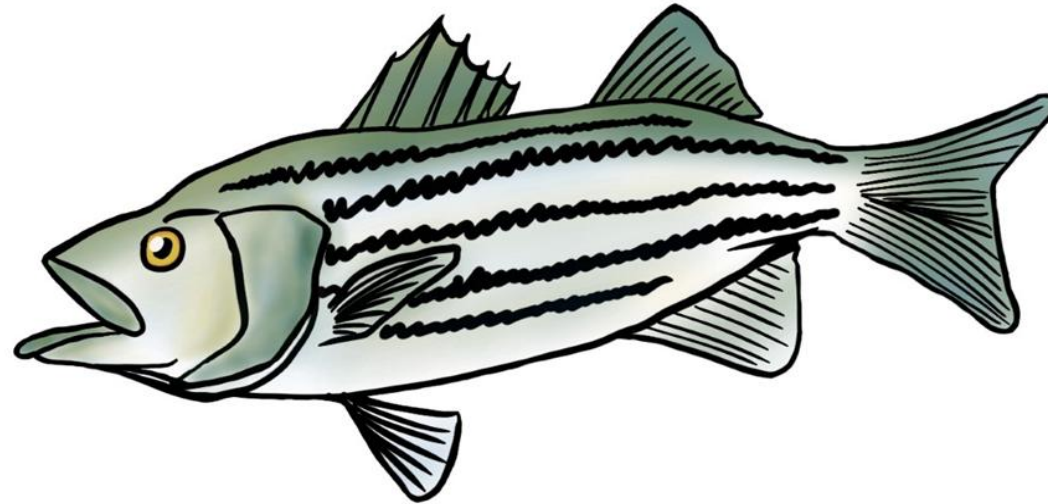


# Summer catch-and-release mortality of Striped Bass in Smith Mountain Lake, Virginia



**Nathan W. Smith and Derek Crane**

Coastal Carolina University

**Dan Wilson**

Virginia Department of Wildlife Resources

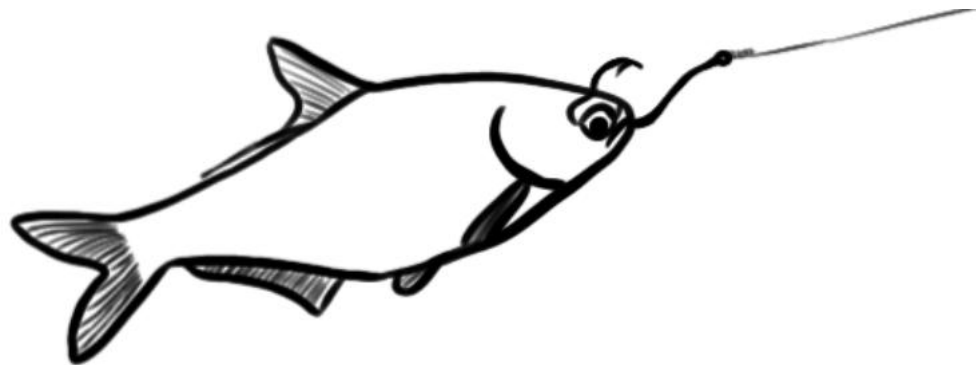
**Jason Doll**

Francis Marion University



# A brief summary of Striped Bass C&R studies

- Temperature and gear type (Artificial vs Natural bait) Bettinger and Wilde 2013
- C&R mortality is typically greatest during summer  
(40 – 83% in summer vs. 0-21% in spring)
- Influenced conservative management plans for Striped Bass nationwide



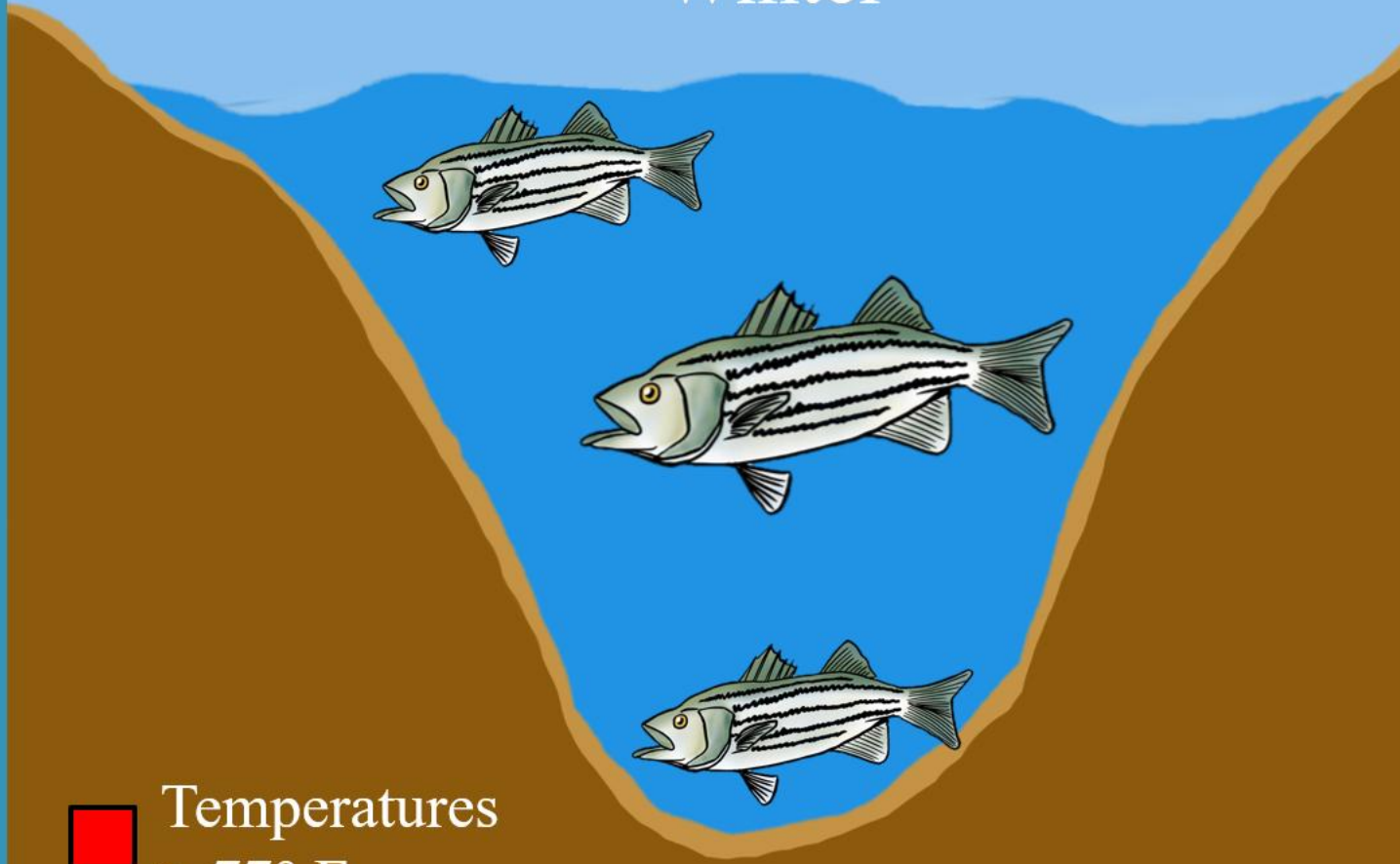
# A fishy mystery solved: Why hundreds of dead fish are washing up on Lake Murray



