

Questionnaire - Forsythe National Wildlife Refuge

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- o Your participation is absolutely voluntary and you may stop at any time.
- o The survey will take approximately 20 minutes of your time to complete.
- o You will not be individually identified and your responses will be used for statistical purposes only.
- o If you have questions about your rights as a participant in this survey, or are dissatisfied at any time with any aspect of the survey, you may contact {*contact for implementation*}.

Public reporting burden for this collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other suggestions for reducing this burden to Peter Wiley, NOAA Office for Coastal Management 1315 East-West Highway, Silver Spring, MD 20910 (Peter.Wiley@noaa.gov, 301- 563-1141).

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[Introductory text]

In October of 2012, Hurricane Sandy inflicted significant damage and loss of life along the eastern seaboard of the U.S. One of the natural areas affected was **Forsythe National Wildlife Refuge** (NWR) near Atlantic City in southern New Jersey.

- The Refuge contains more than more than 47,000 acres of land, 78% of which is a salt marsh.
- The Refuge offers a stop-over for tens of thousands migratory birds along the Atlantic Flyway.
- The Refuge is primarily located within Ocean County New Jersey and the local towns that surround the marsh are home to approximately 75,000 people and 28,000 homes.

Aside from the large amount of debris that was washed into the Refuge, the storm brought attention to the severely degraded status of the Forsythe salt marshes. Pollution, human modification, and sea level rise have reduced the elevation of the salt marshes and altered water flow through the system. These changes impact the services provided by the Refuge, including:

- **Coastal storm protection** – sand and thick grass in salt marshes protect coastal buildings and roads from surging storm waters and erosion.
- **Flood protection** – marshes reduce flooding by slowing and absorbing rainwater.
- **Contaminant removal** – marshes improve water quality for fish and bird habitats by filtering out contaminants (such as excess nitrogen from fertilizers).
- **Habitat** – marshes provides an important resting place for migratory birds, home for nesting birds, and space for fish and shellfish to spawn.
- **Recreation** – marshes provide numerous recreational opportunities such as bird watching, nature/walking trails, canoeing, and kayaking.
- **Food web support for fish** – biological processes in marshes provide the basis of the food web for recreational and commercial fisheries.
- **Carbon storage** - salt marshes absorb and store large quantities of carbon dioxide from the atmosphere, reducing the amount of carbon in the atmosphere (which can help to manage climatic change).

These benefits are made possible by salt marshes being a combination of tall, strong grasses (*Spartina alterniflora*) and the channels of water that connect the marsh to the ocean. Salt marshes require ocean tides to come in and flood the marsh and then to go out and allow the marsh to briefly dry out. As living matter (grasses) settle and decay, the marsh land compacts

and sinks (subsides). In well-functioning marshes, tides will bring new sediment (soil) to raise the elevation of the marsh again, maintaining the area as a salt marsh. If tides do not bring enough sediment or if water (sea) levels increase, however, lower areas of a marsh will be continually flooded with water leading to the marsh grass dying off and those areas to be transformed to open water or mud flats. If not counterbalanced somehow, large areas of marshes can be eventually transformed to open water or mud flats.

In response to the degradation of the marsh at Forsythe from Hurricane Sandy, the Fish and Wildlife Service and the U.S. Army Corp of Engineers, in cooperation with local governments and the State of New Jersey, have initiated restoration projects in the Refuge. These projects include work to raise the elevation of the marshes, improve water flow, remove debris left by Sandy and previous storms, and remove old telephone poles and wires. These efforts should help to maintain and improve the services provided by the Refuge. Some Federal funds have been authorized to begin restoration efforts, but additional future funds may be needed to further restore and maintain the marshes in the future.

The goal of this survey is to collect information from people like you to assist in better decision-making about restoration activities following natural events, such as Hurricane Sandy. We are interested in what you think of marsh restoration and the environmental services it can generate. The survey is also designed to assess how much people like you value the services provided by the marsh.

[Survey questions]

1. How familiar are you with the Forsythe National Wildlife Refuge?

- Very familiar
- Somewhat familiar
- Not very familiar
- Have never heard of it

2. Have you ever visited the Forsythe National Wildlife Refuge?

- Yes - Go to 2a.
- No - Go to 3.

