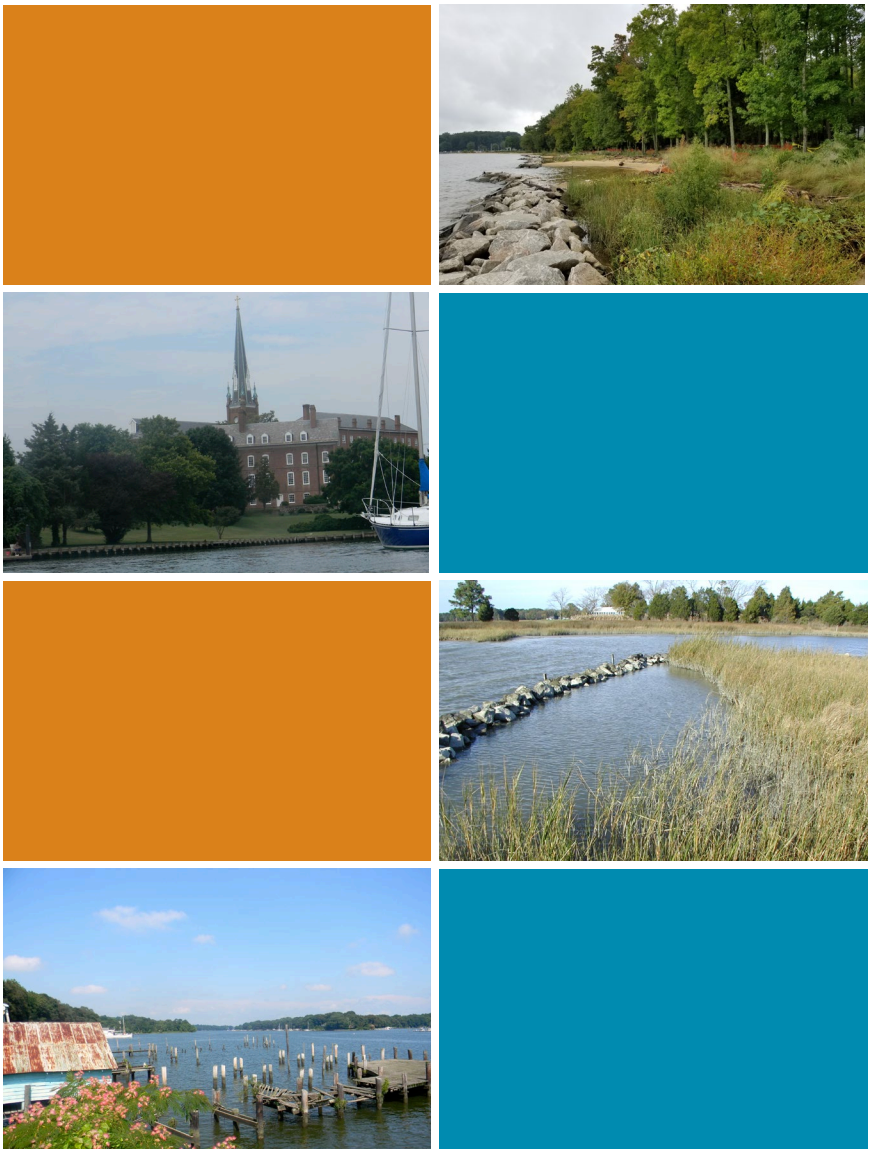
Survey Results – Submerged Aquatic Vegetation: Barriers and Benefits

Chesapeake Bay Program



action RESEARCH

3630 Ocean Ranch Boulevard
Oceanside, CA 92056

40 Exchange Place, Suite 1403
New York, NY 10005

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Acknowledgements

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Action Research

Jennifer Tabanico, *President*

Lori Large, *Director of Research Operations*

Kaitlin Phelps, *Project Director*

Dani Ballard, *Research Coordinator*

Doug McKenzie-Mohr, *Scientific Consultant and Community-Based Social Marketing Founder*

Kenneth Moore, *Scientific Consultant*

Steering Committee

Co-lead: Rachel Felver, *Alliance for the Chesapeake Bay*

Co-lead: Brooke Landry, *Maryland Department of Natural Resources*

Rebecca Golden, *Maryland Department of Natural Resources*

Tom Guay, *Severn River Association*

Amy Handen, *Environmental Protection Agency*

Sally Horner, *Magothy River Association*

Caitlyn Johnstone, *Alliance for the Chesapeake Bay*

Morgan Jones, *Havre de Grace Maritime Museum Environmental Center*

Kelly Leo, *The Nature Conservancy*

Nancy Merrill, *Arundel Rivers Federation*

Rebecca Murphy, *ShoreRivers*

Doug Myers, *Chesapeake Bay Foundation*

Becky Swerida, *Maryland Department of Natural Resources*

Beth Wasden, *Nanicoke Watershed Alliance*

Beth Zinekcer, *Underwood and Associates*

1: Research Goals and Background

The goal of this work was to improve the health of the Chesapeake Bay and its tributaries through helping shoreline property owners protect submerged aquatic vegetation (SAV). To achieve this goal, a steering committee of SAV experts was assembled to provide oversight and expertise. Action Research was then contracted to complete the work, which began with a literature review followed by a survey of Maryland shoreline property owners to understand what challenges and situations they face when considering the SAV in the water alongside their property. This information was gathered to inform the development of strategies and outreach materials that will help shoreline property owners in the Chesapeake Bay watershed better manage their shorelines by motivating them to not interfere with SAV growth and build or extend piers beyond SAV to reduce negative impacts.

Literature Review

The Action Research team began by reviewing the existing literature on SAV. The goal of this literature review was to provide foundational research on the barriers and benefits that property owners may face when engaging in behaviors that protect SAV near their property. SAV includes aquatic grasses, which are rooted, flowering plants in the Chesapeake Bay that provide a wide variety of ecological and economic services. The literature review identified many reasons that property owners either remove SAV or leave SAV in place, including recreational activities, aesthetics, shoreline use, and property value. The literature review also revealed that little has been published on specific behaviors related to SAV issues and that few social science studies have been conducted on this topic. There are many factors that influence SAV health and abundance, given that it grows in shallow water at the interface of terrestrial and aquatic environments where anthropogenic impacts are common and sometimes unavoidable. However, the literature review and consultation with the steering committee determined that reducing direct removal of SAV was a meaningful pathway to increased health and quantity of SAV, particularly as SAV populations are currently increasing in areas where homeowners may be unfamiliar or unaccustomed with its presence. The full review can be found in the *Submerged Aquatic Vegetation Review* memo from May 2020, Appendix A.

Behavior Selection

Our review of the literature identified a set of eight behaviors related to SAV, listed below.

Behavior list

Behaviors to Encourage

- Leave SAV in place
- Leave shoreline unarmored
- Remove bulkheads/riprap if present
- Extend piers beyond where SAV grow

Behaviors to Discourage

- Hand removal of SAV by resident or hired company on residential property
- Mechanical removal of SAV by hired company on residential property
- Hardening of shoreline via riprap or bulkhead
- Installation of additional single-family docks

Through further discussions with the steering committee, it was determined that the most impactful behaviors, with consideration to those that could be feasibly addressed by the committee and not currently part of other active campaigns, were “leave SAV in place” and “extend piers beyond where SAV grows.” These two behaviors were the focus of the next step, a mail survey to Maryland residents.

Shoreline Property Owner Survey

Using the findings from the literature review and expert survey research as a foundation, the next step was to conduct a mail survey to better understand property owners’ current behaviors related to SAV management, their probability of taking the two beneficial SAV-related actions, and their perceived barriers and benefits to engaging in these actions. The methodology and results of the shoreline property owner survey are outlined in the next two sections of this report.

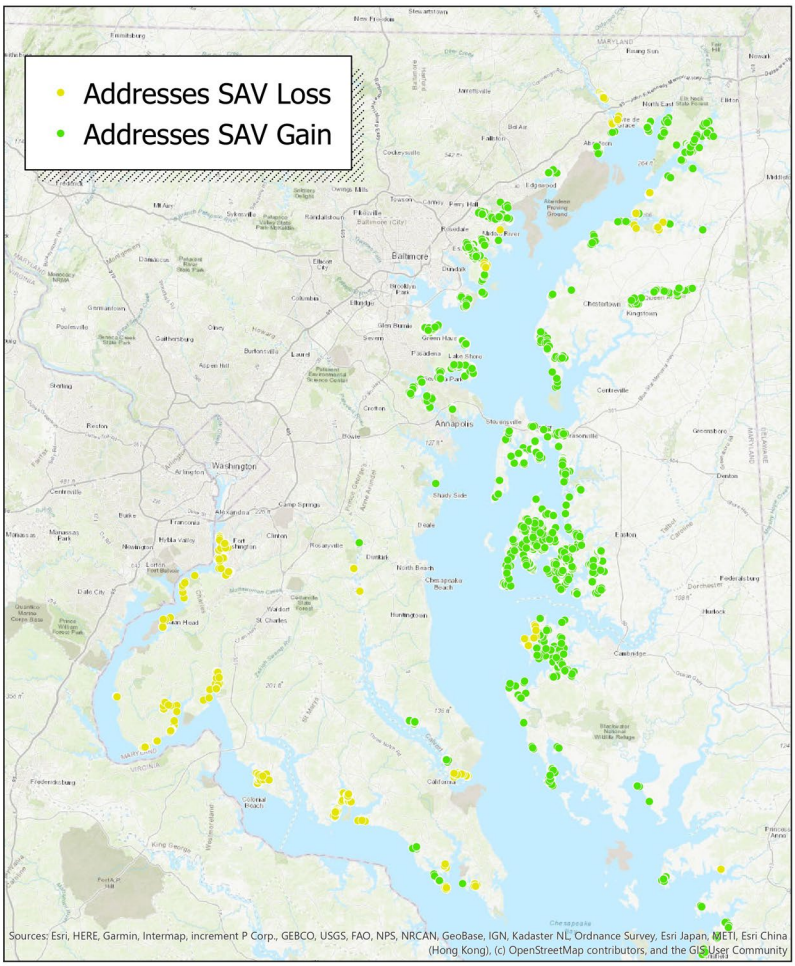
2: Methodology

In September and October of 2020, we administered a mail survey to residents of 600 waterfront properties along both shores of the Chesapeake Bay in Maryland from the northernmost point of the Bay down to the state line at the Potomac River. Several specific communities were selected where SAV is known to be increasing and where removal was reportedly occurring (based on anecdotal reports from the steering committee). The selected communities were near the Susquehanna Flats (Havre de Grace vicinity), Middle River, and near other rivers heading south towards and including the Severn, all in the tidal fresh, oligohaline, and mesohaline salinity zones. An address list of all shoreline properties in the selected communities was created from state-level GIS data and then 600 addresses were randomly selected from this list for inclusion in the survey. This process is described in further detail below.

Address List Generation

After importing all GIS parcel data for Maryland, we removed counties that had no contact with the Chesapeake Bay, coastline, or any river or tributary. We then filtered the addresses to select only residential addresses that were in the targeted regions and mapped where the data indicated with a loss or a gain in SAV. This process resulted in a final list of property addresses, shown in green below.

Figure 1: Map of Addresses in Maryland



Sample Selection

We randomly selected 600 addresses from the complete list with the goal of obtaining survey responses from a minimum of 120 properties (assuming a response rate of at least 20%).

Survey

The survey was administered using the Tailored Design Method (TDM)[1]. In September 2020, selected properties received a prenotification postcard followed a few days later by a hand-addressed survey packet with an addressed and stamped return envelope. In October 2020, non-respondents to the initial mailing received a reminder postcard and a second survey packet. The full survey is attached as Appendix B.

[1] Dillman, Don A., Smyth, Jolene D., Christian, Leah Melani. 2014. Internet, Phone, Mail and Mixed-Mode Surveys: The Tailored Design Method, 4th edition. John Wiley: Hoboken, NJ

3: Results

A total of 600 survey packets were mailed. Of these, 10 were returned as undeliverable. An additional 30 were returned or reported as ineligible (e.g., no shoreline, commercial properties, condominium complexes). This left a sample size of 560 valid addresses in receipt of a survey. From the 560 valid addresses, a total of 198 completed surveys were returned. There were also 14 refusals (blank surveys returned in the pre-stamped envelope). This equates to a response rate of 35.4% which exceeded our expectations. Table 1 lists each category.

