Mortality Rates used in Council Fisheries Management Plans for Angler-Caught and Released Fish

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FishSmart Barotrauma Workshop

March 15, 2011

Objective

- Consolidate information on how release mortality is being applied to marine fisheries management.
- Provide an inventory of known information and assumed information
- Not a comprehensive literature review of barotrauma.

Methods

- Email sent from ASMFC Executive Director requesting information
- Follow up emails
- Searching Council FMPs and stock assessments
- Added select information from other marine fisheries (FMPs and stock assessments).

New England Release Mortality Used in Fishery Management Plan or Models

Species	Release Mortality	Study Or Other Source?	Citation
Cod & Haddock	0%	Assumed	
Winter Flounder	15%	Study	Durso and Iswanowicz 1982
Pollock	100%	Study + Assumed	Rec catch a small part of the harvest

Mid Atlantic
Release Mortality Used in Fishery Management Plan or Models

Species	Release Mortality	Study Or Other Source?	Citation
Summer Flounder	10%	Study	Multiple Studies
Black Sea Bass	25%	Study + Delphi model	Bugley and Shepherd 1991
Bluefish	15%	Study + modified	Malchoff 1995
Spiny Dog Fish	25%	Assumed	Based on similar species

South Atlantic Release Mortality Used in Fishery Management Plan or Models

Species	Release Mortality	Study Or Other Source?	Citation
Black Sea Bass	15%	Study	Multiple Studies Collins et al 1999, Low1981, Vaughn et al.1995.
Red Drum	8%	Assumed	Based on Murphy 2005, Vecchio & Wenner 2007, Anguilar et al 2002, and Gearhart 2002
King Mackerel	33% headboat; 20% rec	Combination	Observer data

South Atlantic (continued) Release Mortality Used in Fishery Management Plan or Models

Species	Release Mortality	Study Or Other Source?	Citation
Red Snapper	For-hire 41% Rec 39%	Based on Gulf studies	Burns et al. 2004
Vermillion Snapper	25%	Assumed	
Mutton Snapper	15%	Based on “similar species”	

South Atlantic (continued) Release Mortality Used in Fishery Management Plan or Models

Species	Release Mortality	Study Or Other Source?	Citation
Red Grouper	20%	Gulf studies	Wilson and Burns 1996 and Burns et al. 2002
Black Grouper	20%	Assumed	
Goliath Grouper	None used		
Gag Grouper	25%	Study	Rudershausen et al. 2005, Burns et al. 2002, Overton and Zabawski 2003, McGovern et al.2005, and Wilson and Burns 1996.

South Atlantic (continued) Release Mortality Used in Fishery Management Plan or Models

Species	Release Mortality	Study Or Other Source?	Citation
Spanish Mackerel	None used		
Greater Amberjack	20%	Assumed	
Red Porgy	8%	Assumed	Collins 1996

Atlantic near shore (ASMFC plans) Release Mortality Used in Fishery Management Plan or Models

Species	Release Mortality	Study Or Other Source?	Citation
Striped Bass	8%	Study	Diodati and Richards (1996)
Red Drum	5%	Study	Murphy 2005
Tautog	2.50%	Study	Simpson and Gates 1999
Weakfish	10%	Study	Multiple Studies
Atlantic Croaker	10%	Assumed	

Gulf of Mexico
Release Mortality Used in Fishery Management Plan or Models

Species	Release Mortality	Study Or Other Source?	Citation
Red Snapper	15%	Multiple studies	Fish caught 20-40m
Red Snapper	40%	Multiple studies	Fish caught 40m +
Gag Grouper	11-42%	Multiple studies	Depending on depth zone
Red Grouper	10%	?	

Pacific Groundfish

- Species-specific recreational fishing release mortality
- Developed based on best available literature
- Combination of three elements of release mortality:
  - **surface** mortality observable when a fish is brought to the surface, handled on deck, and thrown back.
  - **short-term**, below-surface mortality that has been documented in research trials to a limited extent using underwater cameras or divers.
  - l**onger-term**, below-surface mortality that is essentially unobservable in the field and for which there is little, if any, information available in the literature. Generally, this was an additional 5% mortality for each 10 fm of depth of capture.

Pacific Rockfish release Mortality Used in Fishery Management Plans

ROCKFISH	0-10 fm	11-20 fm	21-30 fm	>30 fm
Black	11%	20%	29%	63%
Black & Yellow	13%	24%	37%	100%
Blue	18%	30%	43%	100%
Bocaccio	19%	32%	46%	100%
Brown	12%	22%	33%	100%
Calico	24%	43%	60%	100%
Canary	21%	37%	53%	100%
China	13%	24%	37%	100%
Copper	19%	33%	48%	100%
Gopher	19%	34%	49%	100%
Grass	23%	45%	63%	100%
Kelp	11%	19%	29%	100%
Olive	34%	45%	57%	100%
Quillback	21%	35%	52%	100%
Tiger	20%	35%	51%	100%
Treefish	14%	25%	39%	100%
Vermilion	20%	34%	50%	100%
Widow	21%	36%	52%	100%
Yelloweye	22%	39%	56%	100%
Yellowtail	10%	17%	25%	50%

Pacific-other species Release Mortality Used in Fishery Management Plan or Models

	0-10 fm	11-20 fm	21-30 fm	>30 fm
Cabezon	7%	7%	7%	7%
California scorpionfish	7%	7%	7%	7%
Kelp Greenling	7%	7%	7%	7%
Lingcod	7%	7%	7%	7%
Pacific Cod	5%	32%	53%	97%
Flatfish	7%	7%	7%	7%
Sharks and Skates	7%	7%	7%	7%
Dogfish	7%	7%	7%	7%

North Pacific
Release Mortality Used in Fishery Management Plan or Models

Species	Release Mortality	Study Or Other Source?	Citation
Pacific Halibut-Circle Hooks	3.50%	Assumed	Based on longline study
Pacific Halibut-J Hooks	10%	Assumed	Based on other marine species studies
Demersal Rockfish	100%	Assumed	

Other Councils
Release Mortality Used in Fishery Management Plan or Models

- Caribbean – consider mortality but don't have plans that include it.
- Western Pacific – no response.

Conclusions

- Most mortality estimates based on studies.
- A move toward developing depth-based mortality estimates.
- Some consideration of gear-based mortality estimates.