



English



Introduction

Welcome to the Virginia Middle Peninsula Recreational Angling Survey! This survey contains approximately 25 questions and is expected to take 15 minutes to complete. Your responses will help inform fishery and coastal managers about recreational angling in the region and the economic importance of coastal habitats.

You were invited to participate in this survey because you were licensed or registered to fish recreationally in Virginia tidal waters during 2021 and had a mailing address in or near the Middle Peninsula. Participation in this research is voluntary and you are free to withdraw at any time without penalty. You must be at least 18 years of age to participate. Your individual responses are considered confidential information and will not be shared publicly. All responses will be anonymized at the conclusion of the survey. Survey

results will be shared through publications and presentations to stakeholders and the public.

This research is funded by the Chesapeake Bay Office of the National Oceanic and Atmospheric Administration. If you have any questions or concerns regarding participation in this research, please contact Dr. Andrew M. Scheld at the Virginia Institute of Marine Science by email (scheld@vims.edu) or telephone (804-684-7160).

You may report dissatisfaction with any aspect of this study to Dr. Jennifer A. Stevens, Ph.D., Chair of the Protection of Human Subjects Committee by email (jastev@wm.edu) or telephone (757-221-3862).

By continuing to the survey, you indicate that you agree to participate in this voluntary study and have read the information provided above.

Thank you for your time and participation!

Principal Investigators:

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THIS PROJECT WAS APPROVED BY WILLIAM & MARY
PROTECTION OF HUMAN SUBJECTS COMMITTEE (Phone: 757-
221-3966) ON 2022-04-01.

Recent fishing

In 2021, approximately how many recreational fishing trips did you take in Virginia tidal waters (inshore waters to three miles offshore)? (Please enter the total number of trips)

Fishing questions

When recreationally fishing in Virginia tidal waters, what is your primary fishing mode?

- ☐ Charter or party boat
- ☐ Pier, jetty, bridge or dock
- ☐ Private motorized boat

- ☐ Private non-motorized boat (e.g., kayak)
- ☐ Shore (beach, marsh, riprap revetment or seawall)
- ☐ Other (please describe)

In 2021, which species did you target when recreationally fishing in Virginia tidal waters? (*Select all that apply*)


- ☐ Black drum
- ☐ Bluefish
- ☐ Catfish (blue, channel, flathead)
- ☐ Cobia
- ☐ Croaker/spot
- ☐ Kingfish (sea mullet, roundhead)
- ☐ King/Spanish mackerel
- ☐ Red drum
- ☐ Sheepshead
- ☐ Spadefish
- ☐ Summer flounder
- ☐ Spotted seatrout (speckled trout)
- ☐ Striped bass
- ☐ Tautog
- ☐ Whatever bites
- ☐ Other (please describe)

In 2021, what locations did you visit when recreationally fishing in Virginia tidal waters? (*Select all that apply*)

- ☐ Atlantic Ocean
- ☐ Chesapeake Bay - Mainstem
- ☐ Chesapeake Bay - Mouth
- ☐ Eastern Shore - Bayside
- ☐ Eastern Shore - Seaside Bays
- ☐ James River and tributaries
- ☐ Mobjack Bay and tributaries
- ☐ Piankatank River
- ☐ Potomac River and tributaries
- ☐ Rappahannock River and tributaries
- ☐ York River and tributaries
- ☐ Other (please describe)

Please mark on the map the fishing location you visit most frequently when recreational fishing in tidal waters around the Middle Peninsula of Virginia. If you visit multiple locations with a similar frequency, please mark your most recent fishing location. (*As a reminder, only aggregated data collected through this survey will be shared; individual responses will not be disclosed under any circumstances.*)



- 
- ☐ Yes
 - ☐ No
 - ☐ I do not know

Bait

In 2021, which species did you catch for use as bait when recreationally fishing in Virginia tidal waters? (*Select all that apply*)

- ☐ I did not catch my own bait
- ☐ Crabs (e.g., fiddler crabs, blue crabs)
- ☐ Croaker/spot
- ☐ Eel
- ☐ Finger mullet
- ☐ Grass shrimp
- ☐ Menhaden
- ☐ Minnows (e.g., mummichogs, killifish, sheepshead minnows)
- ☐ Pinfish

☐ Other (please describe)

In 2021, which types of habitats did you visit to catch bait for use when recreationally fishing in Virginia tidal waters?
(*Select all that apply*)