A fishy mystery solved: Why hundreds of dead fish are washing up on Lake Murray

# “Oxy-thermal Squeeze”

Winter

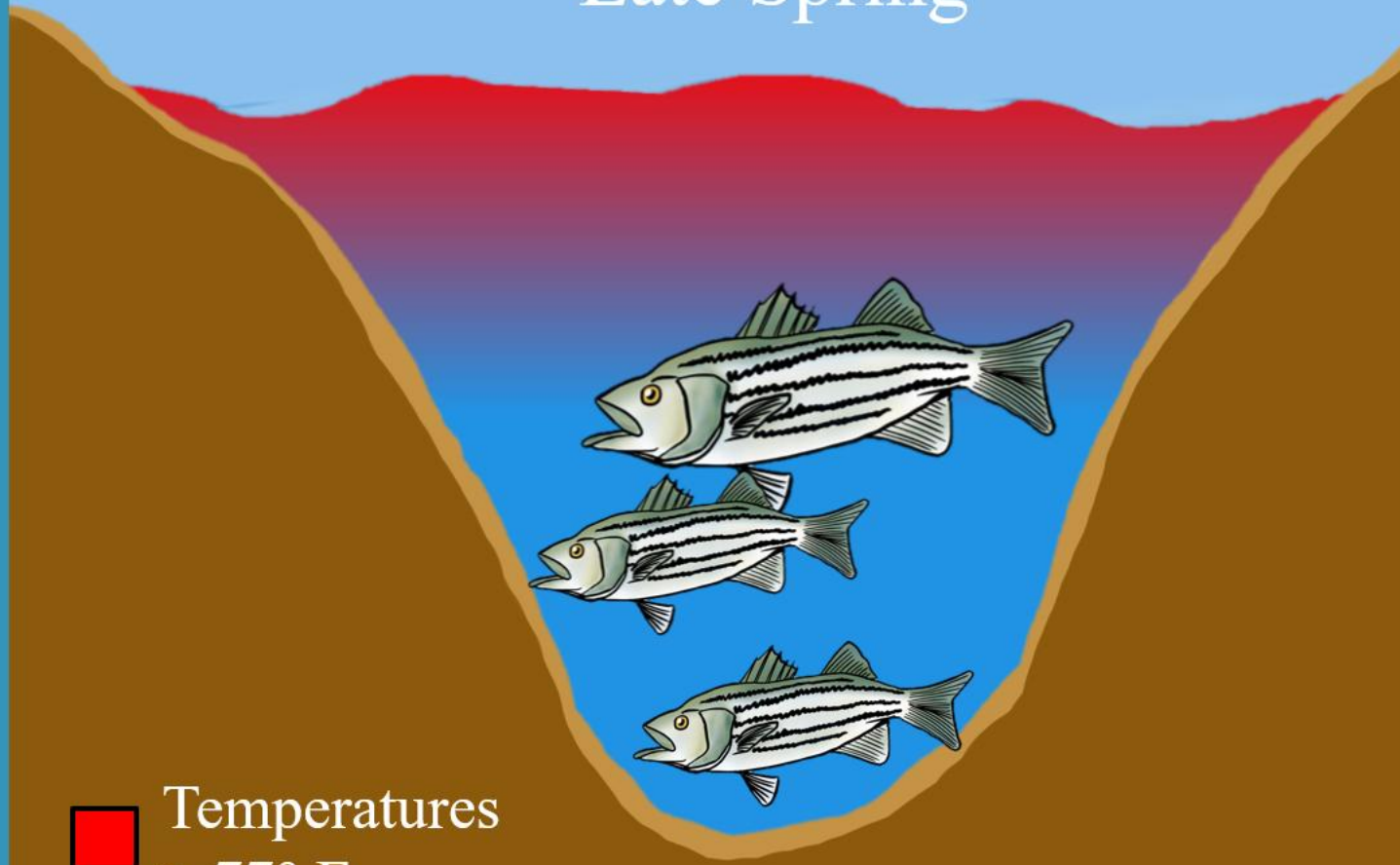


■ Temperatures  
> 77° F

■ Oxygen < 3mg/L

# “Oxy-thermal Squeeze”

Late Spring

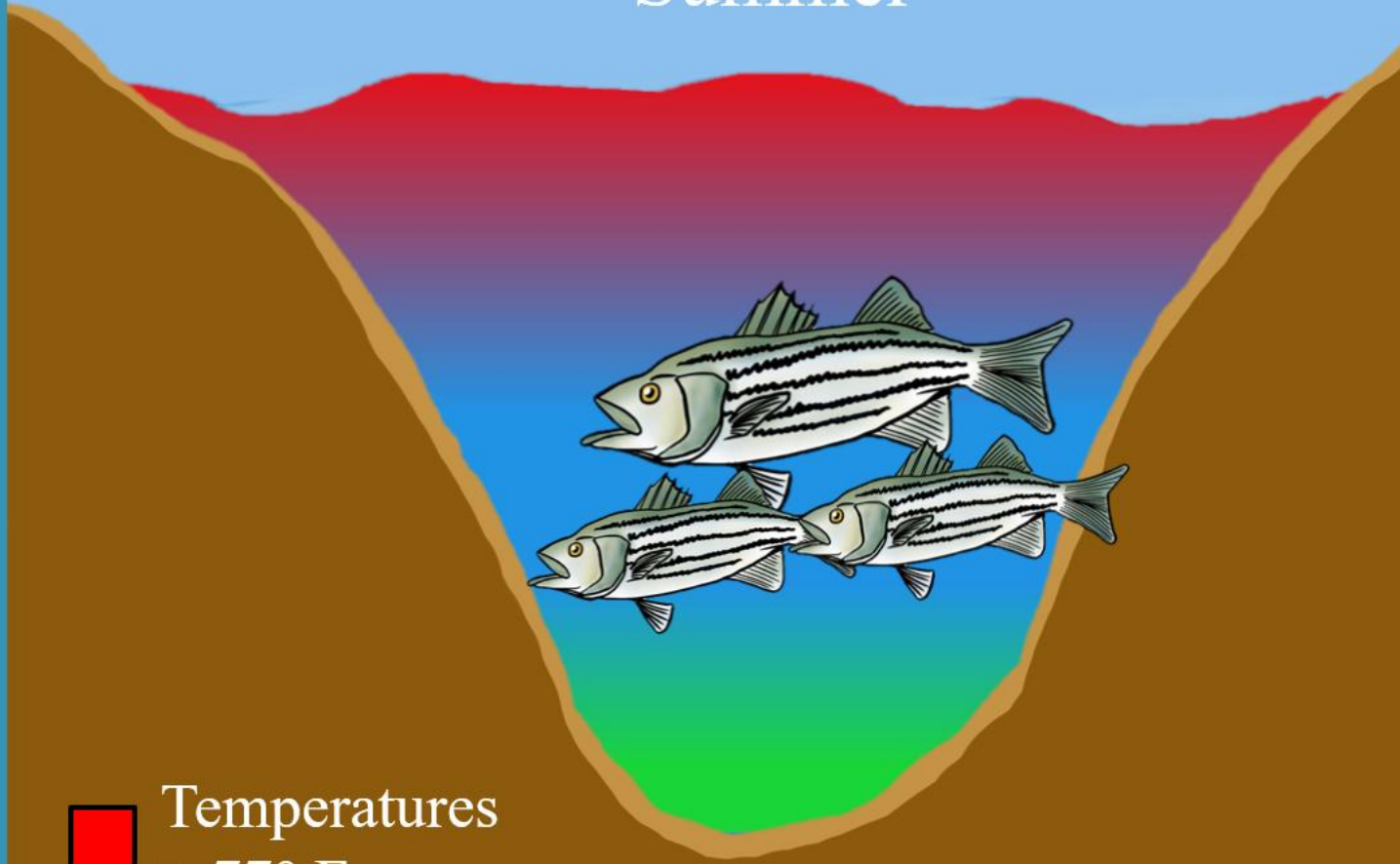


■ Temperatures  
> 77° F

■ Oxygen < 3mg/L

# “Oxy-thermal Squeeze”

Summer



■ Temperatures  
> 77° F

■ Oxygen < 3mg/L

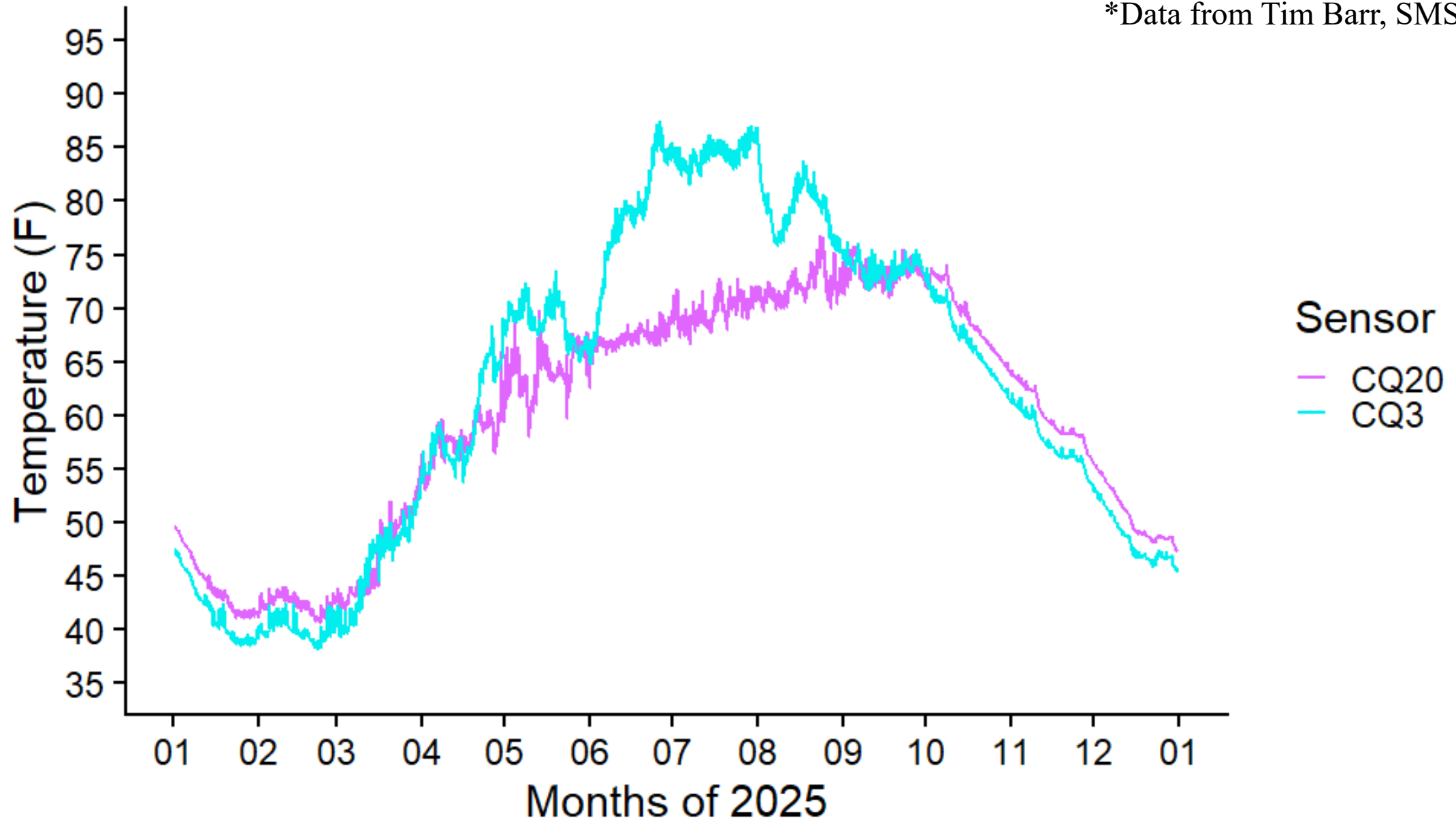
# Smith Mountain Lake vs. other southern reservoirs

	<b>SML, VA</b>	<b>Lake Gaston, NC</b>	<b>Lake Murray, SC</b>
Avg. Depth (ft)	58	40	46
Max Depth (ft)	220	95	200
Surface Area (Acres)	20480	20000	48432
Summer Surface Temperature (°F)	77 - 81	77 - 81	75 - 84
DO below thermocline	Anoxic only at bottom	Anoxic in Summer	Anoxic in summer



# SML thermal profile

\*Data from Tim Barr, SMSC



# Striped Bass Regulations and Guidelines

- Regulations – Smith Mountain Lake

- Two fish per person per day aggregate (combined)
- Nov. 1 – May 31: No Striped Bass between 30” and 40”
- Jun. 1 – Oct. 31: No length limit

- Best practices for catch-and-release

- Knotless rubber nets
- No gloves, wet hands to handle
- Support fish with both hands
- Avoid excessive handling
- Keep in the water in possible



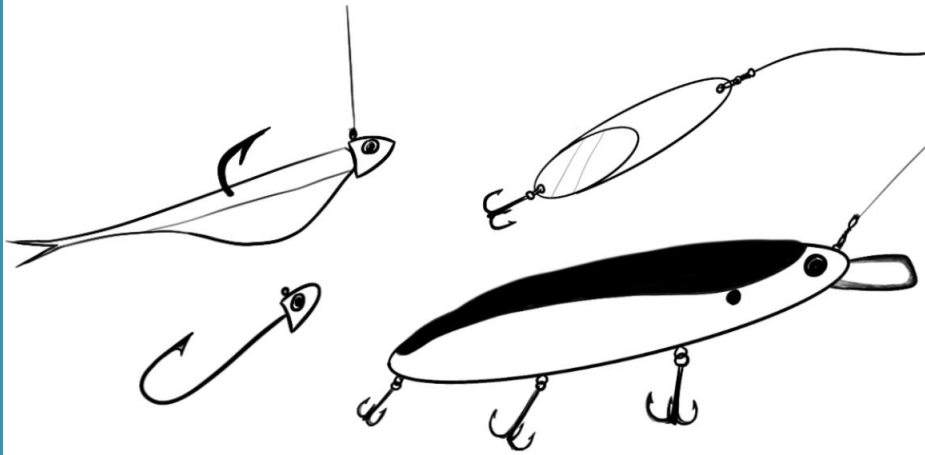
What is catch-and-release (C&R) mortality in  
Smith Mountain Lake?

