



# DEVELOPMENT OF THE SAV RESTORATION GUIDE

*Small-scale SAV  
Restoration in  
Chesapeake Bay*

Dave Jasinski



**A Guide to the Restoration of  
Submerged Aquatic Vegetation**

# THE PROJECT

- In Spring of 2020, contracted to develop an SAV restoration literature synthesis, restoration guide, and education/outreach materials
- Dr. Cassie Gurbisz collaborated
- Audience for the guide and outreach materials - federal and state agencies, local jurisdictions, and non-government organizations, such as Riverkeeper and other watershed organizations





# THE PROCESS

## 2

Based on the information gathered during the interviews and extensive research of the literature, Cassie Gurbisz developed *Chesapeake Bay SAV Restoration Methods: Literature Review*

### Topics covered:

- Site selection
- Propagule collection and planting
- Post-restoration monitoring
- Knowledge gaps
- Future directions

## Chesapeake Bay SAV Restoration Methods: Literature Review

Cassie Gurbisz and Dave Jasinski



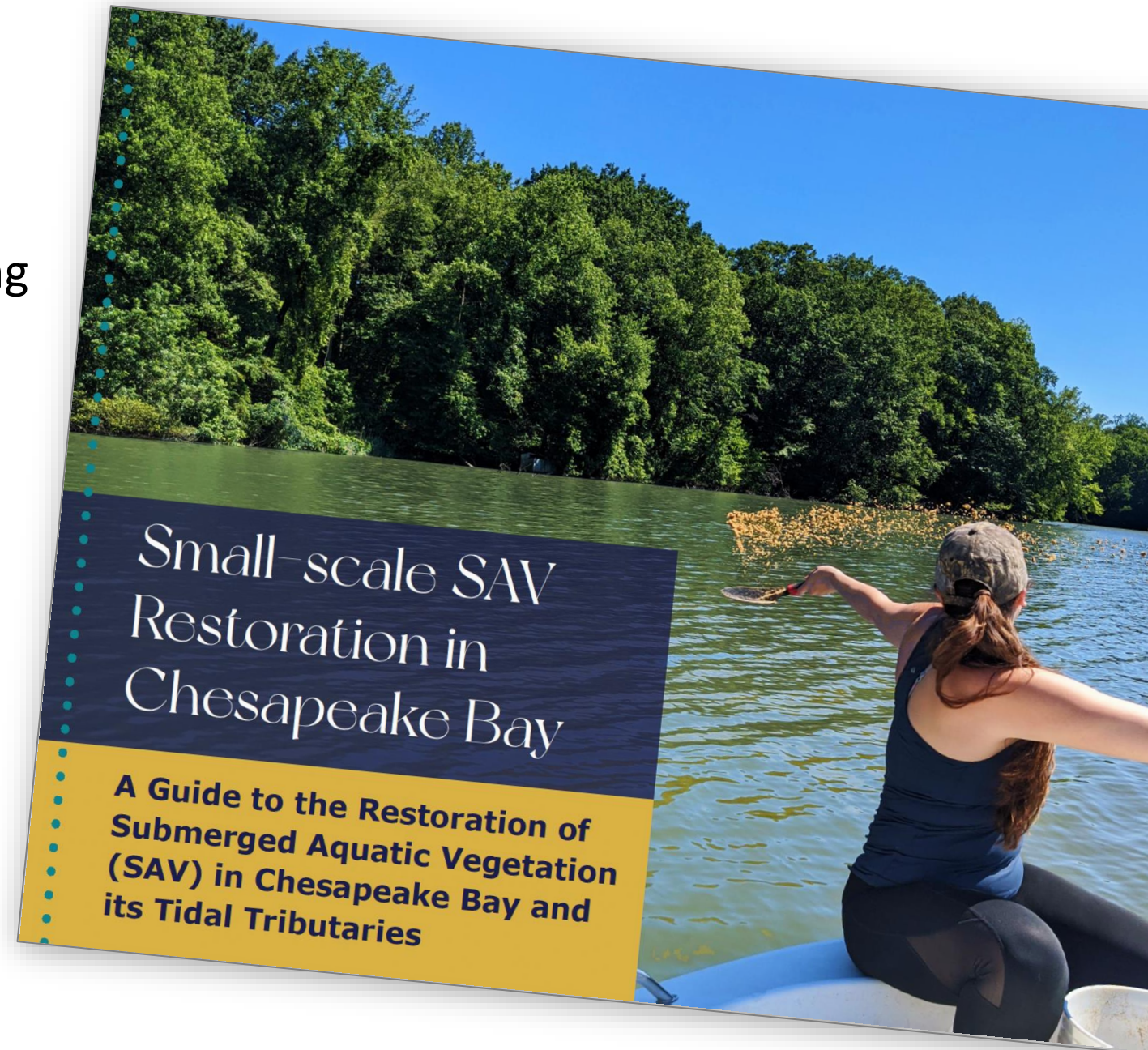
# THE PROCESS

## 3

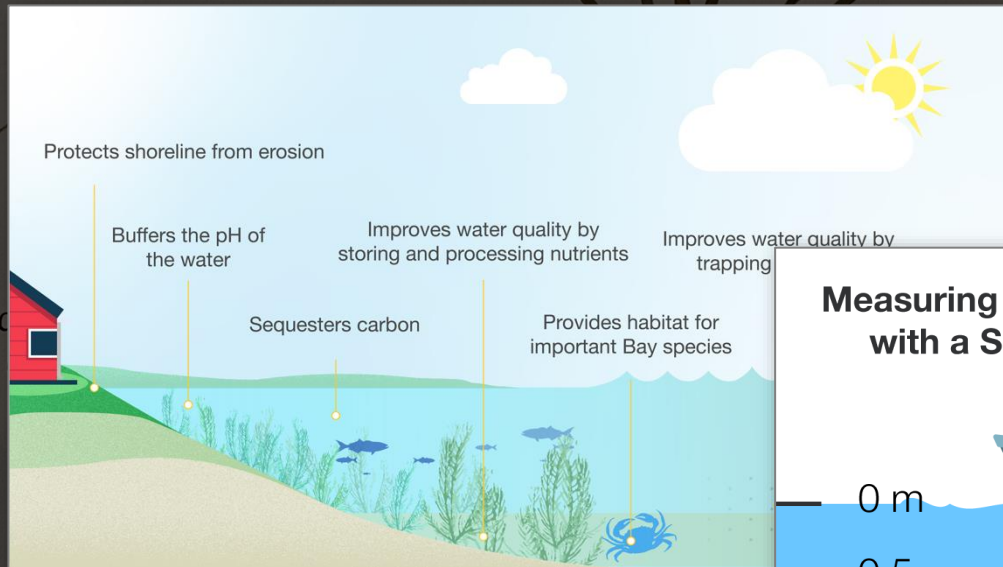
Using the literature review as a starting point, we developed the restoration guide.

Chapters cover topics including:

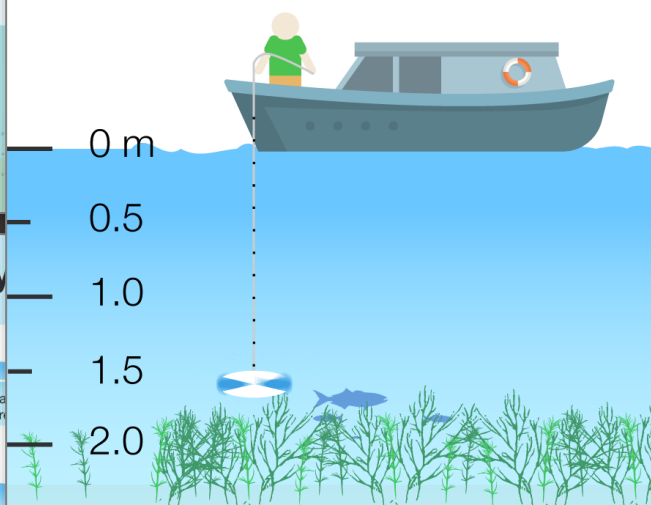
- Regulations and permitting
- Site selection
- Habitat criteria
- Seed and plant collection
- Seed processing and storage
- Testing seed viability
- Seed dispersal
- Monitoring and success criteria



## THE PRODUCTS – The Manual



### Measuring Water Clarity with a Secchi Disc



### How to Estimate Water Velocity

**You will need:**

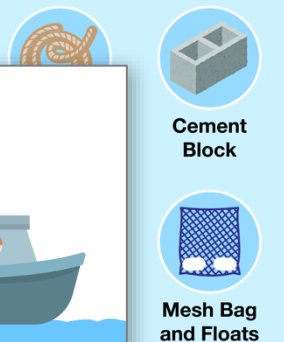
- Two People
- Transect Tape
- Orange
- Stopwatch

1. Measure distance between two points parallel with the direction of the current.
2. Release the orange at the up-current point and at the same time, indicate to the down-current worker to start a stopwatch.
3. When the orange passes the down-stream point, the down-stream worker should stop the stopwatch.

