

Overview of SAV and Shellfish Aquaculture Interactions (Northeast)

LIS Eelgrass Collaborative Workshop 6/12/2024



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NOAA AQUACULTURE PROGRAM



Ocean &
Atmospheric
Research



National
Marine Fisheries
Service



National
Ocean
Service

Supporting Aquaculture Growth In The U.S.

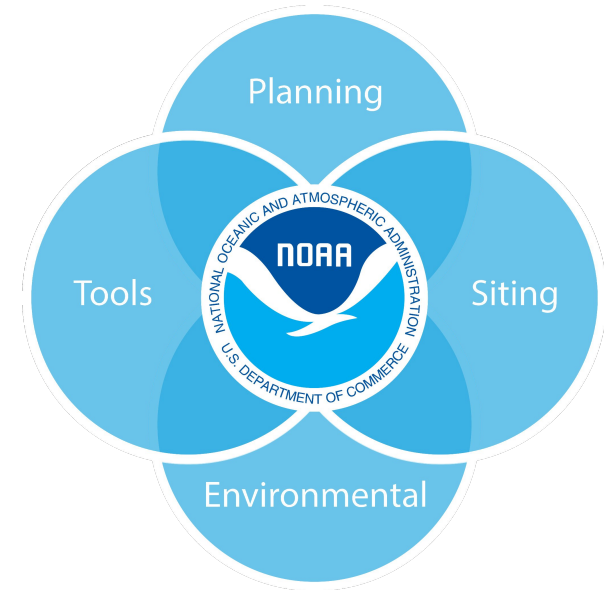
NCCOS Marine Spatial Ecology Division Coastal and Marine Planning Overview

Our Aquaculture Mission

We develop decision support tools and conduct research enabling *coastal managers* to safeguard the environment while supporting sustainable aquaculture development.

Our Aquaculture Priorities

- Environmental Interactions*
- Aquaculture Planning and Siting
- Ecosystem Services



**US Army Corps
of Engineers®**

NOAA Regional Aquaculture Coordinators

Got questions about aquaculture in your area? Contact one of our regional aquaculture coordinators.

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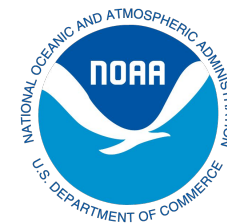
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NEW ENGLAND/MID-ATLANTIC