Table 1: Responses

	(A) Original Sample	(B) Undeliverable	(C) Ineligibles	(D) Valid Sample *(A – (B+ C))*	(E) Refusals	(F) Completes	(G) Response Rate *(F/D)*
Total	**600**	**10**	**30**	**560**	**14**	**198**	**35.4%**

Demographics

Most respondents were property owners (97%). Length of property ownership was an average of 23 years (Range = 1 – 118 years). Respondents ranged in age from 23 to 92 years (Average = 62). The average household size was 2.2 people (15 % had one person, 62% had two people, and 23% had three or more people). The majority of respondents did not have children under 18 in their household (88%).

Boats and Piers

Most respondents had an existing pier (82.6%) or were planning to build one (4.5%). About a third of respondents' neighborhoods have a community pier (31.6%). Most of the respondents had a boat docked along property (62.2%) or docked elsewhere (11.7%).

Property Characteristics

Respondents were asked to report which shoreline structures they had on their property, checking all responses that applied. Most respondents reported having a bulkhead (69.7%). Some respondents had riprap (20.7%), and a few had a living shoreline (12.6%).

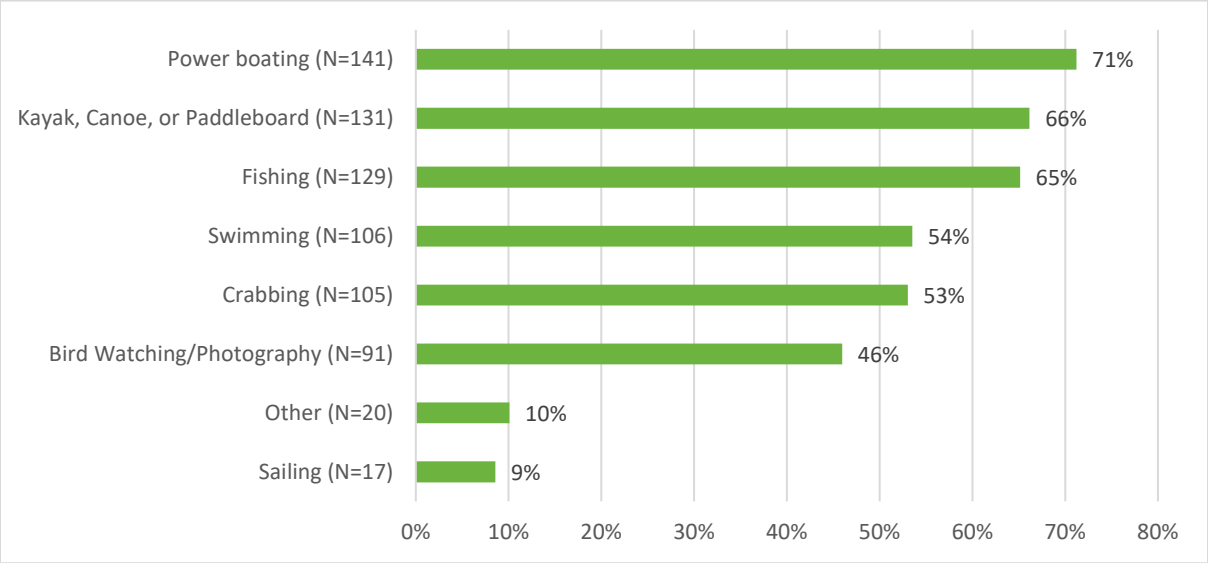
Structures

Respondents were asked to indicate which types of building structures they have on their property, checking all responses that applied. Nearly all had houses (91.9%, N=182). A small number had a vacation or rental home (7.1%, N=14) or other building (12.6%, N=25).

Waterfront Activities

Respondents were asked to report the activities they use their waterfront for, checking as many options as applicable. The most commonly reported activities were *power boating* (71%), *kayak/canoe/paddleboard* (66%), and *fishing* (65%).

Figure 2: Waterfront Activities

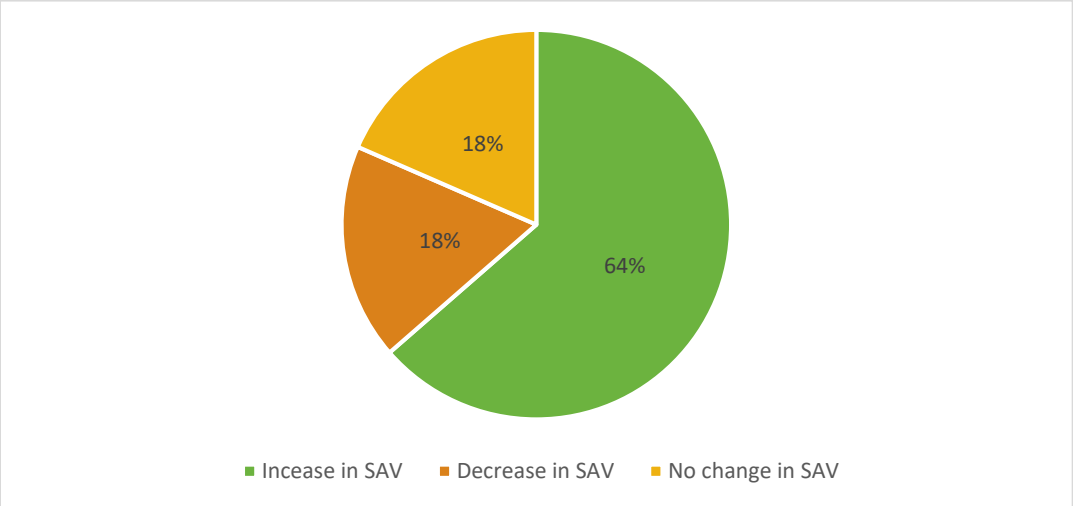


Submerged Aquatic Vegetation (SAV) Context

Change in SAV

Over two-thirds of respondents reported that they have seen an *increase in the amount of SAV* (64%) since living at their property. The remainder of responses were split evenly between seeing a *decrease* (18%) and *no change* (18%).

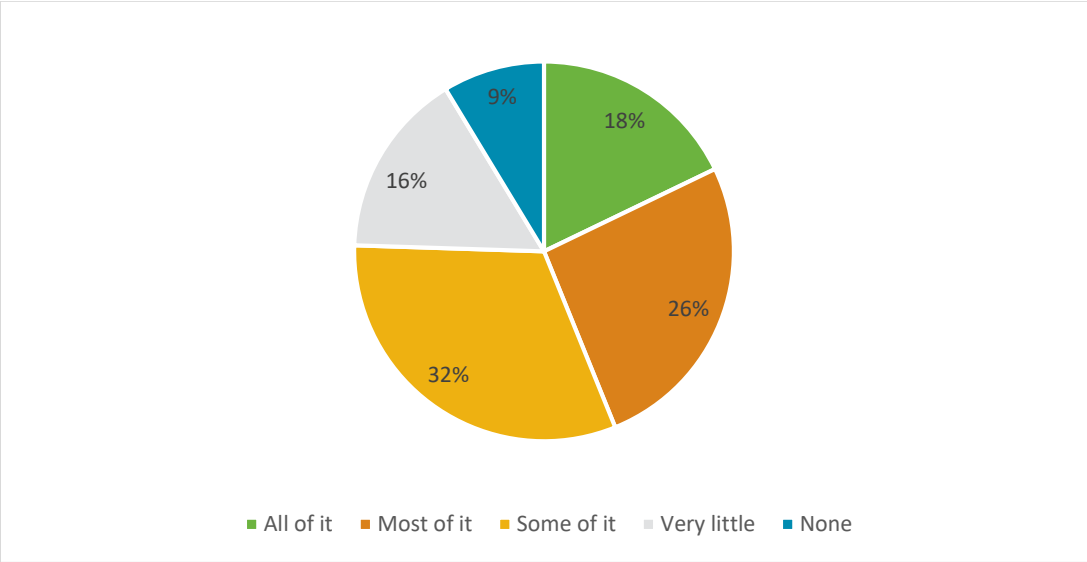
Figure 3: Perceived Change in SAV



Current SAV

About half of respondents reported that either *all* (18%) or *most* (26%) of the water by their shoreline had SAV. Respondents who reported having *none* (N=17) were skipped forward to the attitudes, communication, and demographic questions.

Figure 4: Amount of SAV on the Shoreline



Inferential Statistics

Respondents who reported that either *all* or *most* of the water by their shoreline had SAV were significantly more likely ($p<.05$)[2] to report that they had seen an increase in SAV since they had owned their property. Conversely, respondents who reported *very little* SAV were more likely ($p<.05$) to report that they had seen a decrease in SAV.

[2] A p-value of less than .05 indicates there is a less than 5% chance that the results are due to random chance, and the observed difference is statistically significant.

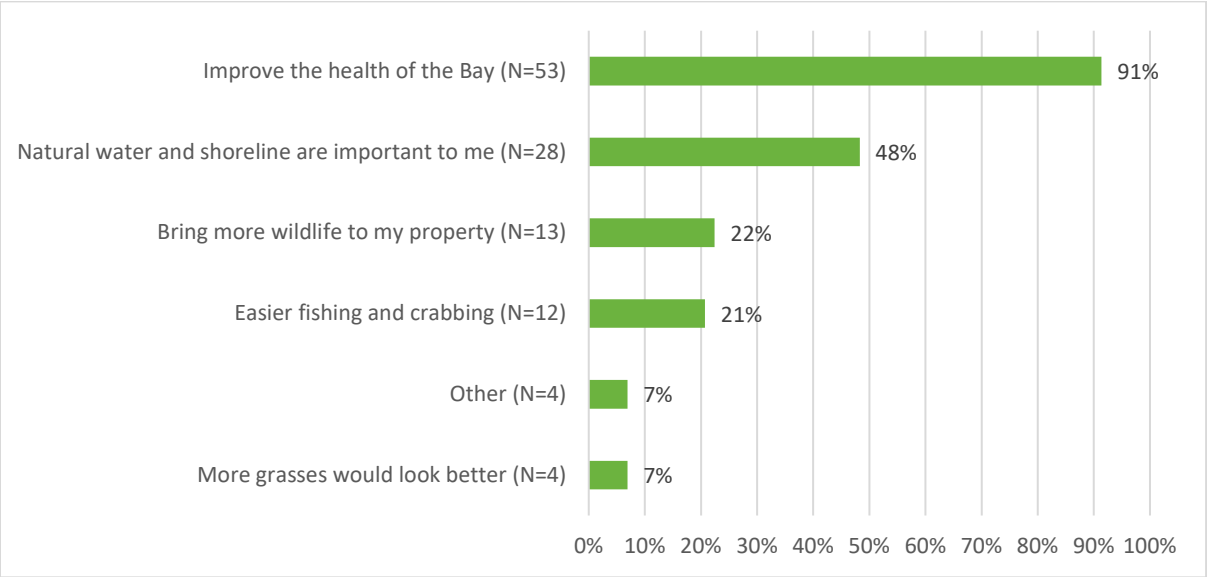
SAV Actions

Restoration or Protection

Two-thirds of respondents (67.8%) reported that they had not considered restoring or protecting the SAV along their shoreline. There was no statistical difference in responses between those who had observed an increase and those who had reported a decrease in SAV.

Respondents (32.2%) that had considered restoring or protecting SAV were asked to identify their primary reason for considering the action. Nearly all respondents who had considered restoring or protecting SAV reported doing so to *improve the health of the Chesapeake Bay* (91%), followed by *natural water and shoreline are important to me* (41%); see Figure 4. While the question was intended to be a singular response, most respondents checked multiple boxes. Therefore, the responses do not add to 100%.