**4. Current Speed =  $\frac{\text{distance traveled (m)}}{\text{travel time (s)}}$**

### The Buoy Dispersal Method

**You will need:**



1. Attach the buoy to the cement block with the line.
2. Stock the mesh bag with reproductive material (about 100 reproductive shoots is a good place to start) and add floats.
3. Attach the mesh bag to the buoy and deploy.
4. Retrieve the setup 4-5 weeks after deploying.

Please refer to the section in this manual

### Stressors to SAV

**Nitrogen and Phosphorus from**

- Fertilizer
- Stormwater Runoff
- Sewage & Wastewater

**SAV is sensitive to storms and floods**

- Stormwater washes a lot of sediment into the Bay.
- Wave energy increases the amount of sediment suspended in the water by churning the Bay bottom.
- Waves can dislodge SAV from sediment.
- Sediment decreases water clarity and blocks sunlight.

**Nutrient pollution can cause algae - called epiphytes - to grow on leaf surfaces.**

- These epiphytes block sunlight from the leaf.
- Nutrient-fueled algal growth in water also blocks sunlight.

**Climate change is predicted to increase the number and intensity of storm events which will increase nutrient and wave impacts.**

donor bed or donor area. Collecting plants that have adapted to conditions that are similar to those at the restoration site will also increase the likelihood of success. As an example, individuals which have developed genetic adaptations to withstand high salinity at a salty donor site would be well-suited for a higher salinity restoration site. To increase the likelihood of success, avoid moving plants from the same tributary (i.e., stay in the same tributary) and its tributaries.

Wild  
Vallisneria

Sag  
(Stuck

Figure 21 -

SAV restoration sp

June

# THE PRODUCTS – Quick Start Guide

## SAV Restoration Quick Start Guide

If you or your organization are interested in a submerged aquatic vegetation (SAV, or Bay grasses) restoration project, this summary guide will give you a sense of what is involved in the planning and executing of such an effort. If you think you are ready to move forward, check out “Small-scale SAV Restoration in Chesapeake Bay” for everything you need to know!

1

### Understand the Rules and Regulations

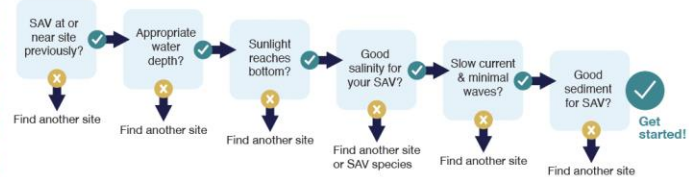
In the tidal Chesapeake, your project could be in Maryland, Washington DC, or Virginia waters. The rules about harvesting and planting SAV vary by location; see full guide for contacts, permitting details, and more.

Permit needed for:	Harvesting seeds	Harvesting plants	Planting grasses
Maryland	✓	✓	✗
District of Columbia	✗	✓	✗
Virginia	✗	✓	✓

2

### Select Your Restoration Site

In order to ensure the best chances for success, you should choose a restoration site that meets the requirements below. If you aren't sure if your site meets the requirements, see the full guide for information on how to check.



3

### Collect Seeds and Plants

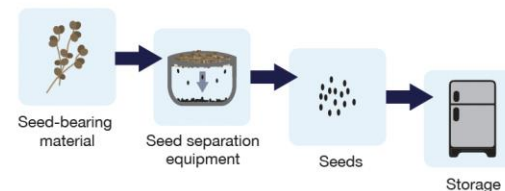
The time for harvesting seeds from SAV growing in the Bay varies by species, as illustrated in the seed harvest calendar to the right. If you are transplanting whole plants, they can be harvested at any time during the growing season.



4

### Process and Store Seeds

Seeds must be separated from seed pods and other plant material. They must then be stored at the proper temperature and salinity to keep them viable and prevent them from germinating before they are planted.



5

### Plant Your SAV Bed

When the time is right, broadcast the seeds from a boat or by wading through the water. Whole plants must be planted manually to ensure their roots become established.



