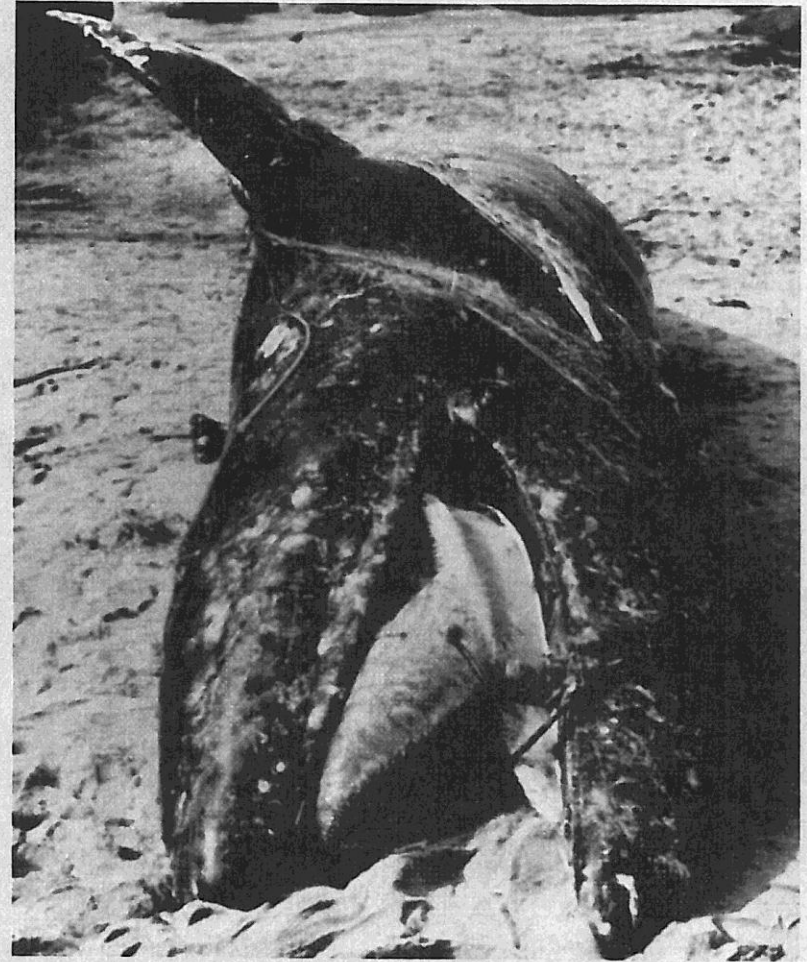


IWC 1990

Symposium
and
Workshop on
the Mortality
of Cetaceans
in Passive
Fishing Nets
and Traps

W.F. Perrin, G.P. Donovan and J. Barlow (eds)

Gillnets and Cetaceans



International
Whaling
Commission

1994

PARTICIPANTS

Argentina	Italy	Russia
Australia	India	South Africa
Belgium	Japan	Sweden
Brazil	Mexico	Spain
Canada	New Zealand	Thailand
Chile	Norway	United Kingdom
China	Pakistan	United States
Denmark	Peru	<i>FAO</i>
France	Philippines	<i>IWC</i>
Hong Kong	Portugal	

TERMS OF REFERENCE

1. Identify and describe new & expanding net and trap fisheries taking cetaceans

TERMS OF REFERENCE

1. Identify and describe new & expanding net and trap fisheries taking cetaceans
2. Investigate how and why entanglement occurs.

TERMS OF REFERENCE

1. Identify and describe new & expanding net and trap fisheries taking cetaceans
2. Investigate how and why entanglement occurs.
3. Estimate mortality and assess impact on populations.

TERMS OF REFERENCE

1. Identify and describe new & expanding net and trap fisheries taking cetaceans
2. Investigate how and why entanglement occurs.
3. Estimate mortality and assess impact on populations.
4. Consider possible ways to mitigate.