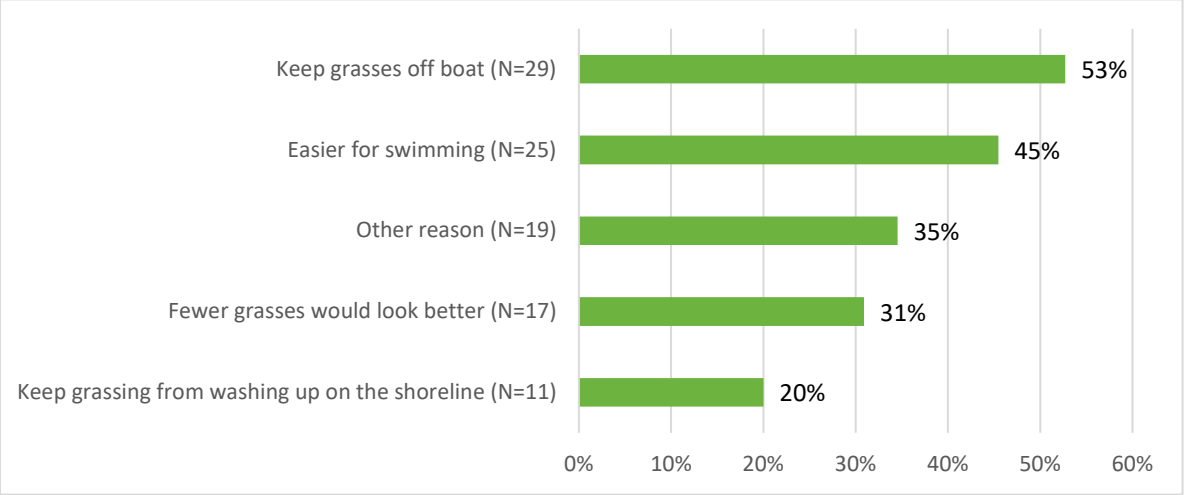
Figure 5: Reasons for Considering Protecting or Restoring SAV



Removal

Two-thirds of respondents (63.8%) reported that they had not considered removing the SAV along their shoreline. Respondents who had seen an increase in SAV were more likely to report that they had considered removing SAV ($p<.05$). The respondents (28.1%) that considered removing SAV were asked to identify the primary reason they considered the action. About half of the respondents who had considered removing SAV would do so to *keep grasses off boat* (53%) and to make their water *easier for swimming* (45%); see Figure 5. While the question was intended to be a singular response, most respondents checked multiple boxes. Therefore, the responses will not add to 100%.

Figure 6: Reasons for Considering Removal of SAV



The written in reasons listed under *Other* were varied, but primarily focused on water activities (jet skis, boats, swimming) and stopping trash from collecting in the SAV.

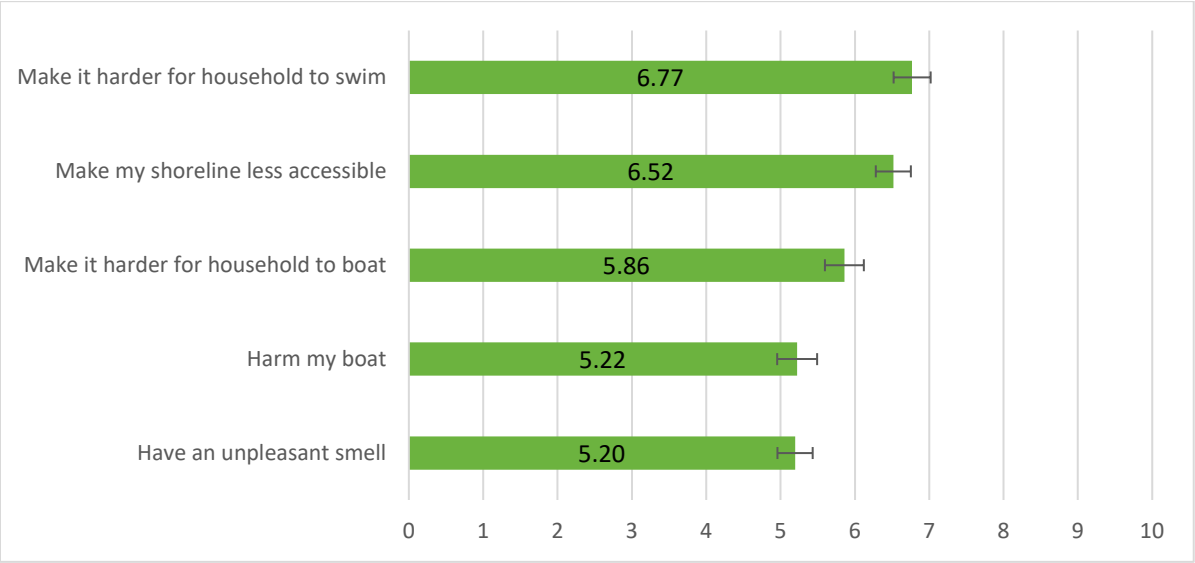
Community Actions

Very few respondents (13.8%) reported anyone in their community restoring or protecting SAV, while about a third (33.5%) reported that someone in their community removed SAV.

Leaving SAV Alone

Respondents were asked to rate a list of statements about the barriers of leaving SAV to grow undisturbed using a scale from *0 (strongly disagree)* to *10 (strongly agree)*. The highest ranked barriers to letting SAV grow undisturbed were making it *harder for their household to swim* and making their *shoreline less accessible.*

Figure 7: Barriers to Leaving SAV Alone



Inferential Statistics

Making it harder for their household to swim had a negative correlation (r = -.165, p<.05) with years of property ownership, indicating that the concerns about this barrier decreased the longer respondents had owned their property.

Benefits

Respondents were asked to rate a list of statements about the benefits of leaving SAV to grow undisturbed using a scale from *0 (strongly disagree)* to *10 (strongly agree)*. The highest valued benefit to letting SAV grow undisturbed was that it was *healthy for the Chesapeake Bay*, followed by *bring(ing) more wildlife to my property* and *protect shoreline from erosion*. Respondents generally disagreed that leaving SAV in the water would *look attractive* or *increase property value*, indicating that these are not seen as benefits.

Figure 8: Benefits to Leaving SAV Alone

Inferential Statistics

Looking attractive and *increasing property value* were positively correlated (r = .210 and r = .211, $p<.05$) with years of ownership, indicating that these perceived benefits increased higher the longer respondents had owned their property.

Permits

Half of respondents were aware that permits were needed for SAV removal, either reporting that *yes,* they were required (27.1%) and *in some situations* (22.9%), while half reported that *no*, they are not required (50.0%). Those who had either seen an increase or decrease in the SAV by their property were more likely ($p<.05$) to report that they did not need a permit than those who reported no change.

SAV-Friendly Piers

The majority of respondents reported having a pier (82.6%, N=147) or were planning on building one (4.5%, N=8). The remainder (12.9%, N=23) were skipped ahead to the next section, Attitudes, as they did not have a pier or an intent to build one.

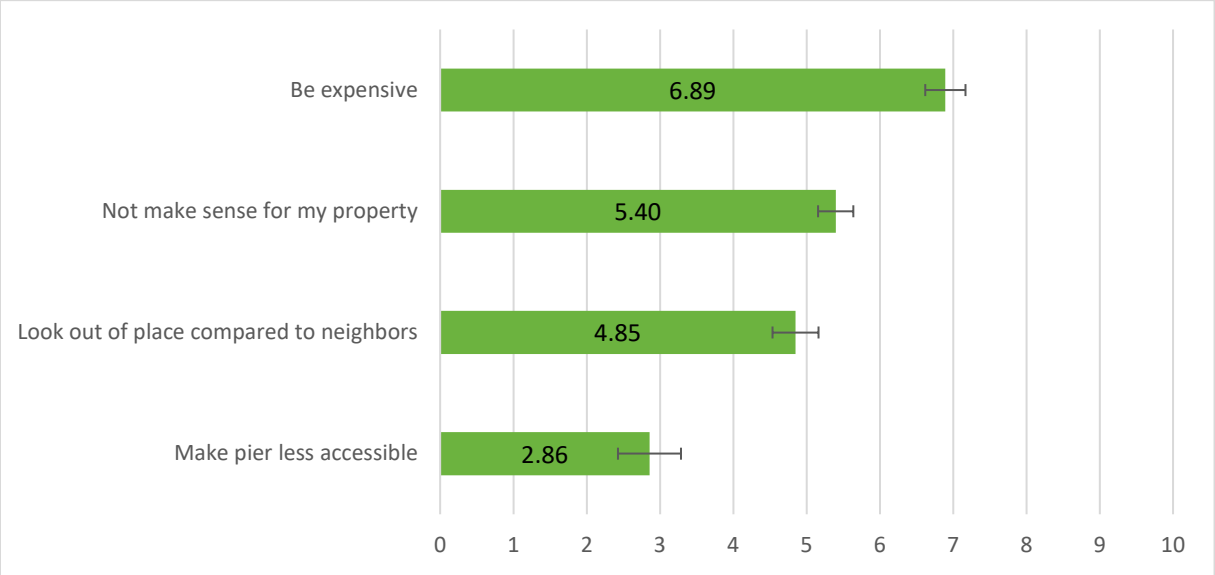
Likelihood

About a quarter (21.7%, N=43) of respondents reported that their pier already extended beyond where SAV grows. To assess the likelihood of extending piers beyond where SAV grows, respondents who reported having a pier that does not already extend beyond SAV (N=93) were asked to rate the likelihood of taking action using a scale from *0 (not at all likely)* to *10 (extremely likely)*. The average likelihood rating was a 4.86, indicating they leaned toward not acting.

Barriers

Respondents were asked to rate a list of statements about the barriers of extending their pier beyond where SAV grows using a scale from *0 (strongly disagree)* to *10 (strongly agree)*. Among respondents, the most significant barrier to extending the pier was that it would *be expensive*. Respondents were moderately concerned about the barriers that it would *not make sense for (their) property* and would *look out of place.* Respondents were not very concerned that it would *make (their) pier less accessible.*

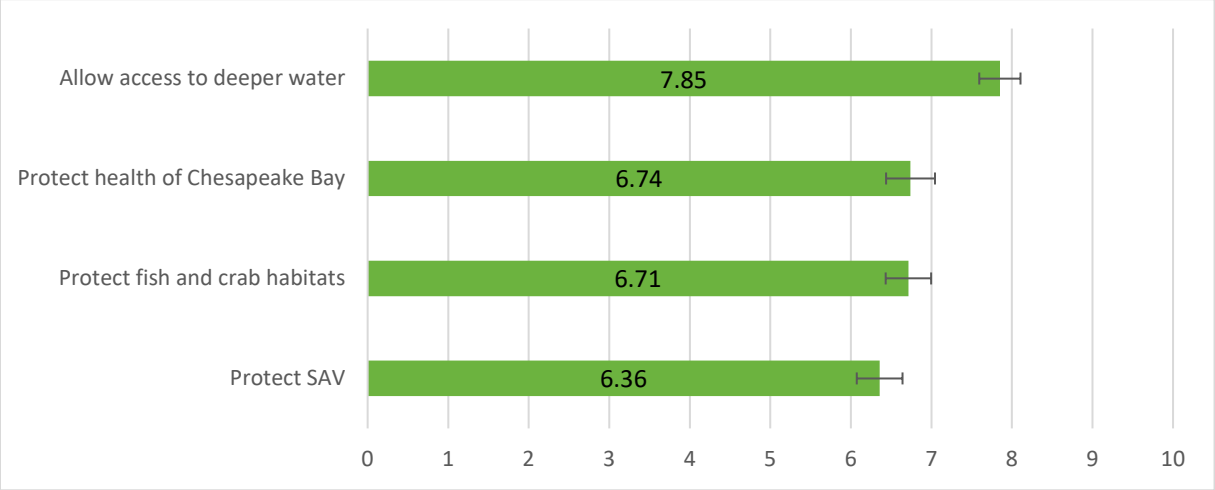
Figure 9: Barriers to Extending Pier



Benefits

Respondents were asked to rate a list of statements about the benefits of extending their pier beyond where SAV grows using a scale from *0 (strongly disagree)* to *10 (strongly agree)*.

