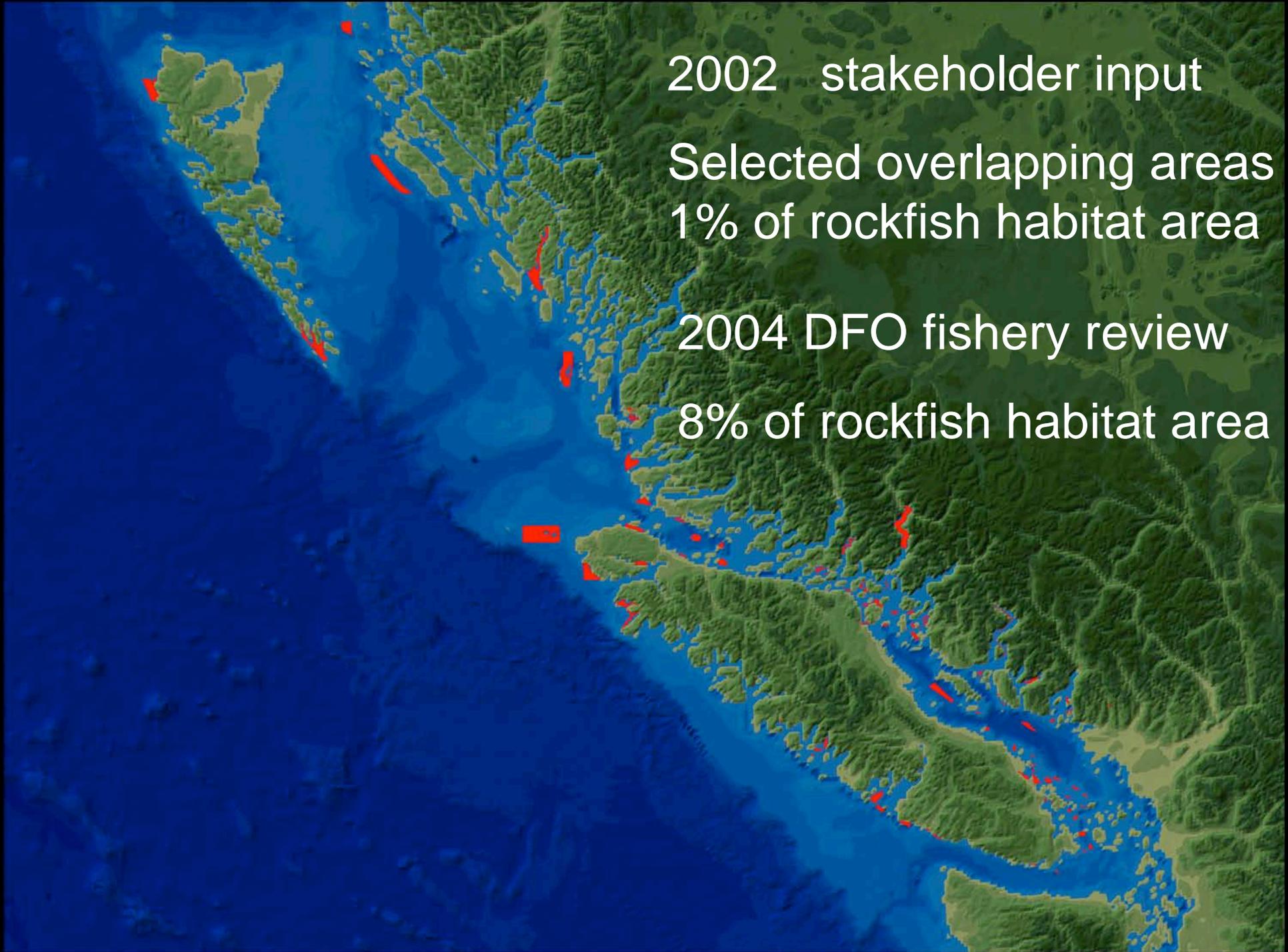
3. Rockfish habitat model (measurement tool)

