

Appendix A. Sample survey

Long Island Sound Tautog (Blackfish) Angler Survey

**Make choices. Show your opinions. Improve the Tautog fishery.
We are researchers studying fishery management and angler behaviors.**

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Thank you for participating in this survey! This survey will take about 13 to 17 minutes for most people to complete. If you have any questions concerning your rights that Professor Schultz is unable to answer, you may contact the University of Connecticut Institutional Review Board (IRB) at 860-486-8802 (reference protocol X18-081).



Please enter your **authorization code** here! _____ (Only correct entries will be enrolled in the lottery!)

Section I. Background

This survey seeks your opinion on the best way to manage recreational fishing for Tautog. The first section asks questions about your background as a Tautog angler and provides you important information.

All the information published about this study will be presented in such a way that no individual can be identified; this is a secret ballot. All your answers will be kept strictly confidential within the research team.

Question 1. Considering the last five years of fishing:

How many days per year did you spend on salt water recreational fishing for any species?
_____ day(s) (please fill in a number for your best estimate)

How many days per year did you spend on recreational fishing for Tautog?
_____ day(s) (please fill in a number for your best estimate)

Question 2. Considering the last five years of fishing:

How many days did you fish Tautog per fall season?
_____ day(s) (please fill in a number for your best estimate)

How many hours per trip did you spend fishing for Tautog, on average, when you were on a trip for this fish?
_____ hour(s) (please fill in a number for your best estimate)

Question 3. How many Tautog, on average, did you catch and keep on a fishing trip for this fish? (Please fill in your best estimates)

On an average day targeting Tautog, I caught _____ fish and of these. Of the fish I caught, on average I kept _____ fish.

Question 4. Is your profession related to recreational or commercial fishing? (circle one)

My profession is related to recreational fishing

My profession is related to commercial fishing

My profession is related to both

My profession is related to neither

Question 5. How do you characterize yourself as a Tautog angler? (circle the most important to you)

I fish Tautog for fun

I fish Tautog for food

I want to catch very big ones

I want to catch fish that are big enough to eat

I like the fishing experience and want to share it with my children or grandchildren

Population status

- Fisheries managers have determined that the Long Island Sound Tautog population is overfished.
- As a result, managers are legally required to modify regulations to reduce harvest.

