

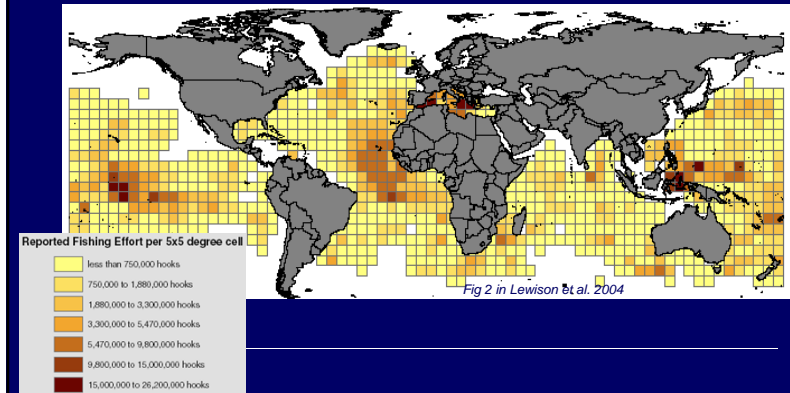
## Pelagic Longline

### Fishing Procedures & Gear



## Introduction

- Pelagic longlining is global



## Objectives

- Describe pelagic longline process
- List 1 potential impact
- Describe 3 components of pelagic longline gear
- List 2 types of specialized equipment you may encounter
- Demonstrate ability to complete the Gear Description form

## What is pelagic longlining?

- Hook & line gear – uses bait to attract fish in pelagic zone
- Pelagic = open ocean (usu. <250m fishing depth)

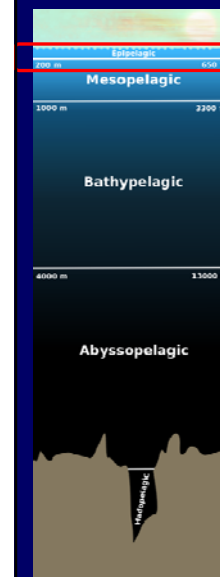


Image: [http://en.wikipedia.org/wiki/Pelagic\\_zone](http://en.wikipedia.org/wiki/Pelagic_zone)

## What is pelagic longlining?

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- Primary targets: tuna, swordfish, sharks



Images: Chapman 2006

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Images: Beverly 2009

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- Primary targets: tuna, swordfish, sharks
- Bait = fish or squid depending on target
- Fishery impacts – bycatch of turtles, seabirds, sharks



<http://ccma.nos.noaa.gov>

Nicolas Gasco

F. Arce

## Data collection priorities

1. Estimate effort for each gear deployment;
2. Identify every individual caught on each set and assess catch condition and fate;
3. Collect biological information on target and other identified species as requested;
4. Record all sightings and interactions with marine mammals and sea turtles;
5. **Record vessel and fishing gear characteristics.**

## How is gear fished?

- Strategies

Atlantic Ocean Sea Surface Temperature  
April 18 2010 to April 24 2010

Sea Surface Height (cm)  
HYCOM Nowcast 0000 UTC 28 July 2008

Optimum Interpolation  
Version 2 (OIv2) is  
based on satellite,  
ship, and buoy data.

<http://www.cpc.noaa.gov/>

<http://www.meted.ucar.edu>

NRL, U.S. Navy

## How is gear fished?

- Strategies
- Deployment

PELAGIC LONGLINE

RADIO BEACON

BUOY LINES

MAIN LINE

SHOODS

BALLED HOOKS

Photo: Kim Dietrich, Cape Town, 2010

[www.montereybayaquarium.org](http://www.montereybayaquarium.org)

## How is gear fished?

- Strategies
- Deployment
- Retrieval
- Video

<http://www.frpboat.cn/fishing-2998.asp>

## Gear components - overview

Radar reflector / Hi-flyer

Float / Buoy

Radio Beacon

Float line / Buoy line

Dropper

Mainline

Basket

Branchline / Gangion / Snood

Dropper

Drawing modified from Hanrahan et al. 1997

## Gear components - mainline

**MONOFILAMENT LONGLINE - MAIN LINE**  
**YM WORLD PrimeLine BRAND**



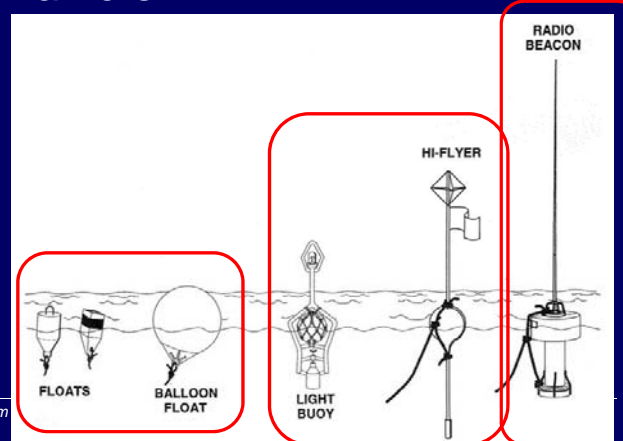
**Monofilament Braided Hi-Tec Main Line**