Figure 10: Benefits to Extending Pier

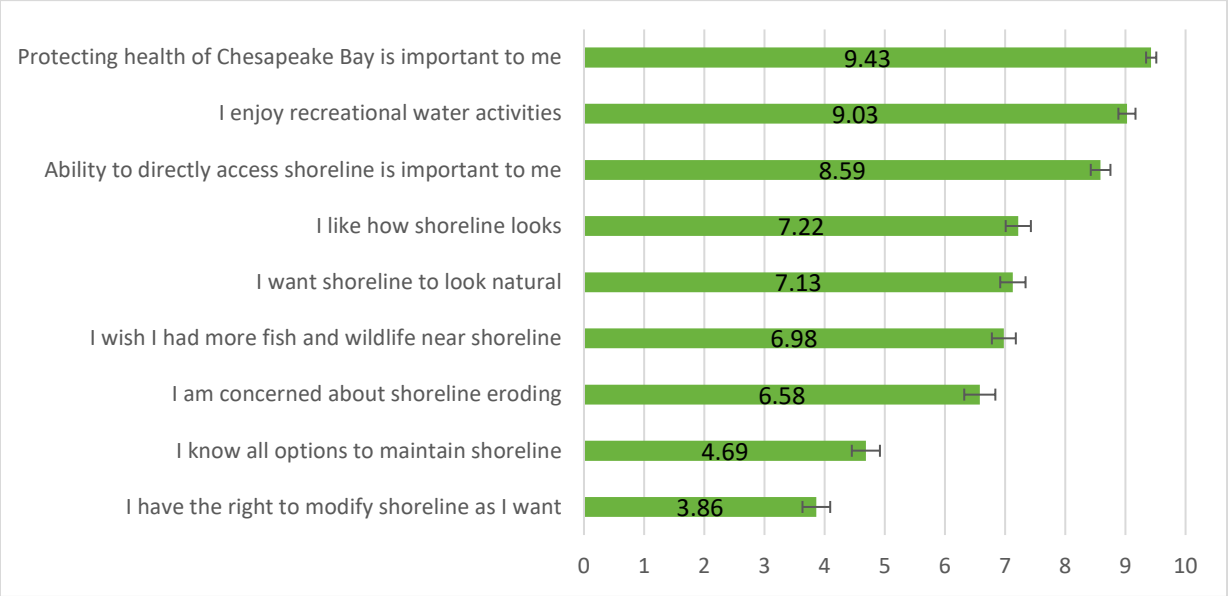


Among respondents, the primary perceived benefit was *allowing access to deeper water.* Respondents rated the benefit for *protecting the health of the Chesapeake Bay, protecting fish and crab habitats*, and *protecting SAV* about equally.

Attitudes

Respondents were asked to rate a list of statements about their attitudes toward their shoreline using a scale from *0 (strongly disagree)* to *10 (strongly agree).* Respondents reported very strong agreement with *protecting the health of the Chesapeake Bay*. Respondents also reported high agreement for *enjoying recreational water activities* and *ability to access the shoreline.* Respondents reported both *liking how their shoreline looks currently* and *wanting their shoreline to look natural*. Respondents did not agree that they *have the right to modify shoreline as they want* or *know all options to maintain shoreline*.

Figure 11: Shoreline-Related Attitudes



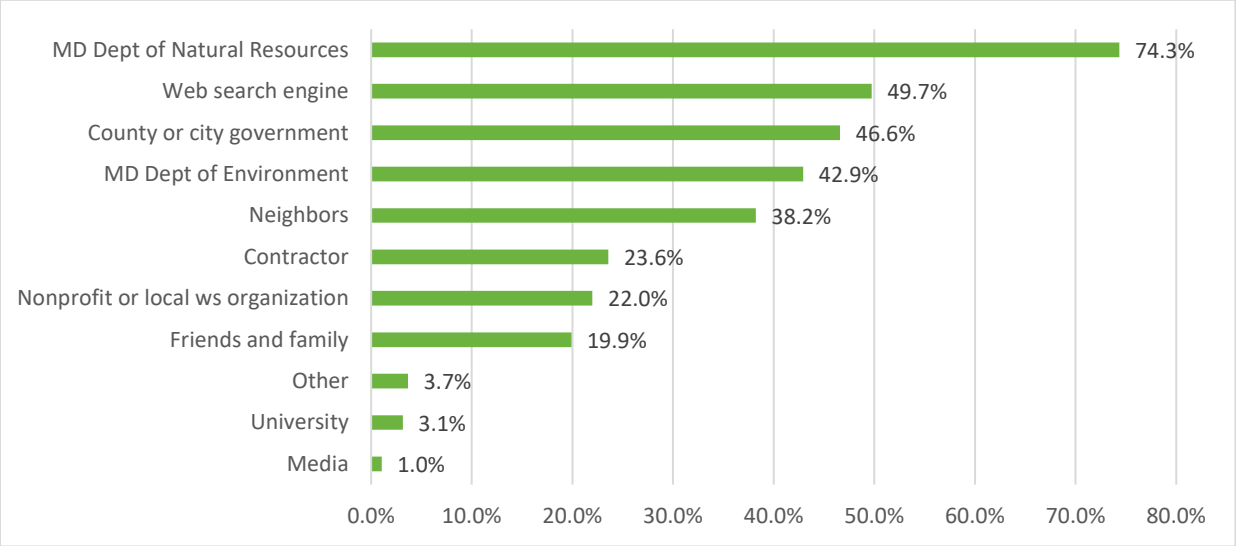
Inferential Statistics

I am concerned about shoreline eroding and *I know all options to maintain shoreline* were correlated (r= .162 and r = .202, $p<.05$) with years of ownership, indicating that these attitudes increased the longer respondents had owned their property.

Communication

Respondents were asked to indicate which sources of information they would use when they have questions about managing their shoreline and could check all that applied. The majority of respondents identified Maryland Department of Natural Resources as a preferred source of information (74.3%). About half of respondents use a web search engine (49.7%), county or city government (46.6%), or MD Department of Environment (42.9%). About two-thirds of respondents speak to their neighbors (38.2%).

Figure 12: Information Sources for Shoreline Management



Exploratory Analysis

Three sets of exploratory analyses were conducted on the perceived barriers and benefits to leaving SAV alone as well as attitudes on this topic. First, we compared respondents who have and have not considered removing SAV. Next, we compared respondents who reported an increase, decrease, or no change in SAV. Finally, we compared respondents based on whether they have the following: boats, piers, and armor.

Analyses were conducted for the questions related to the barriers and benefits around piers, but no meaningful statistical differences were found.

Considering Removal of SAV

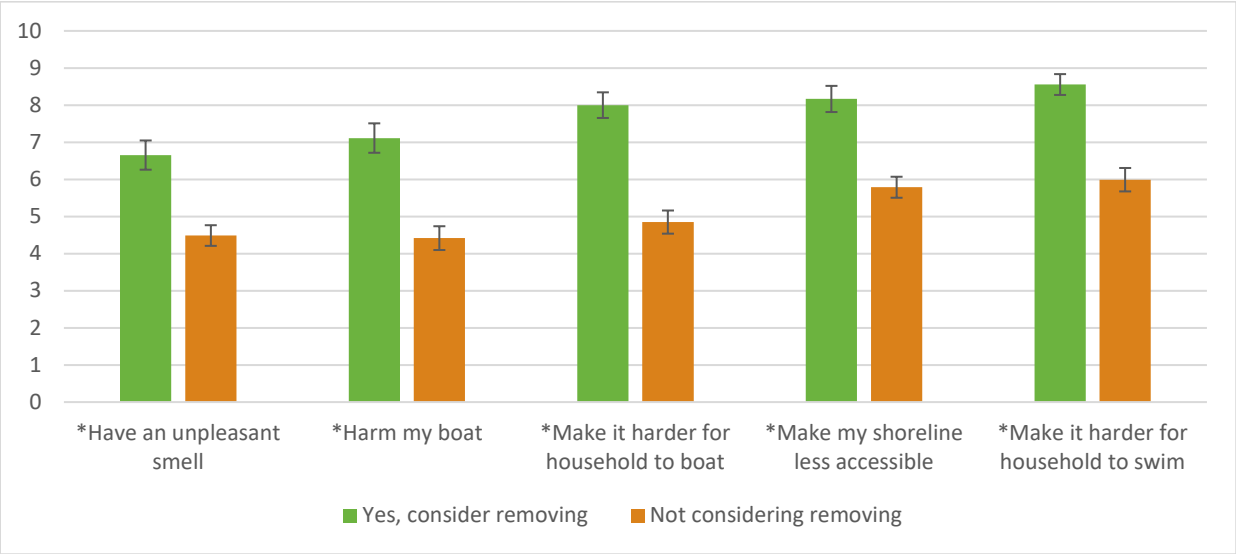
Two-thirds of respondents (63.8%) reported that they had not considered removing the SAV along their shoreline, while one-third of respondents (28.1%) had. Each section below outlines the differences in barrier and benefit ratings for each group.

Barriers to Leaving SAV Alone

Barriers to letting SAV grow were rated by respondents on a scale from *0 (strongly disagree)* to *10 (strongly agree)* and differences between groups (those that have and have not considered removing SAV) were analyzed. Respondents who had considered removing SAV perceived all barriers to be significantly higher than participants who had not considered removing SAV. Compared to the barrier rankings for the whole sample size, the barriers for those who have considered removing SAV were ranked the same, but even the lowest ranked barrier, *have an unpleasant smell*, had a mean rating score

of 6.65 for those who have considered removing. The average rating for the full sample size for this barrier was 5.20. See Figure 13.

Figure 13: Barriers for Leaving SAV Alone by Considering Removing

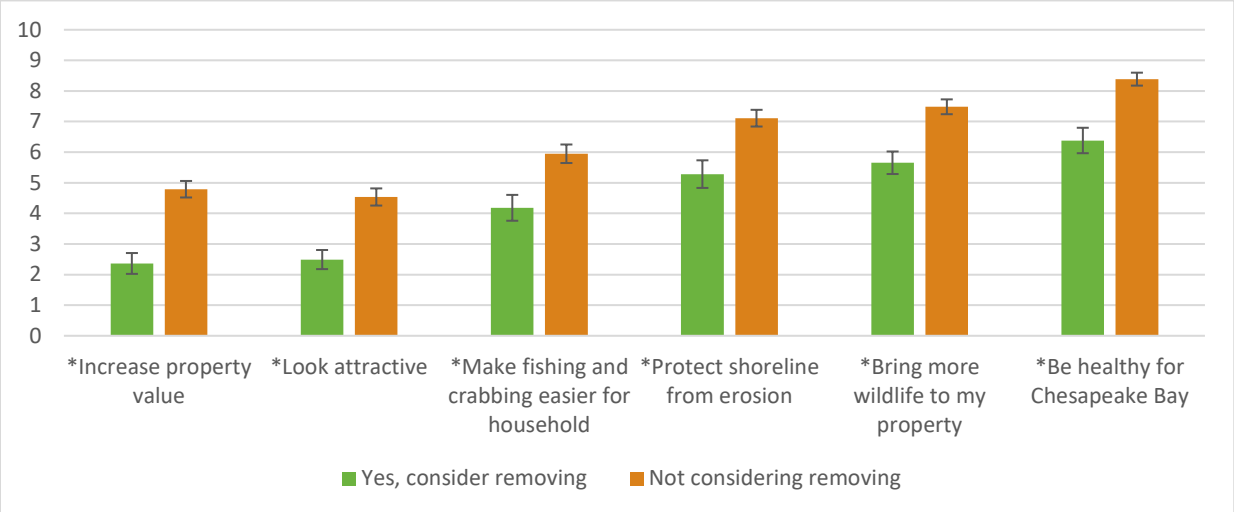


Statements with a statistically significant difference by respondents who have and have not considered removing SAV are noted using a "*".

Benefits to Leaving SAV Alone

Benefits of letting SAV grow were rated by respondents on a scale from *0 (strongly disagree)* to *10 (strongly agree)* and differences between groups were analyzed. Respondents who had considered removing SAV perceived all benefits to be significantly lower than participants who had not considered removing SAV. The benefits for those who have considered removing were generally in the same order as the whole sample size, with *be healthy for Chesapeake Bay, bring more wildlife to my property,* and *protect shoreline from erosion* at the top. See Figure 14.