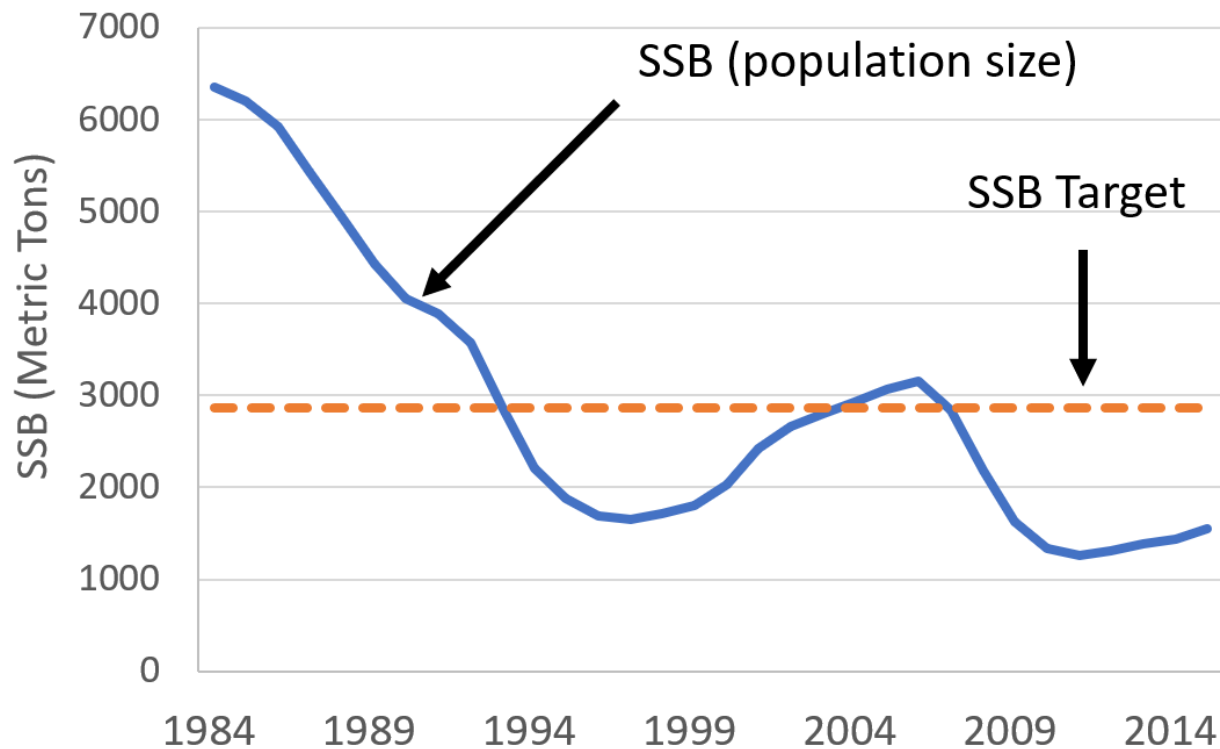


Figure 1. SSB plotted with their targets for the Long Island Sound region

Note: The figure comes from 2016 Tautog Stock Assessment Update by the Atlantic States Marine Fisheries Commission. As the SSB is below the target level (the level that produces the largest harvest), the stock is overfished.

Size and reproduction

- Large female Tautog produce many more eggs than small female Tautog.
- For example, a 20-inch female produces on average 7 times as many eggs as a 14-inch female. (Reference: Laplante and Schultz, 2007 in *Transactions of the American Fisheries Society*, and this study is based on Long Island Sound data)

Question 6. In your opinion, what about fishing for Tautog will change in the next 5 years if regulations remain the same? (circle all that apply)

The number of fish I catch will decrease

The number of fish I catch will increase

The number of keepers I catch will decrease

The number of keepers I catch will increase

The number of lunkers (large fish) I catch will decrease

The number of lunkers will increase

There will be no change

Other (please specify)