- ☐ I did not catch my own bait
- ☐ Beach or sandy shoreline
- ☐ Man-made bottom structure (artificial reef, bridge or pier pile)
- ☐ Man-made shoreline structure (bulkhead, rock or riprap revetment, seawall)
- ☐ Marsh or living shoreline
- ☐ Open water
- ☐ Oyster reef or other natural hard bottom
- ☐ Seagrass bed
- ☐ Other (please describe)

Habitat questions

In 2021, which types of habitats did you visit to catch target species when recreationally fishing in Virginia tidal waters?
(*Select all that apply*)

- ☐ Beach or sandy shoreline
- ☐ Man-made bottom structure (artificial reef, bridge or pier pile)
- ☐ Man-made shoreline structure (bulkhead, rock or riprap revetment, seawall)
- ☐ Marsh or living shoreline
- ☐ Open water
- ☐ Oyster reef or other natural hard bottom
- ☐ Seagrass bed
- ☐ Other (please describe)

Please indicate how important you feel each habitat type is in supporting healthy recreational fisheries in Virginia tidal waters, acknowledging that even if you do not visit or directly utilize a particular type of habitat it may still be important in supporting recreational species.

Beach or sandy shoreline

Man-made bottom structure (artificial reef, bridge or pier pile)

Man-made shoreline structure (bulkhead, rock or riprap revetment, seawall)

Marsh or living shoreline

Open water

Oyster reef or other natural hard bottom

Seagrass bed

For those habitats you felt were "Extremely important" or "Very important" in supporting healthy recreational fisheries in Virginia tidal waters, what beneficial functions do you feel these habitats provide for recreational fish species? (*Select all that apply*)

- ☐ Access to food/forage
- ☐ Protection from predators
- ☐ Spawning/breeding areas
- ☐ I do not know
- ☐ Other (please describe)



A living shoreline is a pile (sill) of rocks, oyster bags, oyster reef structures, or fiber logs placed in front of an existing or planted marsh to protect and stabilize the coastal edge. Living shorelines in the Middle Peninsula have been found to provide habitat for a variety of wildlife, including several species of fish.

Please indicate how you view living shorelines as compared to natural marshes in supporting healthy recreational fisheries in Virginia tidal waters.

- ☐ I view living shorelines as similar or identical to natural marshes
- ☐ I view living shorelines as superior to natural marshes
- ☐ I view living shorelines as inferior to natural marshes

- ☐ I do not know
- ☐ Other (please describe)

Travel 1

You indicated that you visited **beach or sandy shoreline habitats** when recreationally fishing in Virginia tidal waters for target or bait species. The next several questions pertain to your recreational fishing activities at these locations.

In 2021, approximately how many recreational fishing trips did you take to beach or sandy shoreline habitats for the purpose of catching target or bait species? (Please enter the total number of trips)

Approximately how long does it take you to travel to beach or sandy shoreline habitats where you recreationally fish for target or bait species when traveling from your residence?

Please indicate separately average one-way travel times for travel on land and on water. If you typically do not travel to beach or sandy shoreline habitats directly from your residence, please leave the fields below blank.

One-way travel time on land (minutes)

One-way travel time on water
(minutes)

In 2021, how much did you typically spend per fishing trip on trip-related expenses when recreationally fishing at beach or sandy shoreline habitats in Virginia tidal waters? Include all trip expenses such as bait, chum, ice, fuel, food and drinks, lodging, and charter or guide fees. (If you typically split trip costs, indicate only your personal share of expenses)

Travel 2

You indicated that visited **man-made bottom structure habitats** (artificial reef, bridge or pier pile) when recreationally fishing in Virginia tidal waters for target or bait species. The next several questions pertain to your recreational fishing activities at these locations.

In 2021, approximately how many recreational fishing trips did you take to man-made bottom structure habitats for the purpose of catching target or bait species? (Please enter the total number of trips)

Approximately how long does it take you to travel to man-made bottom structure habitats where you recreationally fish for target or bait species when traveling from your residence? Please indicate separately average one-way travel times for travel on land and on water. If you typically do not travel to man-made bottom structure habitats directly from your residence, please leave the fields below blank.