Backfill
Coming
Soon



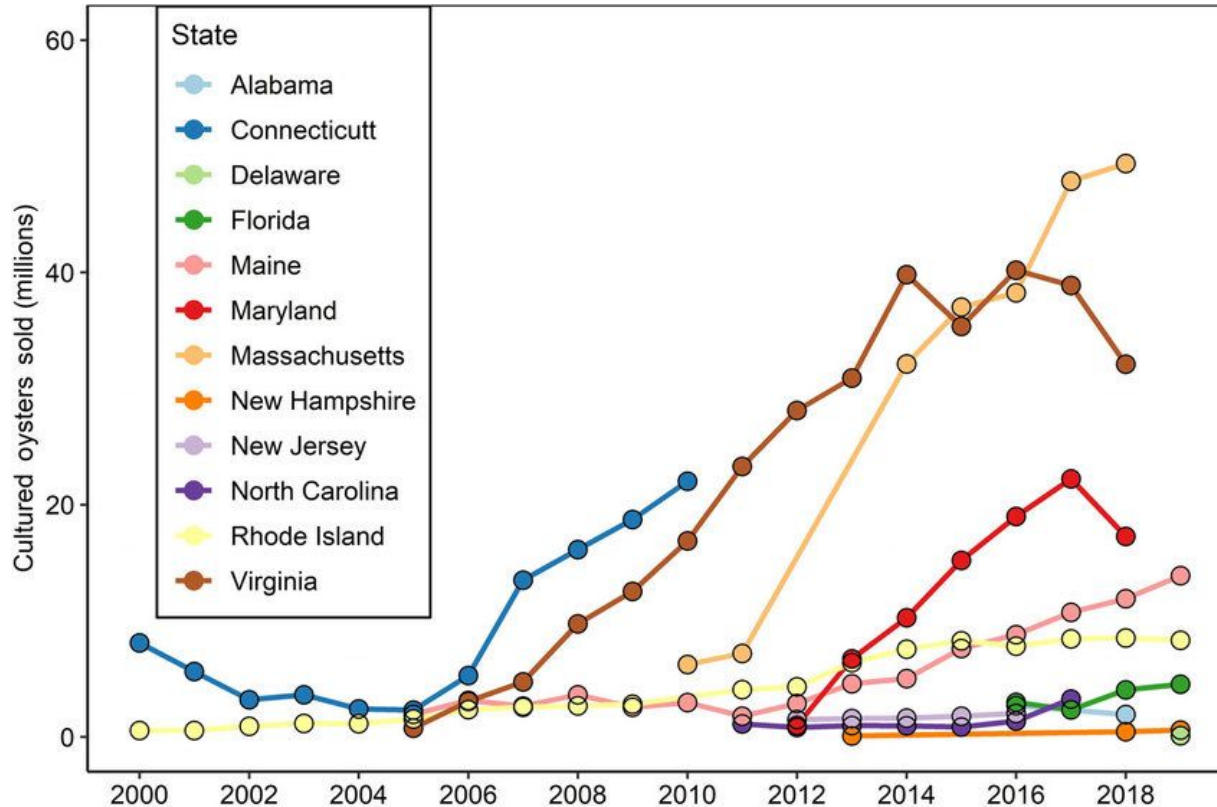
NOAA
FISHERIES

The Topic....



Shellfish Aquaculture Interactions with Submerged Aquatic Vegetation

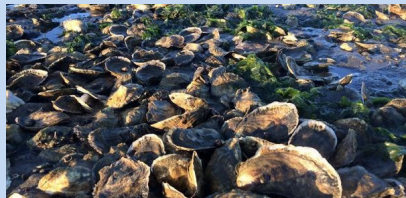
Shellfish Aquaculture is on the Rise



Ray et al. 2021 Annual sales of oysters (*Crassostrea virginica*) raised in aquaculture from Atlantic and Gulf Coasts of the United States.