Figure 14: Benefits for Leaving SAV Alone by Considering Removing

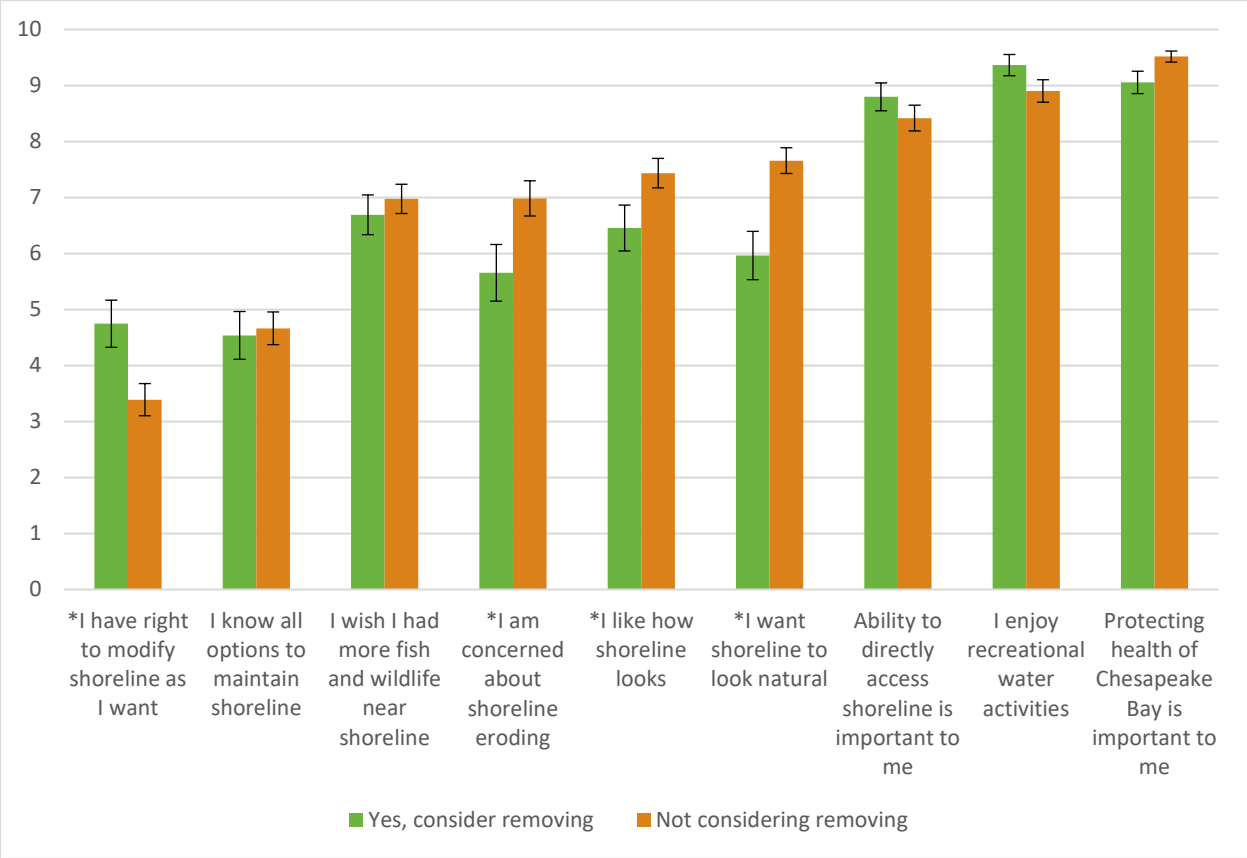


Statements with a statistically significant difference by respondents who have and have not considered removing SAV are noted using a "*".

Attitudes

Attitudes about respondents' shorelines were rated on a scale from *0 (strongly disagree)* to *10 (strongly agree)* and differences between groups were analyzed. About half of the listed attitudes were significantly different for respondents who were and were not considering removing SAV. The largest differences were in the following attitude statements: *I want my shoreline to look natural, I am concerned about shoreline eroding*, and *I have right to modify shoreline as I want.* See Figure 15.

Figure 15: Attitudes Toward Shorelines by Consider Removing



Statements with a statistically significant difference by respondents who had and had not considered removing SAV are noted using an "*".

Change in SAV

We compared respondents who reported an increase, decrease, or no change in SAV. The only meaningful statistically significant ($p<.05$) difference was that respondents who reported an increase in SAV were more concerned SAV would *make it harder for household to boat*, with a mean rating of 6.58 as compared to 4.55 for those who reported a decrease and 4.88 for those reporting no change.

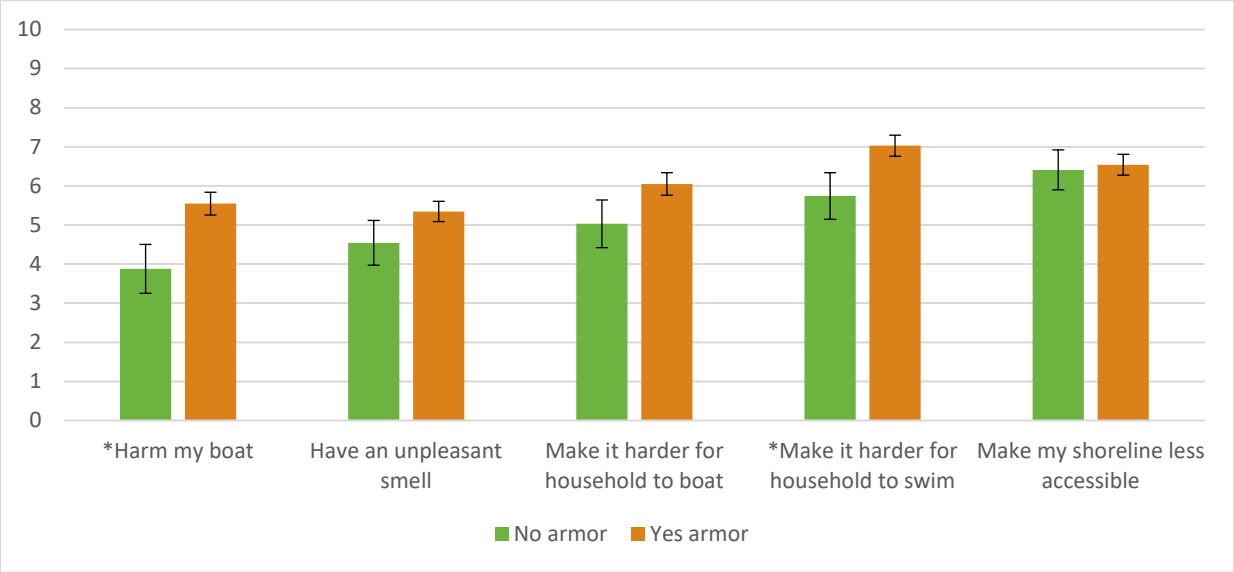
Armor

The majority of respondents reported having armor (80.3%). Each section below outlines the differences in barrier and benefit ratings for each group (armor versus no armor).

Barriers

Barriers to letting SAV grow were rated by respondents on a scale from *0 (strongly disagree)* to *10 (strongly agree)* and differences between groups (those that have and do not have armor) were analyzed. Respondents who had armor perceived that the barriers to leaving SAV alone, where it would *make it harder for household to swim* and *harm my boat* to be significantly higher than participants who did not have armor. See Figure 16.

Figure 16: Barriers to Leaving SAV Alone by Armor

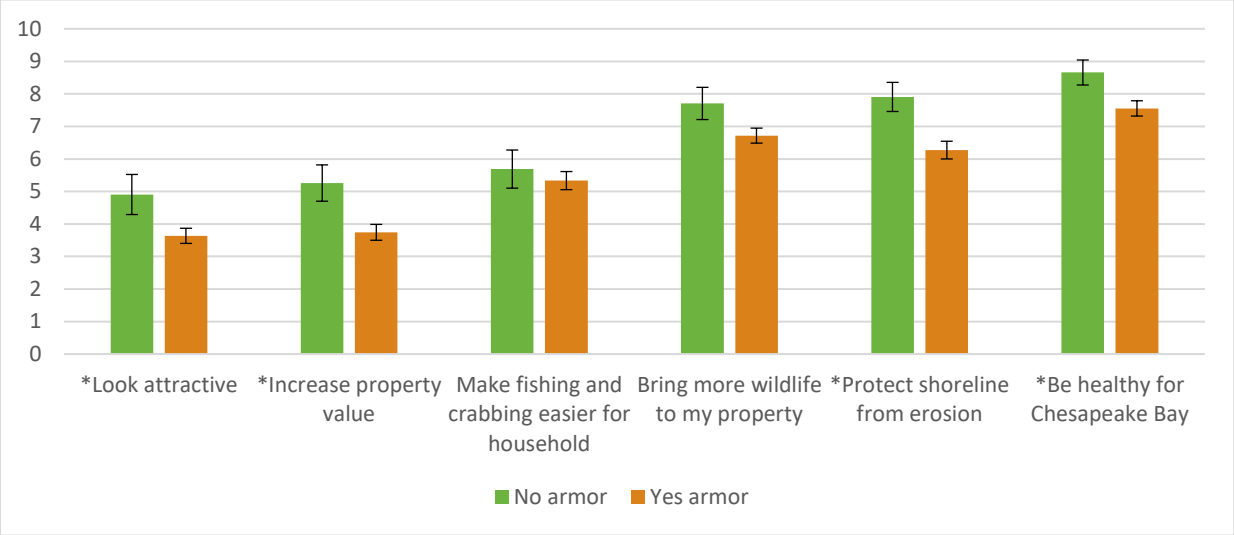


Statements with a statistically significant difference by respondents who do and do not have armor are noted with an "*."

Benefits

Benefits of letting SAV grow were rated by respondents on a scale from *0 (strongly disagree)* to *10 (strongly agree)* and differences between groups were analyzed. Respondents who had armor perceived several benefits to be significantly higher, including *be healthy for Chesapeake Bay, protect shoreline from erosion, increase property value,* and *look attractive.* See Figure 17.

Figure 17: Benefits to Leaving SAV Alone by Armor

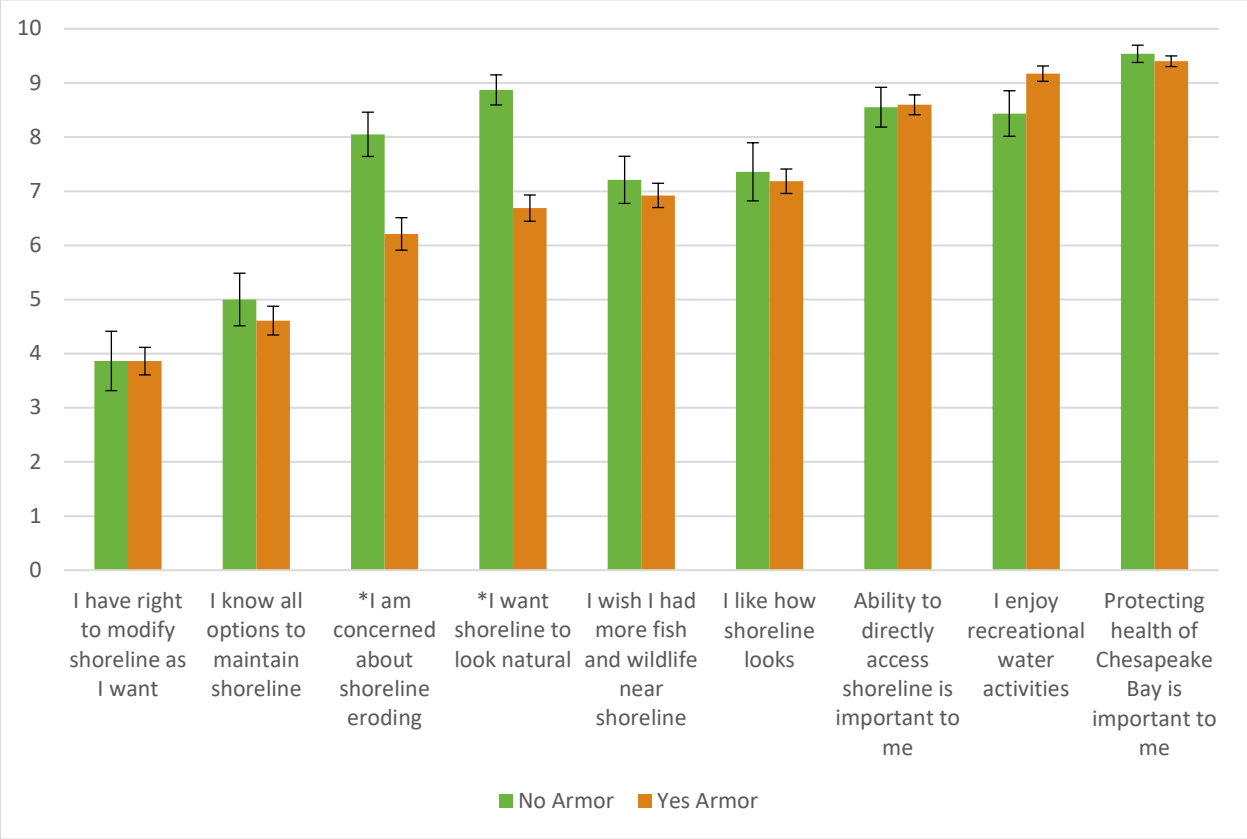


Statements with a statistically significant difference by respondents who do and do not have armor are noted using a "*".