WORKING GROUPS

I. Global review of fisheries
(Perrin)

II. Impacts on populations
(Demaster)

III. Causes and solutions? (Lien)

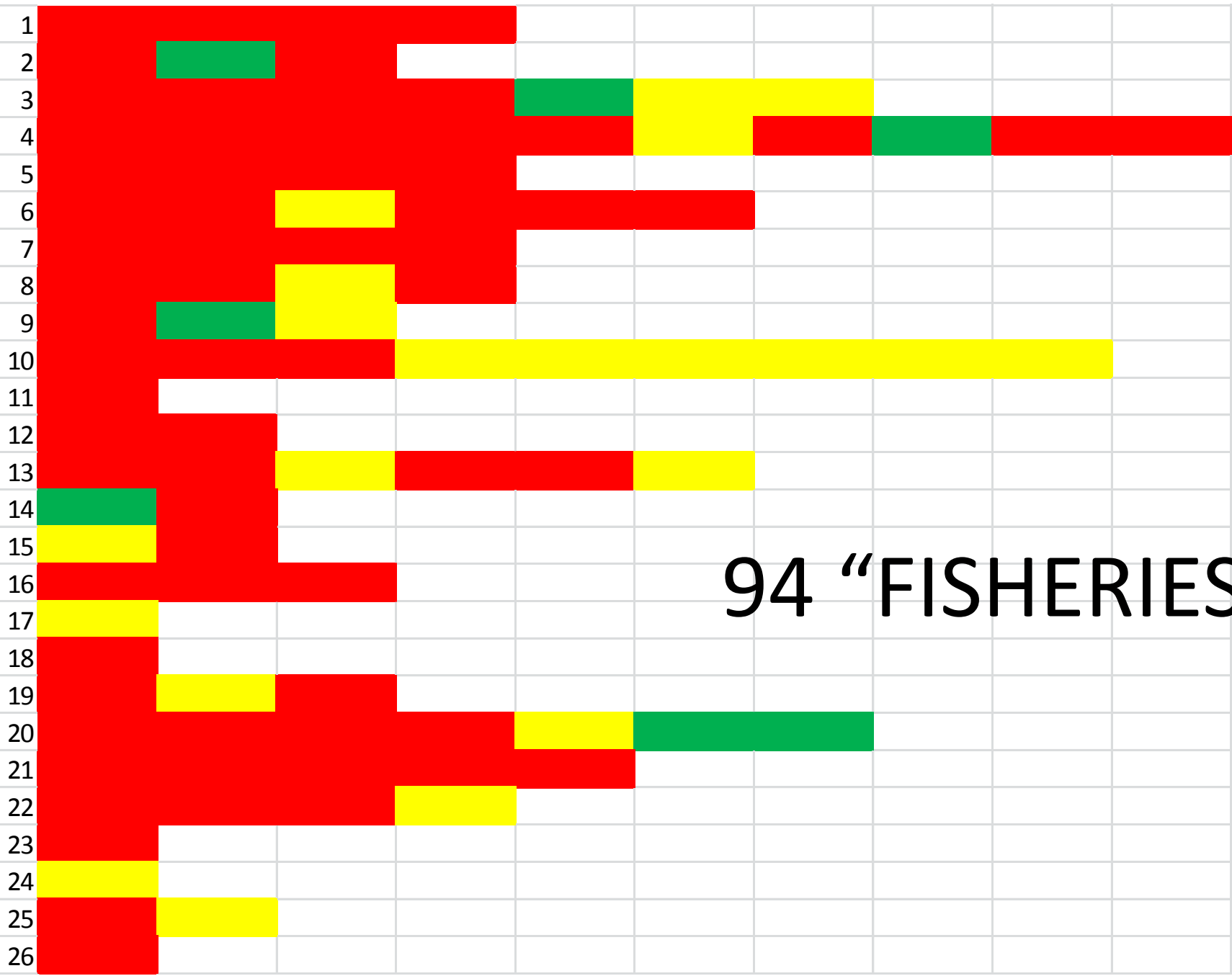


REVIEW OF FISHERIES

26 REGIONS

Region 16 = Japan

Region 8 = Angola, Benin,
Cameroon, Cape Verde, Congo,
Equatorial Guinea, Gabon, Gambia,
Ghana, Guinea, Guinea Bissau, Cote
d'Ivoire, Liberia, Mauretania,
Morocco, Nigeria, Republic of the
Congo, Sao Tome & Principe,
Senegal, Sierra Leone, Togo &
Western Sahara



94 “FISHERIES”

70 RECOMMENDATIONS

- Inventory fisheries.

70 RECOMMENDATIONS

- Inventory fisheries.
- Collect data on fishing effort and bycatch.

70 RECOMMENDATIONS

- Inventory fisheries.
- Collect data on fishing effort and bycatch.
- Use onboard observers to monitor bycatch.

70 RECOMMENDATIONS

- Inventory fisheries.
- Collect data on fishing effort and bycatch.
- Use onboard observers to monitor bycatch.
- Improve understanding of stock identity.

70 RECOMMENDATIONS

- Inventory fisheries.
- Collect data on fishing effort and bycatch.
- Use onboard observers to monitor bycatch.
- Improve understanding of stock identity.
- Estimate cetacean population sizes.

70 RECOMMENDATIONS

- Inventory fisheries.
- Collect data on fishing effort and bycatch.
- Use onboard observers to monitor bycatch.
- Improve understanding of stock identity.
- Estimate cetacean population sizes.
- Build capacity to monitor and assess bycatch.

70 RECOMMENDATIONS

- Inventory fisheries.
- Collect data on fishing effort and bycatch.
- Use onboard observers to monitor bycatch.
- Improve understanding of stock identity.
- Estimate cetacean population sizes.
- Build capacity to monitor and assess bycatch.
- Cooperate internationally.

70 RECOMMENDATIONS

- Inventory fisheries.
- Collect data on fishing effort and bycatch.
- Use onboard observers to monitor bycatch.
- Improve understanding of stock identity.
- Estimate cetacean population sizes.
- Build capacity to monitor and assess bycatch.
- Cooperate internationally.
- Ban large-scale drift-netting.