Diverse Culture Methods Across the Northeast

On-bottom



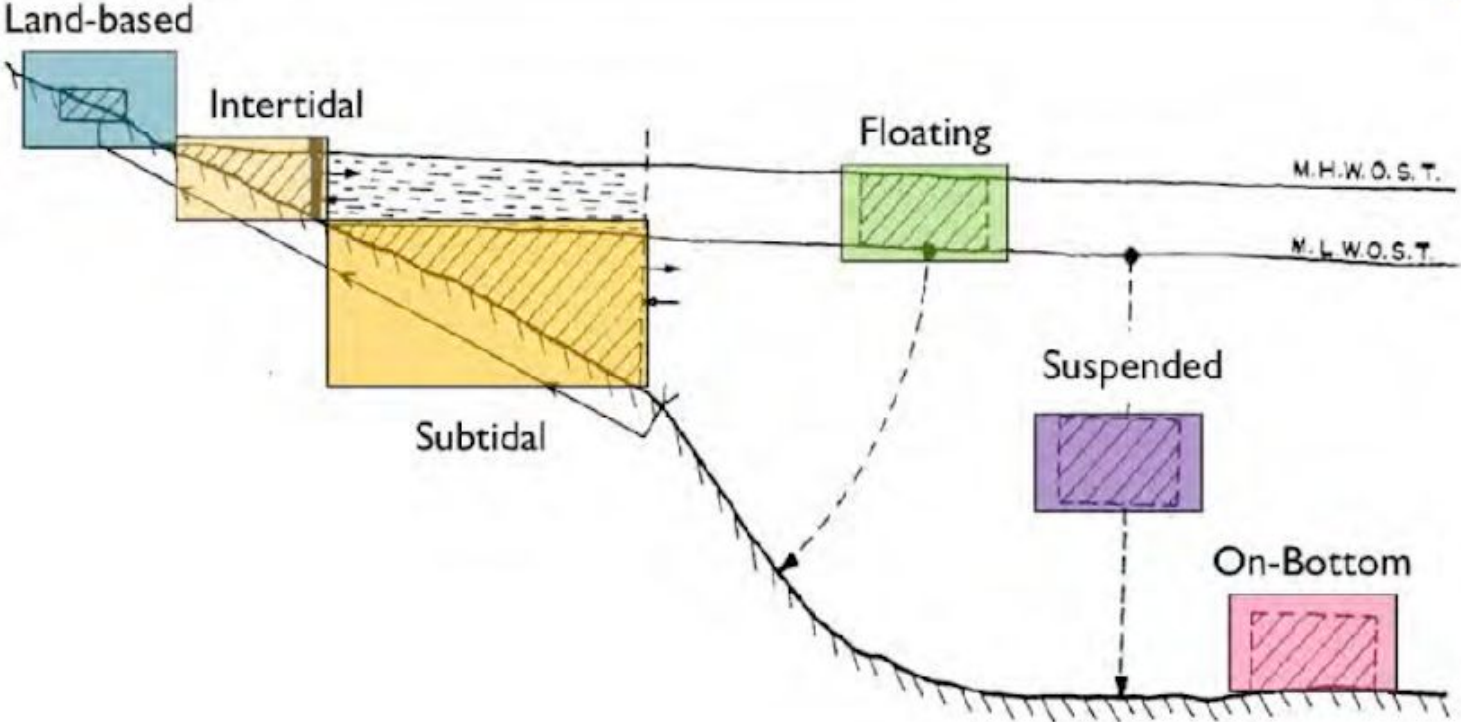
Off-bottom



Suspended/Floating



Culture Activities Span From Intertidal to Subtidal



THE BENEFITS OF OYSTER AQUACULTURE

SHELLFISH PLAY A CRITICAL ROLE IN COASTAL MARINE HABITATS. THEY CAN:

IMPROVE WATER QUALITY

excess algae & nutrients

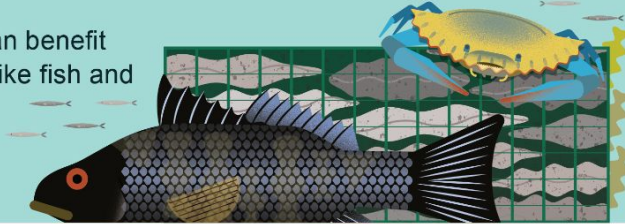
One adult oyster can filter up to **50 gallons** of water a day

clean water

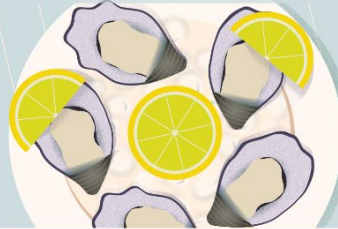
AQUACULTURE=
farming plants and
animals in water

PROVIDE HABITAT & INCREASE BIODIVERSITY

Oyster farming can benefit other marine life like fish and crustaceans.

