

2025 YEAR IN REVIEW REPORT



Martha's Vineyard Shellfish Group



Wells National Estuarine Research Reserve



MA Division of Marine Fisheries



April 2026

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Photos in this report were taken by CZM staff unless otherwise noted.

MARINE INVADER MONITORING AND INFORMATION COLLABORATIVE 2025 YEAR IN REVIEW REPORT

Introduction to the Marine Invader Monitoring and Information Collaborative

Established in 2006, the Marine Invader Monitoring and Information Collaborative (MIMIC) is a participatory science program that brings together scientists, resource managers, and coastal community members to search for marine invasive species. Since the program began, hundreds of trained participants have monitored more than 180 sites from Rhode Island to Canada.

MIMIC participants monitor for 18 established, non-native species (see page 3). They investigate multiple habitat types, including floating docks, tide pools, cobble shorelines, subtidal dive sites, and more. At each site, participants spend one hour searching for the 18 MIMIC species. After the search, participants complete a datasheet to note presence and abundance of each species, as well as environmental data, like surface temperature and salinity.

The goals of MIMIC are to understand patterns of established invaders, detect new non-native species, educate the public, and get outside to learn and have fun!



A spider crab climbs over a rope covered with *Botrylloides violaceus* and *Didemnum vexillum* tunicates.

2025 Season, by the Numbers

MIMIC monitoring partners were busy collecting data last summer. Each year, MIMIC Coordinators—the leads for each monitoring group—submit their data to CZM, along with an estimated number of unique participants. During the 2025 season...

20 groups completed monitoring

146 monitoring events were completed

80 sites were monitored

492 participants were engaged

MIMIC wouldn't be possible without the dedication of the monitoring groups who collect data each summer. Thank you to the organizations that led MIMIC monitoring groups during the 2025 season!



MARINE INVADER MONITORING AND INFORMATION COLLABORATIVE

ABOUT THIS REPORT

Regional Results

MIMIC participants monitor sites across a large portion of the Northwest Atlantic region, ranging from Rhode Island, U.S., to Nova Scotia, Canada. To highlight more focused data trends, the MIMIC monitoring range has been divided into seven distinct regions (Fig. 1). Regions were aligned to U.S. Environmental Protection Agency's National Estuary Program locations and Maine Rivers watershed profiles. The remaining, unclassified regions were grouped by geographic proximity and spread of current and historic sites.

Each "Regional Spotlight" (pages 4-9) provides an overview of the number of MIMIC groups, sites, and monitoring events associated with the 2025 season, a map of current and historical sites, data highlights, and a plot of the mean percentage of MIMIC species detected through time.

Note: No data were submitted from the Buzzards Bay Region in 2025, so there is no summary page for that region included in this report.

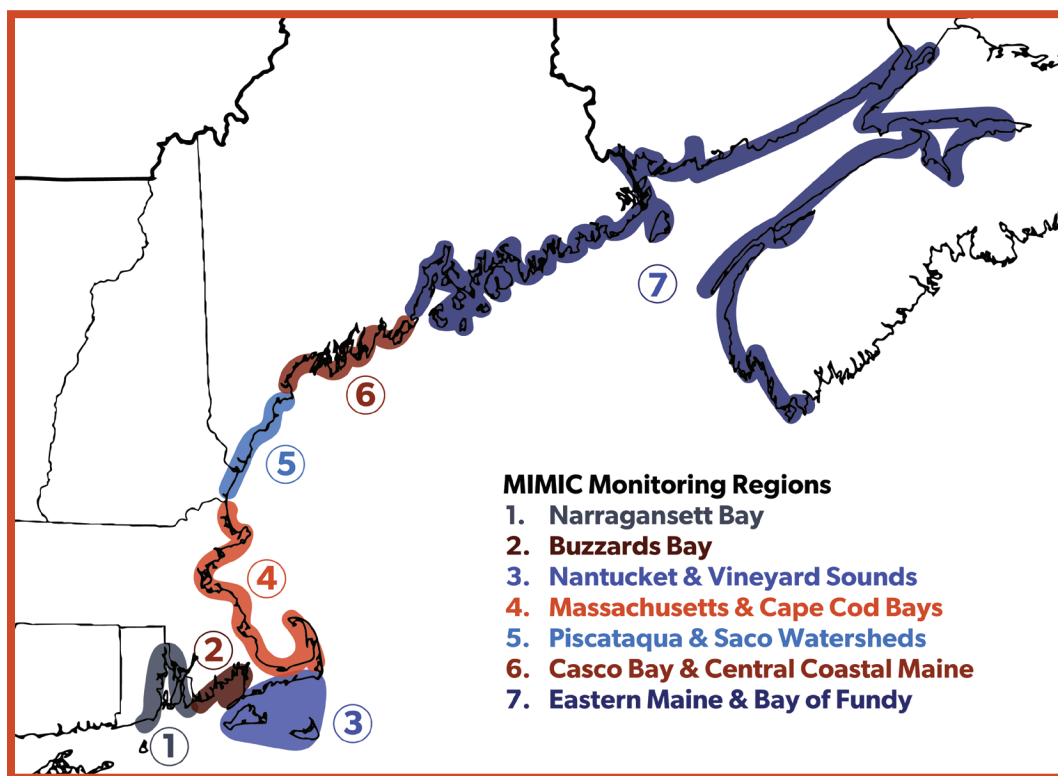


Figure 1: Map of the seven MIMIC monitoring regions, ranging from Rhode Island to Canada.

Data Interpretation

MIMIC monitoring groups are largely self-directed, so variables such as the location and number of sites, number of sampling events per year, habitat types, and participant experience ranges from year to year. Therefore, there are some data interpretation notes to consider when reading this report.

Sites are not randomly sampled. Not all sites have been monitored consistently from year to year, so temporal comparisons include a different suite of sites each year. Absence records may not reflect a true absence of the species, but that the species was not reported within the one-hour monitoring period. While CZM conducts quality control for the data at multiple levels, it is possible that there are some identification errors in the submitted data. MIMIC participants vary in their level of experience with species identification, which may impact the total number of species identified at a site. A CZM analysis suggested that the mean number of MIMIC species recorded during a monitoring event increases with the length of time a monitoring group has been engaged with the program, which may influence temporal trends.

MARINE INVADER MONITORING AND INFORMATION COLLABORATIVE

MEET THE 2025 MIMIC SPECIES



Ascidiella aspersa

Common name: Fluted Sea Squirt

Group: Solitary Tunicates



Styela clava

Common name: Club Tunicate

Group: Solitary Tunicates



Botrylloides violaceus

Common name: Sheath Tunicate

Group: Colonial Tunicates



Botryllus schlosseri

Common name: Golden Star Tunicate

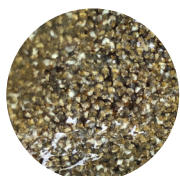
Group: Colonial Tunicates



Didemnum vexillum

Common name: Pancake Batter Tunicate

Group: Colonial Tunicates



Diplosoma listerianum

Common name: Jelly Crust Tunicate

Group: Colonial Tunicates



Bugula neritina

Common name: Purple Bushy Bryozoan

Group: Bushy Bryozoans



Tricellaria inopinata

Common name: Unexpected Bryozoan

Group: Bushy Bryozoans



Membranipora membranacea

Common name: Lacy Crust Bryozoan

Group: Encrusting Bryozoans

Carcinus maenas

Common name: Green Crab

Group: Crabs



Hemigrapsus sanguineus

Common name: Banded Shore Crab

Group: Crabs



Caprella mutica

Common name: Pacific Skeleton Shrimp

Group: Amphipods and Shrimp



Palaemon elegans

Common name: Rockpool Shrimp

Group: Amphipods and Shrimp



Ostrea edulis

Common name: Flat Oyster

Group: Bivalve Mollusks



Diadumene lineata

Common name: Orange-Striped Anemone

Group: Anemones



Codium fragile subsp. fragile

Common name: Green Fleece

Group: Marine Algae



Colpomenia peregrina

Common name: Sea Potato

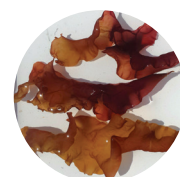
Group: Marine Algae



Grateloupia turuturu

Common name: Devil's Tongue Weed

Group: Marine Algae



MIMIC REGIONAL SPOTLIGHT NARRAGANSETT BAY



MIMIC participants monitor a dock in Jamestown, Rhode Island. (Photo Credit: Rhode Island MIMIC Team)

- 11** monitoring events were completed
- 3** sites were monitored (Fig. 2)
- 1** group monitored in this region

This group included students from Salve Regina University and the University of Rhode Island

DATA HIGHLIGHTS

Most Common Species: *Tricellaria inopinata*, *Codium fragile* subsp. *fragile*, and *Botryllus schlosseri* were found on 100% of monitoring events in 2025.

Species Shifts: The occurrence of *Membranipora membranacea* dropped by nearly 50% in 2025 when compared to 2024, while *Styela clava* increased by 74.2% between the same years.

Fun Fact: *Ostrea edulis* has never been found on a MIMIC monitoring event in this region.

Temporal Trends: In 2025, the greatest percent of MIMIC species per monitoring event was recorded since monitoring began in 2008 (Fig. 3).

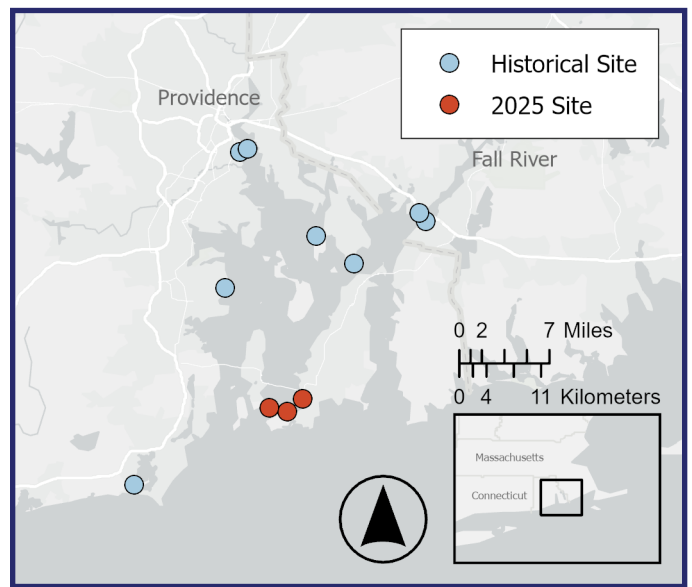


Figure 2: Map of sites monitored in 2025 (orange) and historical sites not monitored in 2025 (blue).