**8 Braided & 12 Braided Line**



## Gear components – gear markers



Drawing modified from Hanrahan et al. 1997

## Gear components - branchline


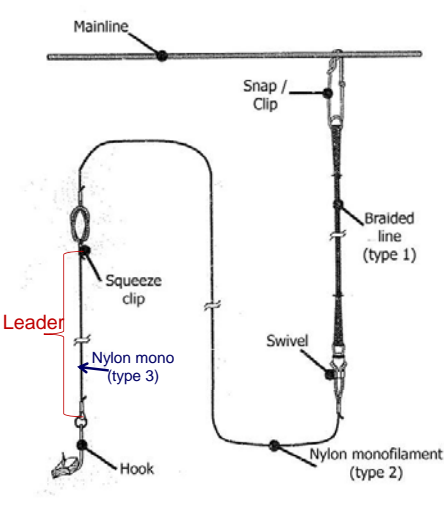



Photo: Kim Dietrich, Cape Town 2010




Drawing modified from Hanrahan et al. 1997

## Swivels (Beverly 2009)





Snap (clip; [www.leadertec.com](http://www.leadertec.com))


  
Eight swivel


  
Crane swivel


  
Bullet swivel

  
Futaba swivel

  
BL swivel

  
Leaded swivel

  
Barrel swivel

  
Box swivel

## Gear components - hooks

**Tuna**

**Circle**

**J-hook**

Offset hook    Non-offset hook

Hook image modified from Beverly 2006, 2009                      Offset image: Beverly 2009

## Gear components – other fish attracting devices

**Chemical lights**

**Glow beads**

## Gear – deployment devices

Line setter

Bait caster

Photo: K. Dietrich, 2012

Drawing: BirdLife International 2010

## Gear – retrieval devices

Line hauler

Branchline coiler

Mainline drum

[video](#)

## Gear – seabird mitigation



Australia Department of Agriculture, Fisheries & Forestry



Davit / tori pole



Photo: Washington Sea Grant

## Gear – seabird mitigation



Streamer curtain



Water cannon

Drawings: BirdLife International - Bycatch Mitigation Fact Sheet 12

### Gear Description - Pelagic Longline

Observer code	Vessel code	Trip ID
---------------	-------------	---------

Lines	Type	Material	Diameter (mm)	Breaking strength (kg)	# strands	Color	Comments
	Mainline	1	↑				
Mainline	2						
Floatline	1						
Floatline	2						
Branchline	1						
Branchline	2						
Branchline	3						
Branchline	4						


**Material Codes**

1 Monofilament	4 Steel wire
2 Multifilament / -strand	5 Other: _____
3 Cotton / natural fiber	

**Color codes**

1 White	4 Green	7 Clear	10 Other
2 Pink	5 Blue	8 Orange	11 Multi-color
3 Black	6 Red	9 Yellow	

Hooks	Type	Manufacturer	Model/pattern	Size	Material	Offset



(Note diameter / Noter le diamètre)






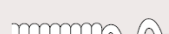
	Monofilament line / Ligne monofilament
	Galvanized wire / Câble galvanisé
	Stainless steel wire / Câble en acier inoxydable
	3 strand tarred rope (red or black) / Cordage goudronné à trois tors (rouge ou noir)
	Braided line / Cordage tressé
	Sekiyama wire / Fil Sekiyama

Image: Beverly 2009

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Observer code	Vessel code	Trip ID				
---------------	-------------	---------	--	--	--	--

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Mainline	1		↑	↑	↑	↑	
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	1		↑			
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--	---

Hooks	Type	Manufacturer	Model/pattern	Size	Material	Offset
	1		↑			
	2					
	3					
	4					

**Model/pattern types**

Tuna J-hook Circle Other (describe): \_\_\_\_\_

**Gear Deployment Location**

Stern       Propeller up-wash  
 Stbd, distance from stern \_\_\_\_\_m       Propeller down-wash  
 Port, distance from stern \_\_\_\_\_m

Other Equipment		Usage
Mainline hauler	Y / N	
Branchline hauler / collar	Y / N	
Line shooter	Y / N	
Bait caster	Y / N	
Weighing scales	Y / N	
Other:	Y / N	
Other:	Y / N	
Other:	Y / N	
Other:	Y / N	

**Usage Codes**

- 1 Used continuously during fishing
- 2 Used often during fishing
- 3 Used sometimes during fishing
- 4 Broken during this trip but used normally
- 5 Rarely used
- 6 Used only during transit
- 7 No longer used
- 8 Unknown

**Seabird Mitigation**

Describe all techniques and equipment to deter birds from hooks during the set (e.g. streamer lines) and haul (e.g. bird curtain). Include diagrams with measurements of streamer lines and other equipment as necessary.