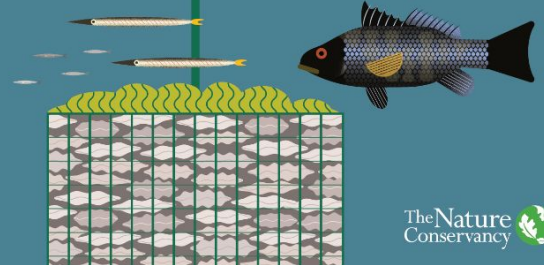


PROVIDE FOOD & SUPPORT LIVELIHOODS

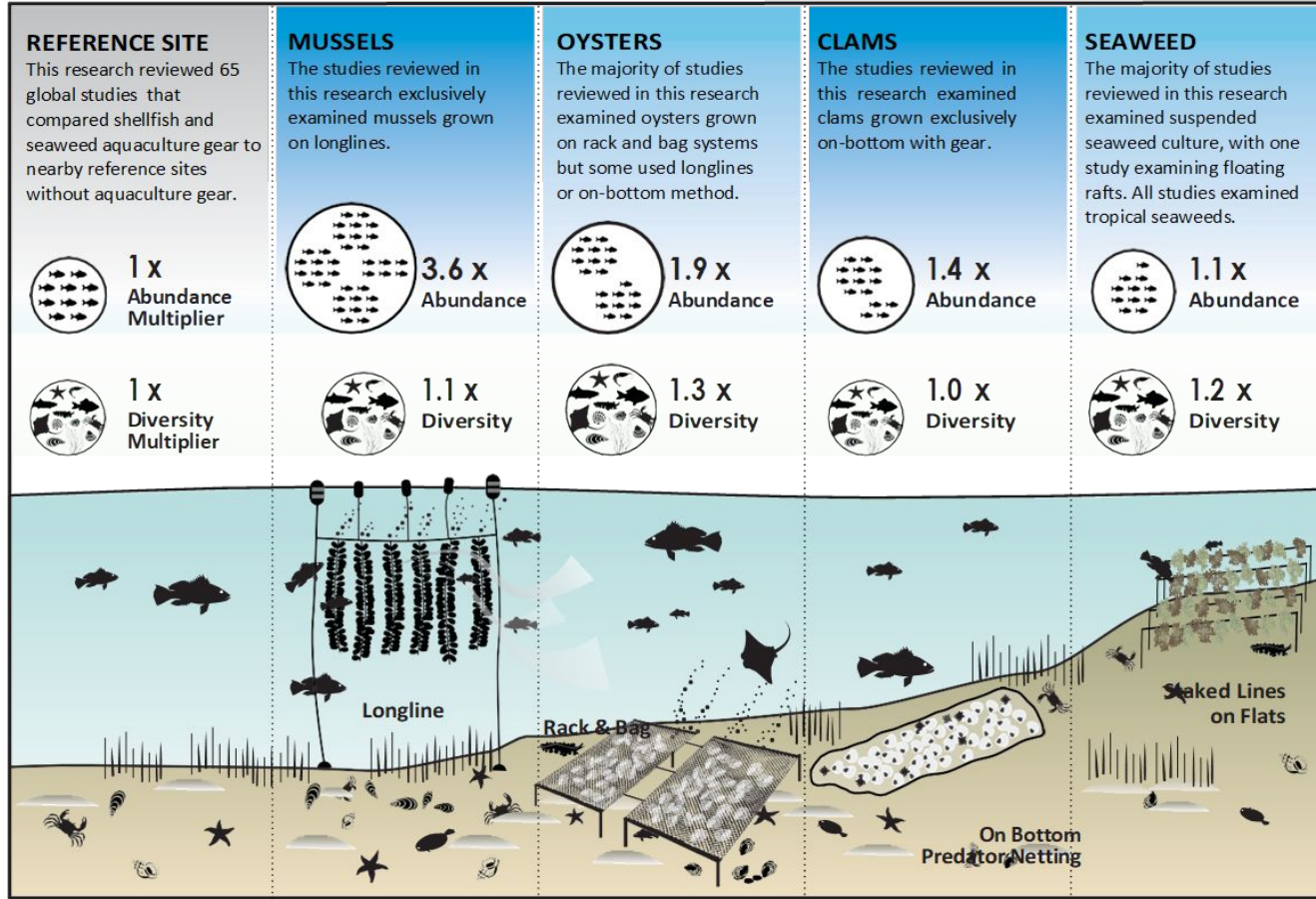


The Nature Conservancy is working to maximize the benefits of restorative aquaculture and strengthen oyster reefs to support healthy coastal ecosystems and the communities that rely on them.

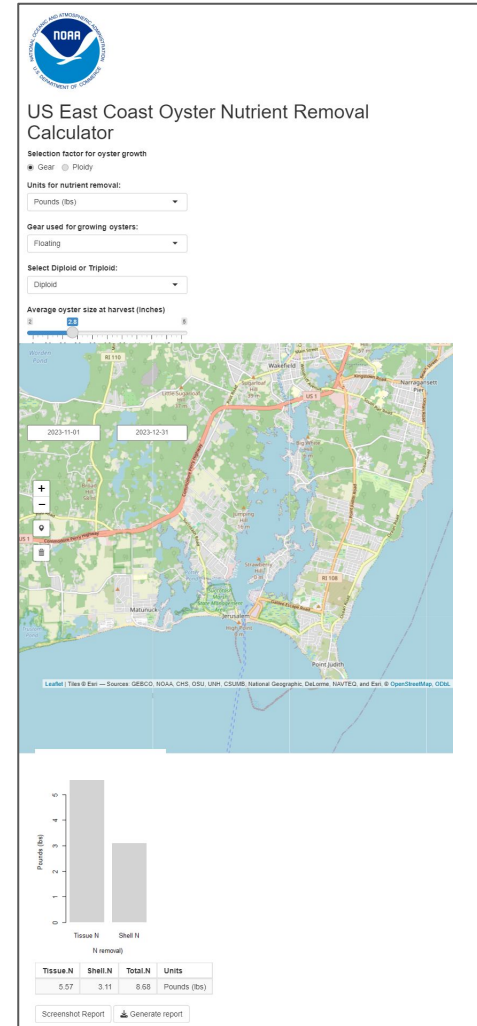
Learn more at: [nature.org/massaquaculture](https://www.nature.org/massaquaculture)



