



reTURN the Favor: Horseshoe crab rescue program 2025 report

The reTURN the Favor program was initiated in 2013 to rescue American horseshoe crabs (*Limulus polyphemus*) stranded on Delaware Bay beaches in New Jersey, where large concentrations of crabs spawn every spring. reTURN the Favor (RTF) is a collaboration of conservation organizations in partnership with New Jersey Fish and Wildlife and a network of trained volunteers who rescue stranded crabs at risk of dying from exposure and predation (Botton and Loveland 1989). Walks are scheduled around tides, spawning activity, and time of day restrictions to efficiently rescue and collect data on stranded crabs. Collectively, volunteers save crabs by the thousands, identify stranding hazards on the beaches, and make observations that inform conservation, restoration, and research. Program participants follow protocols to comply with New Jersey regulations to protect horseshoe crabs and other wildlife.

During spring and summer months, horseshoe crabs convene on sandy beaches to spawn during high tides. On the low-energy beaches of the Delaware Bay, spawning crabs are most numerous around the full and new moons in May and June. Female crabs can lay over 80,000 eggs over the course of a spawning season (Fredericks 2012). Sheltered in the sand, it takes two to four weeks for eggs to develop into larvae that enter the Bay for an extended maturation period of nine or more years. However, very few eggs will survive the incubation period. Eggs are brought to the surface of the sand by waves and spawning activity of other crabs, forestalling further development. These eggs on the surface are readily accessible to foraging shorebirds who hungrily scour the beaches for food during stopovers on their long migration routes, which can exceed 9,000 miles. The stopover in the Delaware Bay is timed perfectly with the peak of spawning season. Other coastal animals, including fish, turtles, and gulls, also take advantage of the abundance of crabs and crab eggs as food.

Pressures from various sources have positioned horseshoe crabs as “Vulnerable” by the [IUCN](#) (Smith et al. 2016) and harvest of the species is managed by the [Atlantic States Marine Fisheries Commission](#). The harvest of horseshoe crabs for eel and whelk bait was one of the primary drivers of the population decline in the Delaware Bay, and concerns over pressures from the harvest of Delaware Bay horseshoe crabs continue. Crabs are also harvested by the biomedical industry for their blood, which is collected from live crabs before release back to the water, but these actions are not without impacts to survival and behavior (Anderson et al. 2013). A moratorium was imposed in New Jersey in 2008 to prohibit further harvest of horseshoe crabs for bait due to concern for recovery of the Delaware Bay population of horseshoe crabs and shorebird populations that visit the Bay (Niles et al. 2009). However, other local states continue to harvest from the Delaware Bay population and harvest limits are subject to change. Though the Delaware Bay population of horseshoe crabs are showing signs of recovery, these pressures will likely continue to lengthen the recovery period.

Best conditions for spawning horseshoe crabs include beaches that are sandy, gently sloped, and free of obstacles. Eroding beaches, coastal development, and shoreline hardening infrastructure have diminished the quality of spawning habitat and increased stranding risks. As a result, more crabs become stranded on beaches, stuck in debris and structures on the shoreline, or washed into marshes and overwash areas. Providing further complications, closures of important spawning and shorebird foraging beaches from May 7- June 7 began in 2003 to reduce disturbance to foraging migratory shorebirds. These closures have proven beneficial for shorebirds, but limit the ability for people to



access beaches to rescue crabs. This is where the reTURN the Favor program steps in to reduce the loss of mature stranded crabs by connecting organizations; engaging new volunteers, community members, and children in conservation; creating an organized structure for rescue; and improving spawning habitat through debris removal, beach restoration, and revitalization of derelict structures on the Bay.

2025 reTURN the Favor Highlights

- **203** volunteers attended virtual and in-person trainings and **176** received materials by email to lead walks. **78** new volunteers joined trainings, **63** received materials, and **22** became walk leaders. **66** volunteers, including **11** new volunteers, met our goal of leading 3 or more walks!
- **106** volunteers led and submitted data for **608** walks this season, for a total of **2,698** volunteer hours. The season ran May 1 – June 30, with **4 – 18** walks conducted every day.
- **7** organizations and **1** individual sponsored beaches and assisted the RTF program in Cape May and Cumberland Counties.
- **140,958** horseshoe crabs were rescued on **19** beaches, which included **117,649** overturned crabs, **13,898** crabs trapped in man-made impingements, and **9,411** crabs stranded by natural impingements and in overwash areas.
- From 2013-2025, **1,335,677** crabs have been rescued by RTF volunteers in **7,310** RTF walks.
- RTF was featured in a video, "[True Facts: Save the Turtle Spiders!](#)", produced by Ze Frank to raise awareness and money for horseshoe crab conservation. It has over **684,000** views!