IMPACTS

For 65 spp./spp. groups, bycatch scored by region/subregion as:

- 1) Unsustainable
- 2) Possibly unsustainable
- 3) Potentially unsustainable
- 4) Minimal impact
- 5) Insignificant impact
- 6) Unknown

IMPACTS

For 65 spp./spp. groups, bycatch scored by region/subregion as:

- 1) Unsustainable 7 (7 spp.)
- 2) Possibly unsustainable
- 3) Potentially unsustainable
- 4) Minimal impact
- 5) Insignificant impact
- 6) Unknown

IMPACTS

For 65 spp./spp. groups, bycatch scored by region/subregion as:

- | | |
|------------------------------|--------------|
| 1) Unsustainable | 7 (7 spp.) |
| 2) Possibly unsustainable | 12 (12 spp.) |
| 3) Potentially unsustainable | |
| 4) Minimal impact | |
| 5) Insignificant impact | |
| 6) Unknown | |

IMPACTS

For 65 spp./spp. groups, bycatch scored by region/subregion as:

- | | |
|------------------------------|--------------|
| 1) Unsustainable | 7 (7 spp.) |
| 2) Possibly unsustainable | 12 (12 spp.) |
| 3) Potentially unsustainable | 35 (21 spp.) |
| 4) Minimal impact | |
| 5) Insignificant impact | |
| 6) Unknown | |

IMPACTS

For 65 spp./spp. groups, bycatch scored by region/subregion as:

1) Unsustainable	7 (7 spp.)
2) Possibly unsustainable	12 (12 spp.)
3) Potentially unsustainable	35 (21 spp.)
4) Minimal impact	12 (8 spp.)
5) Insignificant impact	
6) Unknown	

IMPACTS

For 65 spp./spp. groups, bycatch scored by region/subregion as:

1) Unsustainable	7 (7 spp.)
2) Possibly unsustainable	12 (12 spp.)
3) Potentially unsustainable	35 (21 spp.)
4) Minimal impact	12 (8 spp.)
5) Insignificant impact	19 (14 spp.)
6) Unknown	

IMPACTS

For 65 spp./spp. groups, bycatch scored by region/subregion as:

1) Unsustainable	7 (7 spp.)
2) Possibly unsustainable	12 (12 spp.)
3) Potentially unsustainable	35 (21 spp.)
4) Minimal impact	12 (8 spp.)
5) Insignificant impact	19 (14 spp.)
6) Unknown	88 (58 spp.)

IMPACTS: Conclusions

- Sustainable bycatch rates maybe $\leq 2\%$.

IMPACTS: Conclusions

- Sustainable bycatch rates maybe $\leq 2\%$.
- Management should be conservative, reverse burden of proof.

IMPACTS: Conclusions

- Sustainable bycatch rates may be $\leq 2\%$.
- Management should be conservative, reverse burden of proof.
- Cannot assess impact without systematic collection of data.

IMPACTS: Conclusions

- Sustainable bycatch rates maybe $\leq 2\%$.
- Management should be conservative, reverse burden of proof.
- Cannot assess impact without systematic collection of data.
- Need kill rate, age & sex composition, stock ID, fishing effort, population size.

IMPACTS: Conclusions

- Sustainable bycatch rates maybe $\leq 2\%$.
- Management should be conservative, reverse burden of proof.
- Cannot assess impact without systematic collection of data.
- Need kill rate, age & sex composition, stock ID, fishing effort, population size.
- Coastal fisheries most urgent to address.

WORKING GROUP ON CAUSES AND SOLUTIONS

- Behavior and sensory abilities

WORKING GROUP ON CAUSES AND SOLUTIONS

- Behavior and sensory abilities
- Modifications to existing fishing gear

WORKING GROUP ON CAUSES AND SOLUTIONS

- Behavior and sensory abilities
- Modifications to existing fishing gear
- Alternative technology and management

WORKING GROUP ON CAUSES AND SOLUTIONS

- Behavior and sensory abilities
- Modifications to existing fishing gear
- Alternative technology and management

CAUSES & SOLUTIONS: CONCLUSIONS

- Bycatch in gillnets almost universal.

CAUSES & SOLUTIONS: CONCLUSIONS

- Bycatch in gillnets almost universal.
- No universal cause or solution.

CAUSES & SOLUTIONS: CONCLUSIONS

- Bycatch in gillnets almost universal.
- No universal cause or solution.
- Odontocetes can detect nets, but distracted.

CAUSES & SOLUTIONS: CONCLUSIONS

- Bycatch in gillnets almost universal.
- No universal cause or solution.
- Odontocetes can detect nets, but distracted.
- Behavioral factors contribute to entanglement

CAUSES & SOLUTIONS: CONCLUSIONS

- Bycatch in gillnets almost universal.
- No universal cause or solution.
- Odontocetes can detect nets, but distracted.
- Behavioral factors contribute to entanglement
- Almost no behavioral data on how or when.

CAUSES & SOLUTIONS: CONCLUSIONS

- Bycatch in gillnets almost universal.
- No universal cause or solution.
- Odontocetes can detect nets, but distracted.
- Behavioral factors contribute to entanglement
- Almost no behavioral data on how or when.
- In some cases, only answer to ban fishery.