# Angling

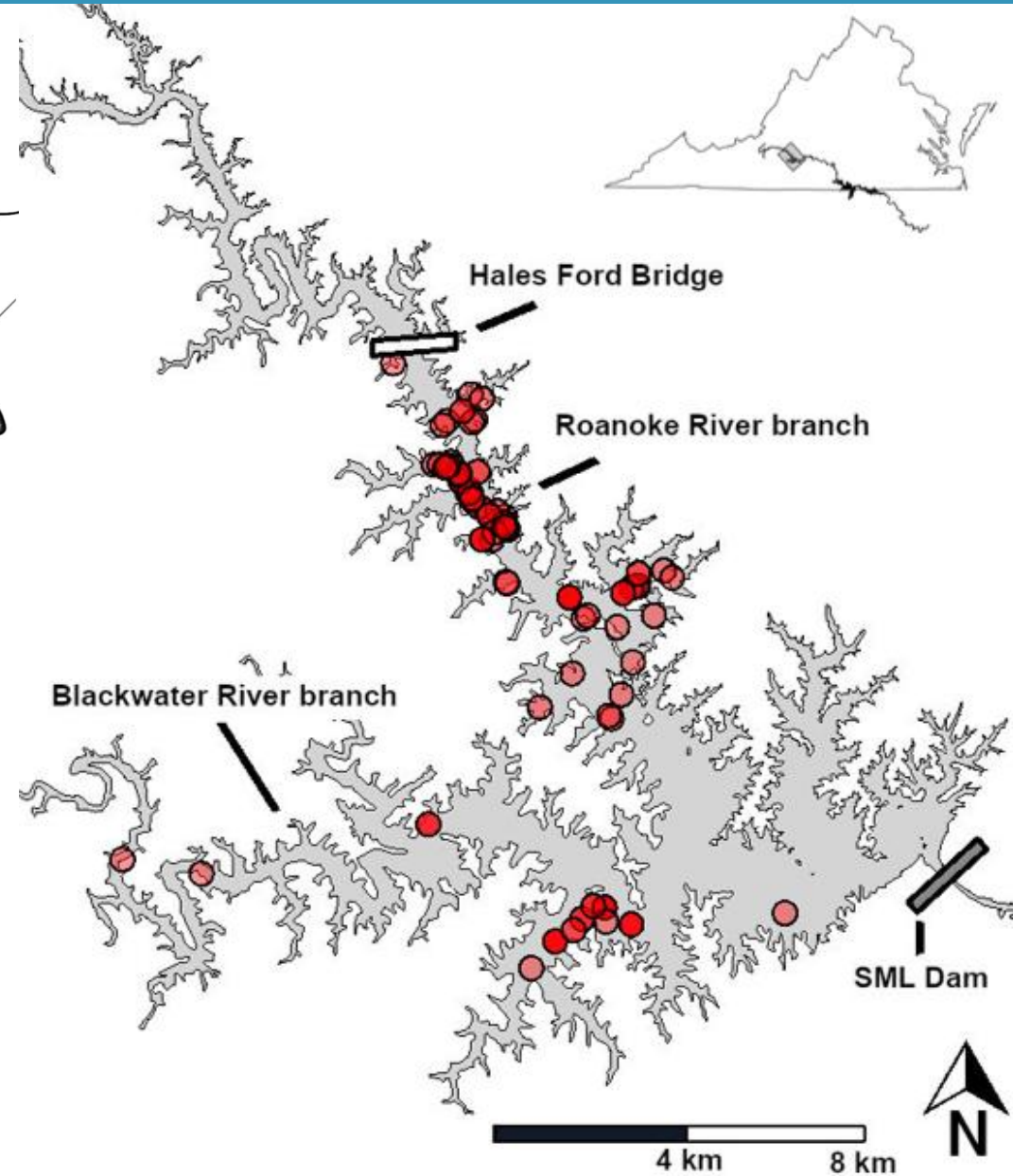
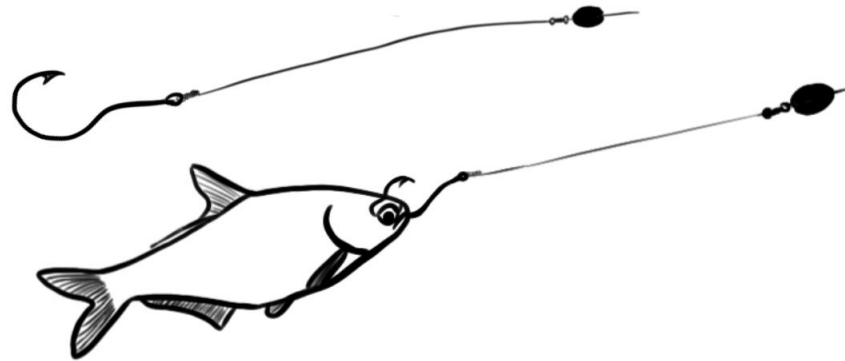
Recorded:

- Total length
- Fight time
- Handling time
- Hooking depth
- Surface temperature
- Bait type
- Post release behavior

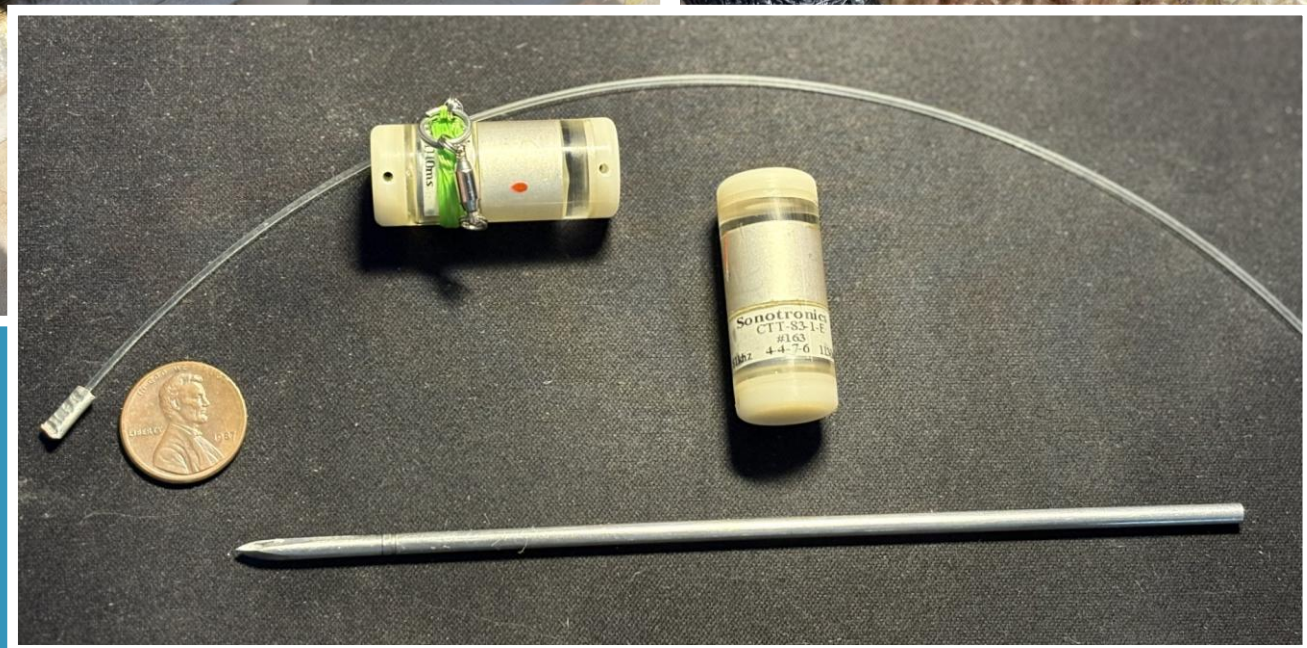
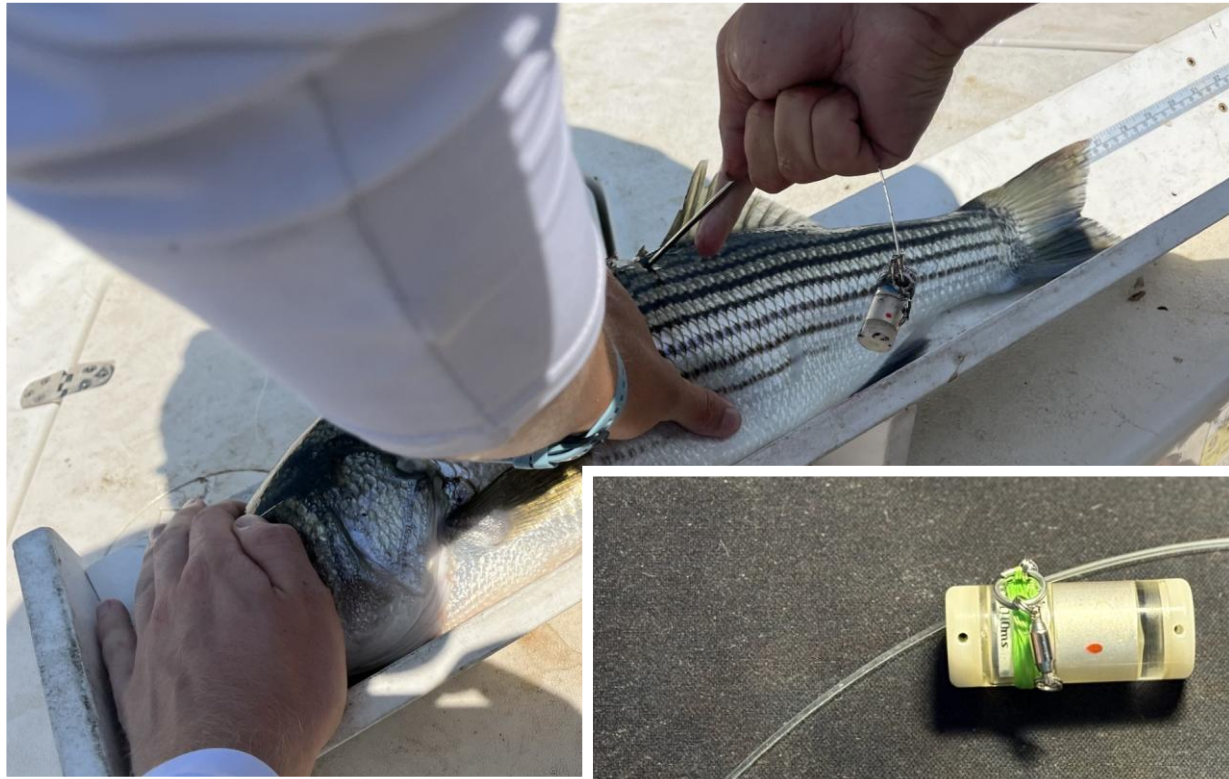
## Artificial



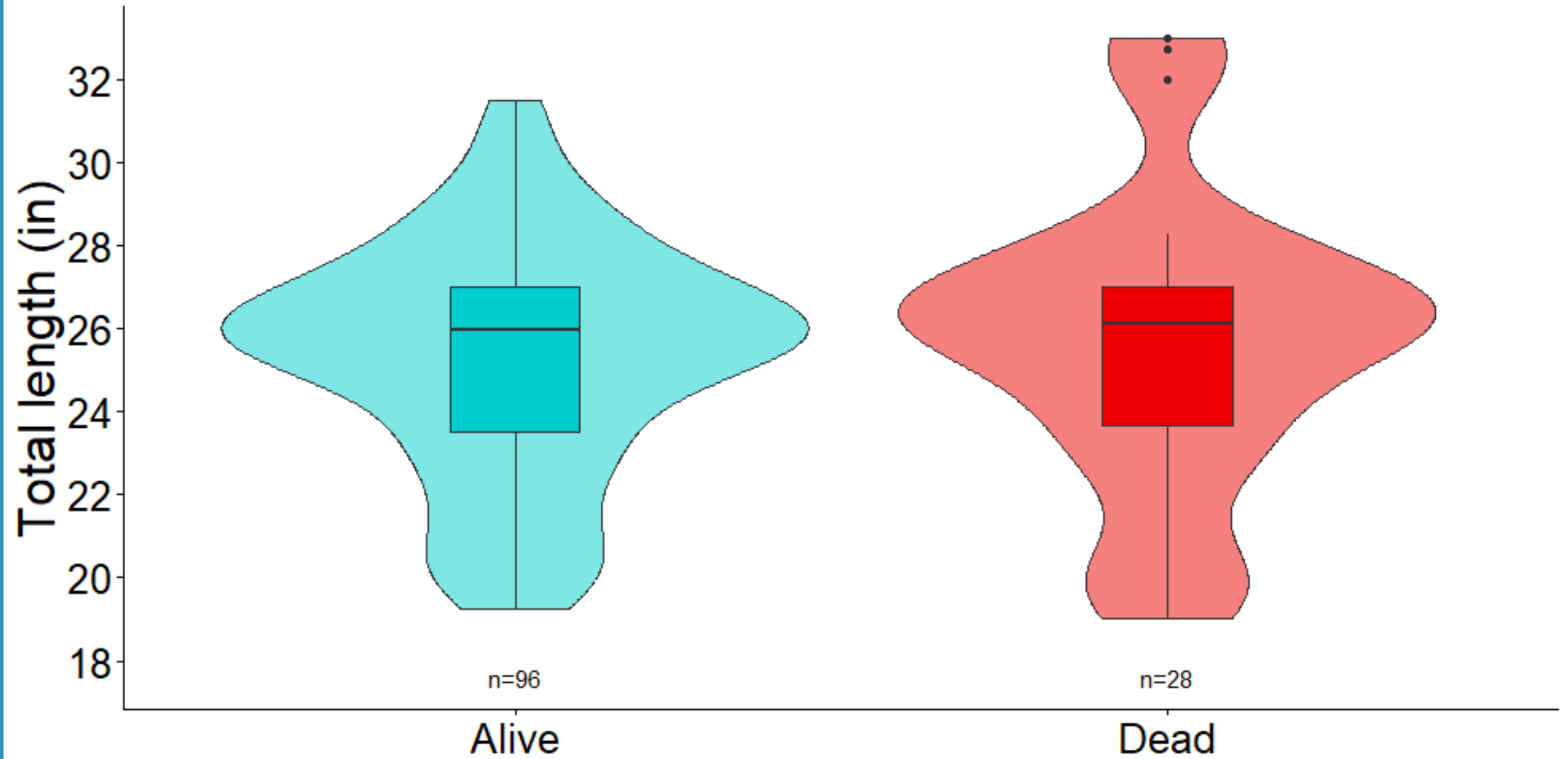
## Natural



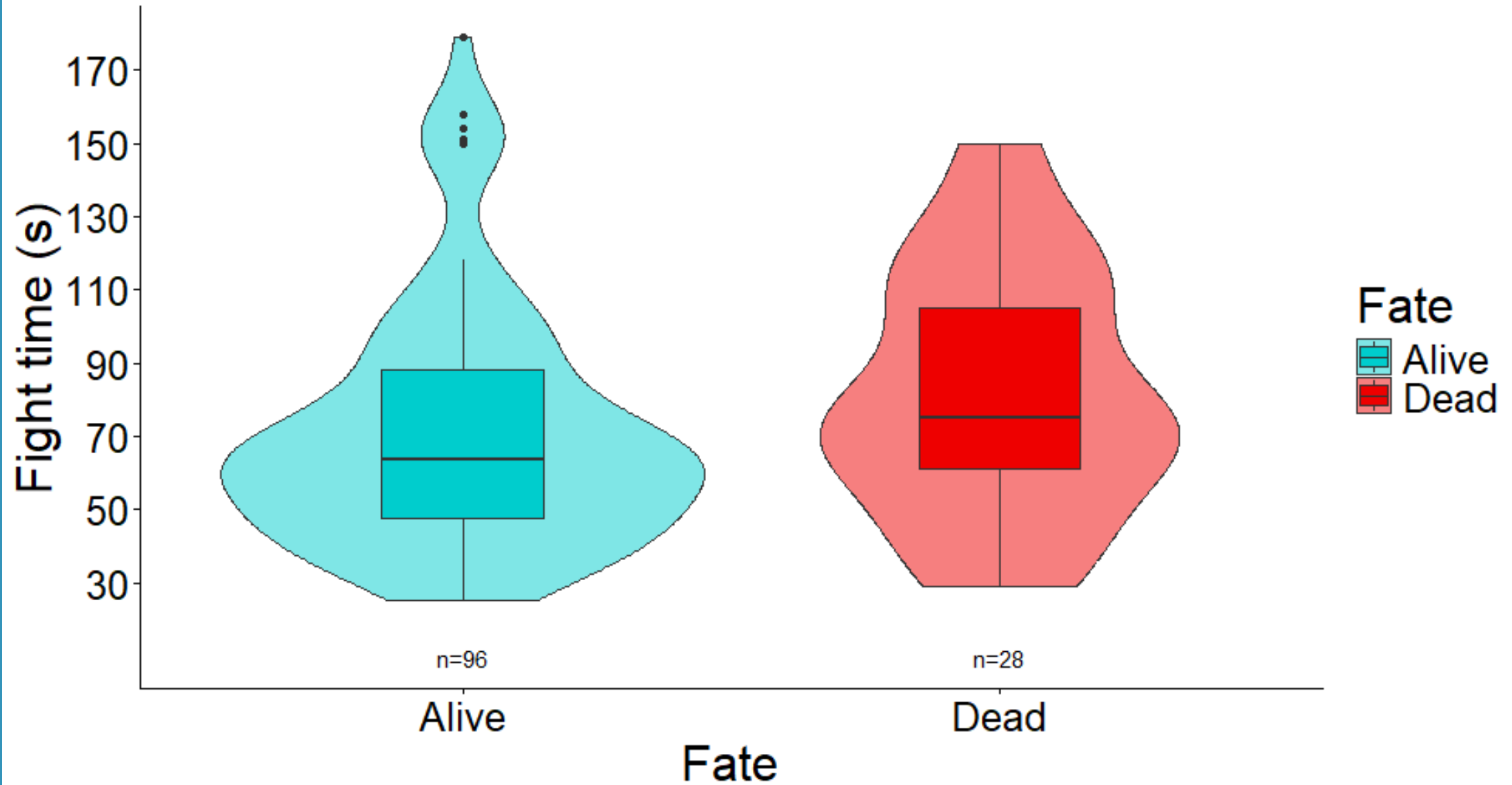
# Telemetry Tags



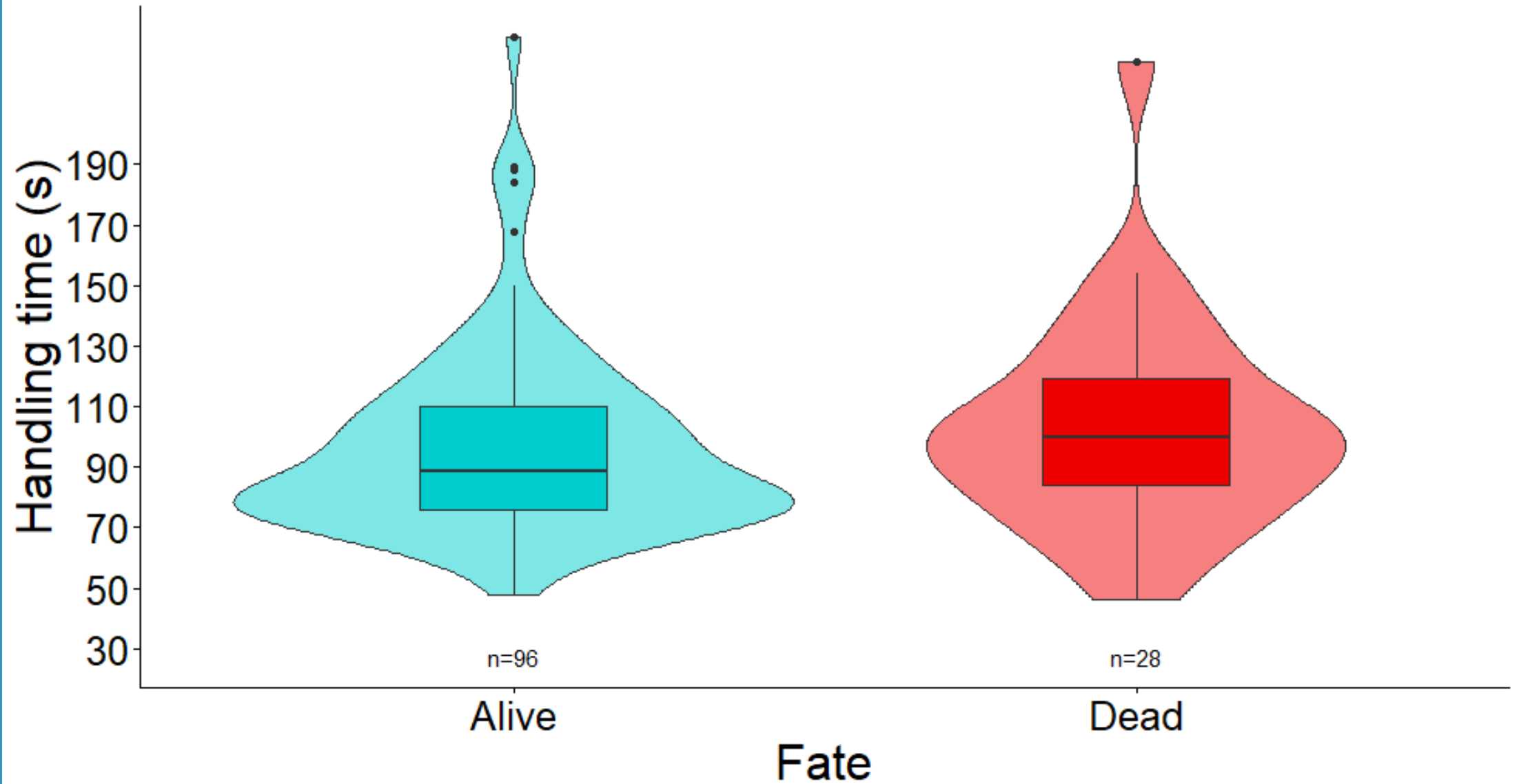
# C&R Results



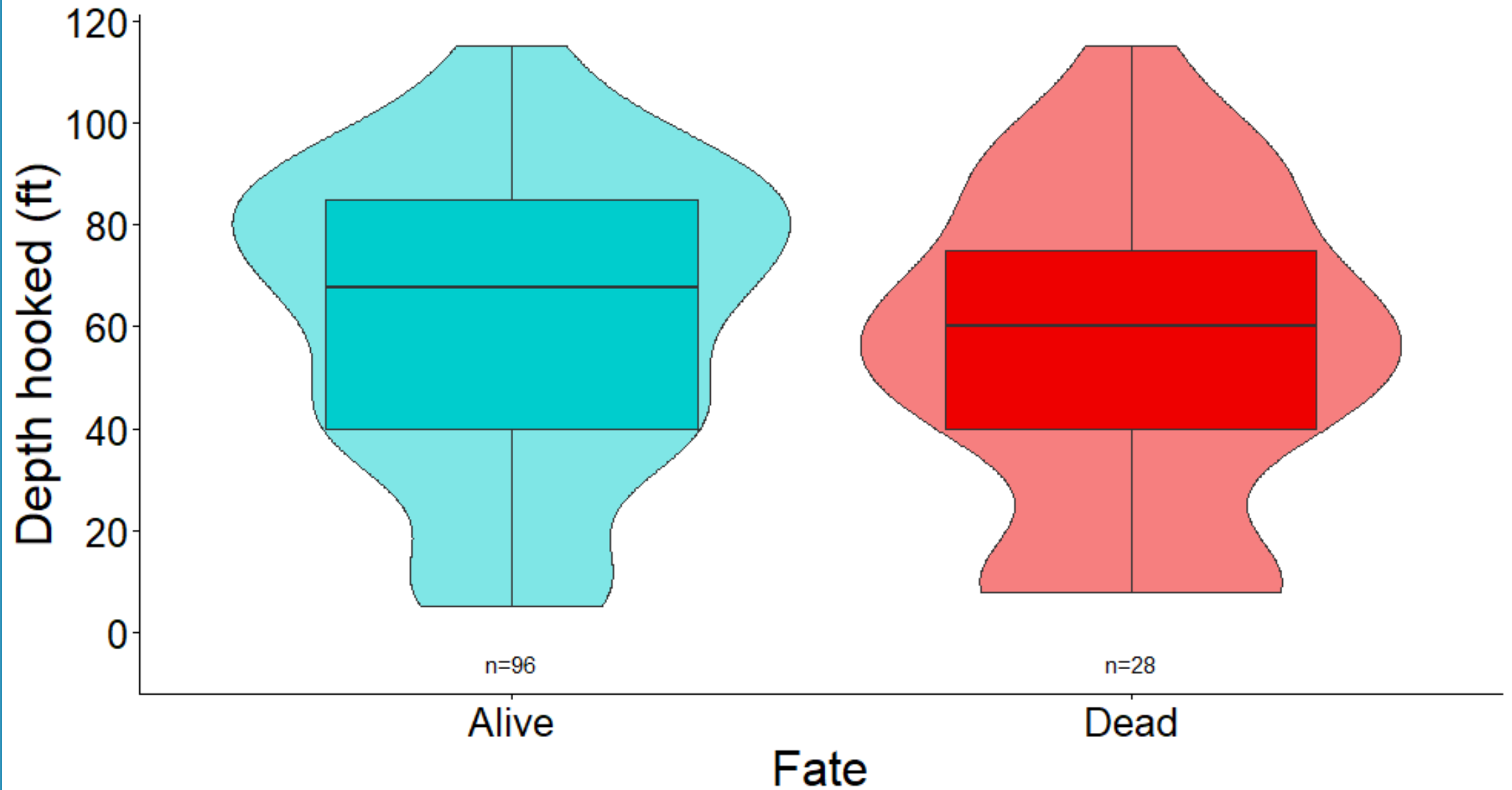
# C&R Results



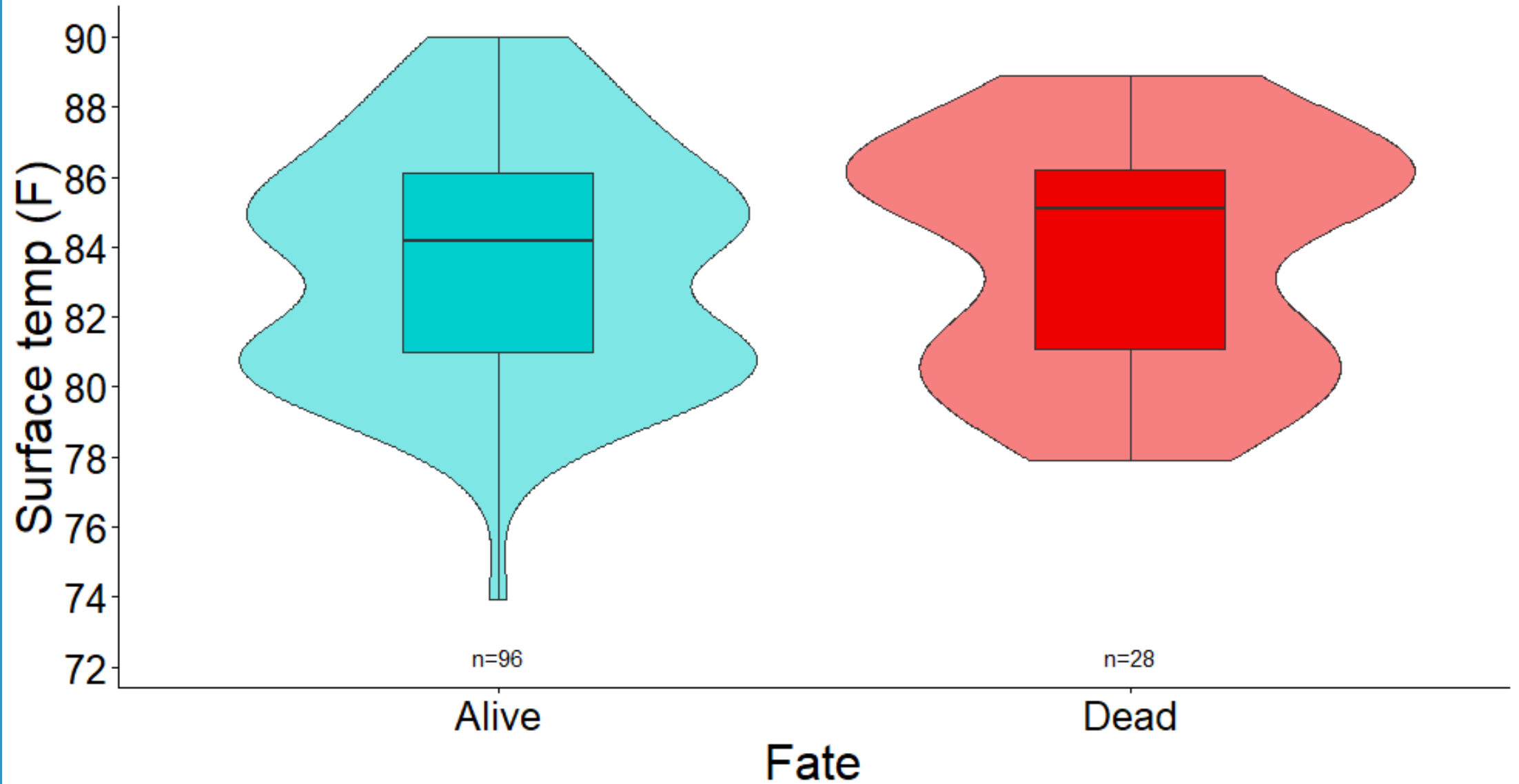
# C&R Results



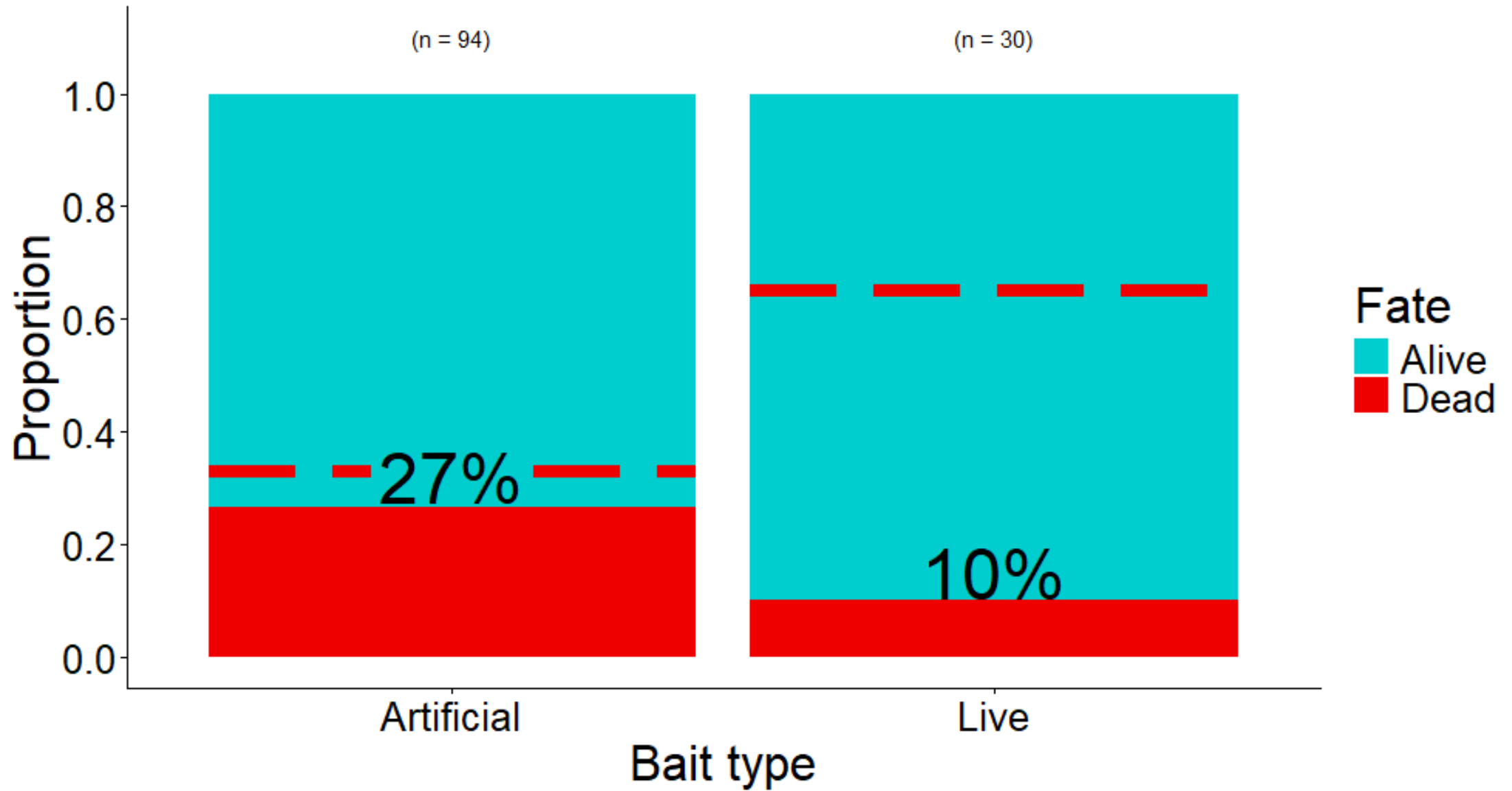
# C&R Results



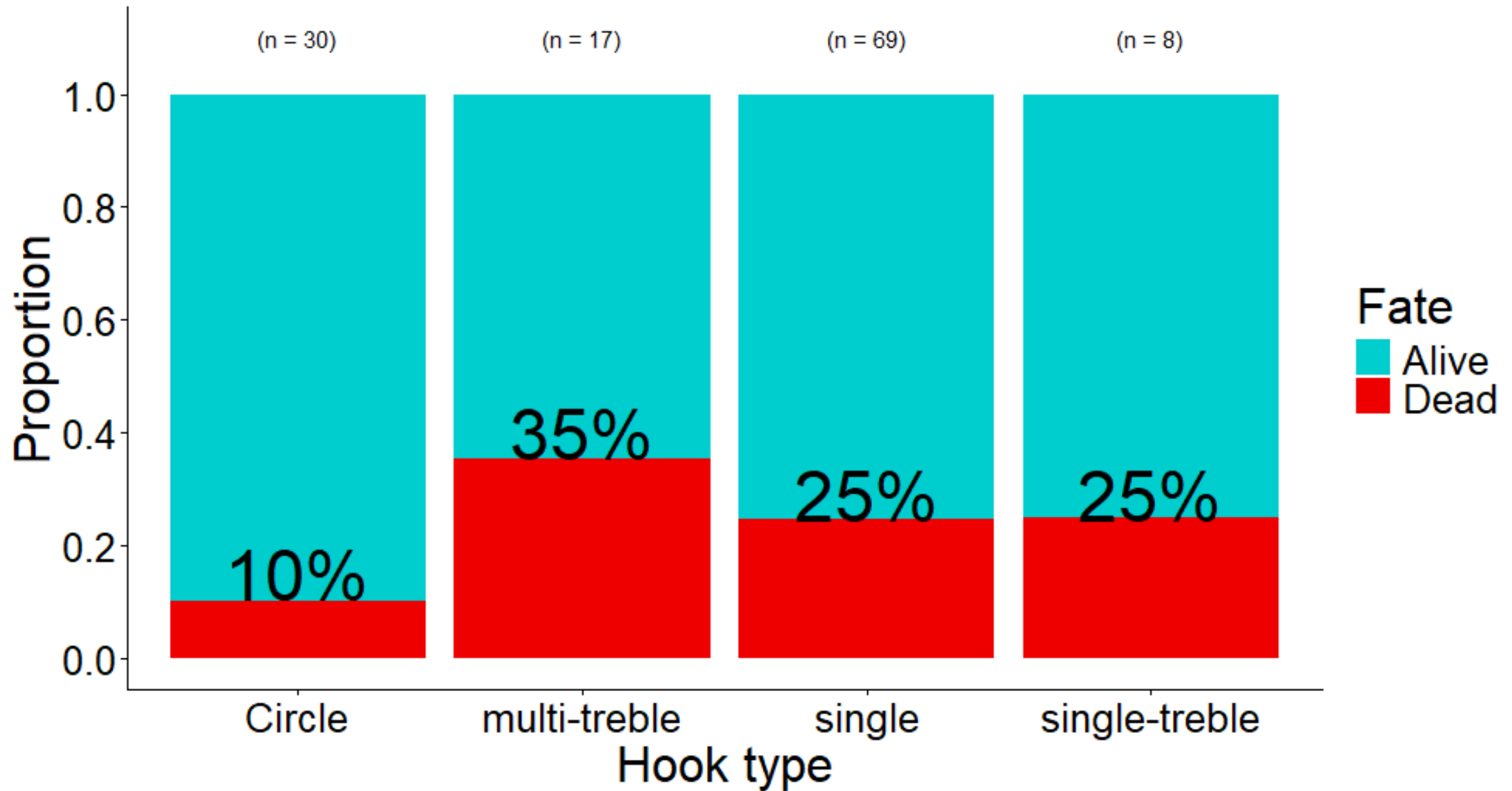