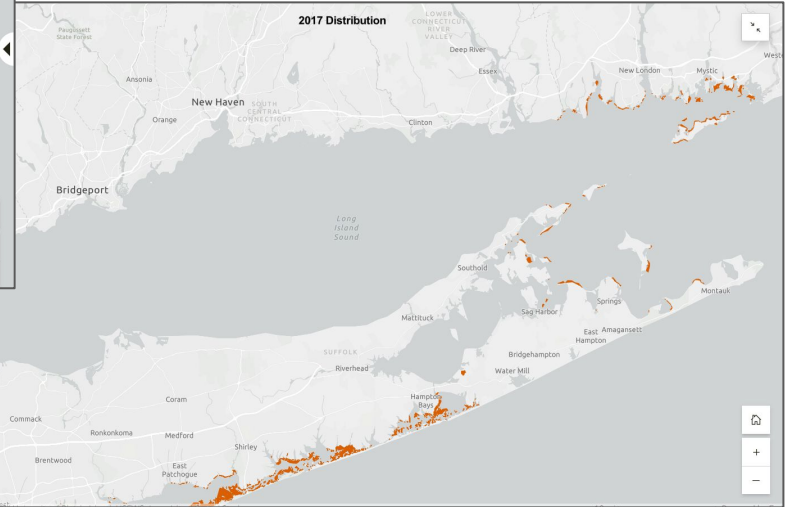
How Much Habitat Benefit do Shellfish and Seaweed Farms Provide?



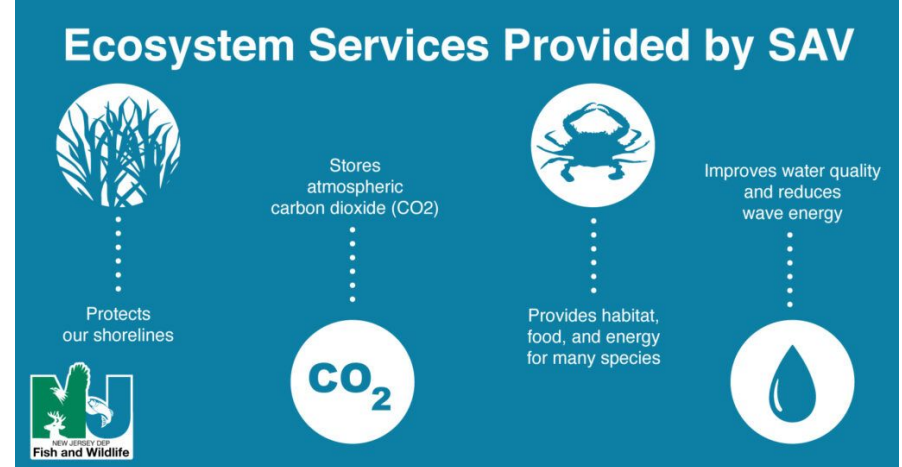
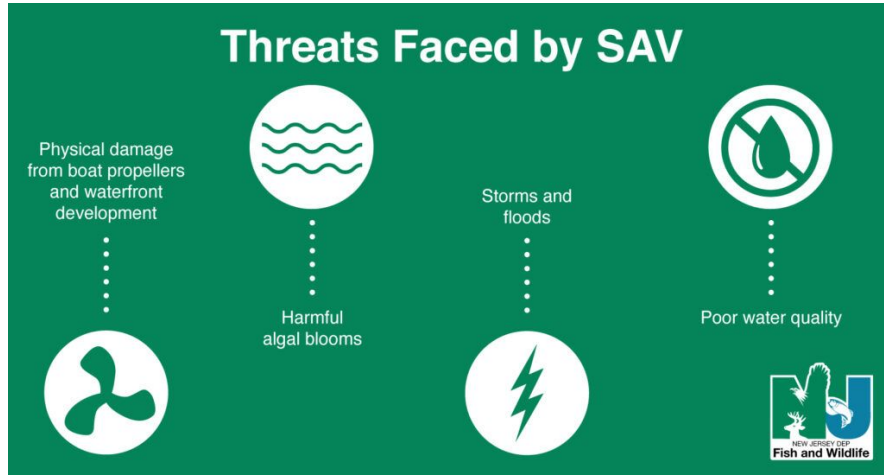
Theuerkauf et al. 2021 Reviews in Aquaculture