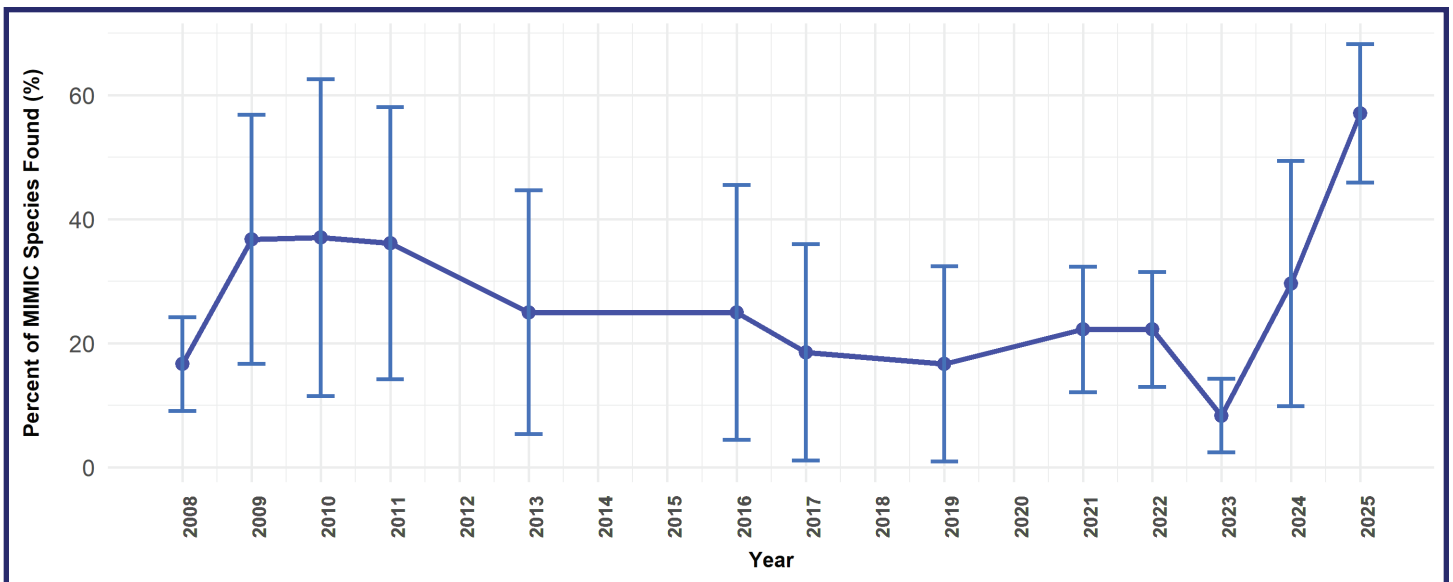


Figure 3: Mean percentage of MIMIC species found per monitoring event for sites in the Narragansett Bay region from 2008 to 2025. Only years where data were collected in this region are plotted. Error bars represent one standard deviation from the mean.



CZM training at the Martha's Vineyard Shellfish Group hatchery dock.

MIMIC REGIONAL SPOTLIGHT NANTUCKET & VINEYARD SOUNDS

38 monitoring events were completed

16 sites were monitored (Fig. 4)

4 groups monitored in this region

Barnstable Clean Water Coalition, Martha's Vineyard Shellfish Group, MA Division of Marine Fisheries, and UMass Boston Nantucket Field Station

DATA HIGHLIGHTS

Most Common Species: *Botryllus schlosseri* was found on 78.8% of monitoring events in 2025.

Species Shifts: *Didemnum vexillum* was found on 53.9% of monitoring events in this region – a 26.2% increase from the 2024 season.

Fun Fact: *Colpomenia peregrina* was not found in 2025. It's the least commonly encountered MIMIC species in the region, only ever reported during the 2024 season.

Temporal Trends: In 2025, the greatest percent of MIMIC species per monitoring event was recorded since monitoring began in 2009 (Fig. 5).

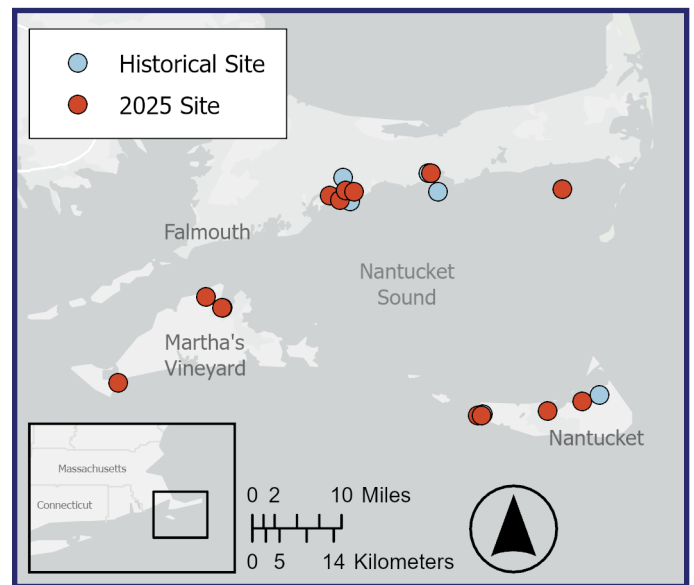


Figure 4: Map of sites monitored in 2025 (orange) and historical sites not monitored in 2025 (blue).