# C&R Results



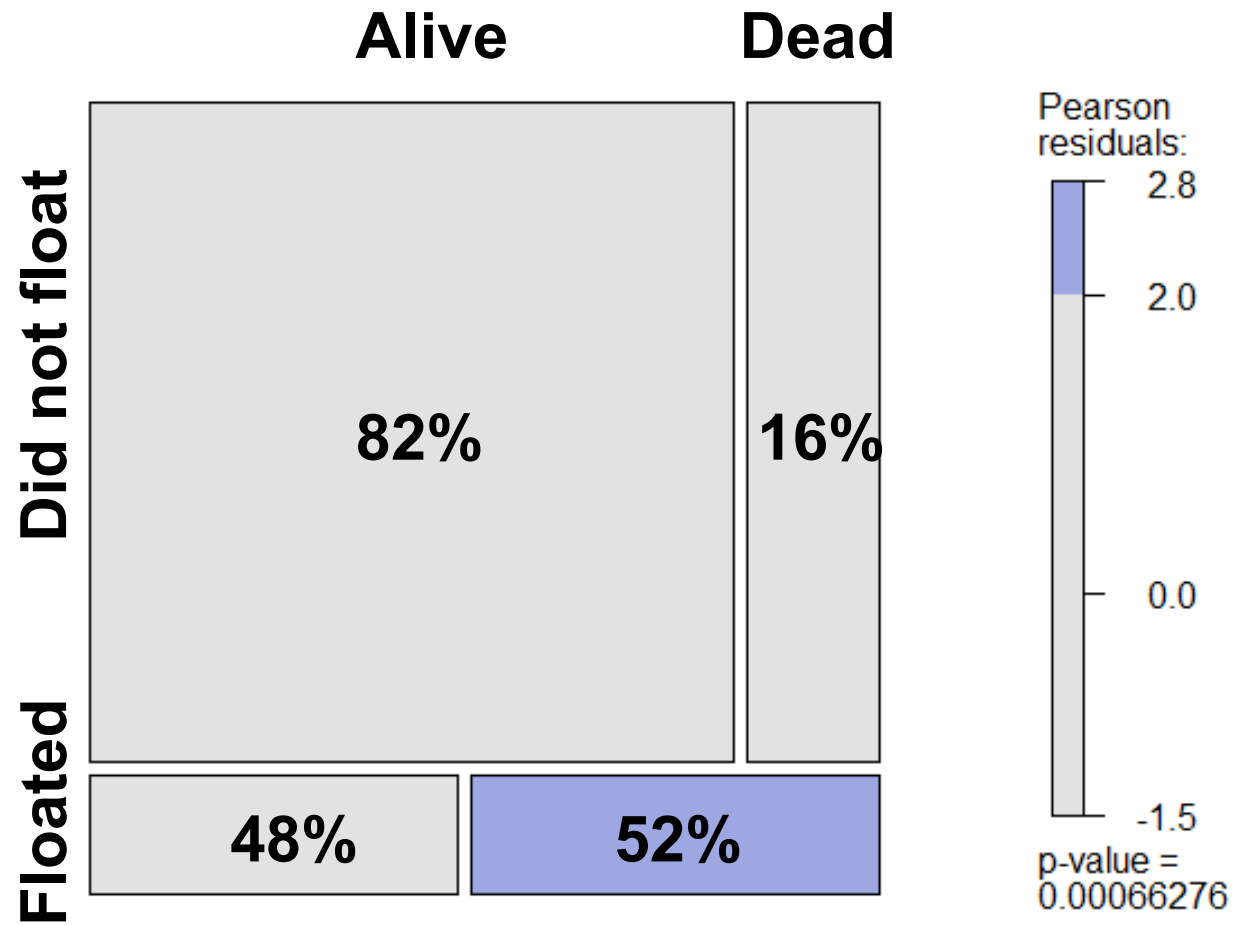
# C&R Results



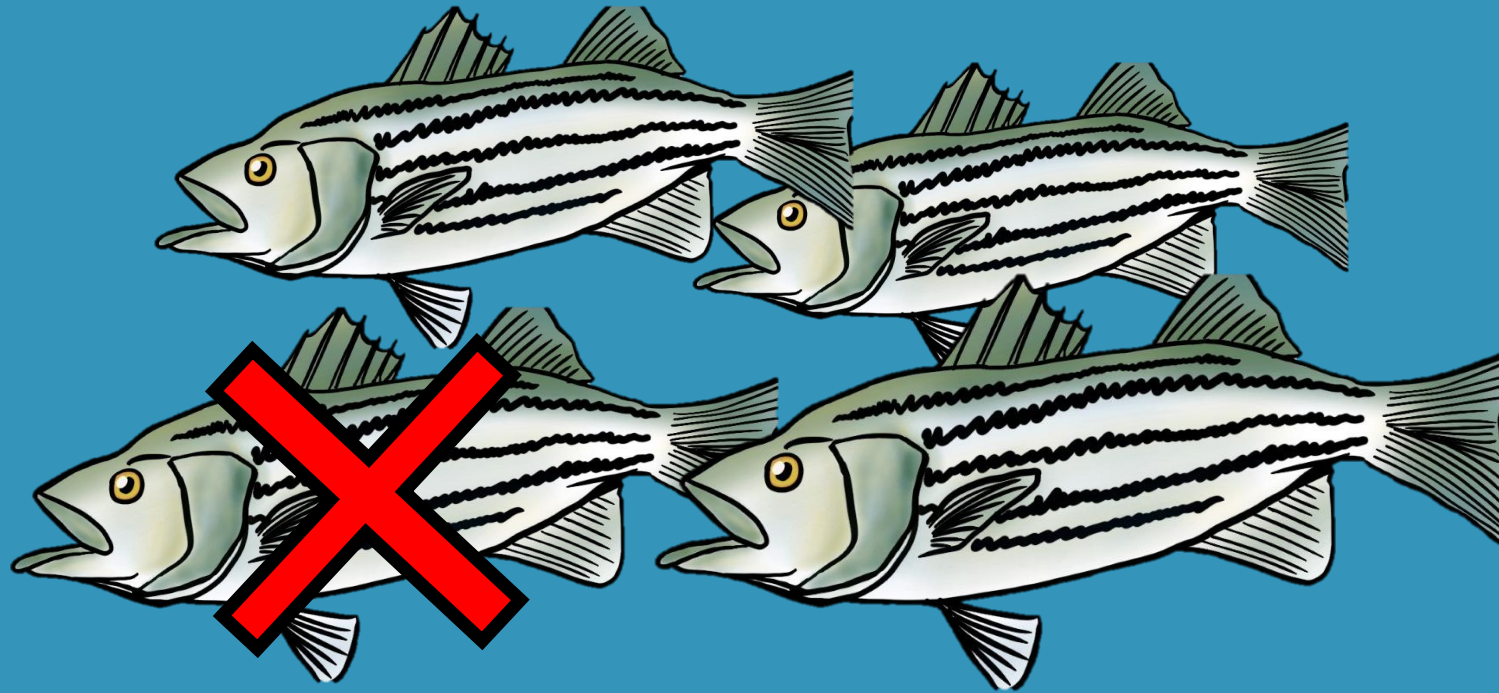
# C&R Results



# C&R Results



# C&R Results



Summer C&R mortality = 24%

How do we use this info to understand the affects of C&R mortality on growth potential?

Growth potential?

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Growth potential = Proportion of fish  $\geq 30$ ''

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Longevity

How do we use this info to understand the affects of C&R mortality on growth potential?

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Longevity

Growing conditions

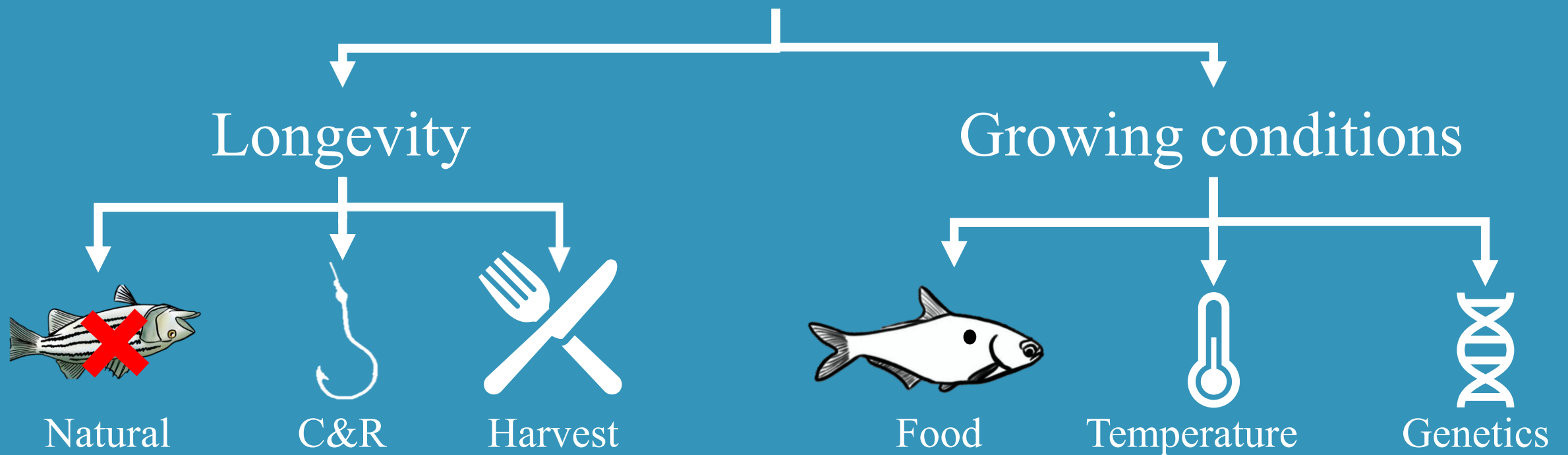
# How do we use this info to understand the affects of C&R mortality on growth potential?

Growth potential = Proportion of fish  $\geq 30''$