2a. How many times did you visit Forsythe National Wildlife Refuge in the previous 12 months?

_____ times

2b. Have you visited Forsythe since Hurricane Sandy?

- Yes
- No

3. Prior to reading the last page that described the benefits of salt marshes, how familiar were you with the environmental services of salt marshes?

- Very familiar
- Somewhat familiar
- Somewhat unfamiliar
- Not at all familiar

4. Overall, how concerned are you about the status of Forsythe National Wildlife Refuge and the environmental services it provides?

- Very concerned
- Somewhat concerned
- Not very concerned
- Not at all concerned
- Unsure / Don't know

5. Were you living in [respondent's current state] when Hurricane Sandy struck?

- Yes
- No

6. How would you describe the impact that Sandy's on you?

- Very significant
- Moderate impact
- Small impact
- No impact at all

7. In order to help us assess where you live in relation to Forsythe National Wildlife Refuge, please provide your ZIP code?

[Instructions prior to valuation question]

The results of this survey are *advisory*. In other words, they can be used to inform policymakers on the opinions and preferences of people such as yourself about funding for restoration of coastal marshes. We would like to better understand your level of support for salt marsh restoration at **Forsythe National Wildlife Refuge**. To do so, we will ask you to vote on different restoration programs. Each program can offer improvements in environmental services, but will require public money to implement the project. One alternative is to not invest in marsh restoration, in which case no public money will be needed.

The restoration options we will ask you about involve restoring a number of acres of salt marsh at Forsythe and some potential benefits from restoring those acres. The benefits we describe are in terms of number of homes protected, habitat restored, and recreation offered. Since any restoration project will produce specific benefits based on its location and details, the described benefits in this survey meant to be general. For example, rather than providing specific recreation benefits for a restoration option such as a number new hiking trails or increased number of wildlife viewing platforms, you might be asked to consider the relative benefits of the restoration alternatives, such as recreation improvements that provide little, moderate, or significant benefits. Once again, our purpose here is to get a sense of how people value different types of restoration options to better inform policy decisions in the future.

As a voting taxpayer, you have an opportunity provide feedback to policymakers regarding your support for – and willingness to pay for – marsh restoration projects. One way that policymakers might evaluate whether or not to do this work at the salt marsh is through an advisory referendum or special ballot question used to gauge voter opinion. Please think carefully about how you would actually vote in this situation. We want you to respond as if costs for your household would actually increase if restoration projects are implemented.

Please think carefully about how you would actually vote in this situation. The results will be provided to policymakers, and we want you to respond as if costs for your household would actually increase if restoration projects are implemented.

Please take the time to consider both the benefits and costs of the restoration program to your household.

Paying for restoration means your household would have less money to spend on other goods like food, clothing, trips, and less toward other environmental problems that you care about.

There are no right or wrong answers. We have found some people would support these kinds of projects and others would not support them. Both kinds of voters have good reasons for why they would vote one way or the other.

8. The table below provides two potential restoration options, the potential benefits from those options, and the associated cost to taxpayers. You can choose to vote for one of the two option or choose neither one (i.e., the “status quo” option).

{Note to reviewer: Options for the blanks appear at the table at the end of the survey. During implementation, values will be inserted into the table for the respondent to select from.}

Category	Status quo	Options A	Option B
Amount of the marsh that is restored	None	_____ acres	_____ acres
Storm protection	<ul style="list-style-type: none"> Homes in the coastal area are under increased risk from storm damage. 	<ul style="list-style-type: none"> Protects _____ homes and businesses from a 5-foot storm surge (a rise of water generated by a storm that is 5 ft over and above the predicted tide level) 	<ul style="list-style-type: none"> Protects _____ homes and businesses from a 5-foot storm surge (a rise of water generated by a storm that is 5 ft over and above the predicted tide level)
Flood protection	<ul style="list-style-type: none"> Homes in the coastal areas are under increased risk of suffering flood damage. 	<ul style="list-style-type: none"> Protects _____ homes and businesses from a 20-year flood 	<ul style="list-style-type: none"> Protects _____ homes and businesses from a 20-year flood
Habitat	<ul style="list-style-type: none"> Habitats for wildlife continue to deteriorate with the marsh 	<ul style="list-style-type: none"> Provides moderate improvements in habitat for migratory birds 	<ul style="list-style-type: none"> Provides significant improvements in habitat for migratory birds.
Recreation	<ul style="list-style-type: none"> Recreational opportunities decline as the marsh deteriorates. 	<ul style="list-style-type: none"> Provides minimal improvement in recreation 	<ul style="list-style-type: none"> Provides significantly better recreation in the marsh
Cost (annually per household)	\$0	\$_____	\$_____
Vote	•	•	•