Citizens United for the Maurice River and its Tributaries • Conserve Wildlife Foundation of New Jersey
• Friends of Cape May National Wildlife Refuge • Horseshoe Crab Recovery Coalition • New Jersey Audubon Society • New Jersey Fish and Wildlife • The Nature Conservancy • The Wetlands Institute • WHSRN Executive Office - Manomet

Table 1. Results from the 2025 reTURN the Favor season by beach, ordered north to south on Delaware Bay, NJ.

Location	Walks	Crabs Rescued				Total	Avg per walk
		Overturned	Man-made Impingement	Natural - Impingement	Natural - Overwashed		
Sea Breeze	23	1,541	700	213	93	2,547	110.7
Money Island	24	2,166	1,235	807	74	4,282	178.4
Gandys Beach	11	941	508	-	356	1,805	164.1
Dyer Cove	35	3,208	1,371	10	146	4,735	135.3
Fortescue/Raybins	61	10,196	5,028	162	410	15,796	259.0
East Point	48	800	874	3,508	1,342	6,524	135.9
Thompsons Beach	23	8,245	182	139	126	8,692	377.9
Moore's Beach	9	3,032	-	29	66	3,127	347.4
Goshen Beach	2	1,185	-	-	-	1,185	592.5
Reeds Beach	79	47,392	545	271	511	48,719	616.7
Cooks Beach	14	381	1	52	3	437	31.2
Kimbles Beach	61	4,046	86	228	39	4,399	72.1
Pierces Point	24	1,627	61	395	3	2,086	86.9
Highs Beach	45	8,756	814	49	51	9,670	214.9
Sunray/Norburys	13	995	1,337	-	-	2,332	179.4
Villas Beach	97	19,948	472	2	301	20,723	213.6
North Cape May	31	3,100	564	-	15	3,679	118.7
Higbee Beach	6	77	-	2	8	87	14.5
Other	2	13	120	-	-	133	66.5
Total	608	117,649	13,898	5,867	3,544	140,958	231.8

2025 reTURN the Favor Season in Detail

To fulfill the program mission this year, we held in-person and virtual workshops in April to train new and returning volunteers. We continued the changes implemented in 2024, including the shortened season to concentrate efforts in the timeframe when the rescue walks are most needed. Like last year, all volunteers, new and returning, kicked off the season on May 1 and walks ended on June 30 as spawning activity slowed. Together, volunteers conducted at least four walks per day over the course of the 61-day season, for a total of 608 walks covering approximately 28 km of coastline on the Delaware Bay in Cape May and Cumberland counties in New Jersey.

Beaches were sponsored by seven partner organizations and one volunteer beach captain: *Citizens United for the Maurice River and its Tributaries* (East Point), *Conserve Wildlife Foundation of New Jersey* (Pierces Point), *Friends of Cape May National Wildlife Refuge* (Kimbles), *Horseshoe Crab Recovery Coalition* (Money Island, Thompsons), *New Jersey Audubon Society* (Cooks, Highs), *The Nature Conservancy* (Sunray/Norburys, Higbee), *The Wetlands Institute* (Sea Breeze, Moores, Reeds, Villas, North Cape May), along with RTF volunteer Sandra Anderson (Gandy’s, Dyer Cove, Fortescue/Raybin’s).