One-way travel time on land (minutes)

One-way travel time on water
(minutes)

In 2021, how much did you typically spend per fishing trip on trip-related expenses when recreationally fishing at man-made bottom structure habitats in Virginia tidal waters? Include all trip expenses such as bait, chum, ice, fuel, food and drinks, lodging, and charter or guide fees. (If you typically split trip costs, indicate only your personal share of expenses)

Travel 3

You indicated that you visited **man-made shoreline structure habitats** (bulkhead, rock or riprap revetment, seawall) when recreationally fishing in Virginia tidal waters for target or bait species. The next several questions pertain to your recreational fishing activities at these locations.

In 2021, approximately how many recreational fishing trips did you take to man-made shoreline structure habitats for the purpose of catching target or bait species? (Please enter the total number of trips)

Approximately how long does it take you to travel to man-made shoreline structure habitats where you recreationally fish for target or bait species when traveling from your residence? Please indicate separately average one-way travel times for travel on land and on water. If you typically do not travel to man-made shoreline structure habitats directly from your residence, please leave the fields below blank.

One-way travel time on land (minutes)

One-way travel time on water
(minutes)

In 2021, how much did you typically spend per fishing trip on trip-related expenses when recreationally fishing at man-made shoreline structure habitats in Virginia tidal waters? Include all trip expenses such as bait, chum, ice, fuel, food and drinks, lodging, and charter or guide fees. (If you typically split trip costs, indicate only your personal share of expenses)

Travel 4

You indicated that you visited **marsh or living shoreline habitats** when recreationally fishing in Virginia tidal waters for target or bait species. The next several questions pertain to your recreational fishing activities at these locations.

In 2021, approximately how many recreational fishing trips did you take to marsh or living shoreline habitats for the purpose of catching target or bait species? (Please enter the total number of trips)

Approximately how long does it take you to travel to marsh or living shoreline habitats where you recreationally fish for target or bait species when traveling from your residence? Please indicate separately average one-way travel times for travel on land and on water. If you typically do not travel to marsh or living shoreline habitats directly from your residence, please leave the fields below blank.

One-way travel time on land (minutes)

One-way travel time on water
(minutes)

In 2021, how much did you typically spend per fishing trip on trip-related expenses when recreationally fishing at marsh or living shoreline habitats in Virginia tidal waters? Include all trip expenses such as bait, chum, ice, fuel, food and drinks, lodging, and charter or guide fees. (If you typically split trip costs, indicate only your personal share of expenses)

Travel 5

You indicated that you visited **open water habitats** when recreationally fishing in Virginia tidal waters for target or bait species. The next several questions pertain to your recreational fishing activities at these locations.

In 2021, approximately how many recreational fishing trips did you take to open water habitats for the purpose of catching target or bait species? (Please enter the total number of trips)

Approximately how long does it take you to travel to open water habitats where you recreationally fish for target or bait species when traveling from your residence? Please indicate separately average one-way travel times for travel on land and on water. If you typically do not travel to open

water habitats directly from your residence, please leave the fields below blank.

One-way travel time on land (minutes)

One-way travel time on water
(minutes)

In 2021, how much did you typically spend per fishing trip on trip-related expenses when recreationally fishing at open water habitats in Virginia tidal waters? Include all trip expenses such as bait, chum, ice, fuel, food and drinks, lodging, and charter or guide fees. (If you typically split trip costs, indicate only your personal share of expenses)

Travel 6

You indicated that you visited **oyster reef or other natural hard bottom habitats** when recreationally fishing in Virginia tidal waters for target or bait species. The next

several questions pertain to your recreational fishing activities at these locations.

In 2021, approximately how many recreational fishing trips did you take to oyster reef or other natural hard bottom habitats for the purpose of catching target or bait species? (Please enter the total number of trips)

Approximately how long does it take you to travel to oyster reef or other natural hard bottom habitats where you recreationally fish for target or bait species when traveling from your residence? Please indicate separately average one-way travel times for travel on land and on water. If you typically do not travel to oyster reef or other natural hard bottom habitats directly from your residence, please leave the fields below blank.

One-way travel time on land (minutes)

One-way travel time on water
(minutes)

In 2021, how much did you typically spend per fishing trip on trip-related expenses when recreationally fishing at oyster reef or other natural hard bottom habitats in Virginia tidal waters? Include all trip expenses such as bait, chum, ice, fuel, food and drinks, lodging, and charter or guide fees. (If you typically split trip costs, indicate only your personal share of expenses)

Travel 7

You indicated that you visited **seagrass bed habitats** when recreationally fishing in Virginia tidal waters for target or bait species. The next several questions pertain to your recreational fishing activities at these locations.