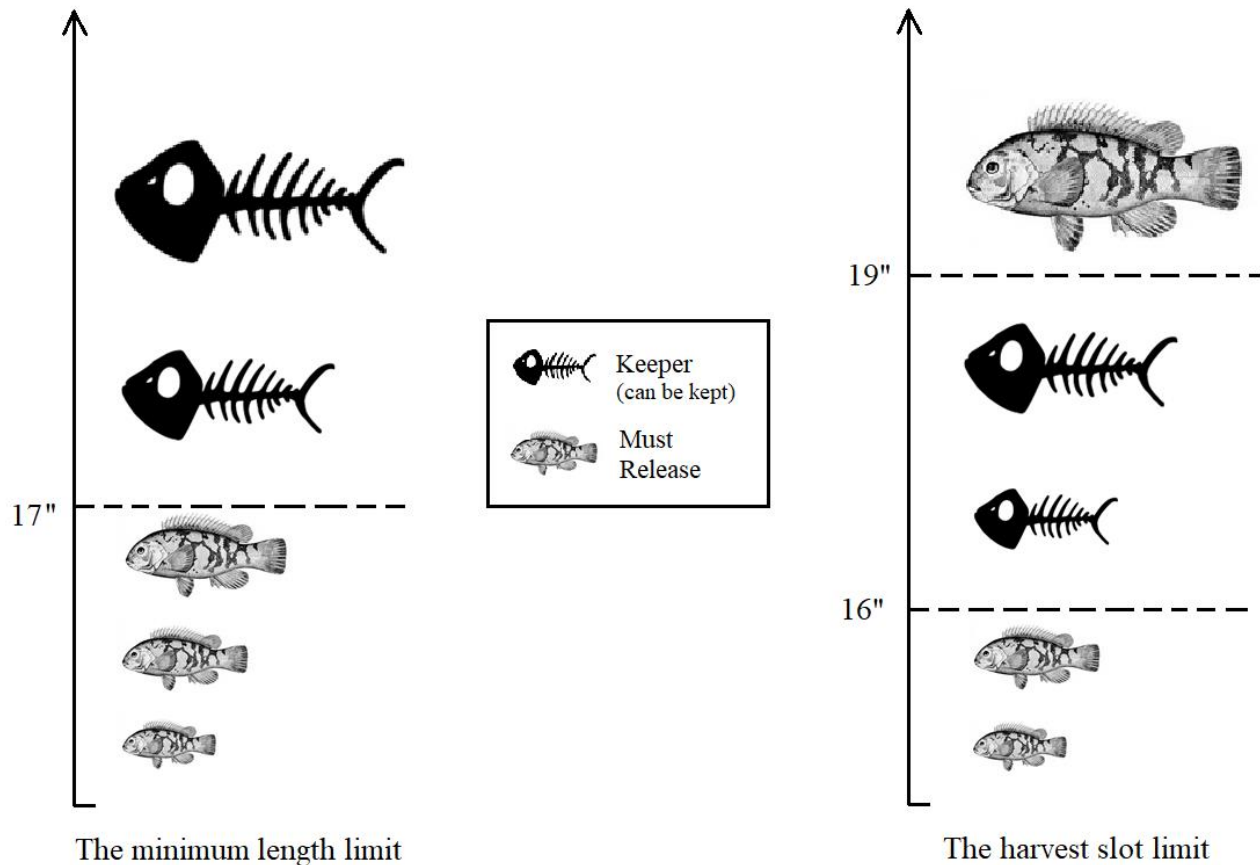


Figure 2. Proposed alternative size limits

Possible regulations to reduce harvest

- Harvest can be reduced by increasing the minimum length.
- At present, there is a minimum length limit for Tautog of 16". Managers have considered increasing the minimum length limit.
- Another kind of size limit is a harvest slot limit, setting both a minimum size and a maximum size between which fish may be kept.
- A harvest slot limit protects large female Tautog that produce more eggs.
- Harvest can also be reduced by decreasing daily possession limit or shortening the season.

Enforcement

- The effectiveness of a regulation increases with more enforcement.
- Changes in regulations may involve changes in license fees and other costs.
- Costs included in the survey's choice questions (see next section) would be used for fishery management activities sufficient to deliver the outcomes depicted in each scenario.

Question 7. In the last five years of fishing, how many times: (please enter estimated numbers)

Did you encounter officers enforcing the recreational fishing regulations? _____

Did you see their vehicles (cars, trucks, or boats)? _____

Section II: Choice Questions

*You will see **five different** choice questions in this section. Each of the following questions presents a set of scenarios involving different fishing regulations, enforcement levels, future outcomes for fishing, and related costs. Vote for Current Management, Alternative Management A, or Alternative Management B. Please choose as if you were voting on which of the regulation sets should be implemented, considering their associated outcomes.*

- The numbers presented in each scenario are based on the best scientific projections available; please take them at face value.
- The choice scenarios presented below combine different ways of reducing harvest. Your choices will be considered by managers who make real decisions regarding the fishery and anglers' experience. However, no regulations can be changed without public hearings and extensive technical reviews.

Imagine that changes to harvest restrictions, enforcement, and costs will be effective in 2020, and consider outcomes projected to occur in 5 years. Please tell us in each question which of the management options you prefer by crossing the box, comparing only the three options below. Each column (column Current, A, or B) presents one option.

Choice Question A.