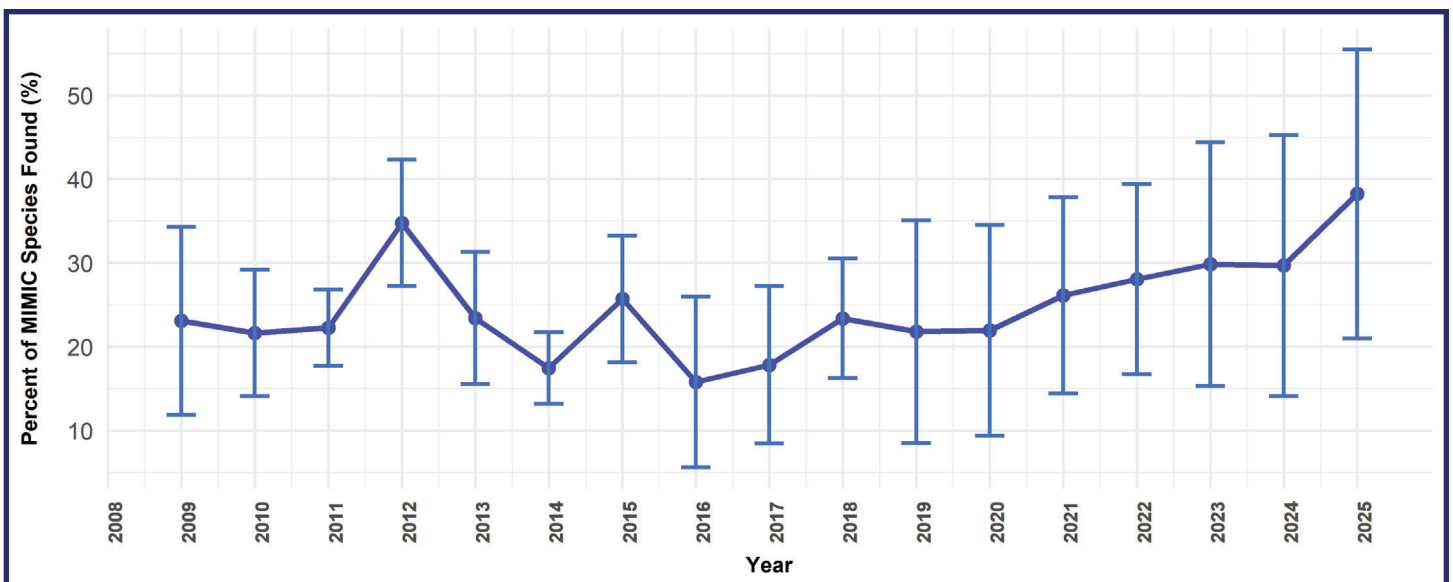


Figure 5: Mean percentage of MIMIC species found per monitoring event for sites in the Nantucket & Vineyard Sounds region from 2009 to 2025. Only years where data were collected in this region are plotted. Error bars represent one standard deviation from the mean.



CZM training with Boston Harbor Now and Stone Living Lab at Rowes Wharf in Boston.

MIMIC REGIONAL SPOTLIGHT MASSACHUSETTS & CAPE COD BAYS

52 monitoring events were completed
35 sites were monitored (Fig. 6)
11 groups monitored in this region

Barnstable Clean Water Coalition, Boston Harbor Now, Center for Coastal Studies, EPA Region 1, Merrimack Valley Planning Commission, Jones River Watershed Association, MA Division of Marine Fisheries, National Park Service, North and South Rivers Watershed Association, Stone Living Lab, and Salem Sound Coastwatch

DATA HIGHLIGHTS

Most Common Species: *Botrylloides violaceus* was found on 79.8% of monitoring events in 2025.

Species Shifts: Between 2024 and 2025, the occurrence of *Palaemon elegans* dropped from 36.7% to 9.5% and *Diplosoma listerianum* dropped from 47.9% to 15.9%.

Fun Fact: *Tricellaria inopinata* has been steadily increasing in this region, hitting a peak of nearly 60% occurrence in 2025.

Temporal Trends: The percent of species found per monitoring event was lower than in 2023 and 2024, but remained close to the historic mean (Fig. 7).

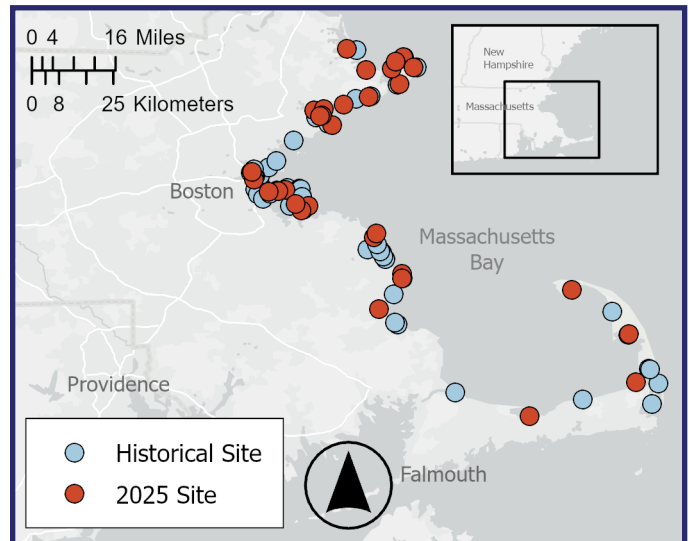


Figure 6: Map of sites monitored in 2025 (orange) and historical sites not monitored in 2025 (blue).