- *extensive consultations

2002 stakeholder input

Selected overlapping areas
1% of rockfish habitat area





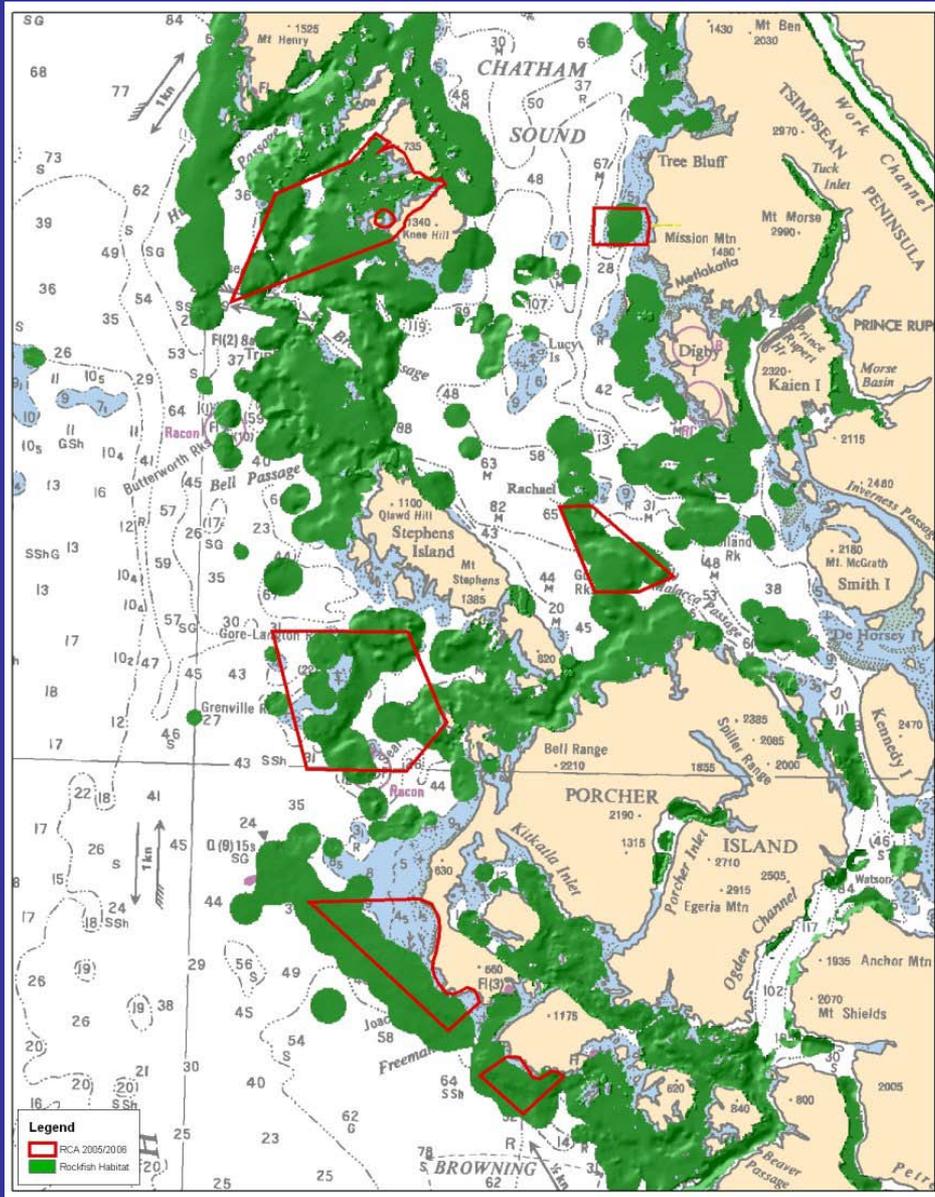
2002 stakeholder input

Selected overlapping areas
1% of rockfish habitat area

2004 DFO fishery review

8% of rockfish habitat area

Rockfish habitat model



Fisher log CPUE
density analysis

Change in slope
bathymetry analysis

Fishing ground +
complex bottom

Rockfish “habitat”