CAUSES & SOLUTIONS: CONCLUSIONS

- Bycatch in gillnets almost universal.
- No universal cause or solution.
- Odontocetes can detect nets, but distracted.
- Behavioral factors contribute to entanglement
- Almost no behavioral data on how or when.
- In some cases, only answer to ban fishery.
- Some promising approaches & research areas.

III. CAUSES & SOLUTIONS: CONCLUSIONS

- Bycatch in gillnets almost universal.
- No universal cause or solution.
- Odontocetes can detect nets, but distracted.
- Behavioral factors contribute to entanglement
- Almost no behavioral data on how or when.
- In some cases, only answer to ban fishery.
- Some promising approaches & research areas.
- Fishermen need to be educated on impacts.



MOST PROMISING:
TIME/AREA CLOSURES AND BANS

CAUSES & SOLUTIONS: PRIORITIES IN RESEARCH

- Focus on urgent cases.

CAUSES & SOLUTIONS: PRIORITIES IN RESEARCH

- Focus on urgent cases.
- Investigate behavioral factors.

CAUSES & SOLUTIONS: PRIORITIES IN RESEARCH

- Focus on urgent cases.
- Investigate behavioral factors.
- Monitor time/area closures.

CAUSES & SOLUTIONS: PRIORITIES IN RESEARCH

- Focus on urgent cases.
- Investigate behavioral factors.
- Monitor time/area closures.
- Explore gear modifications.

CAUSES & SOLUTIONS: PRIORITIES IN RESEARCH

- Focus on urgent cases.
- Investigate behavioral factors.
- Monitor time/area closures.
- Explore gear modifications.
- Investigate environmental and ecological factors.

CAUSES & SOLUTIONS: PRIORITIES IN RESEARCH

- Focus on urgent cases.
- Investigate behavioral factors.
- Monitor time/area closures.
- Explore gear modifications.
- Investigate environmental and ecological factors.
- Before technological change, assess likely impacts.

WHAT HAS HAPPENED IN THE 21
YEARS SINCE THE IWC CONFERENCE?



WHAT HAS HAPPENED IN THE 21 YEARS SINCE THE IWC CONFERENCE?

- More fisheries inflicting bycatch identified
- Progress in use of pingers
- Making nets more acoustically visible
- Other modifications of gear and practices
- Behavioral research
- Regulatory fixes (including time/area closures)
- Successes in reducing bycatch

WHAT HAS HAPPENED IN THE 21 YEARS SINCE THE IWC CONFERENCE?

- More fisheries inflicting bycatch identified
- Progress in use of pingers
- Making nets more acoustically visible
- Other modifications of gear and practices
- Behavioral research
- Regulatory fixes (including time/area closures)
- Successes in reducing bycatch

WHAT HAS HAPPENED IN THE 21 YEARS SINCE THE IWC CONFERENCE?

- More fisheries inflicting bycatch identified
- Progress in use of pingers
- Making nets more acoustically visible
- Other modifications of gear and practices
- Behavioral research
- Regulatory fixes (including time/area closures)
- Successes in reducing bycatch

WHAT HAS HAPPENED IN THE 20 YEARS SINCE THE IWC CONFERENCE?

- More fisheries inflicting bycatch identified
- Progress in use of pingers
- Making nets more acoustically visible
- Other modifications of gear and practices
- Behavioral research
- Regulatory fixes (including time/area closures)
- Successes in reducing bycatch

WHAT HAS HAPPENED IN THE 21 YEARS SINCE THE IWC CONFERENCE?