Attitudes

Attitudes about respondents' shorelines were rated on a scale from *0 (strongly disagree)* to *10 (strongly agree)* and differences between groups were analyzed. Two statements were rated significantly higher by those without armor - *I am concerned about shoreline eroding* and *I want shoreline to look natural.* See Figure 18.

Figure 18: Shoreline Attitudes by Armor



Statements with a statistically significant difference by respondents who do and do not have armor are noted using a "*".

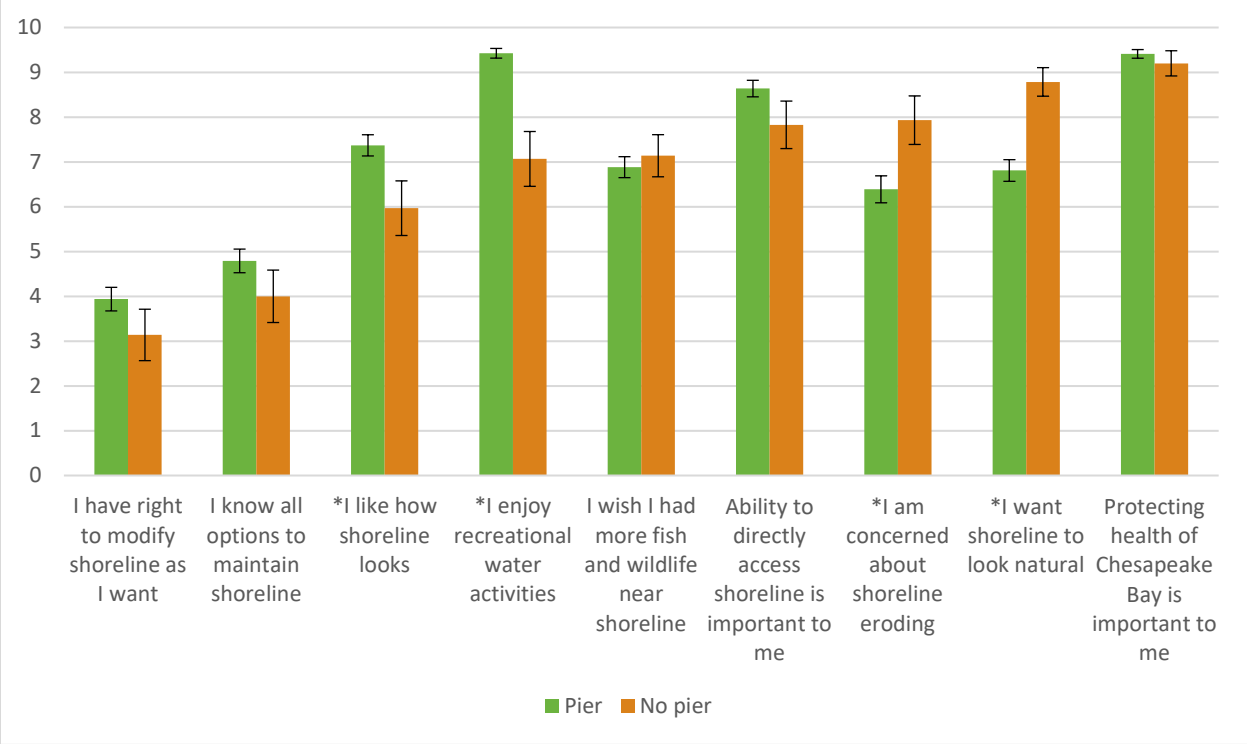
Piers

The majority of respondents reported having a pier (82.6%). Analyses were run on all questions comparing those who did and did not have piers, but significant differences were only found on the attitude questions.

Attitudes

Attitudes about respondents' shorelines were rated on a scale from *0 (strongly disagree)* to *10 (strongly agree)* and differences between groups (those with and without a pier) were analyzed. About half of the listed attitudes were significantly different for respondents who do and do not have a pier. The largest differences were in *I want my shoreline to look natural* and *I am concerned about shoreline eroding* where respondents without a pier rated these attitudes higher than those with a pier. Significant differences in ratings were also found for *I enjoy recreational water activities* and *I like how shoreline looks* where those with a pier rated these attitudes higher than those without. See Figure 19.

Figure 19: Shoreline Attitudes by Pier



Statements with a statistically significant difference by respondents who do and do not have a pier are noted using a "*".

Open-ended Responses

Several questions in the survey included an "other" option; these responses are listed in in Appendix C. Finally, the last question of the survey asked for additional comments. Many of these responses included stories about the respondent's property, from the broken boats and jet skis to concerns about very dense SAV. Many requested more information on making decisions or assisting with issues, and left contact information that was removed for the purpose of this report. These are included in Appendix C.

4: Conclusions and Recommendations

This research sought to better understand how shoreline property owners perceive and make decisions about the SAV on their shoreline. The results of this research will assist organizations in the Chesapeake Bay region to successfully motivate property owners to leave their SAV alone and build piers that protect SAV. In this section, we provide a strategy table with a summary of key findings and associated recommendations for motivating property owners. One key finding to note across both behaviors is that the channel respondents reported using for information (above all others) was Maryland DNR (74%). About half reported using web searches, local government, and Maryland Department of the Environment.

Leave SAV Alone

Overall, respondents perceive low to moderate benefits to leaving SAV alone but face significant barriers. The health of the Bay, encouraging more wildlife, and preventing erosion were all meaningful benefits to the full group, and protecting the health of the Bay was by far the top reason respondents had considered for protecting or restoring SAV. Those who considered removing SAV rated all benefits lower, suggesting the need to enhance benefits across the board. The most important barriers were that SAV is perceived to create challenges with boating and swimming, especially for those who had considered removing SAV. In addition, those who had considered removing SAV also ranked aesthetic barriers highly including concerns about smell, disagreement that SAV looked attractive, and increased property value. Finally, respondents who had considered removing SAV rated a natural shoreline, concern about erosion, and liking how their shoreline looks significantly lower (less agreement). Respondents who had considered removing SAV had moderate agreement to the right to modify shoreline. However, overall, all respondents highly valued protecting the health of the Chesapeake Bay, recreational water activities, and shoreline access.

Other Considerations

Several other important findings should be noted regarding outreach for motivating property owners to leave SAV alone:

- Longer-term property owners were less concerned about SAV and swimming and perceived more benefit from SAV in terms of looking attractive and increasing property value. Longer-term property owners were more likely to report they were concerned about shoreline erosion and know all options to maintain their shoreline. Overall, longer-term residents have lower barriers (easier to motivate), but also may be less likely to seek information as they feel they know the options to maintain their shoreline.
- Respondents who do more activities on their shoreline were more likely to report they enjoy recreational water activities and like how their shoreline looks, and less likely to report they want their shoreline to look natural. As the top barriers to leaving SAV alone are water activity based, those who do more activities have more barriers (harder to motivate).
- About half of respondents were unaware they would need any kind of permit for SAV removal.

Action Research

Target Audience

Based on the results, we recommend the strategies initially focus on targeting longer-term residents, as they reported fewer barriers and more benefits to leaving SAV alone. We also recommend focusing on areas that have higher levels of SAV, either increasing or already established, as they were more likely to consider removing SAV.

Leave SAV Alone Strategy Table

In the strategy table below, we list relevant research findings, link those findings to social science and marketing tools, and suggest pathways for operationalization.

Research Outcome	Tools	Strategy Options/Operationalization
SAV negatively impacts shoreline usage	Education/ Communication	• Outreach will include best practices for boating, swimming, and other waterfront activities with SAV around – both for how to accommodate SAV but also for the activity. This could highlight extending piers beyond SAV, the other behavior that barrier and benefit data was collected on for this work – see next section, *Build Piers that Extend Beyond SAV.* Boats can also trim their motors in shallow water to avoid getting SAV caught in the motor and damaging the boat. • If there are situations that should be exceptions, note those specifically (e.g., if there is a specific density of SAV where it should be cut) • Since SAV, especially when visible at the water surface, is particularly helpful against erosion caused by boat and jet ski wakes, this can be linked to benefits of SAV for waterfront activities.
Low motivation to protect SAV	Normative feedback	• Communicate that the majority of shoreline property owners leave their SAV alone, and highly value the Bay • Show simple metrics of how the local region is improving due to the actions of most property owners. • Highlight well-known and well-respected residents in the area that already leave SAV alone through water-facing "lawn" signage (social diffusion). • This can be linked to the Bay Protector ambassadors referenced in the *Bay Protectors for Shoreline Management: Implementation Plan* as another social diffusion message that identified ambassadors can distribute through their social channels. The results suggest that those without armor, which is part of the criteria to be a Bay Protector ambassador, may be more likely to leave their SAV alone, given lower barriers and higher benefits.

Lack of knowledge about permitting	Education/ Communication	• Include simple information on when the removal of SAV requires a permit. • Consider providing simple information on where state owned land starts.
Protecting the health of the Bay; Wildlife	Education/ Communication / Cognitive Dissonance	• Provide credible, vivid information about how more SAV protects the Bay and brings wildlife to their property. Given that the highest barriers to leaving SAV alone were linked to usage of the shoreline and waterfront activities, messages could link between the health of the Bay, SAV, and ability to continue to engage in their favorite waterfront activities. • Respondents reported valuing the health of Bay as a general attitude. However, when asked if the health of the Bay was a benefit of SAV, it was not valued as highly. Outreach should connect leaving SAV alone as a way to protect the Bay, such as the increase in fish and wildlife and the sequestering of excess nutrients (which may lead to even more growth of algae on their shoreline). • Cognitive dissonance can motivate actions that are consistent with individual's values by reminding them of their values (protecting the Bay is very important) and speaking to what behaviors are consistent with those values (leaving SAV alone).

Build Piers that Extend Beyond SAV

Respondents reported both moderate benefits and moderate barriers to building piers that extend beyond SAV. The primary barrier respondents reported was that extending the pier would be *expensive*, with moderate agreement to it *would not make sense for their property* or *look out of place*. The highest benefit of a longer pier was *allowing access to deeper water,* followed by other benefits related to the Bay, wildlife, and SAV. About a quarter of respondents reported they already had a pier that extended beyond the SAV, and for those who did not, they reported moderate likelihood to engaging in the action.

Target Audience

As above, we recommend focusing on longer-term property owners in areas that have increasing or already established SAV. We recommend focusing on owners who already have a pier that does not extend beyond SAV to avoid incentivizing additional piers and to leverage the primary benefit of access to deeper water to protect their boat and increase the ease of engaging in water activities. If possible, we also recommend initially focusing on property owners with the financial resources to extend their pier without additional grants.

Build Piers that Extend Beyond SAV Strategy Table

In the strategy table below, we list relevant research findings, link those findings to social science and marketing tools, and suggest pathways for operationalization.