9. How confident were you in the choice you made?

- Very confident
- Somewhat confident
- Somewhat unsure
- Not at all confident (I guessed)

10. When voting, what expectations, if any, did you have about how others might vote?

- I thought most people would vote for the status quo option.
- I thought most people would vote for Option A.
- I thought most people would vote for Option B.
- I didn't really think about it.

11. How likely do you think it is that the results of this survey will shape the direction of future policy at Forsythe NWR?

- Very likely
- Somewhat likely
- Somewhat unlikely
- Very Unlikely
- I don't know.

12. [Ask only if answer to Q8 is a "Status quo" vote] You chose to vote for neither Option A nor Option B on the referendum. What was your reasoning?

- I don't really have a specific reason why.
- I'm interested, but I can't afford it.
- I don't think the expected benefits are worth it.
- Society has more important problems than restoring salt marshes.
- I do not support any kind of tax increases.
- I do not live in the area - only people who live in the area should pay for the project.
- Other: _____

13. How important to you are each of the following benefits of salt marshes.

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Storm protection					
Flood protection					
Wildlife habitat					
Fish/seafood spawning ground					
Water purification					
Recreation					
Carbon sequestration					

14. To what extent do you agree with the following statements?

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
The climate is changing in ways that could be harmful to the coast.					
Sandy was a rare event and a similar storm is unlikely to occur in my lifetime.					
I expect to see bigger coastal storms in the future.					
It is the responsibility of the federal government to fund restoration at Forsythe.					
Federal and state governments can effectively implement environmental restoration projects.					

MORE ATTITUDINAL QUESTIONS

15. Which, if any, of the following outdoor activities do you engage in? Please check all that apply.

- Freshwater fishing
- Saltwater fishing
- Boating/Canoeing
- Hunting
- Bird watching
- Hiking/nature walking
- Other _____
- I don't engage in any outdoor activities

Table of value for question #8 (choice experiment question)

Category	Attributes for options A and B	Status quo text
Amount of the marsh that is restored	<ul style="list-style-type: none"> • 1,000 acres • 3,000 acres • 5,0000 acres 	<ul style="list-style-type: none"> • None
Storm protection	<ul style="list-style-type: none"> • Protects 1,000 homes from a 5-foot storm surge (a rise of water generated by a storm that is 5 ft over and above the predicted tide level) • Protects 3,000 homes from a 5-foot storm surge (a rise of water generated by a storm that is 5 ft over and above the predicted tide level) • Protects 6,000 homes from a 5-foot storm surge (a rise of water generated by a storm that is 5 ft over and above the predicted tide level) 	<ul style="list-style-type: none"> • Homes in the coastal area are under increased risk from storm damage.
Flood protection	<ul style="list-style-type: none"> • Protects 4,000 homes from a 20-year flood • Protects 7,000 homes from a 20-year flood • Protects 10,000 homes from a 20-year flood 	<ul style="list-style-type: none"> • Homes in the coastal areas are under increased risk of suffering flood damage.
Habitat	<ul style="list-style-type: none"> • Provides no improvements for migratory birds • Provides small/minor improvements in habitat for migratory birds • Provides significant improvements in habitat for migratory birds. 	<ul style="list-style-type: none"> • Habitats for wildlife continue to deteriorate with the marsh
Recreation	<ul style="list-style-type: none"> • Provides no improvement in recreation • Provides small/minimal improvement in recreation • Provides significantly better recreation 	<ul style="list-style-type: none"> • Recreational opportunities decline as the marsh deteriorates.
Cost (annually per household)	<ul style="list-style-type: none"> • \$25 • \$50 • \$75 • \$100 • \$125 	<ul style="list-style-type: none"> • \$0