I vote for:		Current Management <input type="checkbox"/>	Alternative Management A <input type="checkbox"/>	Alternative Management B <input type="checkbox"/>
Harvest restrictions	Size limit	Min: 16 inches No Max limit Only fish larger than 16 inches can be kept	Min: 16 inches Max: 21.5 inches Only fish between 16 inches and 21.5 inches can be kept	Min: 17 inches No Max limit Only fish larger than 17 inches can be kept
	Daily possession limit	3 fish per day Can keep as many as 3 fish per day	4 fish per day Can keep as many as 4 fish per day	1 fish per day Can keep as many as 1 fish per day
	Fall season length	50 days in Fall, starting Oct 10th No change in other seasons	50 days in Fall, starting Oct 5th No change in other seasons	40 days in Fall, starting Oct 10th No change in other seasons
	Enforcement level	16 officers There are 16 enforcement agents checking Tautog regulations in CT.	41 officers There are 41 enforcement agents checking Tautog regulations in CT.	90 officers There are 90 enforcement agents checking Tautog regulations in CT.
Outcome in 5 years	Tautog caught	100 % current management An average angler will catch as many fish as what they catch if current management remains	92% of current management An average angler will catch 92% as many fish as what they catch if current management remains	118% of current management An average angler will catch 118% as many as what they catch if current management remains
	Keepers caught	100% current management An average angler will catch as many keepers as what they catch if current management remains	81% of current management An average angler will catch 81% as many as what they catch if current management remains	96% of current management An average angler will catch 96% as many as what they catch if current management remains
	Lunkers caught	8 lunkers out of 10000 An average angler will catch 8 fish longer than 23" out of every 10000 caught	39 lunkers out of 10000 An average angler will catch 39 fish longer than 23" out of every 10000 caught	8 lunkers out of 10000 An average angler will catch 8 fish longer than 23" out of every 10000 caught
Cost	License and stamp fees	\$32 per year	\$45 per year Cost is higher if you fish for Tautog, and the increased costs will be used for fishery management activities sufficient to deliver the outcomes described in the scenario.	\$70 per year Cost is higher if you fish for Tautog, and the increased costs will be used for fishery management activities sufficient to deliver the outcomes described in the scenario.

Question A1.

Compared to your efforts to catch Tautog over the last five years, **will your fishing days in fall to catch Tautog change under the scenario you voted for above?** (Circle one)

- | | | |
|----------------------------|----------------------------|---------------------|
| Increase more than 48 days | Increase 36-48 days | Increase 24-36 days |
| Increase 12-24 days | Increase less than 12 days | |
| No Change | | |
| Decrease less than 12 days | Decrease 12-24 days | Decrease 24-36 days |
| Decrease 36-48 days | Decrease more than 48 days | |

Question A2.

Of anglers you know, **do you think they are likely to disregard** the harvest restrictions **under the chosen scenario**? (Circle all that apply)

- | | | |
|--------------------|--------------------------------|-----------------------------|
| Violate size limit | Violate daily possession limit | Violate season length limit |
| No | | |

Question A3.

What do you think the probability is that your voted option will be implemented?

- | | | | | | | |
|------------|------------|-------------|------------|------------|------------|------------|
| [0%, 10%) | [10%, 20%) | [20%, 30%) | [30%, 40%) | [40%, 50%) | [50%, 60%) | [60%, 70%) |
| [70%, 80%) | [80%, 90%) | [90%, 100%) | | | | |

Imagine that changes to harvest restrictions, enforcement, and costs will be effective in 2020, and consider outcomes projected to occur in 5 years. Please tell us in each question which of the management options you prefer by crossing the box, comparing only the three options below. Each column (column Current, A, or B) presents one option.

Choice Question B.