Action Research

Research Outcome	Tools	Strategy Options/Operationalization
Expensive	Incentive	• Either correct misperceptions about expense, provide grants for pier extension, or focus on property owners with the financial means to extend their piers.
Not make sense/look out of place – difficult to motivate	Convenience/ Communication	• Create a website or other information source that provides information quickly and easily for residents to build longer piers. This could include contact information for companies who do this kind of work, rebates/grants for pier extensions, and other important information needed to complete the work. • Consider vivid info, either through photos of piers in their area or via virtual reality, to demonstrate what a longer pier might look like on their property.
Look out of place/ Moderate likelihood	Social Norms	• Highlight that other shoreline owners highly value the health of the Bay. • Create testimonials that communicate how other shoreline owners have overcome barriers and realized benefits of extending piers beyond SAV (e.g., ease of boating and swimming when the water beyond SAV is more accessible). This is linked to the messaging in the *Leave SAV Alone Strategy Table*. • Highlight well-known and well-respected residents in the area that already leave SAV alone through water-facing "lawn" signage (social diffusion). • This can be linked to the Bay Protector ambassadors referenced in the *Bay Protectors for Shoreline Management: Implementation Plan* as another social diffusion message that identified ambassadors can distribute through their social channels. The results suggest that those without armor, which is part of the criteria to be a Bay Protector ambassador, may be more likely to leave their SAV alone, given lower barriers and higher benefits. • Alternatively, this program can conduct work with local groups to identify members of the target audience (longer-term property owners in areas with SAV) that have already extended their pier, and approach them about their willingness to distribute the materials through their social channels.
Allow access to deeper water	Education/ Communication	• Communicate the benefits of having access to deeper water for the resident's use of their property and waterfront

Protecting the health of the Bay; Wildlife	Education/ Communication/ Cognitive Dissonance	• Use cognitive dissonance to motivate actions that are consistent with individual's values by reminding them of their values (protecting the Bay is very important) and speaking to what behaviors are consistent with those values (leaving SAV alone). • Respondents reported valuing the health of Bay as a general attitude. However, when asked if the health of the Bay was a benefit of SAV, it was not valued as highly. Outreach should connect extending a pier beyond SAV as a way to protect the Bay. • Provide credible, vivid information about how more SAV protects the Bay and brings wildlife to their property.

Messengers and Communication Channels

Given the substantial preference for MD DNR, we recommend that any outreach be branded under MD DNR and the local governments. Outreach could be co-branded with water-activities organizations, such as boaters or anglers.

There are a variety of communication channels that are appropriate for this outreach, including door-to-door (as possible with local COVID-19 restrictions), mailers, websites, and social media. Based on results of other shoreline management work with the Chesapeake Bay Program, *Bay Protectors for Shoreline Management: Implementation Plan,* we recommend leveraging social networks when possible, such as visual signage that faces the water and Maryland DNR branded outreach that can be distributed between social networks of shoreline property owners. The final communication channels will be determined in conjunction with the steering committee.

Next Steps

After receiving feedback from the steering committee on strategies, Action Research will develop outreach to assist with motivating property owners to leave SAV alone and build piers that extend beyond SAV. We will identify styles, color, tone, and communication mediums collaboratively based on the expected resources and messengers to motivate shoreline property owners to leave their SAV and extend their piers beyond where SAV grows, creating a healthier Chesapeake Bay.

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Appendix A: *Submerged Aquatic Vegetation Review* memo

See Separate Document

Appendix B: Barrier and Benefit Survey

Dear Resident,

This survey was sent to you from the Chesapeake Bay Program and the Chesapeake Bay Trust. The information we collect will assist us in developing outreach materials to help residents protect their property's shoreline and the water alongside it for years to come. We would appreciate it if you would complete this short survey. It should take no more than 10 minutes.

Your household is one of only a select number of Maryland households being asked to complete this important survey, so your participation is very important to us.

Please return your completed survey by using the postage-paid envelope provided. If for some reason you prefer not to respond, kindly return the blank survey and we will remove you from future mailings regarding this survey.

If you have any questions, please contact Brooke Landry at brooke.landry@maryland.gov. Thank you for your time.

Sincerely,

Brooke Landry
Chair, Chesapeake Bay Program's SAV Workgroup

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Section A. This survey is about the shoreline and property where this survey was received. The shoreline is the area where your land meets the water. **If your property does not have a shoreline, please check this box and return the survey. ☐ No Shoreline**

1. Do you own or rent your shoreline property? ☐ Own, for _____ years ☐ Rent, for _____ years

2. What structures do you have on the property where this survey was received? Please check all that apply.

☐ House (primary residence) ☐ House (vacation/rental property) ☐ Other type of building

3. Do you use your waterfront for any of the following? Please check all that apply.

☐ Swimming ☐ Launching kayak/canoe/paddle board
☐ Fishing ☐ Power boating
☐ Crabbing ☐ Sailing
☐ Bird watching/photography ☐ Other, please specify: _____

Section B. This section is about underwater grasses, also known as seagrasses or submerged aquatic vegetation (SAV). In the Bay, there are many species of underwater grasses, including ones that look similar to field grass, with long, tape-like stems, ones that look more like herbs with short leaves growing right from the stem, and even those that grow in a clumping, bushy manner resembling shrubbery. They grow under the water, sometimes reaching the water's surface, and are many shades of green.
For this survey, think of the underwater grasses that may or may not be growing along your property's shoreline.

4. Since you have lived at your waterfront property, have you seen:

- ☐ An increase in underwater grasses
- ☐ A decrease in underwater grasses
- ☐ No change in underwater grasses

5. When you look at the water along your shoreline, how much of the water has underwater grasses, also known as submerged aquatic vegetation or SAV?

- ☐ All of it
- ☐ Most of it
- ☐ Some of it
- ☐ Very little
- ☐ None **[SKIP to Question 15 on the back]**

6. Have you ever:

a. Considered restoring or protecting the underwater grasses along your shoreline?

- ☐ Yes, please answer Question **6b**. → →
- ☐ No, please go to Question **7a**. ↓ ↓

6b. If yes, what is the top reason you have considered restoring or protecting your underwater grasses? Please choose one.

- ☐ Easier fishing and crabbing
- ☐ More grasses would look better
- ☐ Bring more wildlife to my property
- ☐ Improve the health of the Chesapeake Bay
- ☐ Natural shorelines and water are important to me
- ☐ Other:

7. Have you ever:

a. Considered removing any of the underwater grasses along your shoreline?

- ☐ Yes, please answer Question **7b**. → →
- ☐ No, please go to Question **8** on the next page

7b. If yes, what is the top reason you have considered removing your underwater grasses? Please choose one.

- ☐ Easier for swimming.
- ☐ Keep grasses from washing up on my shoreline.
- ☐ Keep grasses off my boat.
- ☐ Fewer grasses would look better.
- ☐ Other:

8. Have you ever heard of anyone in your community restoring or protecting their underwater grasses?

☐ Yes ☐ No

9. Have you ever heard of anyone in your community removing their underwater grasses?

☐ Yes ☐ No

10. Using a scale from 0 (*strongly disagree*) to 10 (*strongly agree*) please rate your agreement with the following statements.

Letting underwater grasses along my shoreline grow undisturbed would…	Strongly Disagree										Strongly Agree
a. Increase my property value.	0	1	2	3	4	5	6	7	8	9	10

b.	Be healthy for the Chesapeake Bay.	0	1	2	3	4	5	6	7	8	9	10
c.	Bring more wildlife to my property.	0	1	2	3	4	5	6	7	8	9	10
d.	Make my shoreline less accessible.	0	1	2	3	4	5	6	7	8	9	10
e.	Harm my boat.	0	1	2	3	4	5	6	7	8	9	10
f.	Make it harder for my household to swim.	0	1	2	3	4	5	6	7	8	9	10
g.	Make fishing and crabbing easier for my household.	0	1	2	3	4	5	6	7	8	9	10
h.	Protect my shoreline from erosion.	0	1	2	3	4	5	6	7	8	9	10
i.	Make it hard for my household to boat.	0	1	2	3	4	5	6	7	8	9	10
j.	Have an unpleasant smell.	0	1	2	3	4	5	6	7	8	9	10
k.	Look attractive.	0	1	2	3	4	5	6	7	8	9	10
l.	Other, please specify:											

11. To your knowledge, is a permit required for the removal of underwater grasses along your shoreline?

☐ Yes ☐ In some situations ☐ No

Section C. This section is about overwater structures, such as fixed or floating piers, wharfs, docks, walkways, or other similar water-dependent structures constructed on or over tidal wetlands for the purpose of gaining access to the navigable waters.
For this survey, we will refer to all "overwater structures" as "piers."

12. Does your property have a pier?

☐ Yes ☐ No, but we are planning on building one ☐ No, and we are not planning to build one **[Skip to Question 15, over]**

13. Using a scale from 0 (*not at all likely*) to 10 (*extremely likely*), when planning a new pier or renovating an existing pier, how likely are you to use a design that places or extends the end of the pier beyond where underwater grasses grow?

Not at all likely 0 1 2 3 4 5 6 7 8 9 10 Extremely likely

☐ My pier already extends beyond grasses

14. Using a scale from 0 (*strongly disagree*) to 10 (*strongly agree*), please rate your agreement with the following statements.

	Placing the end of the pier beyond where the underwater grasses grow would…	Strongly Disagree										Strongly Agree
a.	Make my pier less accessible.	0	1	2	3	4	5	6	7	8	9	10
b.	Be expensive.	0	1	2	3	4	5	6	7	8	9	10
c.	Protect underwater grasses.	0	1	2	3	4	5	6	7	8	9	10
d.	Protect fish and crab habitats.	0	1	2	3	4	5	6	7	8	9	10
e.	Allow me to access deeper water.	0	1	2	3	4	5	6	7	8	9	10
f.	Not make sense for my property.	0	1	2	3	4	5	6	7	8	9	10
g.	Look out-of-place compared to neighbors' piers.	0	1	2	3	4	5	6	7	8	9	10
h.	Protect the health of the Chesapeake Bay.	0	1	2	3	4	5	6	7	8	9	10
i.	Other, please specify:											

Section D. These next statements are about attitudes and opinions you have about your waterfront property.

15. Using a scale from 0 (*strongly disagree*) to 10 (*strongly agree*) please rate your agreement with each of the following statements.

		Strongly Disagree										Strongly Agree
a.	I am concerned about my shoreline eroding.	0	1	2	3	4	5	6	7	8	9	10
b.	My ability to directly access my shoreline is important to me.	0	1	2	3	4	5	6	7	8	9	10

c.	I want my shoreline to look natural.	0	1	2	3	4	5	6	7	8	9	10
d.	I know all the options to maintain my shoreline.	0	1	2	3	4	5	6	7	8	9	10
e.	I enjoy recreational water activities (boating, kayaking, fishing, etc.).	0	1	2	3	4	5	6	7	8	9	10
f.	Protecting the health of the Chesapeake Bay is important to me.	0	1	2	3	4	5	6	7	8	9	10
g.	I like how my shoreline looks.	0	1	2	3	4	5	6	7	8	9	10
h.	I have the right to modify my shoreline as I want.	0	1	2	3	4	5	6	7	8	9	10
i.	I wish I had more fish and wildlife near my shoreline.	0	1	2	3	4	5	6	7	8	9	10

Section E. The next question is about your communication preferences.

16. When you have questions about managing your shoreline, where do you look for information? Please check all that apply.

- ☐ Contractor
- ☐ County or city government
- ☐ Friends and family
- ☐ Maryland Department of Natural Resources
- ☐ Neighbors
- ☐ Maryland Department of the Environment
- ☐ University
- ☐ Media (newspapers, etc.)
- ☐ Non-profit or local watershed organization
- ☐ Web Search Engine (Google, etc.)
- ☐ Other, please specify: _____

Section F. Other Household Information. These questions are used for classification purposes only.

17. Does your community have a community pier, such as one managed by a HOA?

☐ Yes ☐ No ☐ I do not know

18. Do you have a boat?

☐ Yes, docked in the water along my property ☐ Yes, docked somewhere other than the water along to my property ☐ No

19. Does your waterfront property have any of the following shoreline structures? Please check all that apply.

☐ Bulkhead ☐ Riprap ☐ Living shoreline ☐ Other shoreline structure: _____

20. In what year were you born? _____

21. Including yourself, how many people live in your household? _____ How many are children under 18? _____

22. If you have any other comments about underwater grasses, please write them below.

Thank you for your participation!

Appendix C: Survey Comments

Q3: Do you use your waterfront for any of the following? Other, please specify:
Butterfly garden
Commercial crabbing for 36 years
Community beach, launching (if annual fee paid)
Dog-walking
Ice skating
Invasive hydrylla ruined the water. Used to have boats, jet skis, kayaks.
Jet skiing
Jet skis.
Kayaking.
Oyster gardening
Paddle boarding, relaxing, enjoying view.
Relaxing on the beach.
Scenery
Sitting next to the water
To enjoy the views
Unable to access shoreline directly due to invasive vegetation and steep drop off.
Wacky, fun stuff.
Water skiing
We installed a "living shoreline" to enjoy SAV.