In 2021, approximately how many recreational fishing trips did you take to seagrass bed habitats for the purpose of catching target or bait species? (Please enter the total number of trips)

Approximately how long does it take you to travel to seagrass bed habitats where you recreationally fish for target or bait species when traveling from your residence? Please indicate separately average one-way travel times for travel on land and on water. If you typically do not travel to seagrass bed habitats directly from your residence, please leave the fields below blank.

One-way travel time on land (minutes)

One-way travel time on water
(minutes)

In 2021, how much did you typically spend per fishing trip on trip-related expenses when recreationally fishing at seagrass bed habitats in Virginia tidal waters? Include all

trip expenses such as bait, chum, ice, fuel, food and drinks, lodging, and charter or guide fees. (If you typically split trip costs, indicate only your personal share of expenses)

DCE description

This section of the survey presents two hypothetical recreational fishing trip choice scenarios. Each scenario includes two trip options (Option A and Option B) that may differ in terms of the shoreline habitat visited, total travel time to reach the fishing site, and trip costs. A third no-trip option (Option C) is also presented to provide an alternative if neither fishing trip is desirable.



Trip costs include all direct expenses associated with a recreational fishing trip, such as fuel for your vehicle or boat, food and drinks, ice, and bait. Total travel time captures the amount of time in minutes it would take you to reach the fishing site when traveling from your residence, including both travel time on land and on the water.

For each recreational fishing trip option, assume you would use fishing gear, methods, and site access modes that you

typically use, go during the season you would typically fish, and target species you typically target. In each choice scenario, you will be asked to choose the option you most prefer. Please do not compare options presented across different choice scenarios.

DCE – low cost A

CHOICE SCENARIO

	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Marsh / Living shoreline	Bulkhead	
Total travel time	30 minutes	15 minutes	
Trip cost to you	\$17	\$24	



Choose your most preferred option from the list below:

☐ Option A

☐ Option B

☐ Option C

CHOICE SCENARIO

	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Riprap revetment	Marsh / Living shoreline	
Total travel time	45 minutes	45 minutes	
Trip cost to you	\$10	\$24	

Choose your most preferred option from the list below:



☐ Option A

☐ Option B

☐ Option C

DCE – low cost B



CHOICE SCENARIO

	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Beach	Marsh / Living shoreline	
Total travel time	30 minutes	15 minutes	
Trip cost to you	\$17	\$10	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

CHOICE SCENARIO



	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Riprap revetment	Bulkhead	
Total travel time	30 minutes	15 minutes	
Trip cost to you	\$24	\$10	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

DCE – low cost C



CHOICE SCENARIO

	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Beach	Bulkhead	
Total travel time	15 minutes	30 minutes	
Trip cost to you	\$10	\$17	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

CHOICE SCENARIO



	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Bulkhead	Marsh / Living shoreline	
Total travel time	30 minutes	15 minutes	
Trip cost to you	\$10	\$17	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

DCE – low cost D



CHOICE SCENARIO

	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Beach	Beach	
Total travel time	15 minutes	45 minutes	
Trip cost to you	\$17	\$10	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

CHOICE SCENARIO



	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Riprap revetment	Marsh / Living shoreline	
Total travel time	15 minutes	30 minutes	
Trip cost to you	\$17	\$10	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

DCE – low cost E



CHOICE SCENARIO

	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Riprap revetment	Beach	
Total travel time	45 minutes	30 minutes	
Trip cost to you	\$24	\$24	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

CHOICE SCENARIO



	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Riprap revetment	Bulkhead	
Total travel time	30 minutes	45 minutes	
Trip cost to you	\$10	\$17	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

DCE – high cost A



CHOICE SCENARIO

	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Marsh / Living shoreline	Bulkhead	
Total travel time	45 minutes	30 minutes	
Trip cost to you	\$52	\$73	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

CHOICE SCENARIO



	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Riprap revetment	Marsh / Living shoreline	
Total travel time	60 minutes	60 minutes	
Trip cost to you	\$31	\$73	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

DCE – high cost B



CHOICE SCENARIO

	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Beach	Marsh / Living shoreline	
Total travel time	45 minutes	30 minutes	
Trip cost to you	\$52	\$31	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

CHOICE SCENARIO



	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Riprap revetment	Bulkhead	
Total travel time	45 minutes	30 minutes	
Trip cost to you	\$73	\$31	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