I vote for:		Current Management <input type="checkbox"/>	Alternative Management A <input type="checkbox"/>	Alternative Management B <input type="checkbox"/>
Harvest restrictions	Size limit	Min: 16 inches No Max limit Only fish larger than 16 inches can be kept	Min: 16 inches Max: 19 inches Only fish between 16 inches and 19 inches can be kept	Min: 16 inches Max: 21.5 inches Only fish between 16 inches and 21.5 inches can be kept
	Daily possession limit	3 fish per day Can keep as many as 3 fish per day	3 fish per day Can keep as many as 3 fish per day	3 fish per day Can keep as many as 3 fish per day
	Fall season length	50 days in Fall, starting Oct 10th No change in other seasons	40 days in Fall, starting Oct 5th No change in other seasons	50 days in Fall, starting Oct 10th No change in other seasons
	Enforcement level	16 officers There are 16 enforcement agents checking Tautog regulations in CT.	67 officers There are 67 enforcement agents checking Tautog regulations in CT.	16 officers There are 16 enforcement agents checking Tautog regulations in CT.
Outcome in 5 years	Tautog caught	100 % current management An average angler will catch as many fish as what they catch if current management remains	103% of current management An average angler will catch 103% as many fish as what they catch if current management remains	100% of current management An average angler will catch 100% as many as what they catch if current management remains
	Keepers caught	100% current management An average angler will catch as many keepers as what they catch if current management remains	81% of current management An average angler will catch 81% as many as what they catch if current management remains	97% of current management An average angler will catch 97% as many as what they catch if current management remains
	Lunkers caught	8 lunkers out of 10000 An average angler will catch 8 fish longer than 23" out of every 10000 caught	72 lunkers out of 10000 An average angler will catch fish longer than 23" out of every 10000 caught	38 lunkers out of 10000 An average angler will catch fish longer than 23" out of every 10000 caught
Cost	License and stamp fees	\$32 per year	\$32 per year Cost is higher if you fish for Tautog, and the increased costs will be used for fishery management activities sufficient to deliver the outcomes described in the scenario.	\$85 per year Cost is higher if you fish for Tautog, and the increased costs will be used for fishery management activities sufficient to deliver the outcomes described in the scenario.

Question B1.

Compared to your efforts to catch Tautog over the last five years, **will your fishing days in fall to catch Tautog change under the scenario you voted for above?** (Circle one)

- | | | |
|----------------------------|----------------------------|---------------------|
| Increase more than 48 days | Increase 36-48 days | Increase 24-36 days |
| Increase 12-24 days | Increase less than 12 days | |
| No Change | | |
| Decrease less than 12 days | Decrease 12-24 days | Decrease 24-36 days |
| Decrease 36-48 days | Decrease more than 48 days | |

Question B2.

Of anglers you know, **do you think they are likely to disregard** the harvest restrictions **under the chosen scenario**? (Circle all that apply)

- | | | |
|--------------------|--------------------------------|-----------------------------|
| Violate size limit | Violate daily possession limit | Violate season length limit |
| No | | |

Question B3.

What do you think the probability is that your voted option will be implemented?

- | | | | | | | |
|------------|------------|-------------|------------|------------|------------|------------|
| [0%, 10%) | [10%, 20%) | [20%, 30%) | [30%, 40%) | [40%, 50%) | [50%, 60%) | [60%, 70%) |
| [70%, 80%) | [80%, 90%) | [90%, 100%) | | | | |

Imagine that changes to harvest restrictions, enforcement, and costs will be effective in 2020, and consider outcomes projected to occur in 5 years. Please tell us in each question which of the management options you prefer by crossing the box, comparing only the three options below. Each column (column Current, A, or B) presents one option.

Choice Question C.