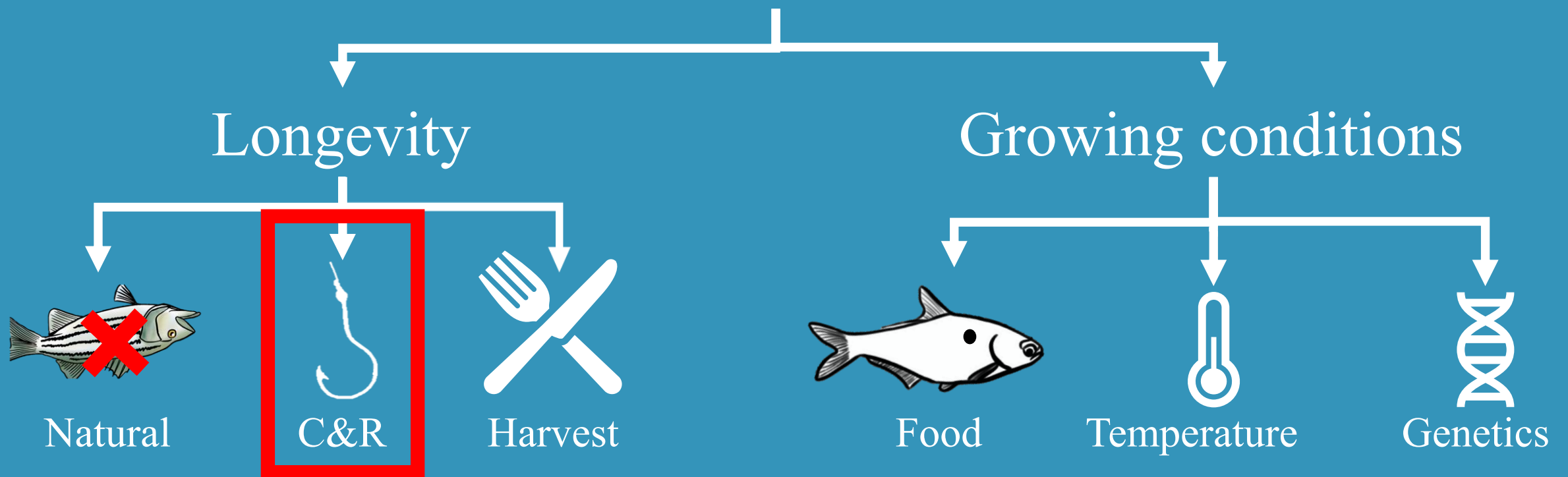
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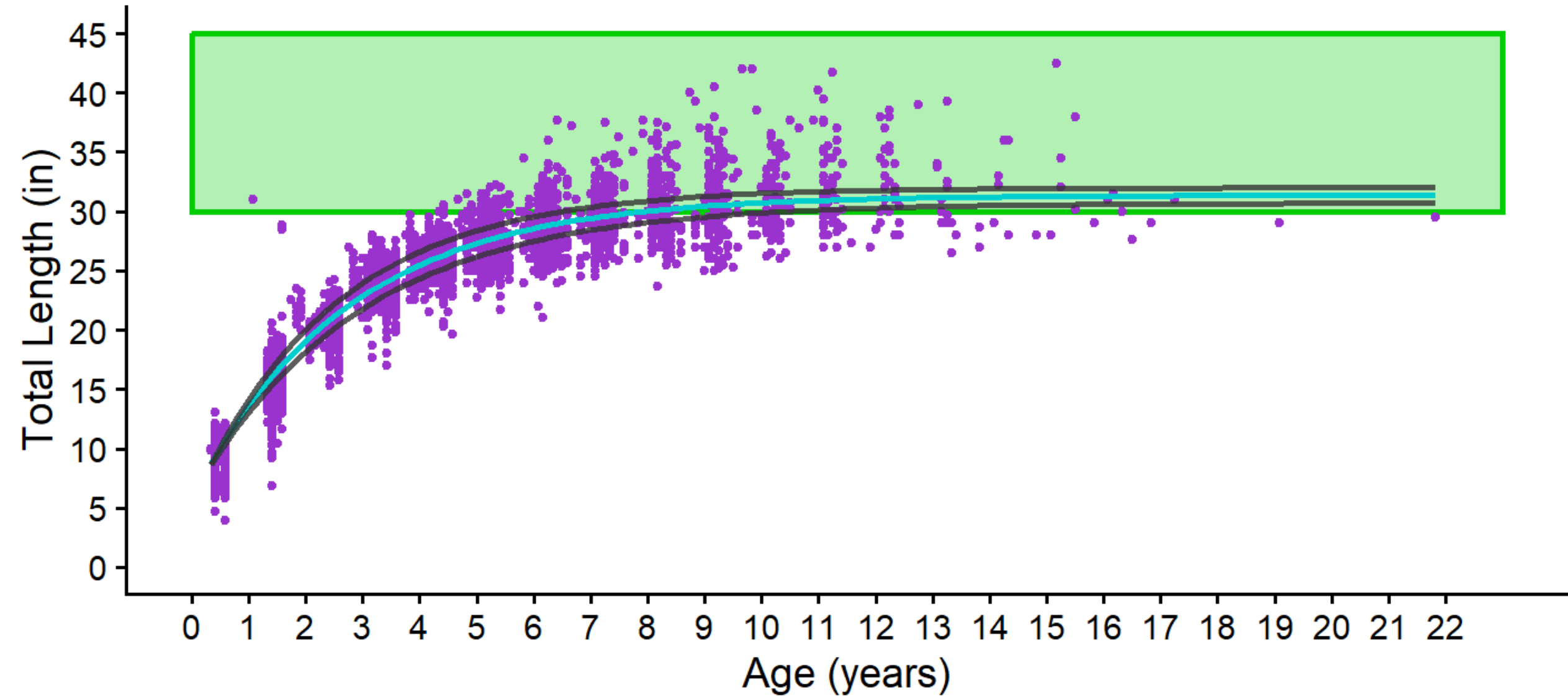


# How do we use this info to understand the affects of C&R mortality on growth potential?

Growth potential = Proportion of fish  $\geq 30''$

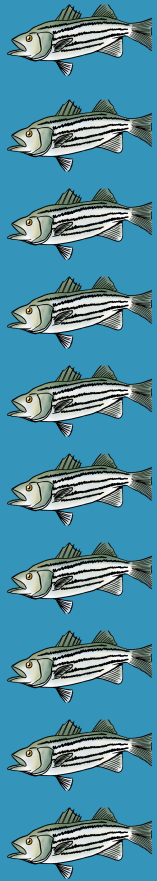


# Proportion of fish $\geq 30''$



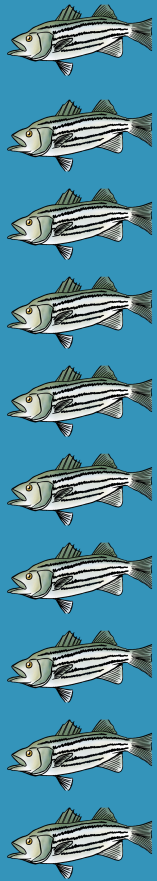
# How can we simulate this?