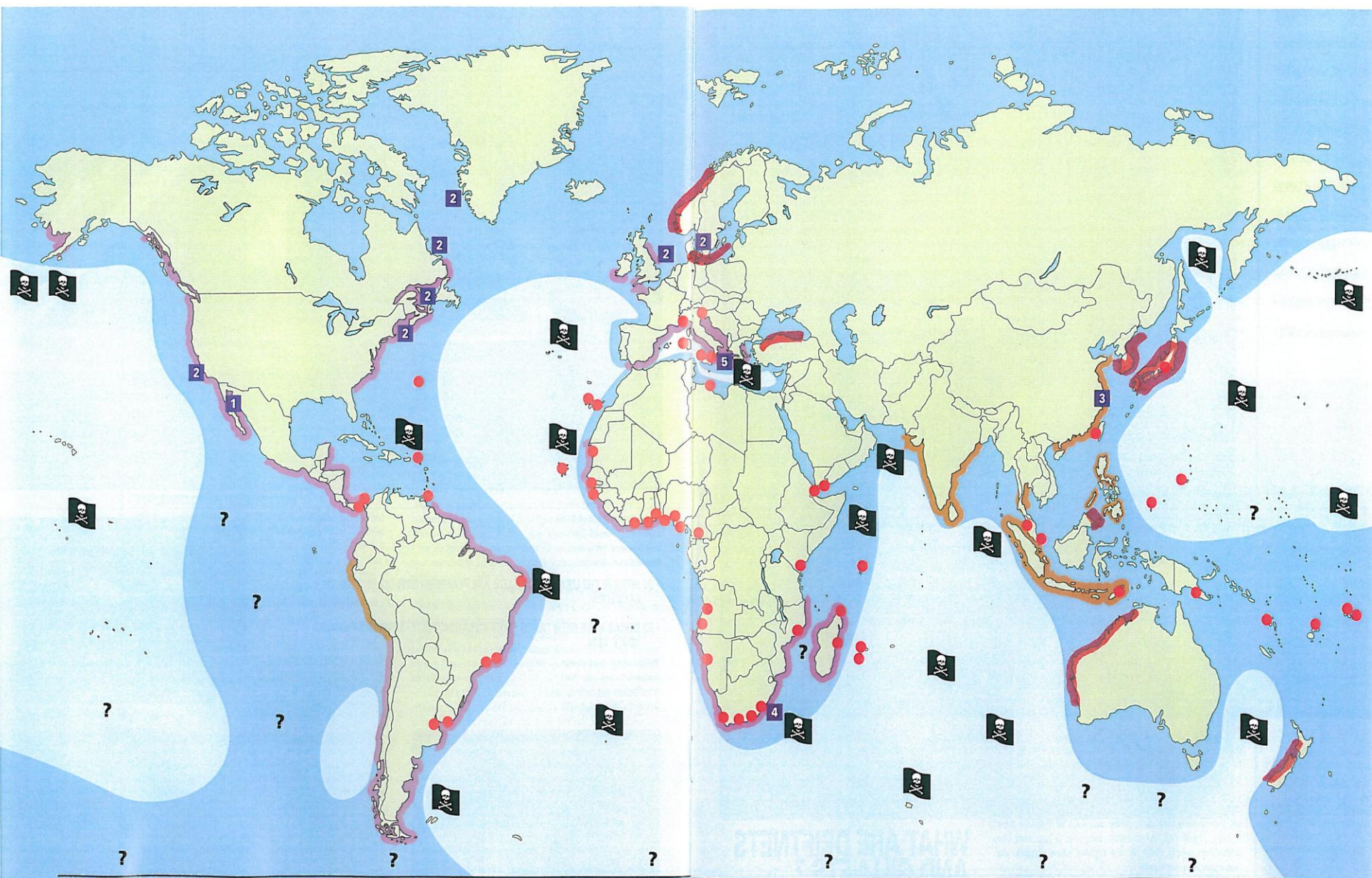
- More fisheries inflicting bycatch identified
- Progress in use of pingers
- Making nets more acoustically visible
- Other modifications of gear and practices
- Behavioral research
- Regulatory fixes (including time/area closures)
- Successes in reducing bycatch

WHAT HAS HAPPENED IN THE 21 YEARS SINCE THE IWC CONFERENCE?

- More fisheries inflicting bycatch identified
- Progress in use of pingers
- Making nets more acoustically visible
- Other modifications of gear and practices
- Behavioral research
- Regulatory fixes (including time/area closures)
- Successes in reducing bycatch

WHAT HAS HAPPENED IN THE 21 YEARS SINCE THE IWC CONFERENCE?

- More fisheries inflicting bycatch identified
- Progress in use of pingers
- Making nets more acoustically visible
- Other modifications of gear and practices
- Behavioral research
- Regulatory fixes (including time/area closures)
- Successes in reducing bycatch



Areas of Pirate driftnetting

?

Suspected areas of Pirate driftnetting



Other areas of driftnetting



Taiwanese fishing
bases worldwide

2

IWC symposium priority species



IWC symposium priority regional



Other areas where gillnets are

WHY FINGERS WON'T WORK!



(Dawson, Perrin, Read and others, 1990s)

WHY PINGERS WON'T WORK!

If entanglement is not survivable, it cannot be a learning experience.

(Dawson, Perrin, Read and others, 1990)

WHY PINGERS WON'T WORK!

If entanglement is not survivable, it cannot be a learning experience.

When distracted by foraging, animals may not perceive the net or see it as an impassible barrier.

(Dawson, Perrin, Read and others, 1990)

WHY PINGERS WON'T WORK!

If entanglement is not survivable, it cannot be a learning experience.

When distracted by foraging, animals may not perceive the net or see it as an impassible barrier.