DCE – high cost C



CHOICE SCENARIO

	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Beach	Bulkhead	
Total travel time	30 minutes	45 minutes	
Trip cost to you	\$31	\$52	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

CHOICE SCENARIO



	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Bulkhead	Marsh / Living shoreline	
Total travel time	45 minutes	30 minutes	
Trip cost to you	\$31	\$52	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

DCE – high cost D



CHOICE SCENARIO

	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Beach	Beach	
Total travel time	30 minutes	60 minutes	
Trip cost to you	\$52	\$31	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

CHOICE SCENARIO



	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Riprap revetment	Marsh / Living shoreline	
Total travel time	30 minutes	45 minutes	
Trip cost to you	\$52	\$31	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

DCE – high cost E



CHOICE SCENARIO

	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Riprap revetment	Beach	
Total travel time	60 minutes	45 minutes	
Trip cost to you	\$73	\$73	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

CHOICE SCENARIO

	Option A	Option B	Option C
			Do not go fishing
Shoreline Type	Riprap revetment	Bulkhead	
Total travel time	45 minutes	60 minutes	
Trip cost to you	\$31	\$52	

Choose your most preferred option from the list below:

- ☐ Option A
- ☐ Option B
- ☐ Option C

Demographics

Please indicate which statements best describe your responses in the previous hypothetical recreational fishing trip choice scenarios. (*Select all that apply*)

- ☐ I chose trips where I thought I would catch the most fish
- ☐ I chose trips where I thought I would catch the biggest fish
- ☐ I chose trips where I thought I would catch species I usually target
- ☐ I chose trips with the lowest cost
- ☐ I chose trips with the lowest travel time
- ☐ I chose trips to habitats I find aesthetically pleasing
- ☐ I chose trips to habitats I can easily access
- ☐ I do not know why I chose the trips I did
- ☐ Other (please describe)

How many years have you recreationally fished in Virginia tidal waters?

What are the primary reasons you fish recreationally? (*Select all that apply*)

- ☐ Challenge/thrill of catching fish
- ☐ Get to experience nature/be outdoors
- ☐ Harvest fish/keep fish for consumption
- ☐ Relaxing/temporary escape
- ☐ Spend time with friends and family

☐ Other (please describe)



How would you rate yourself in terms of angling ability?

- ☐ Beginner
- ☐ Intermediate
- ☐ Advanced
- ☐ Expert
- ☐ I do not fish recreationally

Are you a member of any recreational fishing clubs or interest groups (e.g., Coastal Conservation Association, American Sportfishing Association, American Saltwater Guides Association, VA Saltwater Sportfishing Association)?

- ☐ Yes
- ☐ No
- ☐ Not sure

What year were you born? (YYYY)



What is your gender?

- ☐ Male
- ☐ Female
- ☐ Non-binary/non-conforming
- ☐ Prefer not to respond

What is the highest level of school you have completed or the highest degree you have received?

- ☐ Less than high school degree
- ☐ High school graduate (high school diploma or equivalent including GED)
- ☐ Some college but no degree
- ☐ Associate degree in college (2-year)
- ☐ Bachelor's degree in college (4-year)
- ☐ Master's degree
- ☐ Doctoral degree
- ☐ Professional degree (e.g., JD, MD)

What category best describes your annual household income

before taxes?

- ☐ Less than \$25,000
- ☐ \$25,000 - \$49,999
- ☐ \$50,000 - \$74,999
- ☐ \$75,000 - \$99,999
- ☐ \$100,000 - \$124,999
- ☐ \$125,000 - \$149,999
- ☐ \$150,000 - \$174,999
- ☐ \$175,000 - \$199,999
- ☐ \$200,000 or more
- ☐ Refuse to answer

Which of the following best describes you? (*Select one*)

- ☐ Asian or Pacific Islander
- ☐ Black or African American
- ☐ Hispanic or Latino
- ☐ Native American or Alaskan Native
- ☐ White or Caucasian
- ☐ Multiracial or Biracial
- ☐ A race/ethnicity not listed here

What is your home ZIP Code?

How did you find out about this survey? (*Select all that apply*)

- ☐ Email invitation
- ☐ Postcard invitation
- ☐ Social media
- ☐ Fishing club newsletter/website
- ☐ Other (please describe)

Thank you for participating in the survey! Please include any additional comments you may have below: