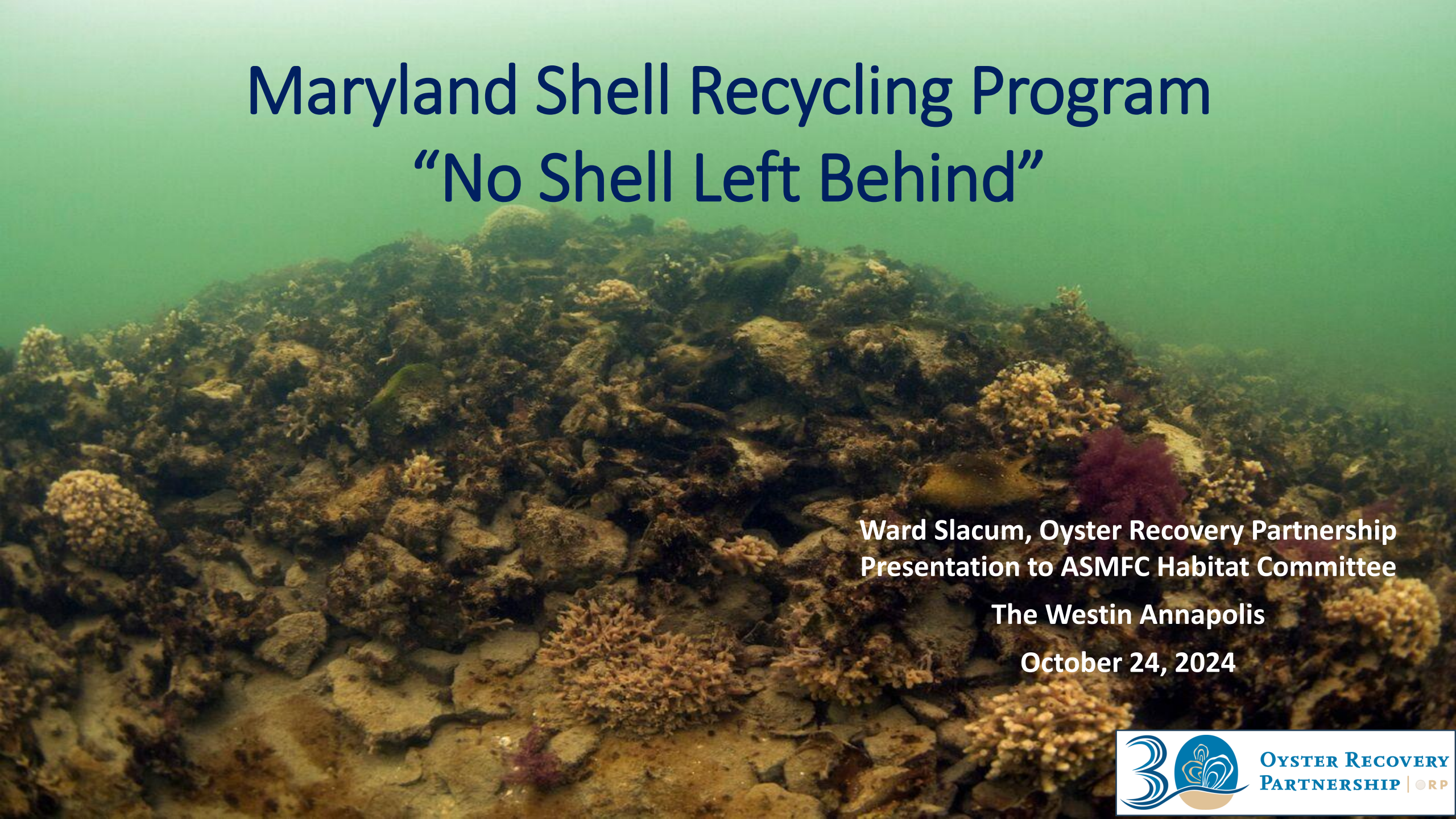
Maryland Shell Recycling Program
"No Shell Left Behind"



Ward Slacum, Oyster Recovery Partnership

Presentation to ASMFC Habitat Committee

The Westin Annapolis

October 24, 2024

Oyster Recovery Partnership | ORP

OYSTER RECOVERY PARTNERSHIP
ORP

Oyster Recovery Partnership (ORP)

Oyster Restoration

- Oyster Sanctuaries
- Public Fishing Grounds
- Aquaculture

Sustainable Fisheries

- MD E-Reporting Program
- Promote Sustainable Fishing

Monitoring and Assessment

- Document Reef Health and Progress

Public Outreach and Promotion

- Promote the Value of Oysters and Seafood Industry

Who is ORP?


OVER 1000000
OYSTERS · CLAMS SERVED ANNUALLY
John W. Faidley
SEAFOOD
RAW BAR
OYSTERS · CLAMS · BEER

MD Oyster Restoration/Management Strategies

- 30 Years Supporting State of Maryland Mission to Restore Oyster

- Oyster Sanctuary Restoration
- Public Fishery
  - Shell Repletion
  - Spat on Shell
- Aquaculture

SHELL!

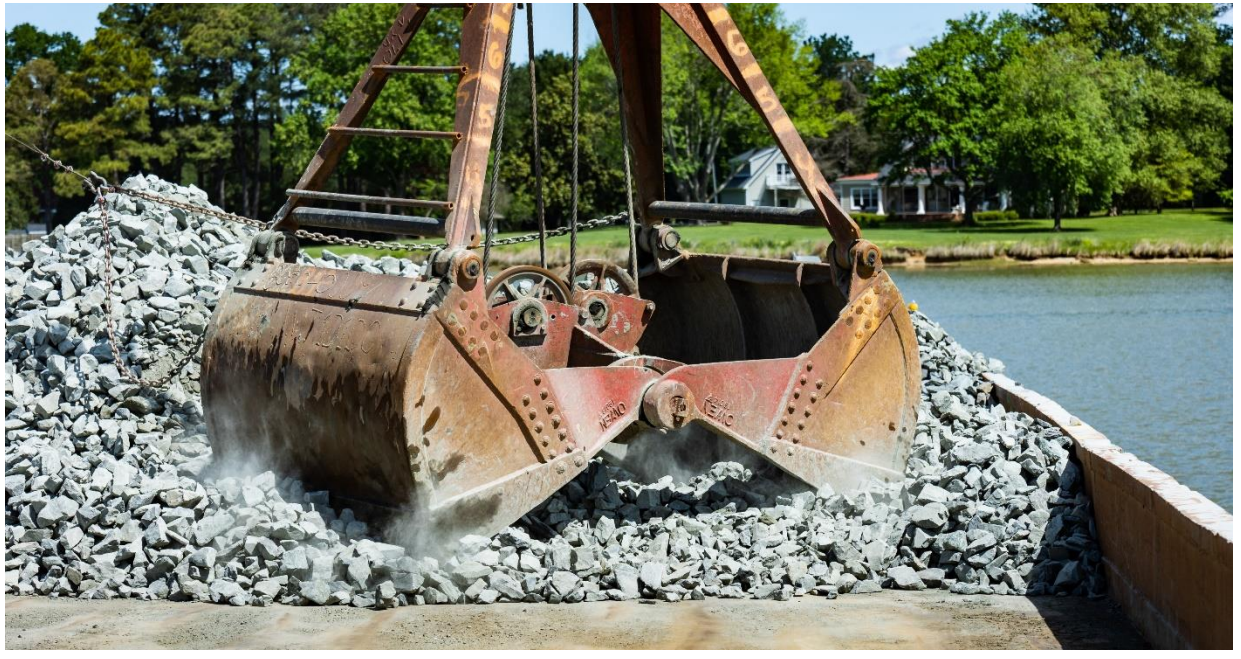
10-Year Oyster Shell Needs

Sector	Shell Needs (Bushels)
Sanctuary Restoration	850,000
Public Fishery	5,000,000 - 10,000,000
Aquaculture	229,000
Total	6,579,000 - 11,079,000

Source: 2023 Maryland Department of Natural Resources Report

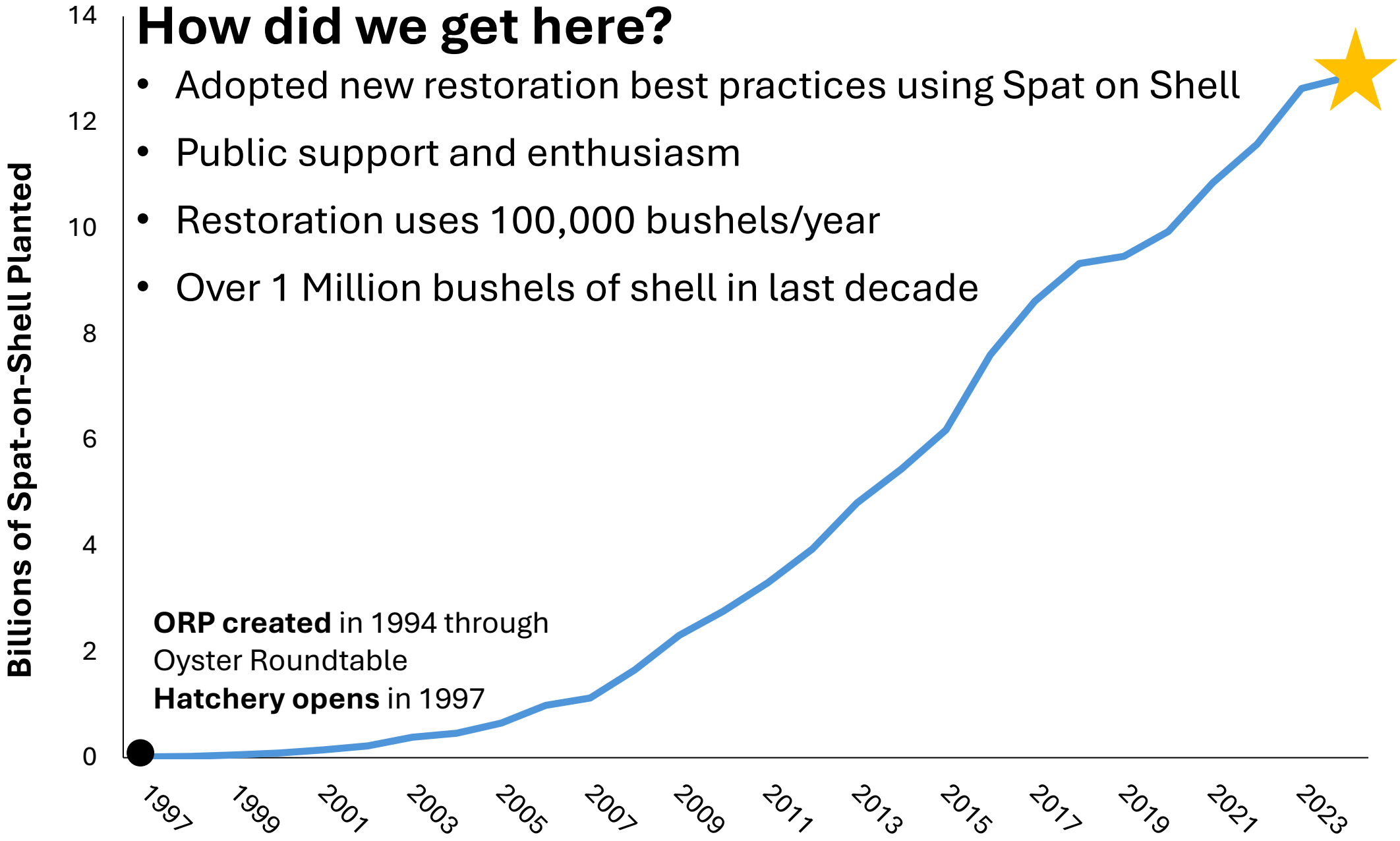
- Recent harvest ~400k bushels/year
- Lack of processing infrastructure so most commercial harvest is exported to other states

Sanctuary Restoration: Building habitat and adding oysters to the Bay



How did we get here?

- Adopted new restoration best practices using Spat on Shell
- Public support and enthusiasm
- Restoration uses 100,000 bushels/year
- Over 1 Million bushels of shell in last decade



Oyster Recovery Partnership
ORP

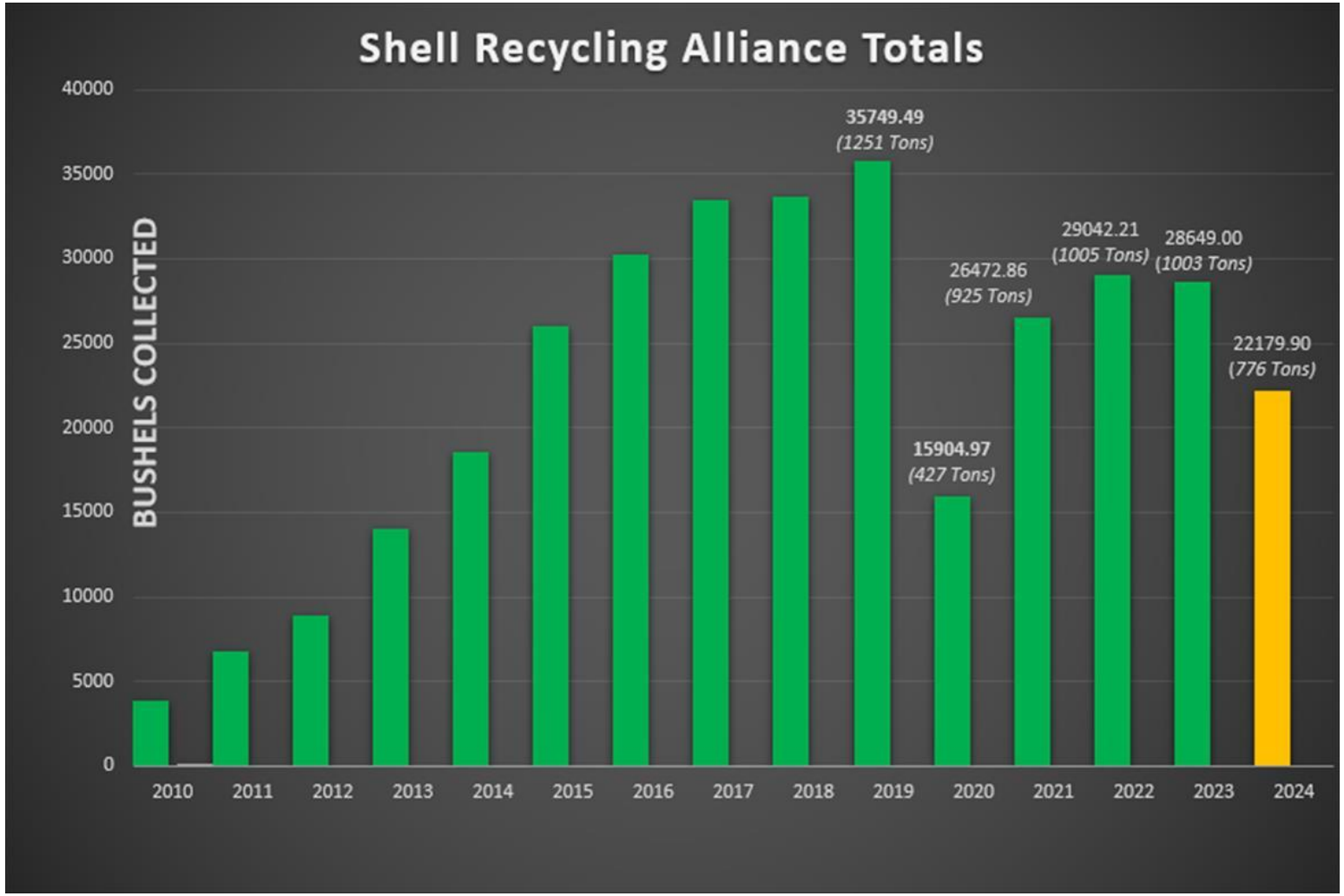
Funding (bundled into restoration contract with MD)

- ORP tasked with acquiring shell for restoration
- Recycled shell is solely used for spat on shell production for restoration in sanctuaries
- How do we meet the 100,000 bushel of shell need for restoration?
  - Purchase shell from out of state processors
  - Maryland Shell Recycling Program
- Annual budget ~$280,000

Shell Recycling Alliance

Shell Recycling Alliance (SRA)?

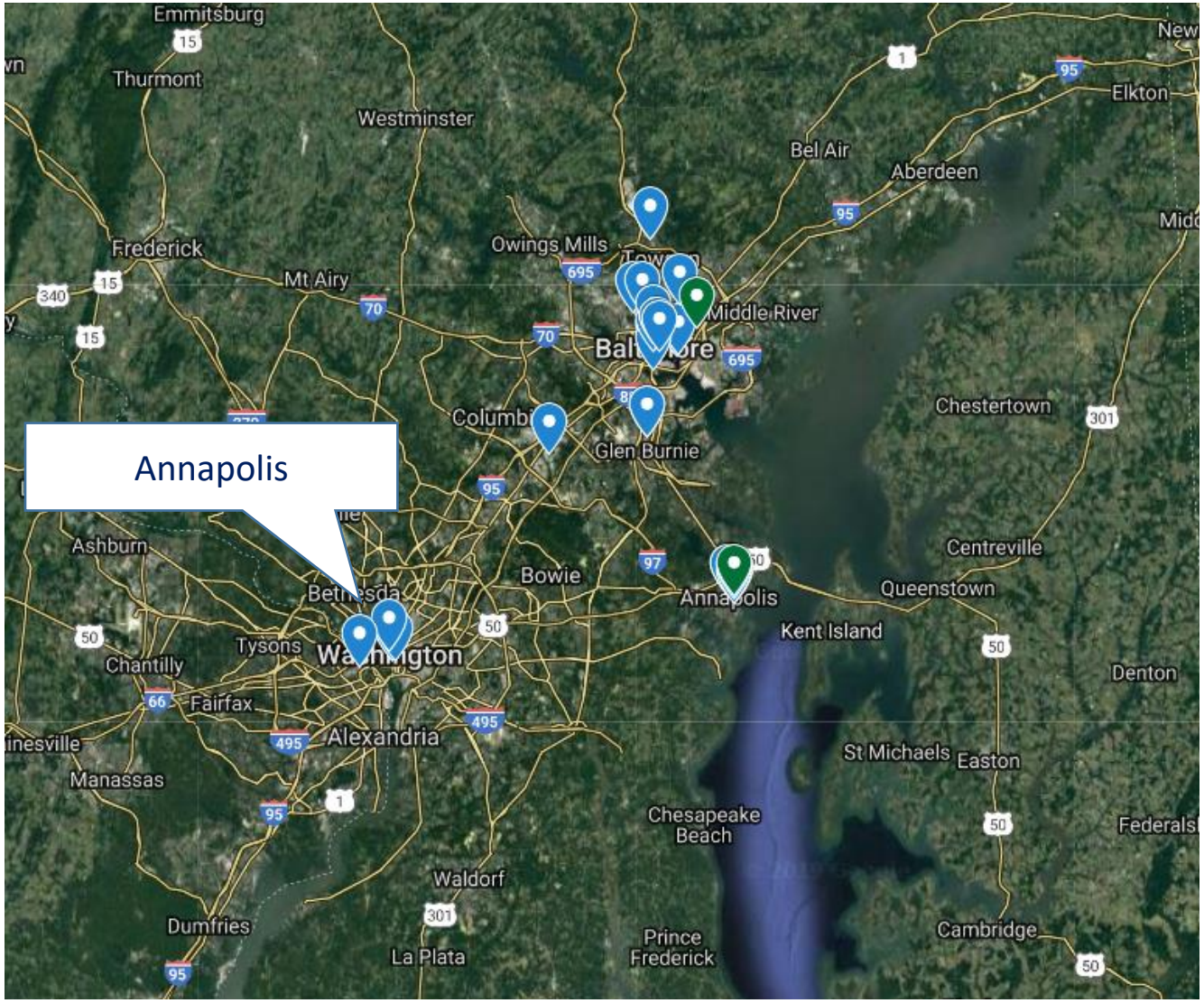
- SRA began as a Pilot in 2010
- Shell is lost forever in a landfill
- Access to public for outreach efforts
- Evaluate whether shell can be recovered from restaurants, public and other on-the ground sources
- 330K bushels of Shell since 2010



SRA Growth

2010 Pilot

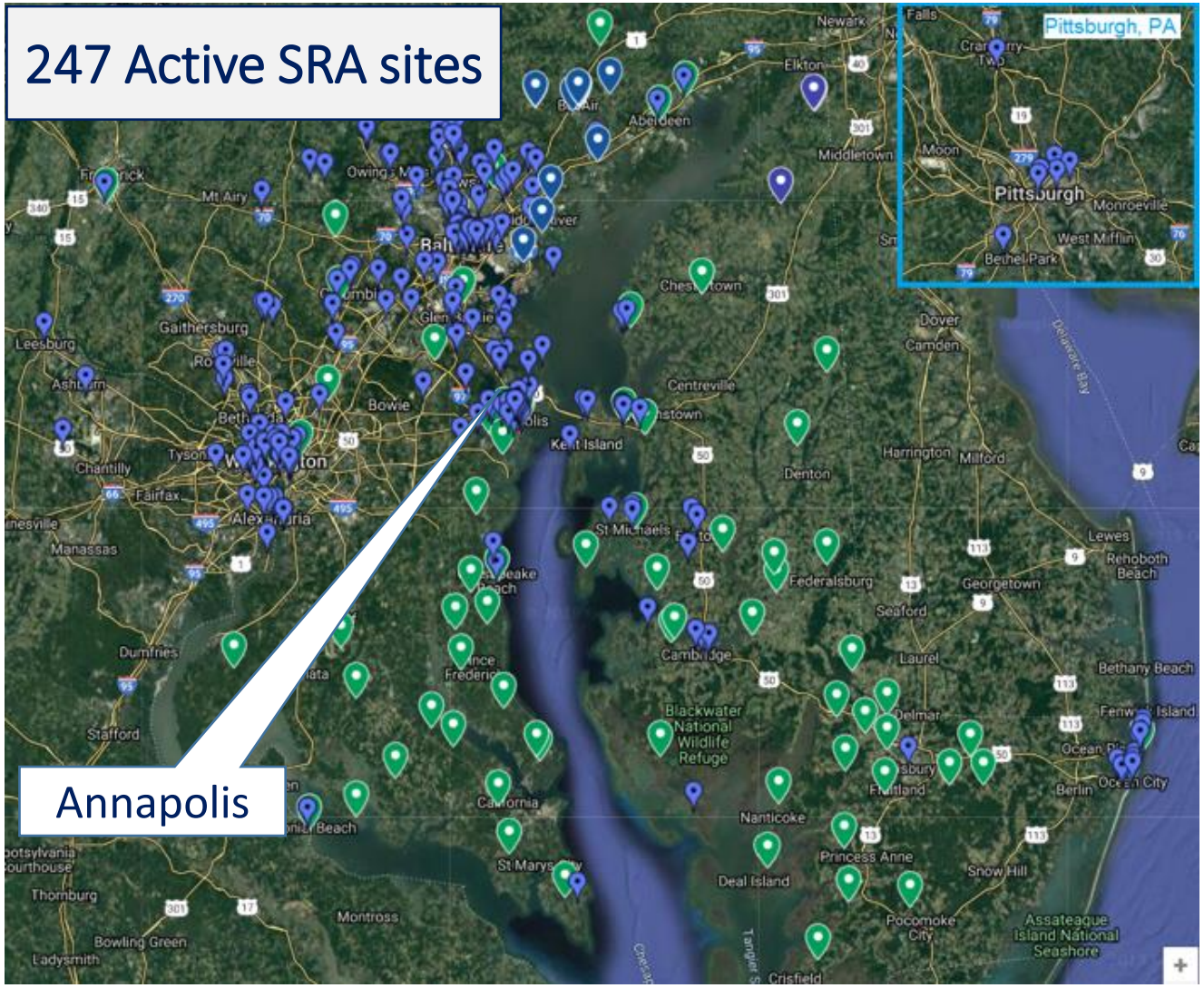
- Centered in Baltimore, Annapolis, and Washington DC
- 32 restaurants and 6 public drop sites
- Repurposed Ford F250 Pickup
- Shell stored mostly in 5-gallon buckets
- Liftgate for 32-gallon Rubbermaid cans
- 10 yard^3 Dumpsters (aggregation sites)



SRA Growth

2024 SRA

- 166 SRA members pickup sites
  - Down from 250 in 2019
- 81 drop sites
- 18 volunteer pickup locations
- Additional shell provided through wholesale seafood distributor
- Seasonal events also contribute
- Supports 30% of annual shell in restoration



SRA Shell Collection and Transport Operations

Daily Operations

- 12 total routes
  - 8 ‘day trip’ routes managed bi-weekly
  - 6 large volume trips require hook and go
  - 2 long distance; Pittsburg and No VA
- Staff scheduling
- Vehicle/Equipment inspections

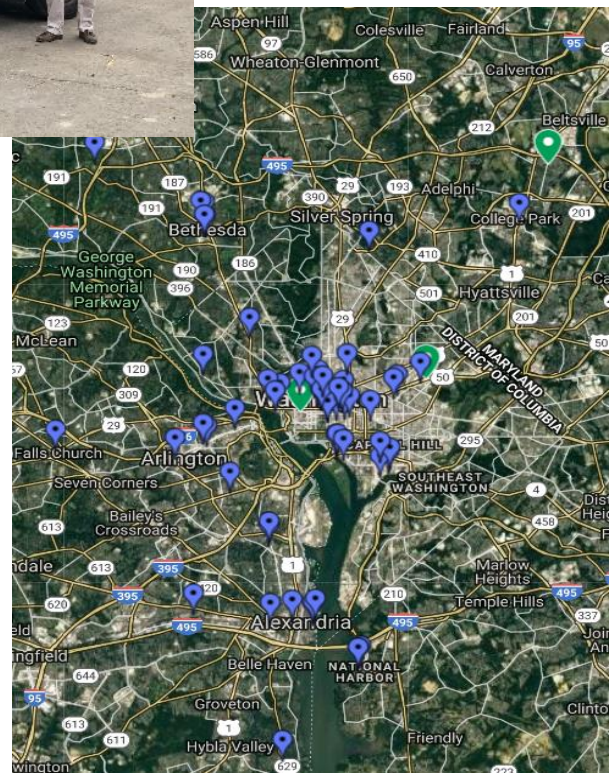
Annual Operations

- DOT compliance
- Equipment upgrades
- Route optimization

Tackling DC (collected 3 x’s weekly)

DC Routes

- Monday- Large Volume Members
- Weds- City Center
- Thurs/Friday- Large Volume Members + NoVa or MD DC Suburbs



What Facilitated SRA Growth?

Project Specific Insight

- Recognized the goal was to recover shell before landfill
- Success Metrics = Cost to acquire a bushel of shell
  - Set metrics early to evaluate program progress

Site and Consumer Specific Insight

- Recognizing every location/consumer/situation is unique
- Evaluated potential shell volume based on pilot results
- Prioritized large volume restaurants to minimize effort and maximize return

What Facilitated SRA Growth (cont.)?

Partner Specific Insights

- Key relationships with restaurant staff and management
  - Visiting restaurants and outreach
- Developed Incentives for SRA members to participate
  - Recognizing restaurants that contribute the most shell
  - Dual marketing with participating restaurants
- Dedicated paid employees

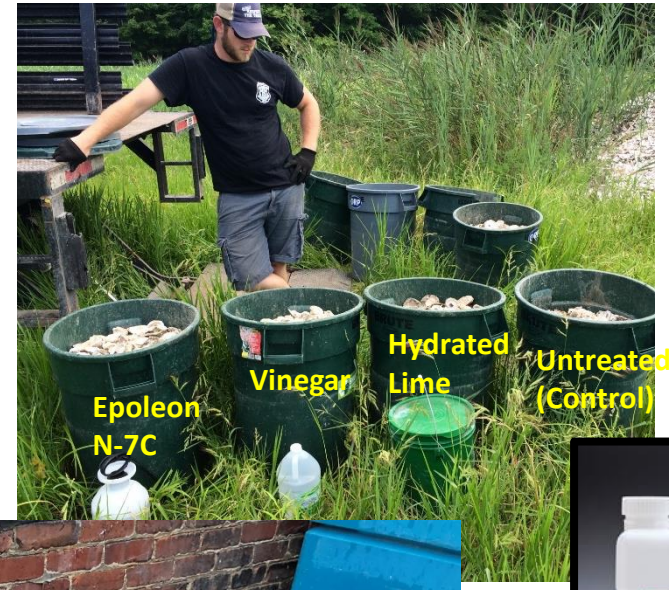
What Facilitated SRA Growth (cont.)?

Logistic Specific Insight

- Tools to help track members, shell volume and quantify results
  - SRA Database and analytics
- Location for shell to be stockpiled
  - Partner with State, county, and other partners to store/age shell
- Vehicles, scheduling, and transport

SRA Challenges

- Odor is a significant deterrent for restaurants to remain in the program
- Use of sealable food grade barrel that was waste product in other industry
- Partner retention



Policy and Incentives to Recycle Shell

- MD Recycling Shell Tax Credit
- Communication and outreach
- New State Grant Program
  - Implemented in 2025

Title 08 DEPARTMENT OF NATURAL RESOURCES

Subtitle 02 FISHERIES SERVICE

Chapter 26 Shell Recycling Tax Credit

Authority: Tax-General Article, §10-724.1, Annotated Code of Maryland

.01 Definitions.

A. In this chapter, the following terms have the meanings indicated.

B. Terms Defined.

(1) "Aggregation site" means a location where shell donated for recycling is stored or aged prior to being replanted in State waters.

(2) "Bushel" means an amount of oyster shells that will fill a 10-gallon container, or about 500 shells.

(3) "Business Entity"

(a) "Business entity" means:

(i) A person conducting or operating a trade or business in Maryland; or

(ii) An organization operating in Maryland that is exempt from taxation under § 501(c)(3) or (4) of the Internal Revenue Code.

(b) "Business entity" includes a person operating a landfill or solid waste acceptance facility permitted under COMAR 26.04.07.

(4) "Certified recycled shell collector" means

(a) A business entity certified by the Department under regulation .06 of this chapter to verify amounts of recycled oyster shell, or

(b) The Department.

(5) "Comptroller" means the Maryland Comptroller of the Treasury, or the Comptroller's designee.

Oyster Recovery Partnership | ORP

oysterrecovery.org
@oysterrecovery
wslacum@oysterrecovery.org

Shell Recycling Alliance

https://oysterrecovery.org/sra/

The Future of Oyster Production and Sustainability

- **Shell is a limited resource and we need to recover all that we can**
  - Develop additional incentives to foster restoration
  - Develop national shell recycling strategy
- **Promote research to conserve shell**
  - Shell alternatives
- **Continue work to expand use of oysters for water quality benefits**
  - Continue projects to develop implementation and verification guidelines
  - Expand research on denitrification to other tributaries/systems and aquaculture
- **Climate change**
  - Must be factored into future planning

Fishing Gear Effects on Marine Habitats

A National Database of Research Publications and Online Application

David Stevenson, Tori Kentner

Background and Purpose

- **Purpose** is to provide an easily accessible and searchable tool to assist Council/NOAA staff, researchers, and stakeholders in evaluating/managing the adverse effects of fishing gears on marine/estuarine habitats
- **Approach**
  - Contractor working with Project Oversight Team (MAFMC, NEFMC, NPFMC, NOAA OHC)
  - Sought input from all regional NOAA and FMC staff
  - Two-phases:
    - Phase 1 = how to improve/expand original database and develop online application
    - Phase 2 = populate database and disseminate results
- **Resulting product**
  - Online application available as of mid-October, database will continue to be updated through 2024 via this contract (see Next Steps for future plans)

Financial support was provided by NOAA Office of Habitat Conservation and MAFMC

Original Database

- Original NEFMC database was used to provide input data for Swept Area Seabed Impact / Fishing Effects models used to estimate effects of fishing on EFH
- Limited to pubs relevant to FEDERAL waters of Greater Atlantic Region, i.e., gears used in region, habitats that exist in region
- Limited to research published through ca 2018
- Empirical studies only (e.g., no models)
- Data used for in-house vulnerability assessment and modelling, stored in a Microsoft Access database, not searchable or widely accessible
- Shared with NPFMC and Fishing Effects Modelling Team at Alaska Pacific University, but not widely distributed

New Database

What's included

As before:

- International impacts-related studies (not just U.S.)
- Limited to habitat impacts of fishing gear, not broader ecosystem effects of fishing, but DOES include a broad range of gear/habitat types and effects

Additions:

- More comprehensive scope with studies relevant to ALL regions of U.S. and its territories, i.e., now includes tropical habitat types
- Added modelling and analytical studies
- Effort made to locate and include more non-peer-reviewed pubs
- Broader range of data elements captured for each study
- Links to pdfs and ability to download reference data

New Database

Example Topics Covered

- European scallop dredges, beam trawls
- Mechanical rockweed harvesters, clam rakes
- Derelict (not ghost) fishing gear
- Water column effects (e.g., turbidity)
- Biogeochemical effects
- Deep-sea corals
- Canyons, seamounts
- Seagrass, IT macroalgae habitats
- Gear technology studies
- Global-wide research (eg carbon storage)

https://fishmaps.shinyapps.io/FishingEffectsDatabase

The Fishing Gear Effects on Marine Habitats Database Home About Map Submit

300 results found

Search full database: ?

Enter Search Term(s)

Search Study ID

Filters: ?

Publication Type

- ☐ Journal article (259)
- ☐ Book section (20)
- ☐ Conference presentation (1)
- ☐ Grant report (4)
- ☐ Technical report (9)

Study ID #	Title	Year	Author
11	The impacts of mobile fishing gear on seafloor habitats in the Gulf of Maine (Northwest Atlantic): implications for conservation of fish populations	1996	Auster, P.J., R.J. Malatesta, R.W. Langton, L. Watling, P.C. Valentine, C.L.S. Donaldson, E.W. Langton, A.N.Shepard, and W.G. Babb
17	Long- and short-term consequences of a Nephrops trawl fishery on the benthos and environment of the Irish Sea	2000	Ball, B.J., G. Fox, and B.W. Munday
21	Mortality in megafaunal benthic populations caused by trawl fisheries on the Dutch continental shelf in the North Sea in 1994	2000	Bergman, M. J. N. and J. W. Van Santbrink
24	Fishing effects on diversity, size and community structure of the benthic invertebrate and fish megafauna on the Bay of Biscay coast of France	2004	Blanchard, F., F. LeLoc'h, C. Hily and J. Boucher
34	Effects of commercial otter trawling on benthic communities in the southeastern Bering Sea	2005	Brown, E.J., B. Finney, S. Hills, and M. Dommisse

Data Extraction

- 18 Data Elements, 57 fields in spreadsheet
  - Data Elements = Key aspects of study that could be objectively assessed for each with reasonable effort
- Only methods/physical context of each publication, no results except for abstract
- Focus on methods (e.g., how field work was done, not statistical tests), study location, study type, substrate type(s), gear types(s), recovery yes/no, natural energy at study site(s), etc.
- Short methods/approach text that summarizes objectives/purpose, data collection methods, study design, other methodological info not included in abstract
- Details re: gear(s) used, substrate type, vulnerable invertebrate types

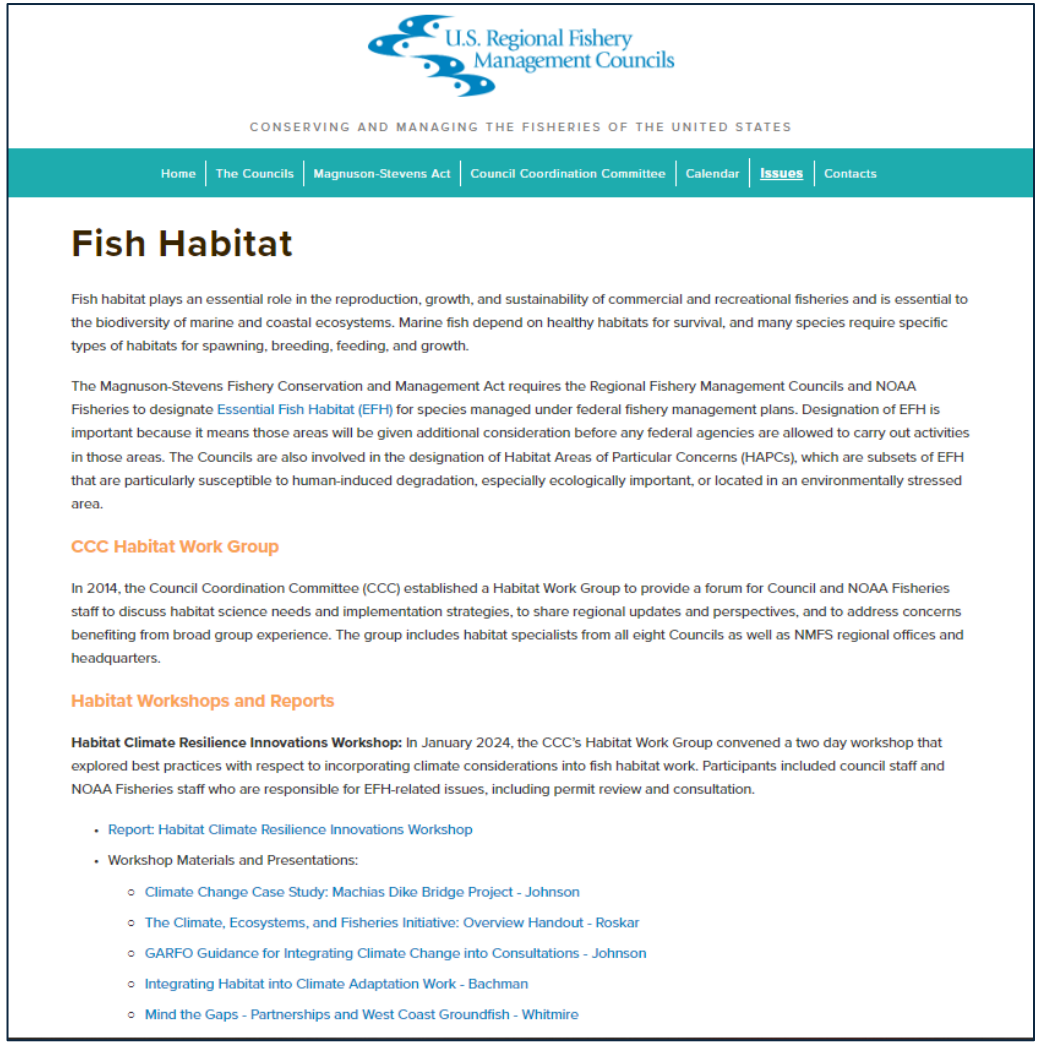
Next Steps

- Now that database is complete, Project Team recommends:
  - CCC collectively assumes long-term maintenance
  - CCC utilizes its Habitat Work Group (HWG) for support

Next Steps

- Requires R-Shiny App host
  - MAFMC can continue to host for now
- Database link added to CCC Webpage
- New records:
  - Train a few HWG members to add records
  - HWG puts standing reminder in agendas to highlight additions, EFH Review needs, and ensure new staff are trained as needed

https://www.fisherycouncils.org/habitat



U.S. Regional Fishery Management Councils

CONSERVING AND MANAGING THE FISHERIES OF THE UNITED STATES

Home | The Councils | Magnuson-Stevens Act | Council Coordination Committee | Calendar | Issues | Contacts

Fish Habitat

Fish habitat plays an essential role in the reproduction, growth, and sustainability of commercial and recreational fisheries and is essential to the biodiversity of marine and coastal ecosystems. Marine fish depend on healthy habitats for survival, and many species require specific types of habitats for spawning, breeding, feeding, and growth.

The Magnuson-Stevens Fishery Conservation and Management Act requires the Regional Fishery Management Councils and NOAA Fisheries to designate Essential Fish Habitat (EFH) for species managed under federal fishery management plans. Designation of EFH is important because it means those areas will be given additional consideration before any federal agencies are allowed to carry out activities in those areas. The Councils are also involved in the designation of Habitat Areas of Particular Concerns (HAPCs), which are subsets of EFH that are particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally stressed area.

CCC Habitat Work Group

In 2014, the Council Coordination Committee (CCC) established a Habitat Work Group to provide a forum for Council and NOAA Fisheries staff to discuss habitat science needs and implementation strategies, to share regional updates and perspectives, and to address concerns benefiting from broad group experience. The group includes habitat specialists from all eight Councils as well as NMFS regional offices and headquarters.

Habitat Workshops and Reports

Habitat Climate Resilience Innovations Workshop: In January 2024, the CCC's Habitat Work Group convened a two day workshop that explored best practices with respect to incorporating climate considerations into fish habitat work. Participants included council staff and NOAA Fisheries staff who are responsible for EFH-related issues, including permit review and consultation.

- Report: Habitat Climate Resilience Innovations Workshop
- Workshop Materials and Presentations:
  - Climate Change Case Study: Machias Dike Bridge Project - Johnson
  - The Climate, Ecosystems, and Fisheries Initiative: Overview Handout - Roskar
  - GARFO Guidance for Integrating Climate Change into Consultations - Johnson
  - Integrating Habitat into Climate Adaptation Work - Bachman
  - Mind the Gaps - Partnerships and West Coast Groundfish - Whitmire

Acknowledgements

Funding provided by NOAA Fisheries Office of Habitat Conservation (EFH Innovation Funds) and the MAFMC

Development work by Dave Stevenson (contracted; database and records) and Tori Kentner (MAFMC; application development)

Project Oversight from Michelle Bachman (NEFMC), Jessica Coakley (MAFMC), and Sarah Rheinsmith (formerly NPFMC, now GFMC)

Regional input and coordination from Ian Lundgren (NOAA Fisheries, National EFH Coordinator) and members of the CCC Habitat Work Group