Submerged Aquatic Vegetation has Declined from Historic Levels



Submerged Aquatic Vegetation Plays a Critical Role in Coastal Ecosystems



Due to the important function submerged aquatic vegetation plays in coastal waters it is protected at the federal and often state level

- EPA includes vegetated shallows in the definition of Special Aquatic Sites (SAS). Vegetated shallows includes seagrasses. Due to their status as a SAS, SAV is subject to greater protection under the Clean Water Act.
- SAV is considered Essential Fish Habitat (EFH) under the Magnuson–Stevens Fishery Conservation and Management Act (MSA). In addition, in some areas seagrasses are also designated as a Habitat Area of Particular Concern, a subset of EFH that is ecologically valuable, rare, and/or at risk.
- SAV impacts from a proposed shellfish aquaculture project are considered during the federal permitting process

- Shellfish Aquaculture projects will generally require a Section 10 Rivers and Harbors Act authorization from USACE
- The USACE has established Nationwide permits for certain aquaculture activities determined to have minimal impacts. Districts often develop regional conditions
- The USACE New England District has established General Permits for each New England state for certain aquaculture activities determined to have minimal impacts
- Both the NWP and SGPs have two tiers of review- Self Verification and Pre Construction Notice. PCNs are generally reviewed by a joint state and federal permitting group
- Projects not eligible for authorization under a SGP or NWP require an individual permit

GP 16. AQUACULTURE PROJECTS & FISHERIES (Sections 10 and 404; navigable waters of the U.S.) The installation of buoys, floats, racks, trays, nets, lines or other structures in navigable waters for the containment and cultivation of indigenous species of shellfish and seaweed/kelp. Also authorized are anchored upweller floats, small-scale shellfish hatchery seawater intake/discharge structures, and discharges of dredged or fill material associated with cultivation such as the placement of cultch or spatted-shell on bottom. Depth of cultch or spatted-shell must not result in visible degradation of habitat for other aquatic resources.

Not authorized under GP 16: Impacts to SAS, including vegetated shallows.

Self-Verification (SV) Eligible	Pre-Construction Notification (PCN) Required
<p>Placement of seed shellfish, spatted-shell or cultch for commercial shellfish aquaculture on Rhode Island state leased grounds for a RIDEM project or project conducted in partnership with RIDEM.</p> <p>The installation of temporary structures for research, educational or experimental aquaculture gear impacting $\leq 1,000$ SF for indigenous species under the supervision of the CRMC Aquaculture Coordinator provided there is no adverse effect to navigation.</p> <p>Suspended cages or bags located wholly below and within the footprint of an existing <u>authorized</u> fixed or floating structure in water depths ≤ 10 feet mean low water (MLW); provided no loose lines and there is a vertical clearance of at least 2 feet between the bottom of the gear and the sea floor at MLW.</p> <p>Shellfish upweller floats not to exceed 160 sf (anchored/berthed only, no piling installation), with a vertical clearance of at least 2 feet between the bottom of the gear and the sea floor at MLW, cannot be located within the buffer of an FNP.</p>	<p>Work not eligible for SV.</p> <p>Vertical-drop longlines and suspended gear for the culture of shellfish or other marine organisms, such as kelp and seaweed.</p> <p>Cages, trays, racks, netting or other structures on the ocean bottom or floating on the water surface used to contain, cultivate or depurate shellfish.</p> <p>Intake and discharge structure with a diameter ≤ 3 inches, for the withdrawal and discharge of water to support small-scale shellfish land-based hatchery with negative impact on source or discharge waters.</p> <p>Activities that involve a change from authorized gear for bottom culture to floating or suspended gear.</p> <p>Boundaries of vegetated shallows may be required to be located/surveyed in the field. See Corps website for guidance: http://www.nae.usace.army.mil/Missions/Regulatory/Jurisdiction-and-Wetlands/.</p>