The web-based volunteer management service, [Sign-Up Genius](#), was used to schedule volunteer walks in advance to align effort with the greatest time of need (falling to low tides) over the array of sponsored beaches to reduce redundant effort, and to comply with beach access and permit restrictions. From May 7 until June 7, walks on many beaches were only permitted after sunset or before sunrise due to [NJ beach closures](#). RTF materials, including permits and permission letters, were emailed to trained volunteers, while identification materials (stickers, t-shirts, and vests to be easily identified as RTF volunteers) were made available at in-person trainings and for pickup. Updated protocols, datasheets, and beach-specific fact sheets were provided to volunteers on request and through the online [RTF resource toolkit](#). In the field, volunteers collected data on RTF datasheets and submitted data online. Volunteers were permitted to use labeled totes to maximize rescue efforts and safety on certain beaches where crabs are known to be stranded in large numbers. The program website also provided a place for visitors to learn more about the program through learning resources, past reports, a [data portal](#), and [story map](#).

Of the 203 volunteers who attended training sessions this year, 106 volunteers led walks and submitted data, and 66 individuals conducted 3 or more walks. Walks lasted 1 hour and 28 min ± 49 (sd) min with 3.1 ± 5.6 participants. Altogether, volunteers spent 2,698 hours rescuing crabs this year and rescued an average of 231.8 ± 389.7 crabs per walk (Figure 1).

RTF volunteers rescued a total of 140,958 crabs this season. The peak number of crabs rescued was on June 9, with 7,927 crabs rescued during 11 walks across RTF beaches (Figure 2). Peak numbers of crabs rescued typically follow the moon schedule, with crab

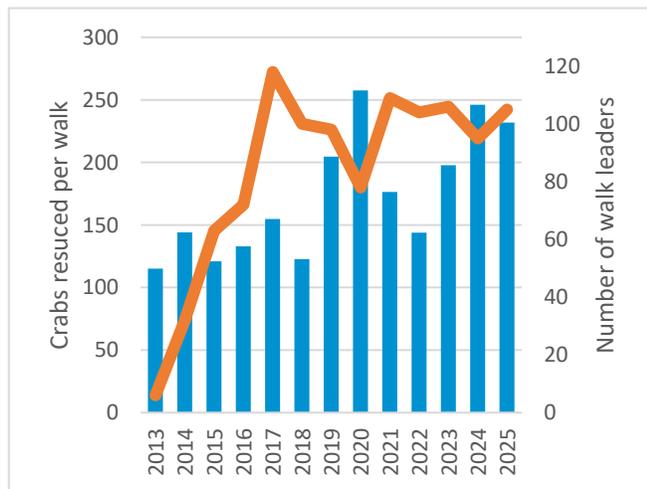


Figure 1. Total number of crabs rescued per walk (blue bars) and number of walk leaders (orange line) for each year of the reTURN the Favor program. Note that the season duration was reduced by two weeks in 2020, 2024, & 2025.

numbers building up to and a few days following the full and new moons when tides and spawning activity are highest. In 2025, optimal spawning conditions were often offset from the moon phases. In particular, the late May moon cycle, which typically has the highest spawning activity and rescued crabs, was a period with cool and rough water from wind and storms that resulted in reduced numbers of each. There was a spike in activity and rescues with improved conditions a few days after the full moon in mid-May and ahead of the third moon cycle in mid-June. During walks, we categorized rescued crabs into two general categories: **overturned** (upside down on the beach) and **impinged** (stuck in or obstructed by manmade or natural material or features), which are further grouped into descriptive categories.