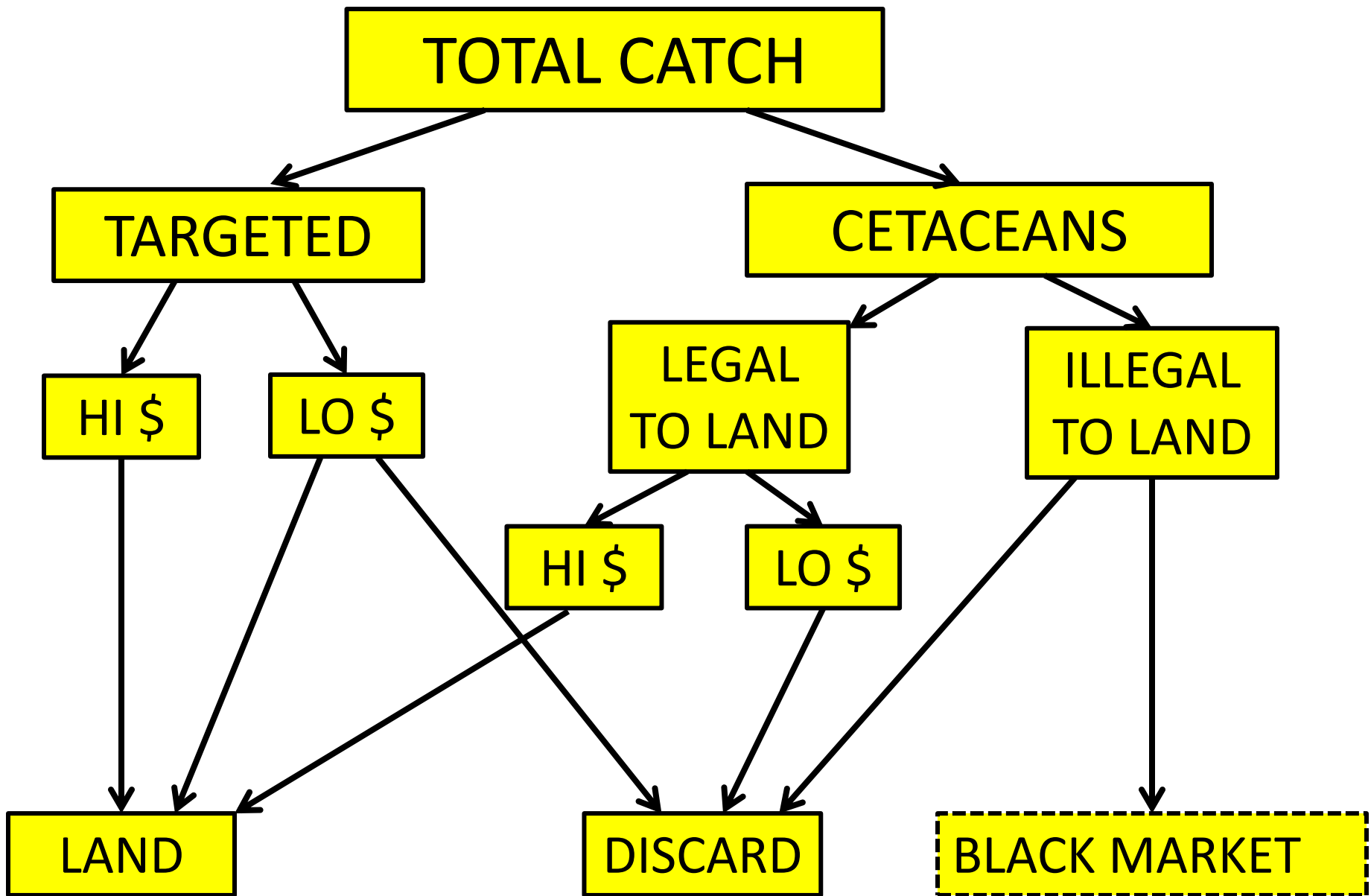
Even if sounds repel, entanglement may re-occur after initial drop, due to habituation.

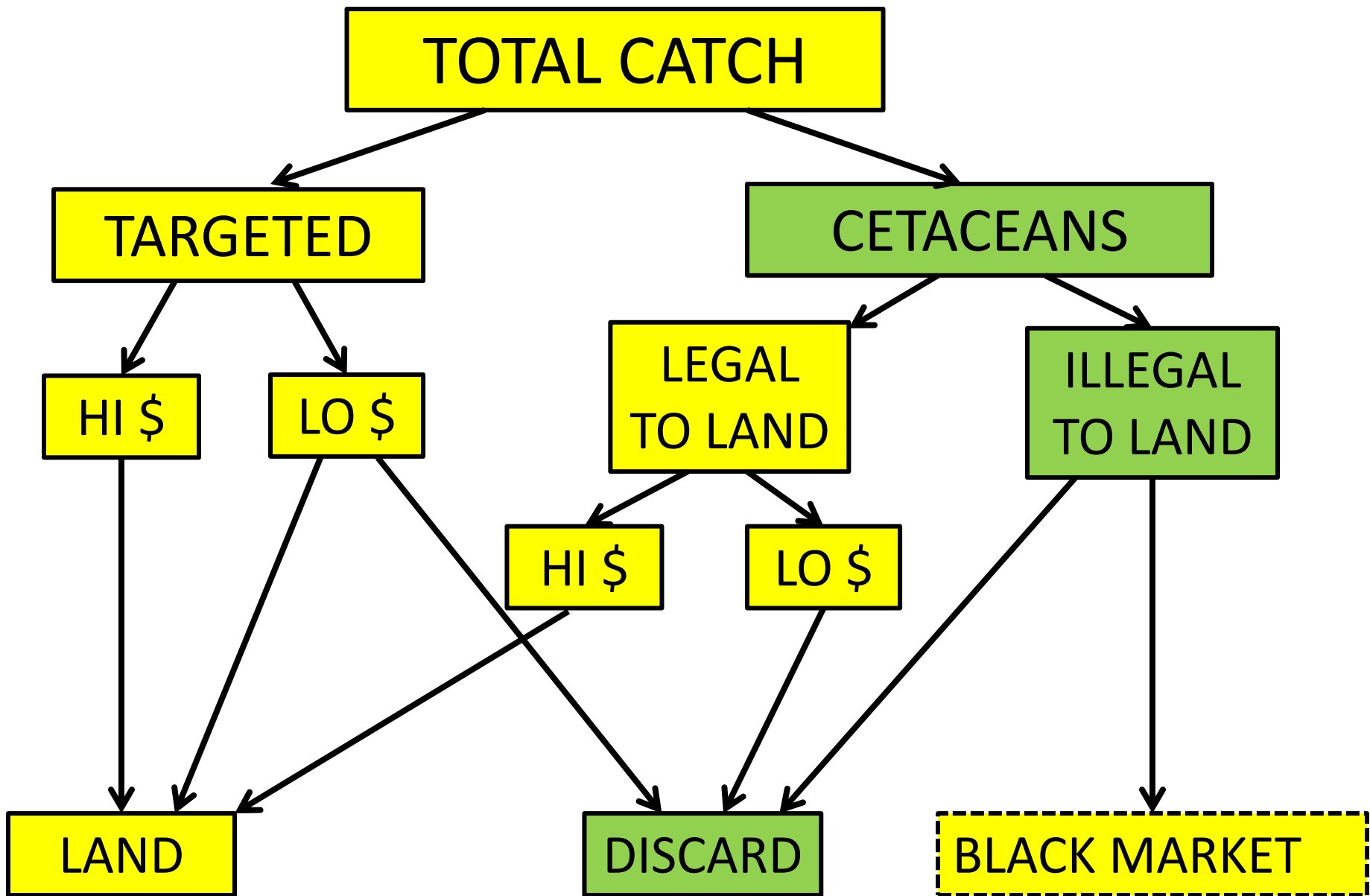
(Dawson, Perrin, Read and others, 1990)