habitat model

2005

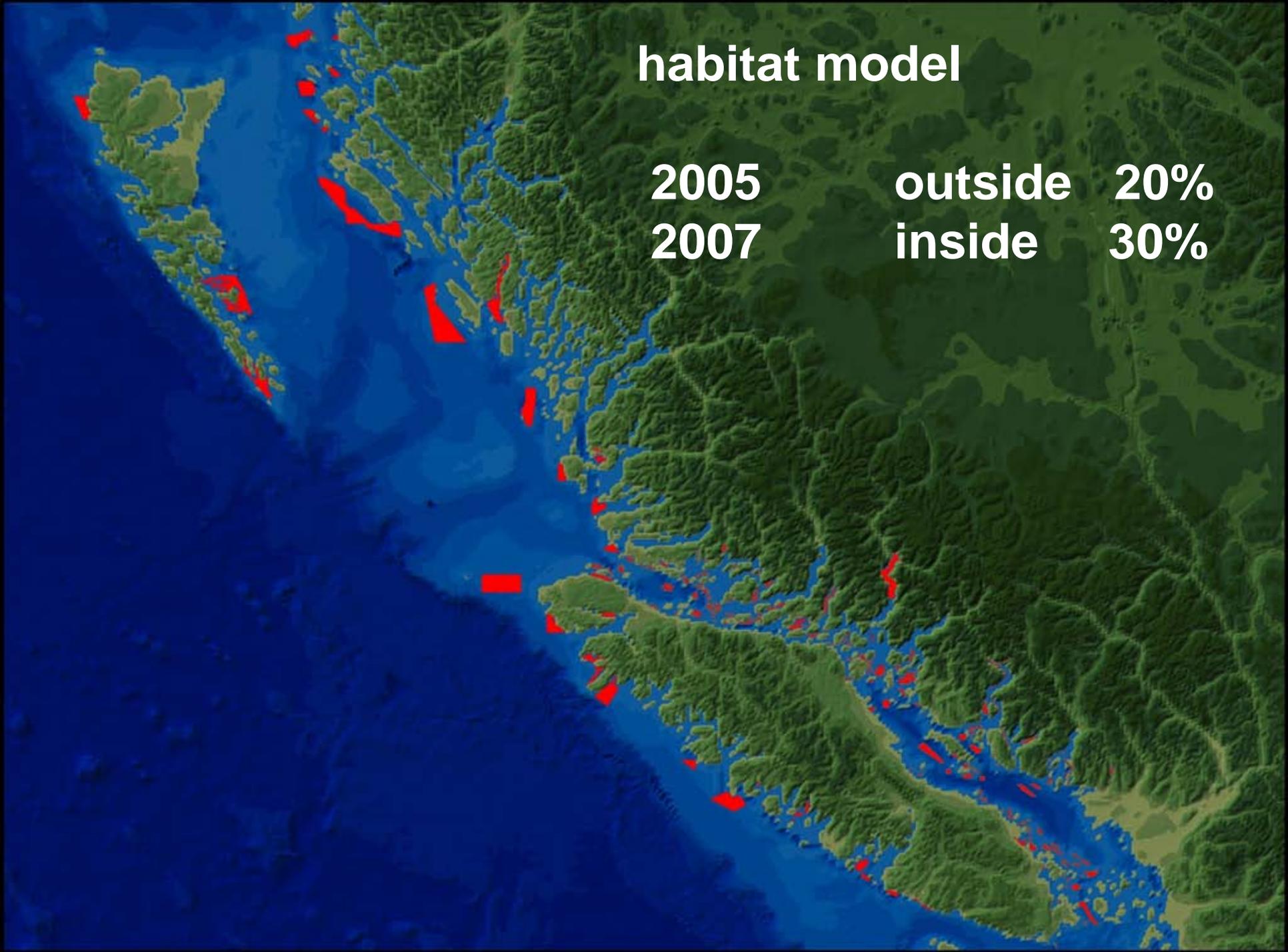
outside

20%

2007

inside

30%



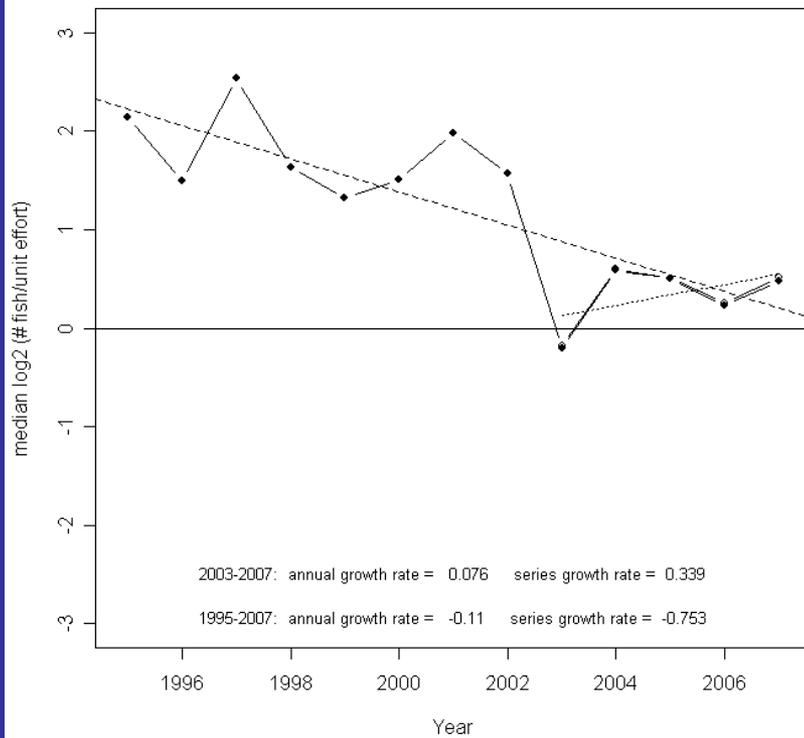
Inshore Rockfish Conservation Strategy



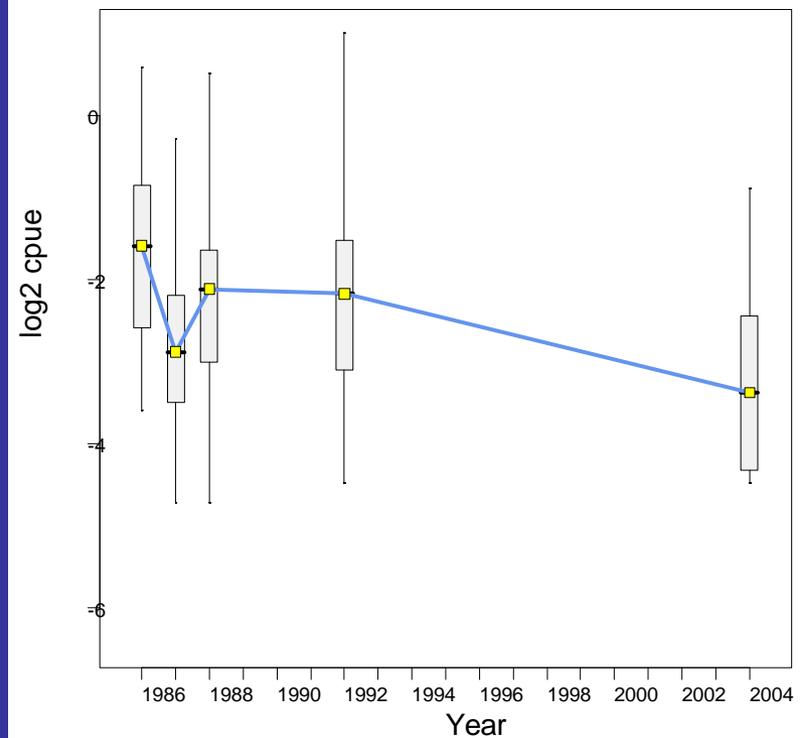
- **account for all catch**
- **reduce fishing mortality**
 - 50 - 75% reduction in TAC**
- **establish areas closed to all fishing**
 - 20% & 30% of rockfish habitat**
- **improve stock monitoring & assessment**