Set

Haul

Comments

**Seabird Mitigation**

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Set

Haul

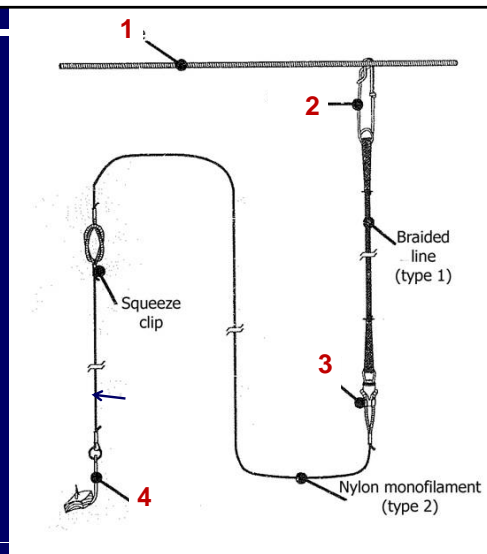
Comments

## Gear Description Form

- Questions about gear or the gear form?
- Practice exercise
  - Groups of 2
  - 15 minutes to complete Gear Description Form

## Summary

- Describe pelagic longlining
- What are the potential impacts of this fishery?



Drawing modified from Hanrahan et al. 1997

## Summary

- Describe pelagic longlining
- What are the potential impacts of this fishery?
- Describe 4 components of pelagic longline gear
- List 2 types of specialized equipment you may encounter on pelagic longline vessels





## References

- Beverly, S. 2006. Hooks used in longline fishing. *SPC Fisheries Newsletter* **117:45-48**.
- Beverly, S. 2009. Longline terminal gear Identification guide - Draft. Submitted to the Western and Central Pacific Fisheries Commission, Scientific Committee, Fifth Regular Session, 10-21 August 2009, Port Vila, Vanuatu, WCPFC-SC5-2009/FT-IP-01, Secretariat of the Pacific Community, Marine Resources Division, Coastal Fisheries Programme, Noumea Cedex, New Caledonia.
- BirdLife International Bycatch Mitigation Fact Sheet 11 (Version 1)
- BirdLife International Bycatch Mitigation Fact Sheet 12 (Version 1)
- Chapman, L., P. Sharples, D. Brogan, A. Desurmont, S. Beverly, and W. Sokimi. 2006. Marine species identification manual for horizontal longline fishermen. Secretariat of the Pacific Community, New Caledonia.
- Hanrahan, J., D. J. Melindy, and J. V. Pelrine. 1997. At-sea Observer Program Operations Manual: A Training Aid and Field Reference. National At-sea Fisheries Observer Program, Department of Fisheries and Oceans, Ottawa, Canada.
- Lewison, R. L., S. A. Freeman, and L. B. Crowder. 2004. Quantifying the effects of fisheries on threatened species: the impact of pelagic longlines on loggerhead and leatherback sea turtles. *Ecology Letters* **7:221-231**.

February 7, 2013

### Activity - Gear Description Form

Use your manual, the gear we're passing out, and the information below to complete the Gear Description form.

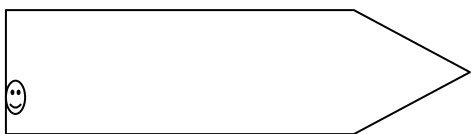
Your observer code is Y2473 and you are aboard the f/v Sunny Days (code 00555). This is trip 347.

The vessel is using 4mm monofilament mainline. The color is clear and the captain tells you the breaking strength is 0.8 metric tons. For the floatline, they're using yellow 3-strand polyester. The floatline is 5mm in diameter and has a breaking strength of 500 kg.

There are three branchline materials from the snap to the hook.

1. solid braided nylon line - 500lb test (or breaking strength)
2. 2.25mm, 600lb test monofilament
3. 1.56mm, 300 lb test monofilament

The smiley face in the diagram below indicates the location of the setting station and the gear is being deployed into the downwash.



The vessel uses a mainline hauler, line shooter and bait launcher every set. They also have a branchline coiler but it broke on July 7 so was only used for ~40% of the time you were on board. The vessel occasionally deployed a 100m rubber hose astern of the vessel as a seabird deterrent. The hose was drug at the surface during gear deployment. The hose was yellow and ~1cm in diameter. There was an orange road cone with float attached to the end for drag.

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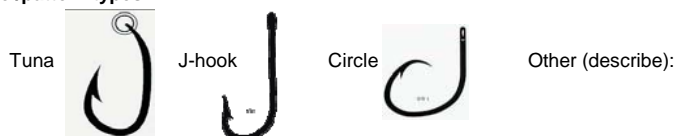
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	2					
	3					
	4					

**Model/pattern types**



**Gear Deployment Location**

- |  |  |
|--|--|
| <input type="checkbox"/> Stern<br><input type="checkbox"/> Stbd, distance from stern _____ m<br><input type="checkbox"/> Port, distance from stern _____ m | <input type="checkbox"/> Propeller up-wash<br><input type="checkbox"/> Propeller down-wash |
|--|--|

## Other Equipment

	Usage
Mainline hauler	Y / N
Branchline hauler / coiler	Y / N
Line shooter	Y / N
Bait caster	Y / N
Weighing scales	Y / N
Other:	Y / N
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