6

### Monitor Your SAV Bed

Check back often to see how your SAV is doing. Make note of areas where growth is better or worse to guide future restoration work.



# THE PRODUCTS – Fact sheet and bookmark

*photo credit: Chesapeake Bay Program*

## SMALL-SCALE SAV RESTORATION IN CHESAPEAKE BAY

A guide to the Restoration of Submerged Aquatic Vegetation (SAV) in Chesapeake Bay and its Tidal Tributaries

### WHAT IS SAV?

Submerged aquatic vegetation (SAV), also known as "bay grass" in the Chesapeake Bay, is a group of flowering plants which live underwater. In the high-salinity marine environment, submerged plants are often called "seagrasses." However, the term "SAV" applies to all of the underwater plants that inhabit the full range of estuarine salinities, from tidal fresh and low salinity to brackish and saltwater.

SAV is different from seaweed because it has a vascular system which transports nutrients between the sediment, roots, and leaves, just like terrestrial plants. SAV also reproduces through flowering, pollination, and seeds, unlike seaweed. Most SAV species can also reproduce asexually when adult plants spread to create "baby" clones or when plant fragments sprout into new plants.

*photo credit: Chesapeake Bay Program*

### WHAT IS THE GUIDE? WHO IS IT FOR? WHY WAS IT MADE?

A comprehensive resource for individuals & organizations with an interest in restoring SAV in the tidal waters of the Chesapeake Bay. Its development was sponsored by the Chesapeake Bay Program's SAV Workgroup.

The intended audience is federal and state agencies, local jurisdictions, and non-government organizations (such as Riverkeepers). However, anyone interested in the Chesapeake Bay and its living resources will likely find something of value here.

To get closer to meeting the Chesapeake Bay Program SAV restoration target by helping readers directly restore SAV in appropriate areas instead of relying solely on improvements in water quality to passively promote recovery.





### THE PROCESS

The guide will walk the reader through the multiple steps involved in planning and executing an SAV restoration project.

- Regulations & Permitting
- Site Selection
- Seed & Plant Collection
- Processing & Storage
- Planting
- Monitoring

*photo credit: Chesapeake Bay Program*

### SPECIES

Sago Pondweed	Redhead Grass	Widgeon Grass	Eelgrass
			
5	5-18	>18	>18
parts per thousand)			

your selected SAV species and your restoration site are a good match, you will need information about the conditions at the restoration site; the guide includes information on how to get this information, but the general flow chart is below.

```

    graph TD
      A[Appropriate water depth?   
 site] --> B[Sunlight reaches bottom?   
 site]
      B --> C[Good salinity for your SAV?   
 site]
      C --> D[Slow current and no waves?   
 site]
      D --> E[Good sediment for SAV?   
 site]
      E --> F[Get started!]
      A -- No --> A1[Find another site]
      B -- No --> B1[Find another site]
      C -- No --> C1[Find another site or SAV species]
      D -- No --> D1[Find another site]
      E -- No --> E1[Find another site]
  
```

Once you have selected your restoration site and determined the best SAV species to use for that site, the guide can answer questions like what time of year seeds or whole plants should be harvested, how to process and store seeds, how to plant seeds or whole plants, and how to monitor your SAV bed's growth.

*photo credit: Jonathan Lefcheck*

Ready to get started? Download the guide at [chesapeakebay.net](http://chesapeakebay.net)

## HELP RESTORE SAV IN CHESAPEAKE BAY

Learn how you can help restore submerged aquatic vegetation (SAV) with the new restoration guide available at [chesapeakebay.net](http://chesapeakebay.net)

### BEST SPECIES FOR RESTORATION PROJECTS

Species	Salinity Range	Water Type
Wild celery	5	Freshwater
Sago pondweed	5-18	Brackish
Redhead grass	5-18	Brackish
Widgeon grass	>18	Brackish
Eelgrass	>18	Ocean Water

*photo credit: Chesapeake Bay Program*



# THE PRODUCTS – Download

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The Guide - [bit.ly/SAV\\_Guide](http://bit.ly/SAV_Guide)

Fact Sheet – [bit.ly/SAV\\_FS](http://bit.ly/SAV_FS)

Quick Start - [bit.ly/SAV\\_QS](http://bit.ly/SAV_QS)

Book Mark - [bit.ly/SAV\\_Bmark](http://bit.ly/SAV_Bmark)



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