



Hook Modifications in Coastal Fishing Waters

DEPARTMENT OF ENVIRONMENTAL QUALITY

Marine Fisheries

Steve Poland

February 25, 2021



Overview

Background

- Issue and origination
- Literature review



Arana 2014



Catch All Tackle

Rule Development and Considerations

- Hook definition and gap width
- Exemptions
- Proposed rules
- Next Steps



NOAA Fisheries

Issue and Origination

Timeline

- MFC requests information on hook modifications – *Aug. 2019*
- Information paper presented; motion to begin rule making – *May 2020*
- Draft issue paper with options – *Feb. 2021*

“Require the use of barbless, non-offset circle hooks greater than 2/0 while fishing with natural bait and the use of barbless or pinched barbed treble hooks”

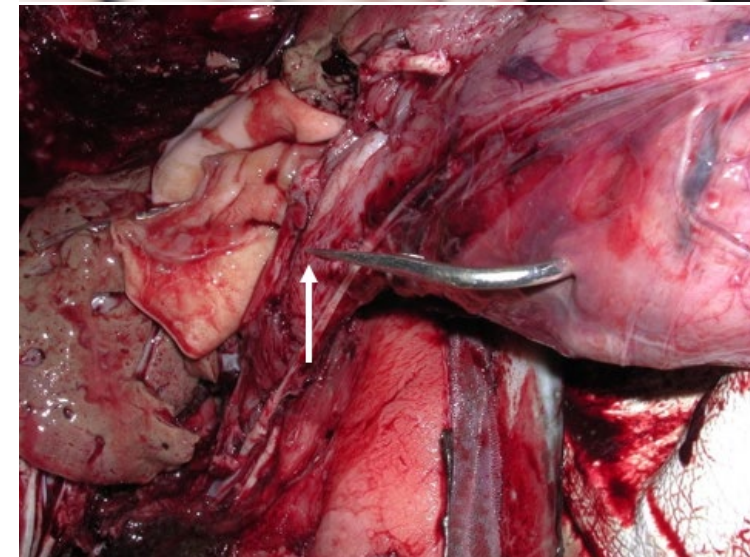
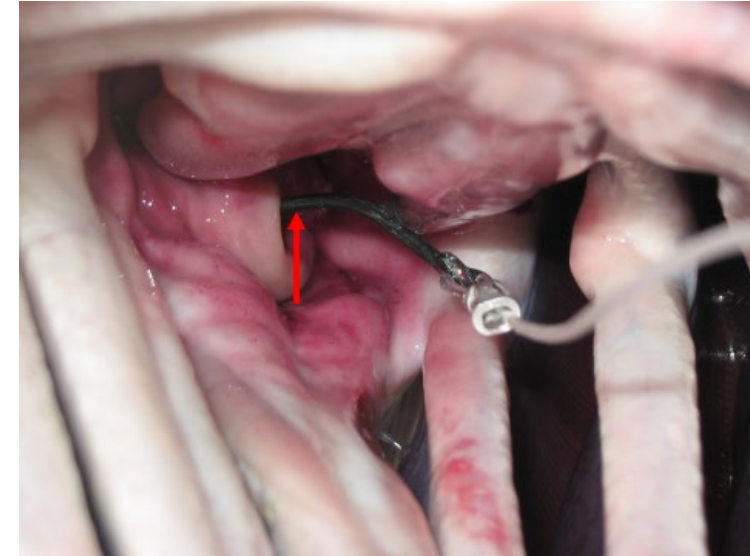
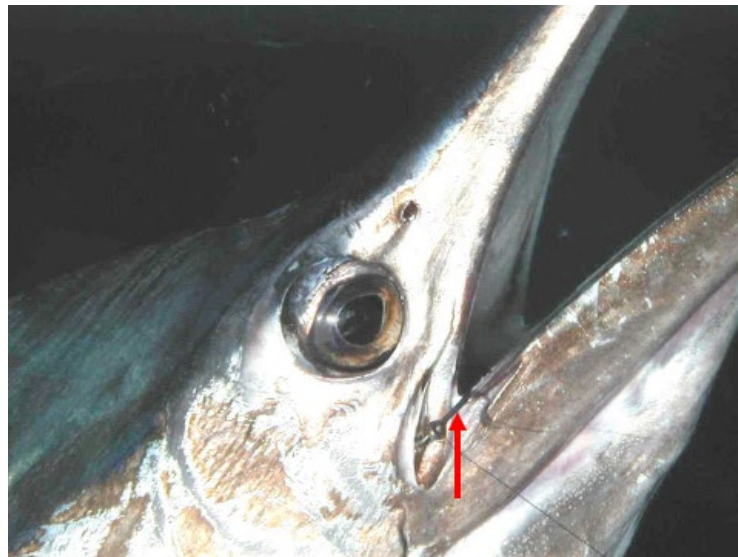


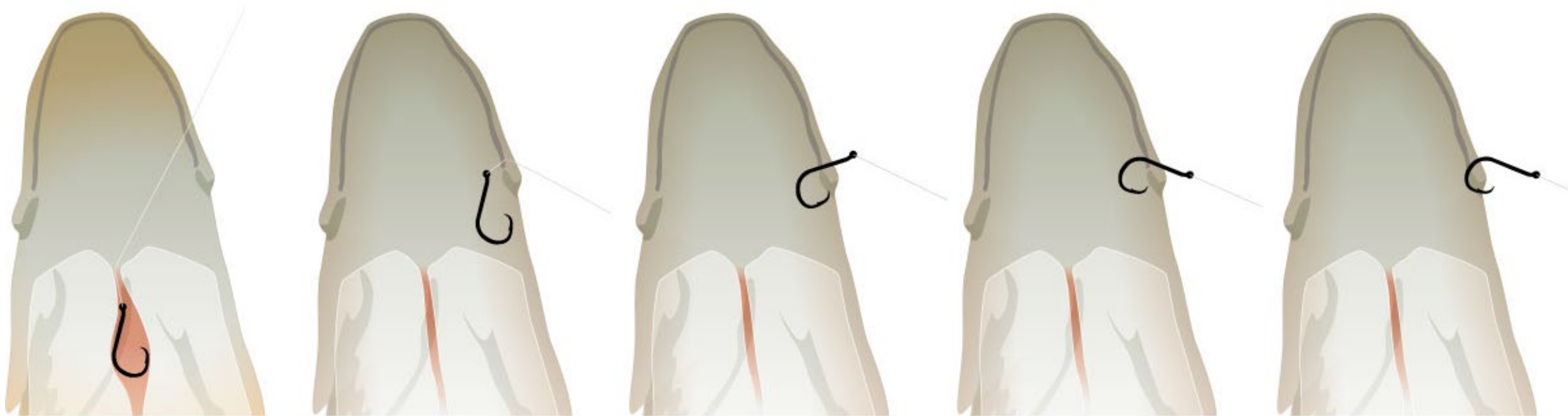
Literature Review

Reduce hooking injury → Increased survival

Circle Hooks and barbless hooks

- Lower occurrence of deep-hooking
- Reduce damage





Source: Tom Jones, Minnesota Dept. of Natural Resources

PIONEER PRESS



Literature Review

Effects of circle versus J-style hooks on target and non-target species in a pelagic longline fishery

D.W. Kerstetter*, J.E. Graves

Virginia Institute of Marine Science, College of William and Mary, Route 1208 Greate Road, Gloucester Point, VA 20362, United States

Received 22 April 2005; received in revised form 21 March 2006; accepted 30 March 2006

Does Hook Choice Matter? Effects of Three Circle Hook Models on Postrelease Survival of White Marlin

JOHN E. GRAVES* AND ANDRIJ Z. HORODYSKY

Virginia Institute of Marine Science, College of William and Mary, Post Office Box 1346, Gloucester Point, Virginia 23062, USA

Are circle hooks an effective tool for conserving marine and freshwater recreational catch-and-release fisheries?

S.J. COOKE^{a,*} and C.D. SUSKI^b

^a Centre for Applied Conservation Research, Department of Forest Sciences, University of British Columbia, Vancouver, British Columbia, Canada

^b Department of Biology, Queen's University, Kingston, Ontario, Canada

CIRCLE HOOKS IN COMMERCIAL, RECREATIONAL, AND ARTISANAL FISHERIES: RESEARCH STATUS AND NEEDS FOR IMPROVED CONSERVATION AND MANAGEMENT

Joseph E Serafy, Steven J Cooke, Guillermo A Diaz, John E Graves, Martin Hall, Mahmood Shivji, and Yonat Swimmer

A Comparison of Circle Hook and “J” Hook Performance in Recreational Catch-and-Release Fisheries for Billfish

ERIC D. PRINCE, MAURICIO ORTIZ, AND ARIETTA VENIZELOS

National Marine Fisheries Service
Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, Florida 33149, USA

Large circle hooks and short leaders with fixed weights reduce incidence of deep hooking in angled adult red drum

George H. Beckwith Jr.^a, Peter S. Rand^{b,*}

^a Down East Guide Service, P.O. Box 403, Oriental, NC 28571, USA

^b The Wild Salmon Center, 721 NW 9th Avenue, Suite 280, Portland, OR 97209, USA

Received 29 December 2003; received in revised form 2 July 2004; accepted 2 August 2004

Caveats

Mouth morphology, feeding behavior, bait type, etc. can change circle hook effectiveness (Cooke et al. 2003, Matlock et al. 1993)

Offset circle hooks negate benefits (Graves and Horodysky 2008, Serafy et al. 2012)

Cooke and Suski (2004) recommended evaluating benefits on a species specific basis

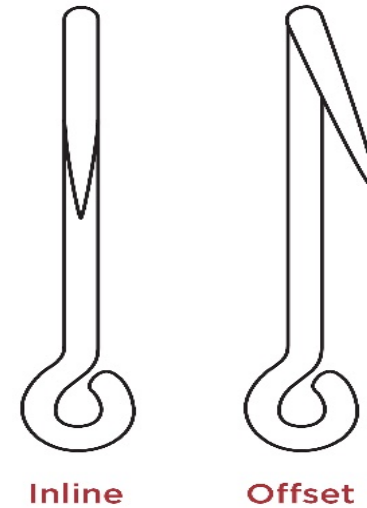
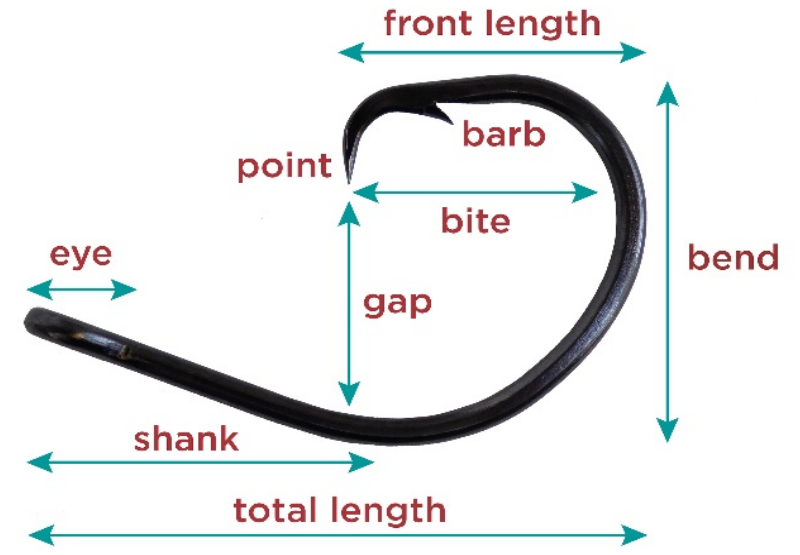
- Only Red Drum studied in North Carolina (Beckwith and Rand 2005)

Studies on treble hooks are inconclusive (Matlock et al. 1993; Stunz and McKee 2006)



What is a Circle Hook?

- “A hook with the point turned perpendicularly back to the shank to form a generally circular or oval shape.” – National Marine Fisheries Service
- “A hook with the point of the hook directed perpendicularly back toward the shank, and with the barb either compressed or removed” – North Carolina Marine Fisheries Commission rule
- "Non-offset hook with the point turned perpendicularly back to the shank." – Atlantic States Marine Fisheries Commission



Does size matter?



Gap Width

Discrete measurement needed for compliance checks

Representative 2/0 circle hooks (Table 2)

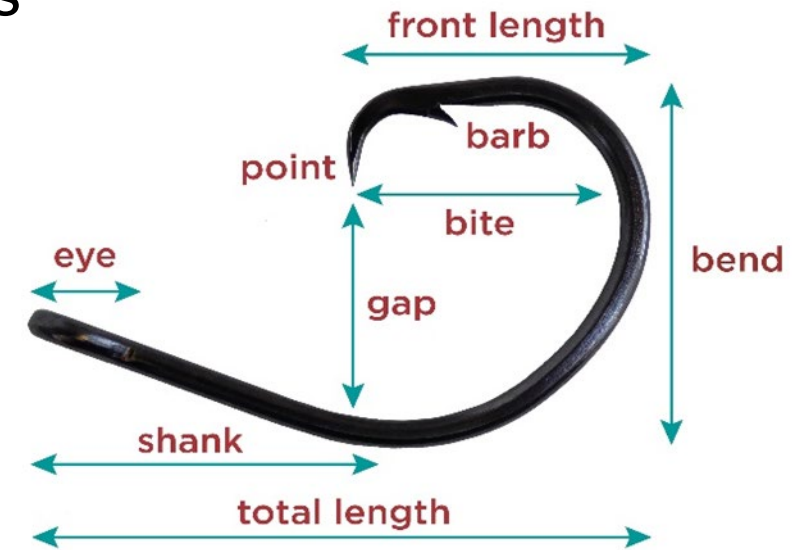
- Gap width range: 0.38 – 0.49 inches

Representative jig head hook sizes (Table 3)

- Gap width range: 0.47 – 0.69 inches

Consider upper range and/or common measurement

- Would allow for easier compliance check



Natural Bait

How inclusive should the definition be?

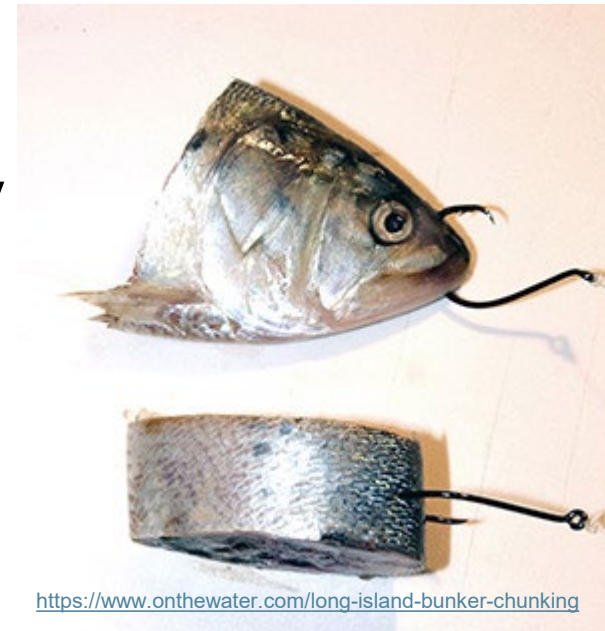
- Include live and dead bait? Synthetic bait?