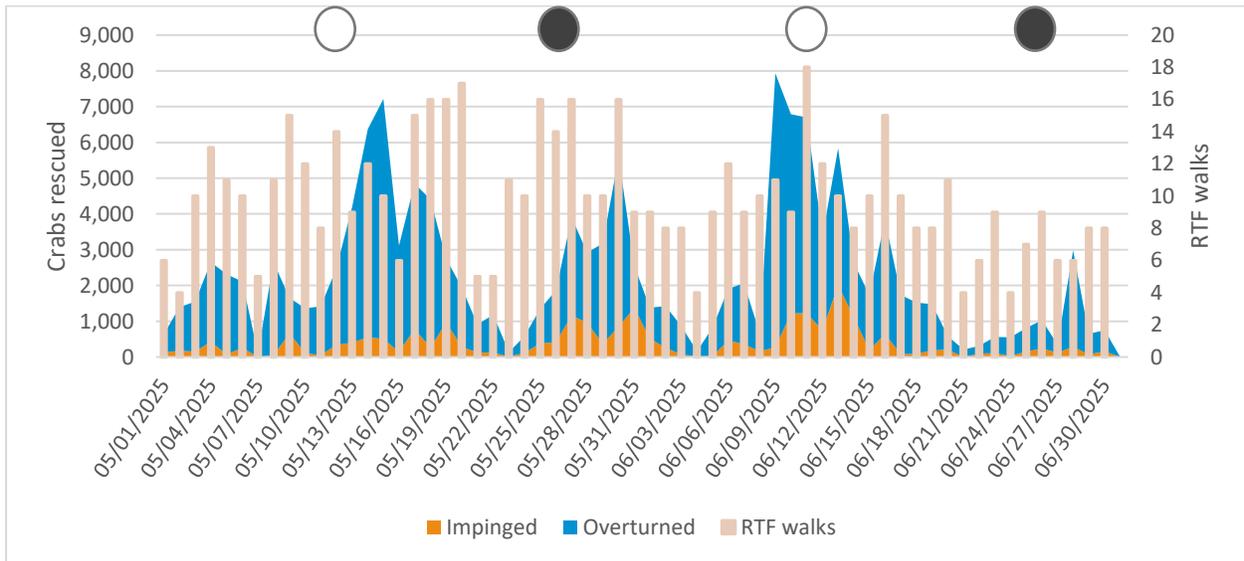


Figure 2. Total number of crabs rescued (stacked areas: overturned + impinged crabs, all categories) and RTF walks (bars) conducted by date, 2025. Moon phase is indicated above the graph by open circles (full moon) and filled circles (new moon).

Overturned Crabs

The majority of all crabs rescued this year were overturned (83.5%, 117,649 crabs). This is the highest annual percentage of overturned crabs recorded through the program, with the average over all years (2013-2024) being 67.7% ± 8.1% (Figure 3). Roughly 40% of all overturned crabs were rescued on just one beach, Reeds Beach in Cape May County (Table 1). This year also saw more overturned crabs per walk, with 21 walks surpassing 1,000 overturned crabs rescued. This is a 31% increase over 16 walks in 2024 and a 133% increase over nine walks in 2023. These 21 walks occurred at Villas, Reeds, Thompsons, and Fortescue/Raybin’s Beaches. Six of these walks surpassed 2,000 overturned crabs rescued (Reeds and Villas Beaches), two of which surpassed a record-breaking 3,000 overturned crabs rescued (Villas Beach). Volunteers turned these crabs right-side-up so they could return to the water to spawn again and reduce risk of adult mortality from exposure and gull predation.

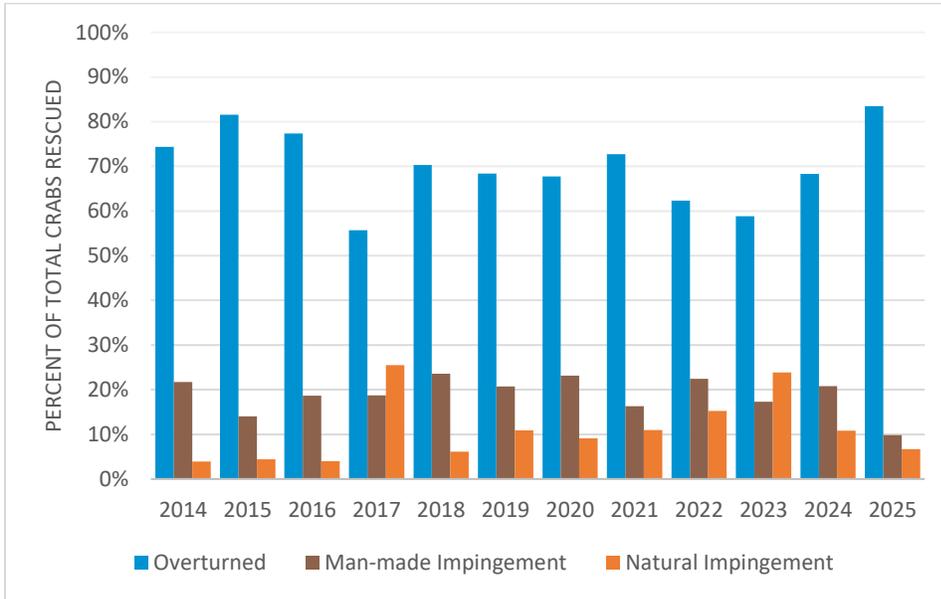


Figure 3. Percent of total number of crabs rescued for each year, 2014-2025, by category of rescued crabs: overturned, man-made impingement, and natural impingement (natural and overwash categories combined).