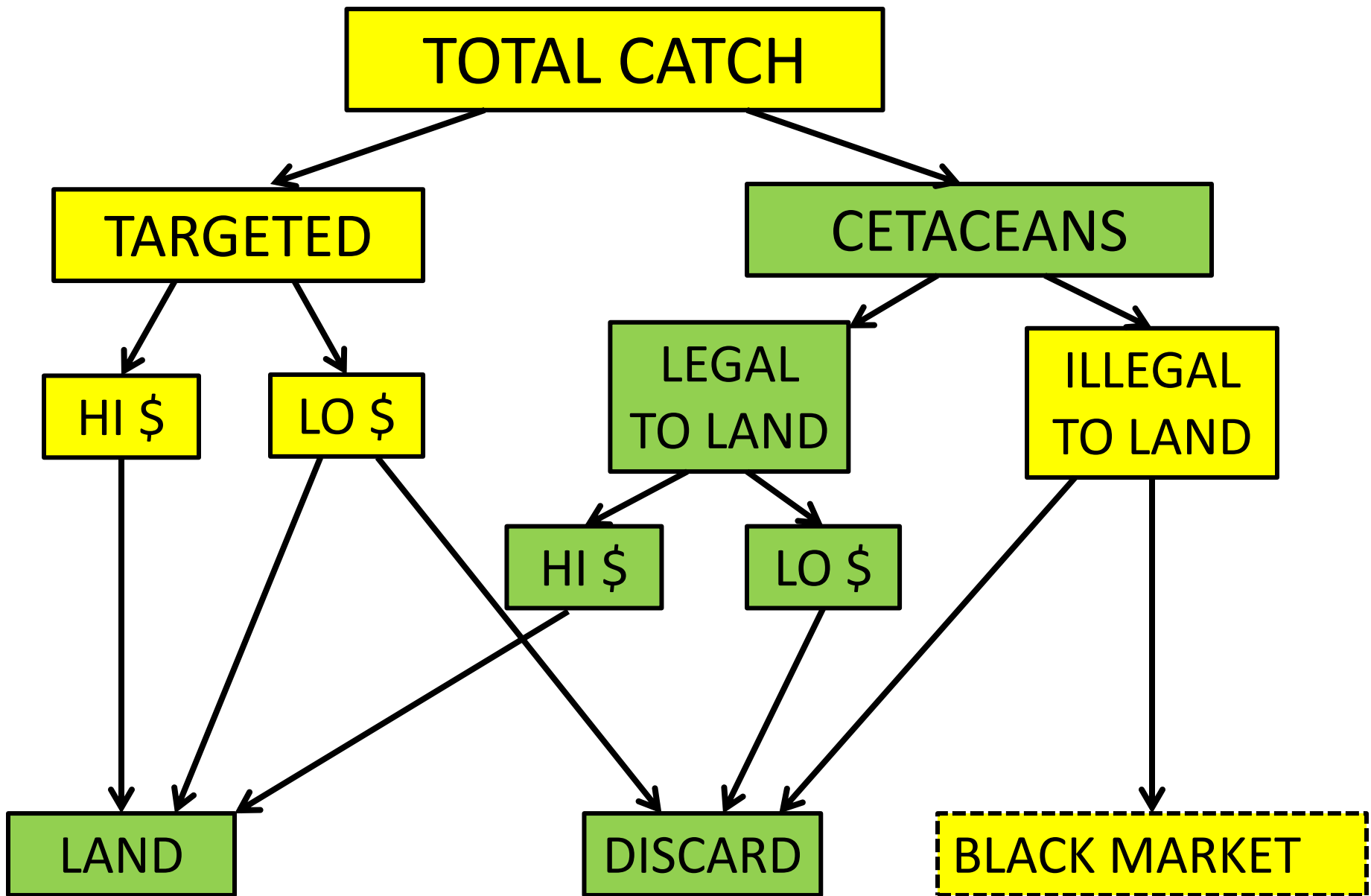
OTHER CONCERNS

- Reduced fish catch?
- Dinner-bell effect?
- Sound-saturation of habitat?
- Compliance?