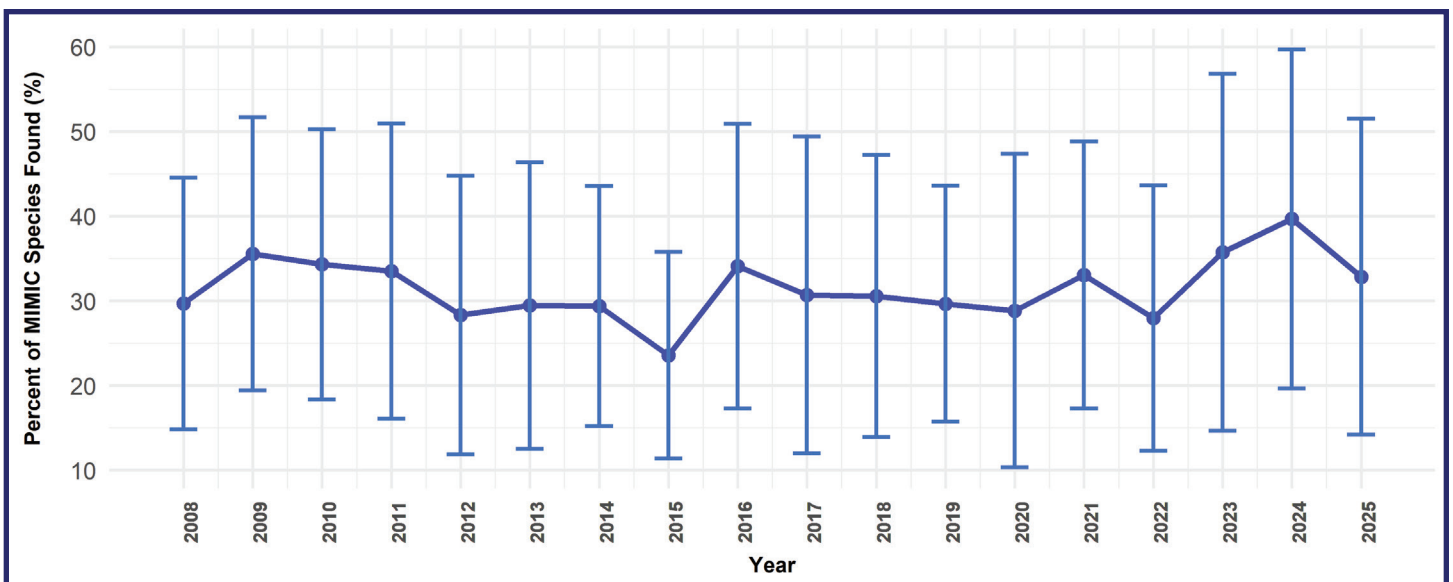


Figure 7: Mean percentage of MIMIC species found per monitoring event for sites in the Massachusetts & Cape Cod Bays region from 2008 to 2025. Only years where data were collected in this region are plotted. Error bars represent one standard deviation from the mean.



The Wells National Estuarine Research Reserve leads a training at the Wells Harbor Dock. (Photo Credit: Wells NERR)

MIMIC REGIONAL SPOTLIGHT PISCATAQUA & SACO RIVER WATERSHEDS

- 17** monitoring events were completed
- 7** sites were monitored (Fig. 8)
- 4** groups monitored in this region

Gundalow Company, Seacoast Science Center, Star Island, and Wells National Estuarine Research Reserve

DATA HIGHLIGHTS

Most Common Species: *Botrylloides violaceus* was found on 73.7% of monitoring events.

Species Shifts: *Caprella mutica* was found on 35.3% of 2025 monitoring events, compared to just 3.7% in 2024. *Palaemon elegans* was found less frequently in 2025 with a 31.6% occurrence rate – the lowest in this region since 2021.

Fun Fact: *Carcinus maenas* had its lowest occurrence rate (57.9%) since 2013.

Temporal Trends: The percent of MIMIC species per monitoring event has been generally increasing through time since a historic low in 2014 (Fig. 9).

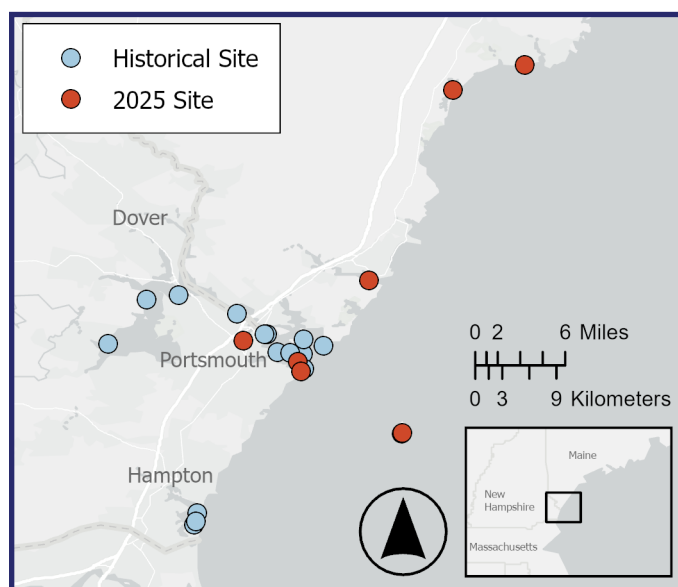


Figure 8: Map of sites monitored in 2025 (orange) and historical sites not monitored in 2025 (blue).