I vote for:		Current Management <input type="checkbox"/>	Alternative Management A <input type="checkbox"/>	Alternative Management B <input type="checkbox"/>
Harvest restrictions	Size limit	Min: 16 inches No Max limit Only fish larger than 16 inches can be kept	Min: 16 inches Max: 19 inches Only fish between 16 inches and 19 inches can be kept	Min: 16 inches Max: 19 inches Only fish between 16 inches and 19 inches can be kept
	Daily possession limit	3 fish per day Can keep as many as 3 fish per day	4 fish per day Can keep as many as 4 fish per day	1 fish per day Can keep as many as 1 fish per day
	Fall season length	50 days in Fall, starting Oct 10th No change in other seasons	50 days in Fall, starting Oct 10th No change in other seasons	40 days in Fall, starting Oct 5th No change in other seasons
	Enforcement level	16 officers There are 16 enforcement agents checking Tautog regulations in CT.	16 officers anglers' Tautog regulations in CT.	90 officers There are 90 enforcement agents checking Tautog regulations in CT.
Outcome in 5 years	Tautog caught	100 % current management An average angler will catch as many fish as what they catch if current management remains	103% of current management An average angler will catch 103% as many fish as what they catch if current management remains	115% of current management An average angler will catch 115% as many as what they catch if current management remains
	Keepers caught	100% current management An average angler will catch as many keepers as what they catch if current management remains	80% of current management An average angler will catch 80% as many as what they catch if current management remains	96% of current management An average angler will catch 96% as many as what they catch if current management remains
	Lunkers caught	8 lunkers out of 10000 An average angler will catch 8 fish longer than 23" out of every 10000 caught	72 lunkers out of 10000 An average angler will catch 72 fish longer than 23" out of every 10000 caught	66 lunkers out of 10000 An average angler will catch 66 fish longer than 23" out of every 10000 caught
Cost	License and stamp fees	\$32 per year	\$32 per year Cost is higher if you fish for Tautog, and the increased costs will be used for fishery management activities sufficient to deliver the outcomes described in the scenario.	\$45 per year Cost is higher if you fish for Tautog, and the increased costs will be used for fishery management activities sufficient to deliver the outcomes described in the scenario.

Question C1.

Compared to your efforts to catch Tautog over the last five years, **will your fishing days in fall to catch Tautog change under the scenario you voted for above?** (Circle one)

- | | | |
|----------------------------|----------------------------|---------------------|
| Increase more than 48 days | Increase 36-48 days | Increase 24-36 days |
| Increase 12-24 days | Increase less than 12 days | |
| No Change | | |
| Decrease less than 12 days | Decrease 12-24 days | Decrease 24-36 days |
| Decrease 36-48 days | Decrease more than 48 days | |

Question C2.

Of anglers you know, **do you think they are likely to disregard** the harvest restrictions **under the chosen scenario**? (Circle all that apply)

- | | | |
|--------------------|--------------------------------|-----------------------------|
| Violate size limit | Violate daily possession limit | Violate season length limit |
| No | | |

Question C3.

What do you think the probability is that your voted option will be implemented?

- | | | | | | | |
|------------|------------|-------------|------------|------------|------------|------------|
| [0%, 10%) | [10%, 20%) | [20%, 30%) | [30%, 40%) | [40%, 50%) | [50%, 60%) | [60%, 70%) |
| [70%, 80%) | [80%, 90%) | [90%, 100%) | | | | |

Imagine that changes to harvest restrictions, enforcement, and costs will be effective in 2020, and consider outcomes projected to occur in 5 years. Please tell us in each question which of the management options you prefer by crossing the box, comparing only the three options below. Each column (column Current, A, or B) presents one option.

Choice Question D.