Q6b: If yes, what is the top reason you have considered restoring or protecting your underwater grasses? Other, please specify.
It's a vital nursery to many different species.
To prevent shoreline erosion.

Q7b: If yes, what is the top reason you have considered removing your underwater grasses? Other, please specify.
Allow trash to not collect at low tide.
Can't get boat out.
Clogs up jet ski.
Density of grasses are excessive. I won't step in the water along the shoreline because of how thick the grasses are.
Fishing
Grasses get into jet ski pumps.
Harbor snake head fish - not good!
In 2016 there was an abundance of grass. I pulled out some for swimming but it appeared to be Milfoil.
Invasive algae blooms.
It gets in the prop of our power boat.
Jet ski clogs up.
Keep grasses out of boad motor and jet skis.
Less algae blooms, easier fishing
Reduce algae bloom and smell.
So dense it completely covers surface of the water.
They smell.
Trash collects in it.
Trash gets stuck in the grasses. Over-run with some grasses, some are beautiful.

Q10: Letting underwater grasses along my shoreline grow undisturbed would… (Other)
Bad for prop and jet skis.
Encourage underwater life
Make the water clearer
More seaweed results in clearer water. In 2016 you could see to the bottom and see fish swimming.

My jet ski sucked grass and is now broken.
Reduce the number of mosquitoes
The algae floats on top of grasses and is very unsightly.
The debris that it collects is disgusting and an eyesore.
The Milfoil is so thick and ends ups giving us fish kills with low oxygen.
Water clarity is desirable. SAV's improve water clarity immensely.

Q14: Placing the end of the pier beyond where the underwater grasses grow would… (Other)

Allow better use of boat lifts at low tide.
Grasses collect algae on top.
Improve my boating.
It is narrow, don't think I would be allowed to extend.
Our entire cove is shallow and grassed in; therefore, there is no possibility of building a pier beyond the grasses.
The grass will grow around the pier and rocks. It's the re-growth grass. As long as the Bay is healthy it will grow.

Q22: If you have any other comments about underwater grasses, please write them below.

1997 there was no grass, 2020 everywhere you look is grass.
A much anticipated dredging project was slated for Bird River. Included in the project were many spurs. Bird River is extremely silted due to sand and gravel strip mining which has been on-going for a very long time. The project has been delayed and all the spurs have been eliminated due to a new requirement that SAV's destroyed in spurs must be mitigated at a 4 to 1 ratio. This is not at all fair to all those who need spurs and made decisions based on getting spurs. Why dredge if you can't get to the channel? SAV's will be destroyed by folks prop dredging to the channel! *(contact information removed)*
Agree they indicate a healthy bay, but this year are totally out of control and interfere with swimming, kayaking, jet skiing, and like I said, the collection of debris from storms is unacceptable.
Can I use something to remove a portion of the grass? It is choking out everything. If yes, what? *(contact information removed)*
Concerned over invasive underwater grasses choking Bird River. Also, underwater grasses making it impossible to swim at Maxwell Point.
Garbage gets trapped. It smells, it burned up my jet ski motor. Friends with boats can no longer come by water. Fish get trapped in it and die. Get rid of it! PLEASE!
Grass in Middle River was extremely thick 3 or 4 years ago. Last year there was very little, and not much this year (not even milfoil). The water is no longer clear and very few migratory ducks stopped here this year. Ten years ago we had large flocks of many different ducks. However, oddly enough, there are more fish, and in the past couple weeks, crabs!
Grasses came back a few years ago then disappeared. In 1950's much grass with minnows, crab, fish. Now water dead, too many people pouring chemicals on lawns, taking trees down. Water clear in winter, cloudy in summer - too many boats going too fast.
Have all seaweed - it effects my boating!
How do we get grasses? We do have clams. How can we help cleanup the Bay?
Hydrilla gets really bad July/August where we often can't use or safely get our jet skis out. We have a boat we can't use because of low tide. We were promised dredging a year ago and the low water lever exacerbates the hydrilla. We can fix the issue with hydrilla by dredging!!
I acknowledge that grasses place restrictions on use of waterways but I appreciate how much they help with water quality of the bay, how they improve the overall habitat and in turn draw more wildlife to the area.
I am very pro education about environmental issues, however, I am strongly against any more legislation that will limit and/or penalize homeowners when they try to use the water front property they pay such a great price to own. I personally think the grasses that took over our pond last summer were unsightly, but I appreciate the good they do for the health of the environment.
I believe the grass is good for the water. Only concern is that it grows to top of water and collects algae. If you trim it below water it seems to do a lot better. It doesn't choke out the area and fish love it.
I don't know if the grass is good or bad for environment/water. It did ruin my jet ski and wrapped around boat propeller. I would like some grass removed. It also smells bad.
I don't see a lot of underwater grasses. I wonder about vegetation that would help at the end of my property where water goes over the bulkhead.
I have always thought there are good and bad grasses. Not sure which is which or if this is true.

I live on the main part of Middle River. In 2016 a pontoon boat came several times and cut all the seaweed from the beach out at my neighbor's home. Living right next door I can promise you that these grasses were not affecting my neighbor's boating. He has many guests all summer and does not want them to have to swim in seaweed. My understanding was that companies like "Seaweed Solutions" could only remove grasses from the end of your pier out to an area where grasses would not impede boating. I guarantee you they are breaking the law and should be investigated. I've seen so many barges of seaweed being carried to Chesapeake Marine to haul away.

I never had grasses until the last couple of years. This year it is so bad, I can't even get my boat in and out without issues. Is there a way to keep the seaweed from getting so dense?

I sold both of my jet skis due to grasses. Never had a problem until 3-4 years ago. However, the grasses make the water clearer.

I support growth of underwater grasses, much of what is there now though are invasive species (hydrilla) so plans on how to support more natural species growth would be beneficial.

I want to support the bay and would like to know how to promote "good" grass.

I would like more info on introducing natural grass to my shoreline.

I would like to restore and replant the grasses at my home! We had dense beds of sea grasses four years ago and they are mostly gone now. Please contact me with info about how I can replant. *(Contact information removed)*

I would like to understand the connection between the SAVs and the algae that forms on the top - it only forms where there are some grasses and not in deeper channel area - very unsightly and smelly and a pain to get rid of when it dies back as big [?] on the shoreline in the fall.

I'd like to know more about the grasses, if they are native or invasive and what to look for.

If MDNR would dredge our creek it would be deeper. The foot of sludge or muck would wash into the dredged area and more grasses would grow, but every year less and less crabs, and grasses grow.

In the early 70's when we purchased this property there were grasses growing along out shoreline. Several years later they began to vanish - now there are none.

Invasive grasses are no good!

Invasive Milfoil has been getting worse every year. I realize SAV's are important but not when we have one overtaking and outcompeting other species. When they die and use up all the oxygen, they die off along with the fish and you can smell it from a far distance. Milfoil is lowering our SAV diversity.

I've lived on the Bush River and have seen considerable improvement in SAV's in the river, in particular the past few years. I am planning on riprapping a 100' section in front of my house that continues to erode into the Bush River. However, regulations, permits, etc. are time consuming, complicated, bureaucratically a mess, and expensive so I'm not sure when I will address.

MDE would not permit a bulkhead the full length of my property and now my shoreline is eroding. Grasses between mine and neighboring piers have increased dramatically over the past few years.

My neighbor's waterfront has never had any bulkhead or riprap securing their property/shoreline. Is there any law or agency that would require them to do so?

My waterfront is very shallow and is overrun with underwater grass. The grass extends approximately 190 ft. from the shoreline.

Not very pleasant to swim or stand in.

Only that I was under the assumption that when the underwater grass get out of control it is due to fertilizer runoff from surrounding communities.

Q16: Didn't know these [MD DNR, MD Dept of the Environment] existed.

Sadly, we know very little about the grasses. Perhaps an educational program should be considered.

Since there are both good and bad grasses, I'm not sure which the survey refers to. Good, of course, is healthy for all.

Thank you! If looking at our property for survey/research, please contact us: *(Contact information removed)*

Thanks for sending this out to us!

The county has given too many building permits over the years. Building and nature do not agree. We've lived here since 1966, had a lot of seagrasses - all gone!

The grass was extreme this year. Never seen it like that before. Don't know if good or bad.

The proliferation of the invasive hydrilla grasses is destroying the shoreline along my property. Swimming is not an option anymore, fishing and crabbing are difficult and getting by boat from my pier to deeper water is a problem. Please refer to the attached correspondence with Baltimore County government for a full explanation or contact me at *(Contact information removed)* if you wish to discuss.

The underwater grasses in our cove seem to retain algae. This is what is visible from our house and unsightly and degfinitely reduces our property value.

There had been an increase in SAV in the past 5 years, however this year there is very little.

There has been an enormous growth of new underwater grasses this year in my cove. I have never seen this much growth before. They allow unwanted trash to collect at lower tides and clog boaters thru-hulls.

Action Research

They have been coming back!

They should never allow people to remove grass at all from slips around pier, etc. I told my neighbor if in the spring you want to remove the grass or limit growth throw cracked corn in the slip. Carp will feed on the cracked corn and in the process, root up the grass naturally. The grass came back in 2015, 2016, 2017, and 2018 like I remember in the early 1960's. I thought I would never see tht again in my lifetime, but I did. Sincerely, *(Contact information removed)*

They vary year to year - some years none, some it's so thick it stalls a small boat.

Underwater grass was very common and thick in 2014. Over the last 6 years it has become less dense, and is more useable to fish and crab population to the extent that 100' out from shoreline, completely acceptable in its present state of density.

Underwater grasses are bad in the cove I live in as it makes boating and swimming very unpleasant and damages engines on boats and smells. The runoff on Baltimore County rightaways in our tiny cove is very bad and filling in our cove where our channel has become more shallow over the years and killed the grasses. Dredging our cove was omitted when they dredged Middle River several years ago. No attempt is being made by Baltimore County to top the runoff on the two rightaways on our cove and we residents are the ones putting up with this, not only for shallow water but also polluting the rivers and bay. Concerned citizen

We are happy with the grasses. However, in August when they start to die they smell and can get in the boat motor. We had a lift installed so that should not be an issue.

We are very concerned about wave erosion and damage to bulkhead and boat from motor boats going in and out of Middle River.

We don't mind the grasses, what we really don't like are the algae. When we had a lot of grass, toward the end of the season we would see algae. We don't know where the grass went this year.

We have always had the tall, beautiful grasses but now we have the invasive underwater grasses that are taking over. You can't even see the water anymore near our bulkhead. Feel free to call me or stop by to see how bad it has gotten. *(Contact information removed)*

We have definitely noticed an increase this year, especially along the eddy near our creek mouth. We have been contemplating asking about returning the creek to its natural state for the Bay conservation as we sit on 11 acres with 1000 ft. of waterfront.

We have seen more turtles and eagles this year than in previous years. In 25 years, we have seen the osprey population increase dramatically, as well as snakes, lizards, frogs, and other birds (seagulls, blue jays, cardinals).

We just replaced our bulkhead and stone revetment with a living shoreline.

We live in a condo. The grass grows in June and takes over the shoreline from the bulkhead to about 20-30 feet out. While this doesn't affect me personally, I see boats have trouble with seaweed. The owners of the marina are planning to dredge next to our building.

We live on a small creek just off Middle River. We have seen many changes in the amount of SAV over the years. We answered the questions to reflect how things are in the present.

We would like more info on the kind of grasses that currently exist in our water - how to maintain them, promote more growth, while protecting existing grasses. How to ID the grasses so we can promote growth of native grasses. Can we plant native grasses? We are looking into the Gunpowder Valley Conservancy raingardens and micro bio-retention gardens. They don't have funds to build on our property. Are there other organizations that do? We'd like to reduce/eliminate rainwater runoff from the street and other impervious surfaces. I heard about a citizen scientist program where we could monitor our water, collect data, and report it. I have not been able to find any info on the program. Would like more info. (contact info removed)

We would need to work with the City of Havre de Grace and our neighbors if bulkhead were to be converted to a living shoreline. We would seriously consider such a project.

Wife doesn't like them, I don't mind them. Not sure why they are back - may be due to power plant that closed.

Would appreciate any assistance the Trust could give us to stop erosion and continue to enhance our natural shoreline.