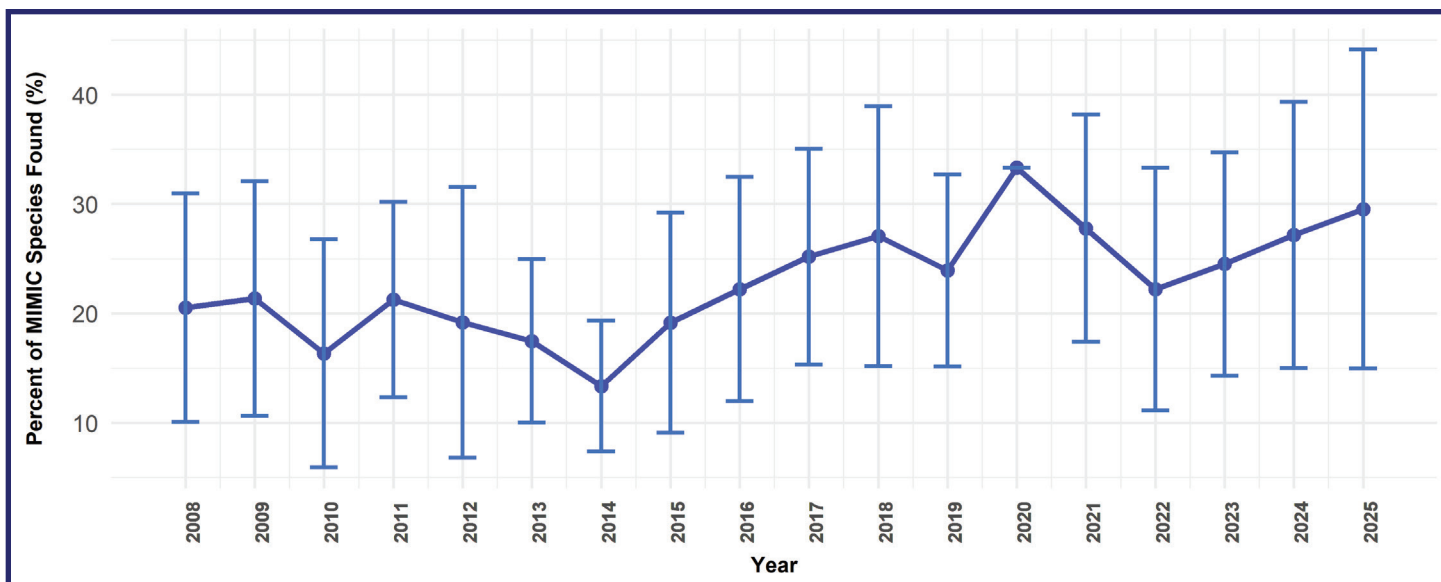


Figure 9: Mean percentage of MIMIC species found per monitoring event for sites in the Piscataqua & Saco River Watersheds region from 2008 to 2025. Only years where data were collected in this region are plotted. Error bars represent one standard deviation from the mean.



MIMIC participants monitor a tide pool near Southern Maine Community College. (Photo Credit: Wells NERR)

MIMIC REGIONAL SPOTLIGHT CASCO BAY & CENTRAL COASTAL MAINE

20 monitoring events were completed

15 sites were monitored (Fig. 10)

1 group monitored in this region

Wells National Estuarine Research Reserve

DATA HIGHLIGHTS

Most Common Species: *Botrylloides violaceus* was found on 64.7% of monitoring events in 2025. While still the most common species, this was its lowest occurrence rate since 2013.

Species Shifts: *Botryllus schlosseri* was only found on 14.7% of 2025 monitoring events compared with 55.2% in 2024.

Fun Fact: *Grateloupia turuturu* and *Bugula neritina* continue to be rarely found in this region and were not recorded in 2025.

Temporal Trends: The percent of MIMIC species found per monitoring event has been steadily increasing since 2015. The 2025 season was the first year in a decade with a decreasing trend (Fig. 11).

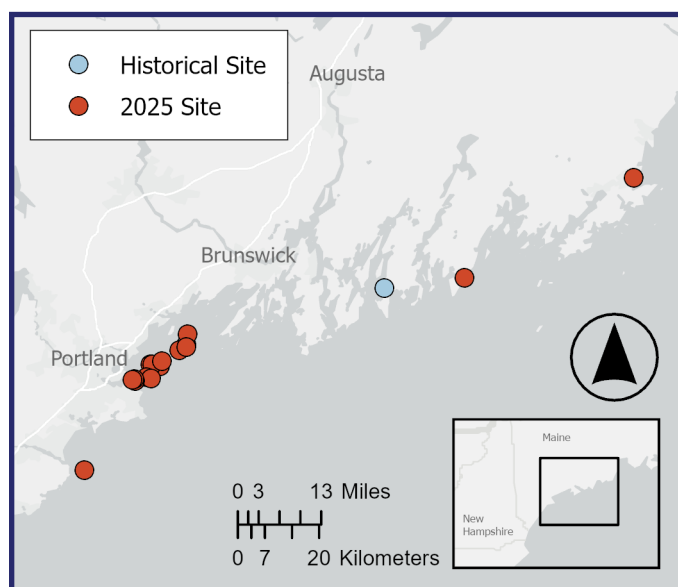


Figure 10: Map of sites monitored in 2025 (orange) and historical sites not monitored in 2025 (blue).

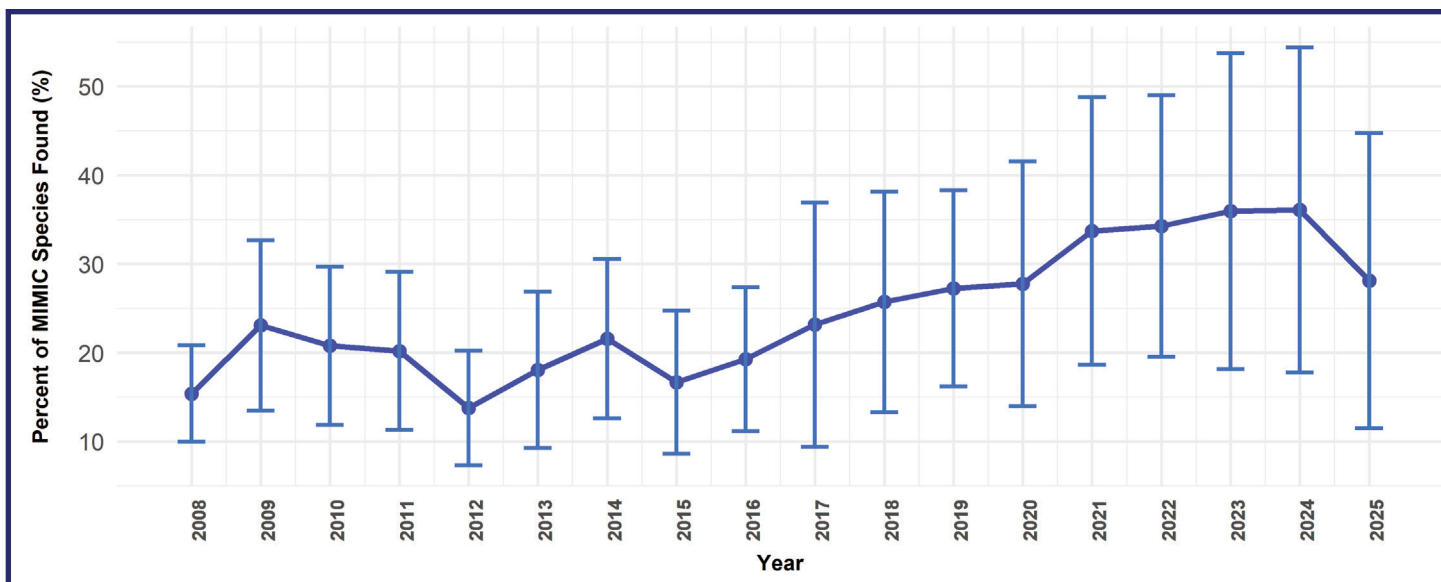


Figure 11: Mean percentage of MIMIC species found per monitoring event for sites in the Casco Bay & Central Coastal Maine region from 2008 to 2025. Only years where data were collected in this region are plotted. Error bars represent one standard deviation from the mean.