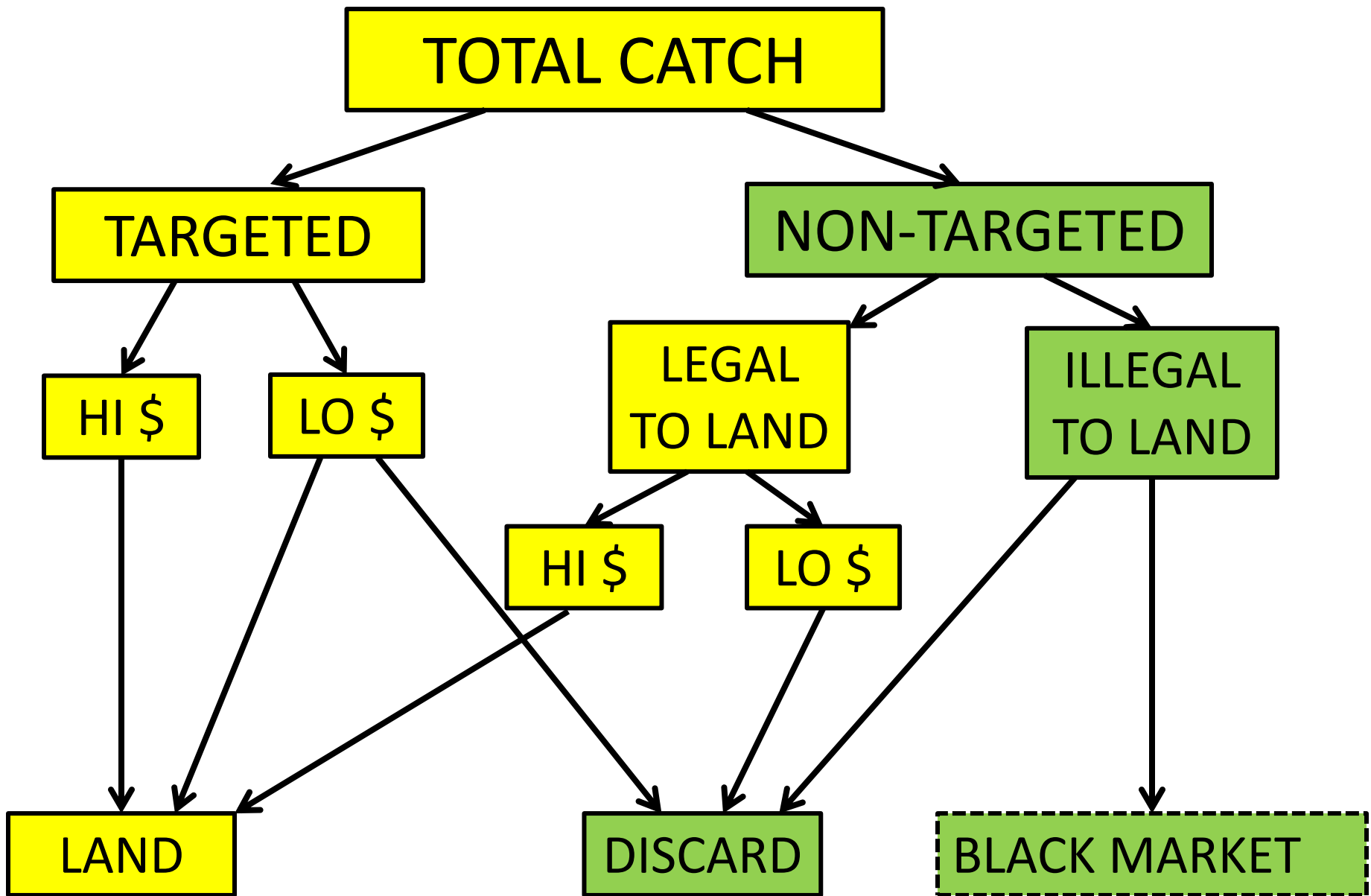




MOST DEVELOPED COUNTRIES



DEVELOPING COUNTRIES WITH NO PROTECTION



DEVELOPING COUNTRIES WITH PROTECTION