Surveys: data mining with Int. Pacific Halibut Commission

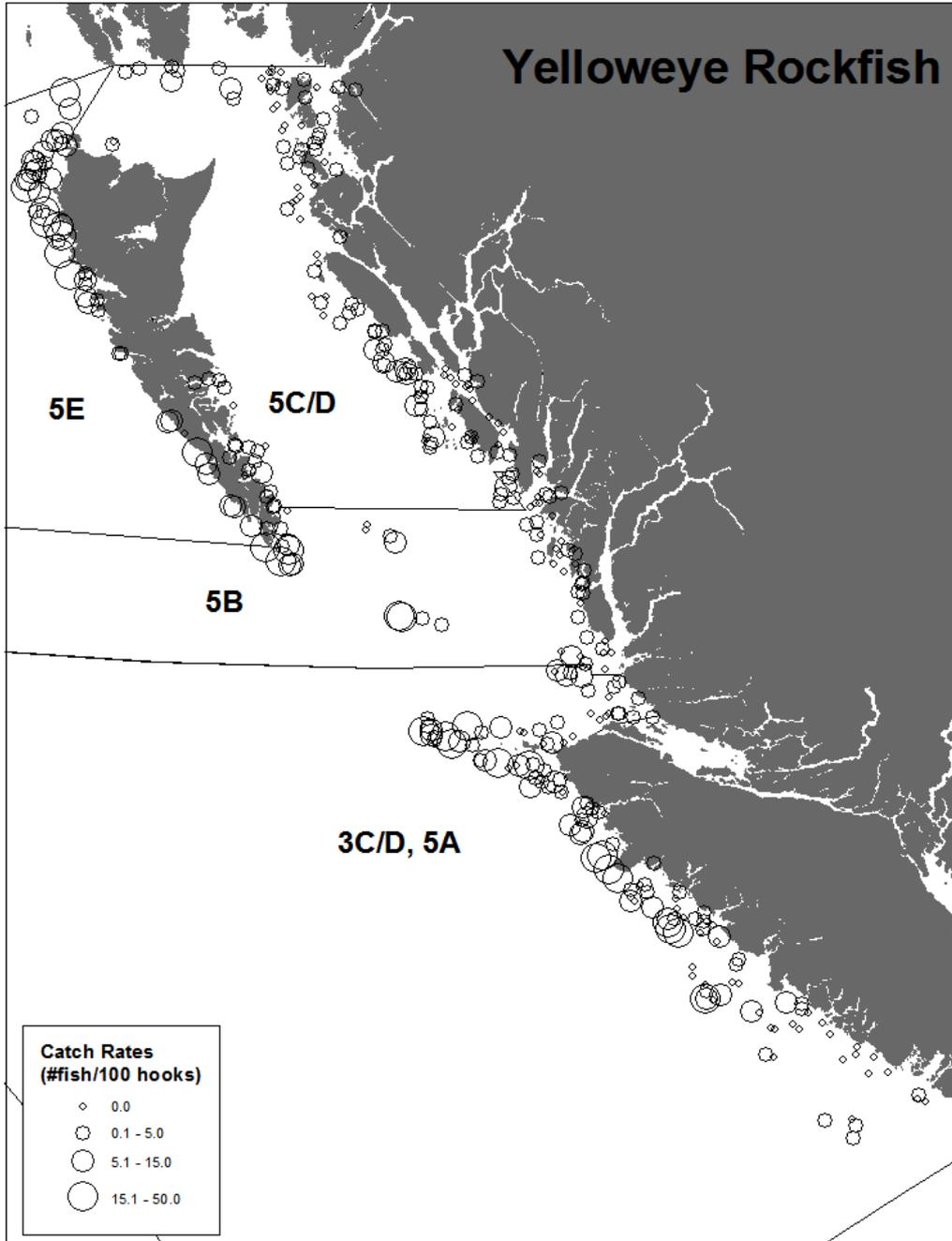
Yelloweye Rockfish



Quillback rockfish



Yelloweye Rockfish



Initiated coastwide
longline surveys in
collaboration with industry

Inshore Rockfish Conservation Strategy



- **account for all catch**
- **reduce fishing mortality**
 - 50 - 75% reduction in TAC
- **establish areas closed to all fishing**
 - 20 - 50% of rockfish habitat
- **improve stock monitoring & assessment**
 - Surveys