The Wildlife Resources Commission definition:

- “Any living or dead organism (plant or animal), or parts thereof, or prepared substances designed to attract fish by the sense of taste or smell” 15A NCAC 10C .0205

Enforcement and compliance concerns

- Live and dead bait, including processed – easy
- Synthetic bait and attractants - difficult



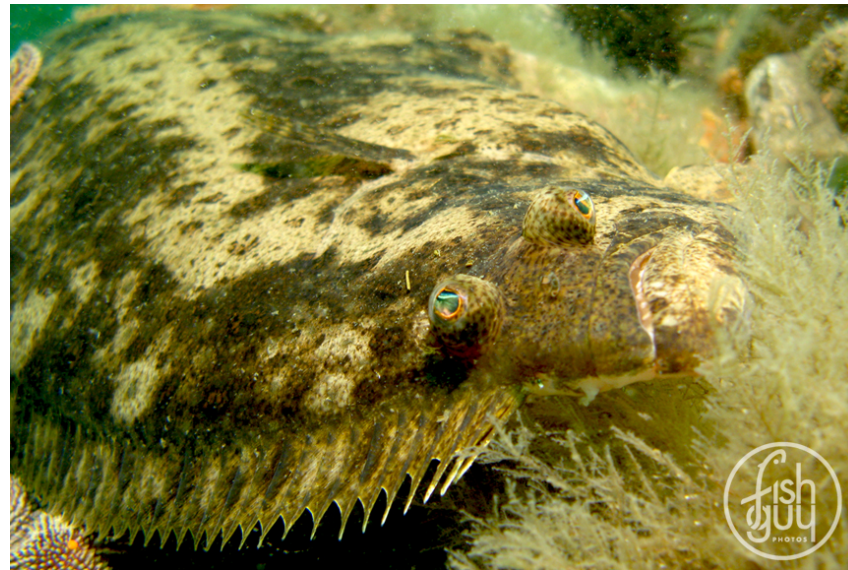
<https://www.onthewater.com/long-island-bunker-chunking>



Exemptions

Are there fisheries that may need to be excluded?

- Mouth morphology?
- Feeding behavior?
- Fishing Technique?



Exemptions

Size requirement greater than 2/0 provides for small, non-circle hook use

- Eg. Sheephead fishing, live bait fishing with jig heads

Trot line gear exemption

- Allow barbed and non-circle hooks

Trolling exemption for natural bait

- Allows for traditional J-hook style bait rigs
- For circle hooks only or treble hooks too?



Proposed Rule Changes

15A NCAC 03J .0306

Modify “Hook and Line” rule to expand hook requirements statewide

- Currently only applies to certain areas and times; “Red Drum rig”

Definitions:

- “circle hook”, “gap width”, “natural bait”, and “non-offset”

Require the use of:

- Barbless, non-offset circle hooks greater than ***three-fourths inch*** when fishing with natural bait
- Barbless multi-point hooks

Retain “Red Drum rig” requirements

- Modify 4/0 requirement?



Proposed Rule Changes

15A NCAC 03J .0306

Delayed effective date – ***April 1, 2023?***

- Allows retailers and anglers time for education and compliance

Proposed exemptions in management option 3

- Trolling and trot lines exempt from hook requirements
- Others?



Proposed Rule Definitions

Management options 2 and 3 include amendments to 15A NCAC 03J .0306 (Hook and Line)

Includes definitions *only applicable to this rule* for:

- “circle hook”
- “non offset”
- “gap width”
- “natural bait”

Rule 15A NCAC 03I .0101 (Definitions) applies to *all* MFC rules in Chapter 03 (Marine Fisheries)

New definitions may best be added there to begin formal rulemaking process

Both rules subject to readoption by June 30, 2022



DMF Perspective

In general, science supports the use of hook modifications to reduce discard mortality

Hook sizes are not standardized, consider a discrete measurement like gap width

Consider investigating hook modifications within upcoming FMPs

- Determine conservation impact

There will be positive and negative social and economic impacts

- Decreased angler satisfaction? Increased abundance if stock responds to lowered discards? Short term economic impact?



What we need today...

Confirmation of intent of proposed actions

- The proposed rule applies to all activities regardless of sector

Provide input on:

- Gap width measurement
- Potential exclusions/exemptions and trolling in Option 3
- Modify Red Drum specific hook size requirement of 4/0?
- Delayed effective date?



Questions?



Contact: Steve Poland
Steve.Poland@ncdenr.gov
252-808-8011