College students assist with monitoring in Lunenburg, Nova Scotia, Canada. (Photo Credit: Coastal Action Nova Scotia)

MIMIC REGIONAL SPOTLIGHT EASTERN MAINE & BAY OF FUNDY

- 8** monitoring events were completed
- 4** sites were monitored (Fig. 12)
- 2** groups monitored in this region

Coastal Action Nova Scotia and Huntsman Marine Science Centre

DATA HIGHLIGHTS

Most Common Species: *Carcinus maenas* and *Membranipora membranacea* were found on 77.8% of monitoring events in 2025.

Species Shifts: *Ascidella aspersa* was found at 55.6% of monitoring events. Previously, it has not been recorded in this region by MIMIC participants.

Fun Fact: Nine of the 18 MIMIC species have not been found during MIMIC monitoring in this region.

Temporal Trends: The 2024-25 data were collected from sites in Canada, while the 2015-16 data were from a discontinued site in Machiasport, Maine (Fig. 13). With longer term monitoring by new Canadian MIMIC groups, temporal trends will be better elucidated.

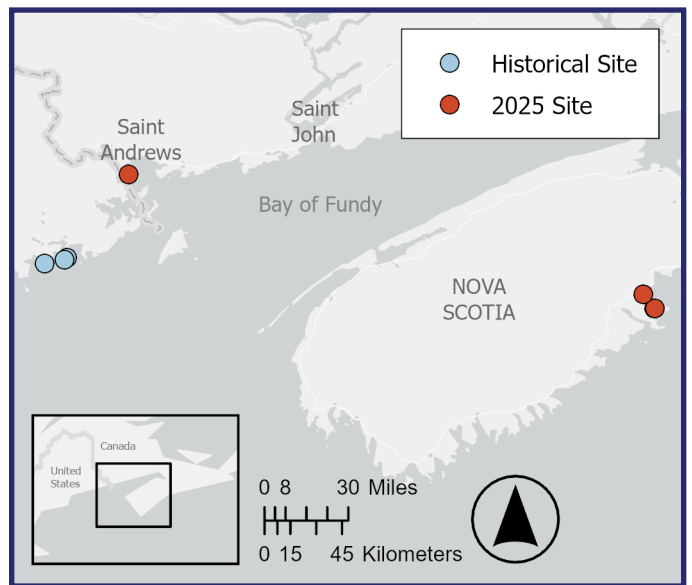


Figure 12: Map of sites monitored in 2025 (orange) and historical sites not monitored in 2025 (blue).

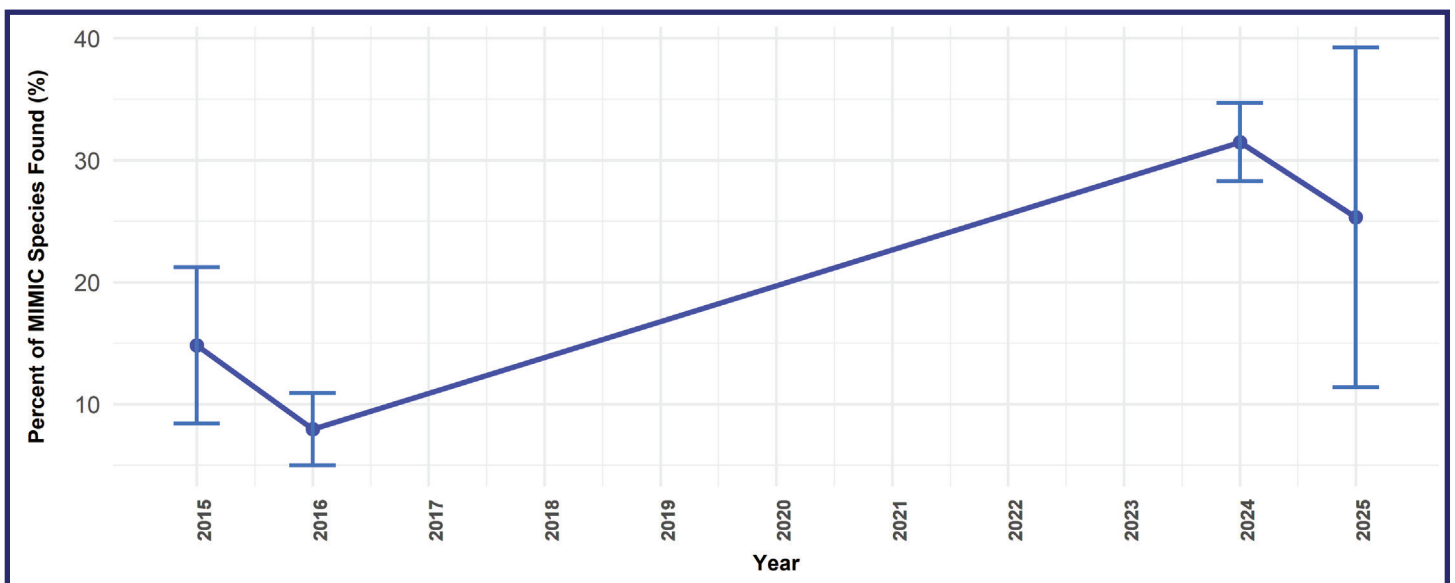


Figure 13: Mean percentage of MIMIC species found per monitoring event for sites in the Eastern Maine & Bay of Fundy region from 2015 to 2025. Only years where data were collected in this region are plotted. Error bars represent one standard deviation from the mean.