State General Permits and Nationwide Permits (ME-NY)

State	Self Verification	Pre Construction Notice	Regional Conditions	State Requirements
ME (SGP)	No impact to SAV and ≥ 25 ft buffer			Extent of impact part of review process. SAV Survey
NH (SGP)	No impact to SAV and ≥ 25 ft buffer			No overlap. SAV Survey
MA (SGP)	No impact to SAV and ≥ 25 ft buffer			No overlap. SAV Survey
RI (SGP)	No impact to SAV and ≥ 25 ft buffer	Not eligible if permanent or temporary impacts to SAS		No overlap. SAV Survey
CT (SGP)	No impact to SAV and no new aquaculture activities within 100 feet of SAV	No aquaculture activities with $\geq 2,500$ SF of impacts to SAV		No overlap. SAV Survey
NY (NWP)	No impact	No aquaculture activities with $\geq .5$ acres of SAV	No SAV impacts	Location specific. SAV Survey

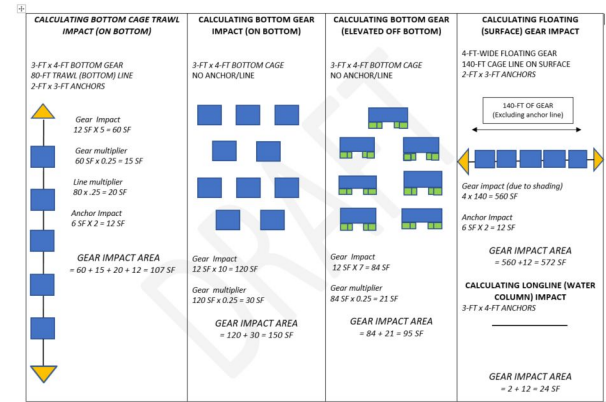
In some cases both observed and historical mapping is considered to determine buffer

NOAA Fisheries EFH Consultation

- Federal action agencies are required to consult with NMFS on projects that may impact Essential Fish Habitat.
- NMFS may require project specific EFH consultations for activities that require additional coordination with applicant.
- Programmatic consultations (PC) exist for activities that we have long term knowledge regarding their impacts.
- NMFS currently has a PC in place, but are updating it to increase efficiencies.
 - Current PC for aquaculture allows up to ≤ 100 SF of impacts to SAV
- A SAV survey consistent with the USACE/NOAA SAV Survey Guidance is required.



Photo credit: Eric Savetsky



Opportunities and Challenges

- SAV encroachment on existing leases is occurring in some areas.
 - Most sites are not surveyed again after initial survey unless a permit modification or expansion is requested.
 - Under current PC up to 100 sqft allowable SAV impact but more would require reinitiation and individual consultation
 - If permitted under a SV may require new authorization if SAV impacts exceed SV thresholds
- NOAA has stated willingness to collaborate through abbreviated project specific consultation to understand what BMP's may be effective and what gear types could allow expansion.
 - May require detailed information and conceptually less impactful gear type if changing
- Need to understand the combination of site, gear types, and operations that supported SAV expansion to eventually incorporate opportunities for additional overlap into a programmatic and abbreviated consultation approach.

Observations and Questions from Across the Region

- Coastal managers tend to compartmentalize resources they manage
- Need to develop a system that does not penalize growers for operating farms in a manner that encourages SAV colonization
- Compliance monitoring is variable among states
- If impact observed, will farm be required to stop operations?
- What about natural environmental change?
- What happens when SAV increases on site?
- Requirement to balance at local and landscape scale with permitting and mitigation tools/approaches
- We need more research!



NCCOS

NATIONAL CENTERS FOR
COASTAL OCEAN SCIENCE

Thank You!

NOAA/NOS/NCCOS/Marine Spatial Ecology Division

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