1000 age-3 Striped Bass



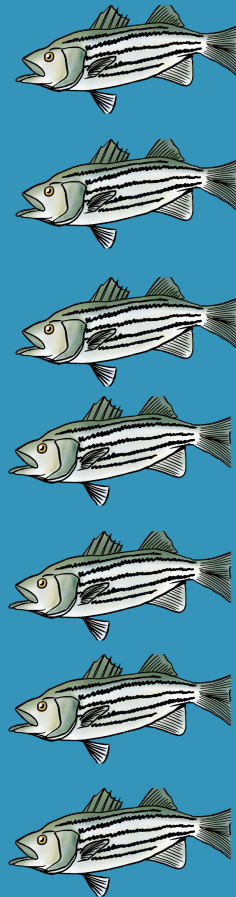
# How can we simulate this?

1000 age-3 Striped Bass



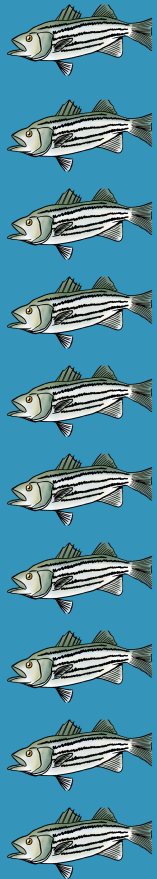
(Fish heads  
and gill nets)

age-4

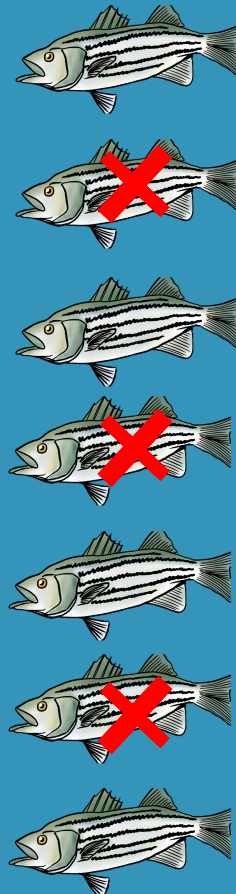


# How can we simulate this?

1000 age-3 Striped Bass



age-4



Let some fish die by annual mortality

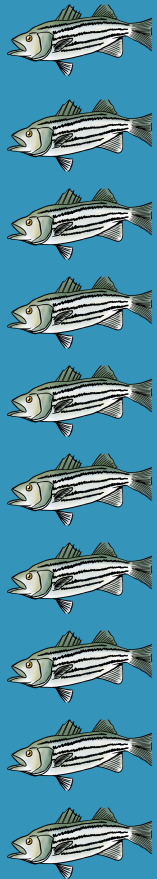
Tag-Return study  
% harvested  
% released

C&R mortality study  
% dead after release

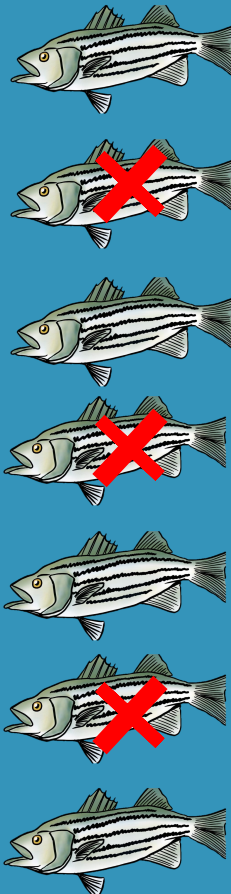
Badin Lake study  
% dead from natural  
causes

# How can we simulate this?

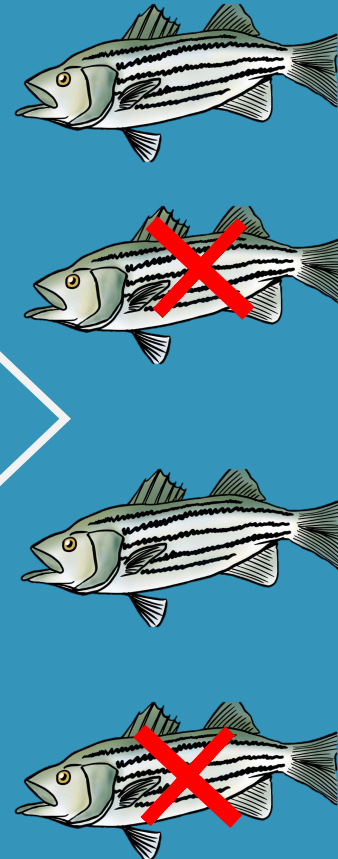
1000 age-3 Striped Bass



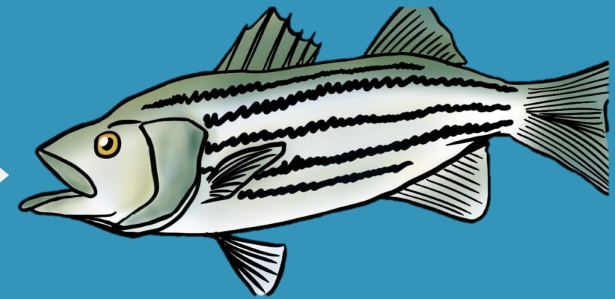
age-4



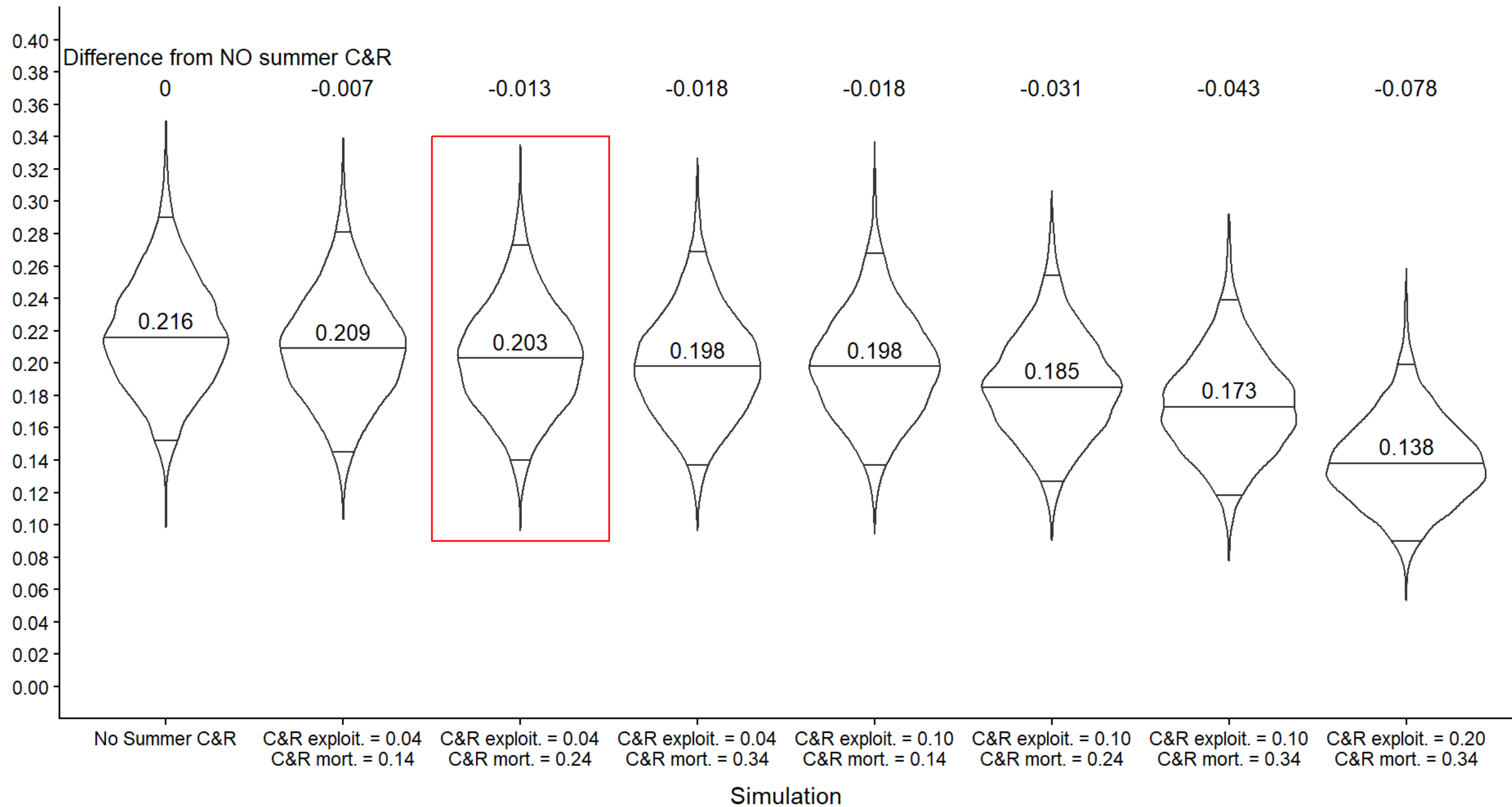
age-5



age-22



Probability of Age-3 Striped Bass growing  $\geq 762\text{mm}$



# Take Home points

- C&R was lower than previous studies estimated for SML
- Circle hooks Work!
- Under the current scenario, effects of C&R on growth potential are negligible
- Angler collaboration and participation is pivotal to our Success – Thank you!
- We don't have the data to do this with Citations (37+) but with fish heads of this size class we can update our models

# Acknowledgements



**Federal Aid Project**  
funded by your purchase  
of fishing equipment  
and motor boat fuels

Coastal Carolina University

- Brock Batson
- Riley Phelps
- Zach Ramsey

Virginia Department of Wildlife  
Resources

- George Palmer
- Tyler Young

Federal Aid in Sport Fish Restoration

Jeff Smith

Smith Mountain Striper Club

- Jon Anderson
- John Hughes
- Tim Barr

Special Thanks –

Lian Eng, Dr. Erin Burge, Wyatt Burge,  
Will Kurts, and Matthew Andresik



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**WILDLIFE RESOURCES**  
CONSERVE. CONNECT. PROTECT.



# Questions?