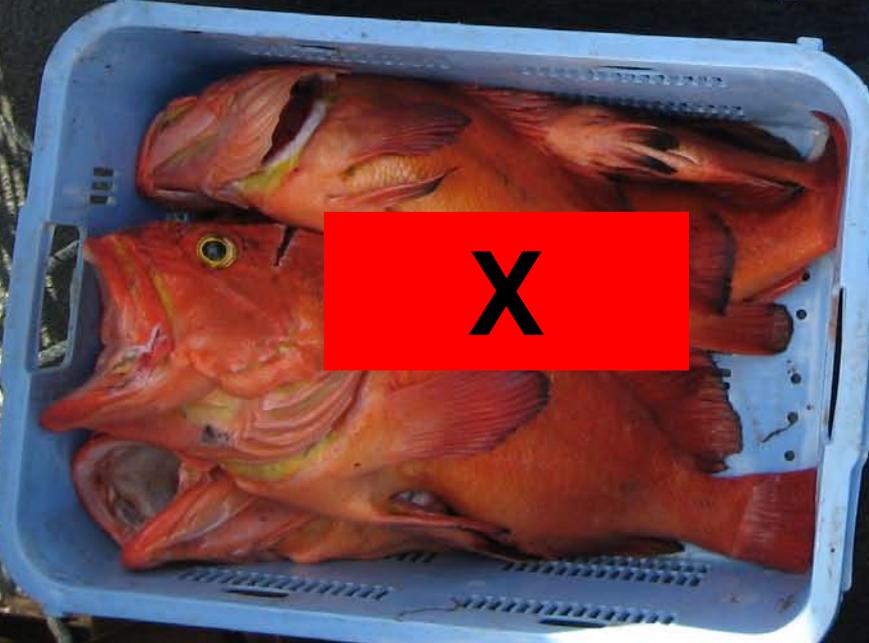
**demersal longline
catch**



OK



X



X



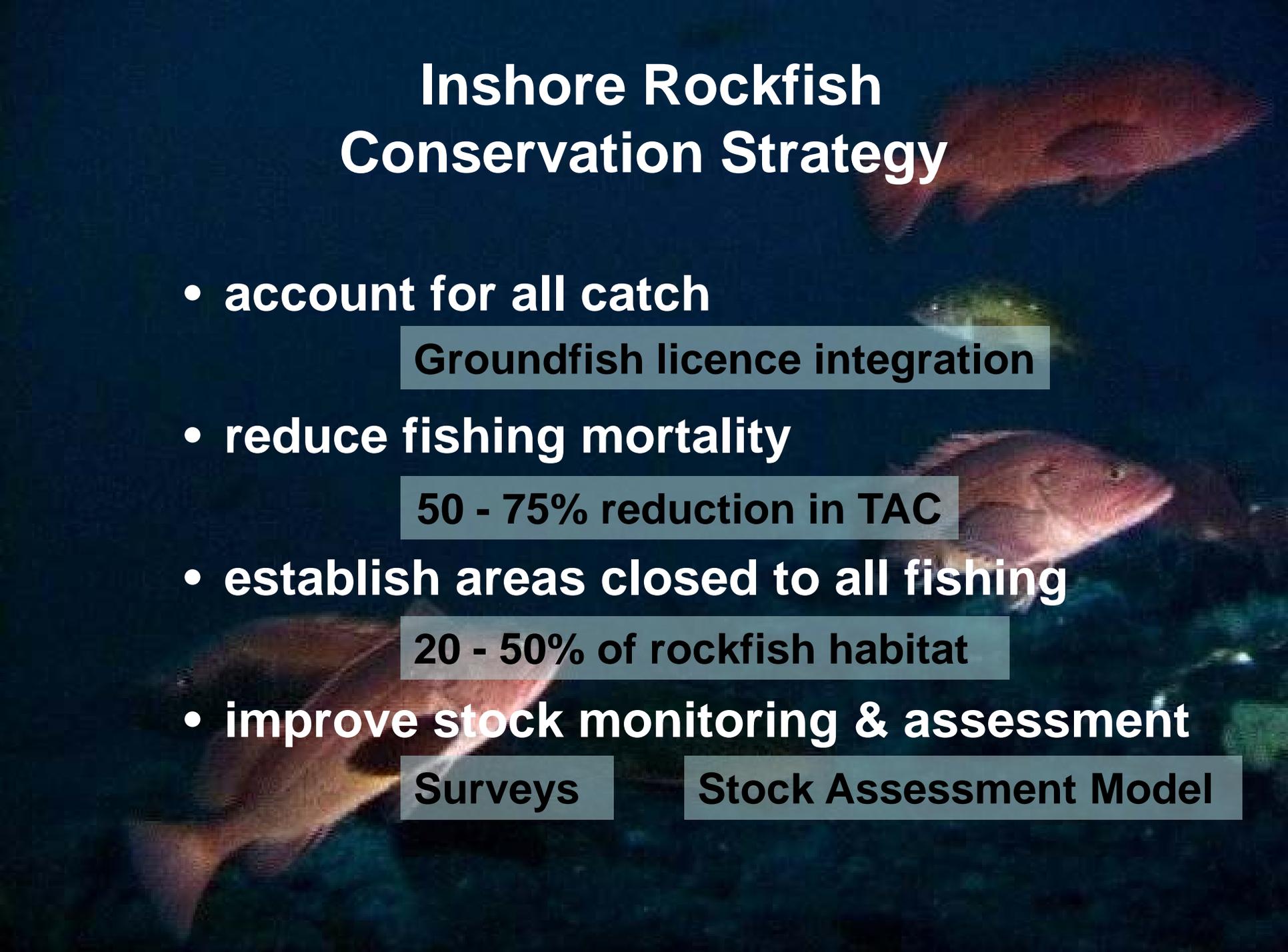
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Catch accounting: Industry driven process

Groundfish Licence Integration Plan - purpose is to eliminate 'bycatch'

- relax license limitations
- individual transferable quotas for species
- quota trading among vessels fleets
- quota trading among fleet sectors
- 100% at-sea monitoring
- 100 % dockside monitoring
- individual accountability for catch

Inshore Rockfish Conservation Strategy



- **account for all catch**

Groundfish licence integration

- **reduce fishing mortality**

50 - 75% reduction in TAC

- **establish areas closed to all fishing**

20 - 50% of rockfish habitat

- **improve stock monitoring & assessment**

Surveys

Stock Assessment Model



better decision making
in management