I vote for:		Current Management <input type="checkbox"/>	Alternative Management A <input type="checkbox"/>	Alternative Management B <input type="checkbox"/>
Harvest restrictions	Size limit	Min: 16 inches No Max limit Only fish larger than 16 inches can be kept	Min: 17 inches No Max limit Only fish larger than 17 inches can be kept	Min: 17 inches No Max limit Only fish larger than 17 inches can be kept
	Daily possession limit	3 fish per day Can keep as many as 3 fish per day	1 fish per day Can keep as many as 1 fish per day	3 fish per day Can keep as many as 3 fish per day
	Fall season length	50 days in Fall, starting Oct 10th No change in other seasons	50 days in Fall, starting Oct 5th No change in other seasons	40 days in Fall, starting Oct 10th No change in other seasons
	Enforcement level	16 officers There are 16 enforcement agents checking Tautog regulations in CT.	67 officers There are 67 enforcement agents checking Tautog regulations in CT.	67 officers There are 67 enforcement agents checking Tautog regulations in CT.
Outcome in 5 years	Tautog caught	100% current management An average angler will catch as many fish as what they catch if current management remains	103% of current management An average angler will catch 103% as many fish as what they catch if current management remains	107% of current management An average angler will catch 107% as many as what they catch if current management remains
	Keepers caught	100% current management An average angler will catch as many keepers as what they catch if current management remains	68% of current management An average angler will catch 68% as many as what they catch if current management remains	75% of current management An average angler will catch 75% as many as what they catch if current management remains
	Lunkers caught	8 lunkers out of 10000 An average angler will catch 8 fish longer than 23" out of every 10000 caught	4 lunkers out of 10000 An average angler will catch 4 fish longer than 23" out of every 10000 caught	5 lunkers out of 10000 An average angler will catch 5 fish longer than 23" out of every 10000 caught
Cost	License and stamp fees	\$32 per year	\$45 per year Cost is higher if you fish for Tautog, and the increased costs will be used for fishery management activities sufficient to deliver the outcomes described in the scenario.	\$70 per year Cost is higher if you fish for Tautog, and the increased costs will be used for fishery management activities sufficient to deliver the outcomes described in the scenario.

Question D1.

Compared to your efforts to catch Tautog over the last five years, **will your fishing days in fall to catch Tautog change under the scenario you voted for above?** (Circle one)

- | | | |
|----------------------------|----------------------------|---------------------|
| Increase more than 48 days | Increase 36-48 days | Increase 24-36 days |
| Increase 12-24 days | Increase less than 12 days | |
| No Change | | |
| Decrease less than 12 days | Decrease 12-24 days | Decrease 24-36 days |
| Decrease 36-48 days | Decrease more than 48 days | |

Question D2.

Of anglers you know, **do you think they are likely to disregard** the harvest restrictions **under the chosen scenario**? (Circle all that apply)

- | | | |
|--------------------|--------------------------------|-----------------------------|
| Violate size limit | Violate daily possession limit | Violate season length limit |
| No | | |

Question D3.

What do you think the probability is that your voted option will be implemented?

- | | | | | | | |
|------------|------------|-------------|------------|------------|------------|------------|
| [0%, 10%) | [10%, 20%) | [20%, 30%) | [30%, 40%) | [40%, 50%) | [50%, 60%) | [60%, 70%) |
| [70%, 80%) | [80%, 90%) | [90%, 100%) | | | | |

Section IV: Demographic Information Question

Please circle answers that fit you best.

1. What is your gender?
 - A. Male
 - B. Female
 - C. Not-gender conforming
 - D. Prefer not to answer

2. Which range covers your age?
 - A. 18-20
 - B. 21-30
 - C. 31- 40
 - D. 41- 50
 - E. 51- 60
 - F. 61 -70
 - G. 71 or above
 - H. Prefer not to answer

3. What is the highest level of education you have completed?
 - A. High school or less
 - B. Associate's degree or some college
 - C. Bachelor's degree
 - D. Graduate degree or some graduate school
 - E. Prefer not to answer

4. What category best describes your annual household income before taxes?
 - A. < \$25,000
 - B. \$25,000-\$49,999
 - C. \$50,000-\$99,999
 - D. \$100,000-\$149,999
 - E. \$150,000 - \$200,000
 - F. > \$200,000

5. With what racial or ethnic group do you most closely associate?
 - A. White
 - B. Hispanic, Latino, or Spanish
 - C. Black or African American

D. Asian

E. American Indian or Alaska Native

F. Middle Eastern or North African

G. Native Hawaiian or other Pacific Islander

H. Some other race or ethnicity

6. Do you have at least one child that fishes with you or might fish in the future?

A. Yes

B. No

7. If you have anything related to this survey to say, share it with us! We appreciate any comments you make here!