MARINE INVADER MONITORING AND INFORMATION COLLABORATIVE MORE 2025 SEASON HIGHLIGHTS



NON-NATIVE CLAM IN MASSACHUSETTS

Records of the non-native clam, *Ruditapes philippinarum*, known colloquially as the “Manila clam,” “Japanese littleneck,” or “Asari Clam,” have been reported along the Massachusetts coastline in recent years. Previously unknown to this region, the clam was identified from Beverly to Cape Cod by researchers and commercial shellfish harvesters between 2023 and 2025. MIMIC participants aided in reporting, as Salem Sound Coastwatch found a live clam in Beverly, MA, during a monitoring event. Researchers monitoring the clam have found evidence that the species is reproducing in Massachusetts, suggesting establishment of this non-native species.

R. philippinarum shells can be identified through their distinctive cross-hatched pattern, compared with native quahog shells that have only concentric growth rings. Visit iNaturalist to see more images of the species or upload your own observation.

MIMIC IN THE NEWS

Invasive tunicates were a hot topic in 2025! MIMIC was featured by three news outlets on this topic.

In April, WBUR released a radio segment on invasive tunicates and warming New England waters, which featured quotes from CZM and Kristin Osborne, MIMIC Coordinator with the Massachusetts Maritime Academy. Jeremy Miller, MIMIC Coordinator with the Wells National Estuarine Research Reserve, was interviewed in two features on the subject: Civil Eat’s May article on the impact of invasive tunicates on Maine fisheries and News Center Maine’s December TV segment on invasive tunicates and Maine aquaculture.

Finally, MIMIC was mentioned in the Duxbury Clipper’s article on the emerging story of the Manila clam’s establishment in Massachusetts.



MARINE INVADER MONITORING AND INFORMATION COLLABORATIVE WHAT'S NEW IN 2026?

Four New Species Added to the MIMIC Monitoring List

The species on MIMIC's monitoring list have stayed consistent since the most recent additions in 2013. Based on emerging bioinvasions, range expansions, and native range revisions, four species have been added to the monitoring list for the 2026 season:



Aiptasiogeton eruptaurantia Pink-Spotted Anemone

This **anemone** is native to the U.S. Atlantic Coast from the Chesapeake Bay and south, but its range is expanding northward likely due to warming waters. There are currently no known confirmed observations north of Rhode Island, where the species was first reported in 2010. (Photo Credit: Aly Putnam)



Archidoris pseudoargus Sea Lemon

The sea lemon **nudibranch** was first reported in the region in 2017, found by diver and photographer, Alex Shure, off of Cape Ann, Massachusetts. Its native range extends from northern Europe to the Mediterranean Sea. The species has already been reported by MIMIC participants, including the photo to the left, submitted by the Maine MIMIC contingent. (Photo Credit: Wells NERR)



Ciona intestinalis Sea Vase

MIMIC participants are likely already familiar with this **solitary tunicate**, which is commonly seen fouling the sides of floating docks. The species was previously considered cryptogenic in the region, but recent evidence suggests the species is native to Europe and was introduced to the Northwest Atlantic. (Photo Credit: Gretchen Lambert)



Ruditapes philippinarum Asari Clam, Manila Clam

As mentioned on page 10, observations of this **bivalve** were reported in Massachusetts between 2023 and 2025. Native to the Northwest Pacific, the species has been widely introduced across the world. With evidence of reproduction in Massachusetts populations, the establishment of this clam in Northwest Atlantic means that it has "completed its journey" across the global north.

New Identification Cards

With four new species on the monitoring list, the MIMIC identification cards were updated to include the new additions. In addition to the new species, the cards also include new, detailed information on MIMIC taxonomic groups and streamlined formatting to present information on the MIMIC species. MIMIC groups will also receive new field datasheets that include the new species.

If you have any questions on this report or would like to learn more about MIMIC, email Lexie Neffinger (alexis.neffinger@mass.gov) or visit the CZM website.

		Anemones			
		<i>Diadumene lineata</i> Orange-Striped Anemone		<i>Aiptasiogeton eruptaurantia</i> Pink-Spotted Anemone	
		Non-Native		Range-Expanding Species	
Identification		<ul style="list-style-type: none"> • Body column light greenish to brown with vertical orange, white, or tan stripes • Up to 1.2 inches tall and 0.8 inches wide • Crown of about 25 to 100 white tentacles • Attaches to rocks, docks, muddy banks, and vegetation • Often found in clusters growing close to the water surface 		<ul style="list-style-type: none"> • Body column translucent white with pink or red spots • Up to 1 inch tall and 0.6 inches wide • Crown of less than 65 white-pink tentacles • May be found growing in clusters on hard surfaces 	
Distribution		<ul style="list-style-type: none"> • First reported in New England in the late 1800s • Found throughout New England and in Nova Scotia, but was not detected in New Brunswick or Prince Edward Island on recent surveys • Native to the Northwest Pacific 		<ul style="list-style-type: none"> • Native to the U.S. Atlantic Coast from the Chesapeake Bay and south, but its range is expanding northward likely due to warming waters • First reported in Rhode Island in 2010, no known confirmed observations in Massachusetts or northern New England 	
		Marine Invader Monitoring and Information Collaborative (MIMIC)		Established Invaders	