Impinged Crabs

Degraded conditions and marine debris at beaches exposed crabs to additional risks during spawning. Crabs became stuck in structures, debris, or shoreline features and were often unable to return to the water without assistance from volunteers. These stranded crabs were classified into three categories based on where they are found: man-made impingements (e.g. homes and infrastructure, seawalls, derelict houses, bulkheads, and boat ramps, accumulated rubble and marine debris), natural impingements (i.e. exposed peat and vegetation above or below the high tide line), and areas where high water or storms stranded crabs beyond their typical intertidal range (i.e. overwash areas). The RTF program has previously documented many of these problems and problem areas, but the condition and degree of stranding risk can change over time with restoration projects, beach cleanups, extreme storms, and natural processes. Data documenting persistent problem areas, such as derelict structures, rubble debris, and overwash areas, or emerging issues can be used to prioritize and inform restoration needs on the Delaware Bay beaches.

Man-made Impingements

Of all crabs rescued this year, 9.9% were freed from man-made impingements (13,898 crabs). This is less than half the percentage (20.8%) and less than half the number freed (28,289 crabs) in 2024. It is also the lowest percentage recorded during the program, with the average over all previous years (Figure 3; 2013-2024) being 21.9% ± 7.5%. The issue of man-made impingements is largely concentrated at Cumberland County beaches. This year, 71.2% (9,898 crabs) of man-made impingements were from seven beaches in Cumberland County compared to 90.6% (25,622 crabs) from eight beaches in Cumberland County in 2024, despite a similar number of walks at these beaches between years. Several beaches in Cumberland County have significant hazards from rip-rap seawalls and large rubble fields that trap crabs, resulting in higher totals of rescued crabs. In Cape May County, hazards tend to be more localized, though these persistent problem areas can trap sizable numbers of crabs over time (Figure 4).

In Cumberland County, Fortescue/Raybin’s, Dyer Cove, and Money Island beaches had the most crabs freed from man-made impingements (Table 1), but these numbers were far less than typical. In fact, Sunray/Norbury’s Beach in Cape May County had the second highest number of man-made impingements after Fortescue/Raybin’s Beach.

Overall, rubble and bin blocks/riprap comprised half (50.5%, 7,020 crabs) of all man-made impingements this year across 15 beaches (Figure 5). Boat ramps at two beaches were responsible for another 14.6% (2,031 crabs) of all man-made impingements this year.



Figure 4. Horseshoe crabs impinged in rubble at Highs Beach in 2025 (Jennifer Lynch).

Natural Impingements

Crabs become impinged in natural hazards due to degraded and eroded beach conditions and/or high tides that transport crabs to dunes or marshes adjoining the spawning beaches. Stranded crabs rescued from natural impingements and overwash areas accounted for 6.7% (9,411 crabs), down from 10.8% (14,739 crabs) of all crabs rescued last year. The percentage in this category fluctuates from year to year due to some years with mass overwash strandings caused by storms, but the average over all previous years (2013-2024) was $11.4\% \pm 7.2\%$ (Figure 3). Natural impingements were more prevalent on Cumberland County beaches (79.5%, 7,481 crabs) compared to Cape May County (20.5%, 1,930 crabs), supporting the trend in larger scale differences in spawning hazards for crabs.

The beach with the most crabs rescued from natural impingements and overwash areas was East Point. (Table 1, Figure 6), with the majority of rescues from vegetation and peat outcrops in areas above the high tide line. Moores Beach has often been characterized by several overwash areas and degraded dunes that can strand large numbers of crabs, and in past years has had a large coordinated effort to rescue these stranded crabs after storms. This year, although effort has been greatly reduced because of access road hazards, the overturned rescues (3,032 crabs) far outweighed the overwash rescues (66 crabs). Efforts to build protective dune features, such as the berms constructed at Pierces Point in 2021-2022, have the potential to reduce overwash potential from storms initially but may require additional restoration or management to resolve the issue long term.

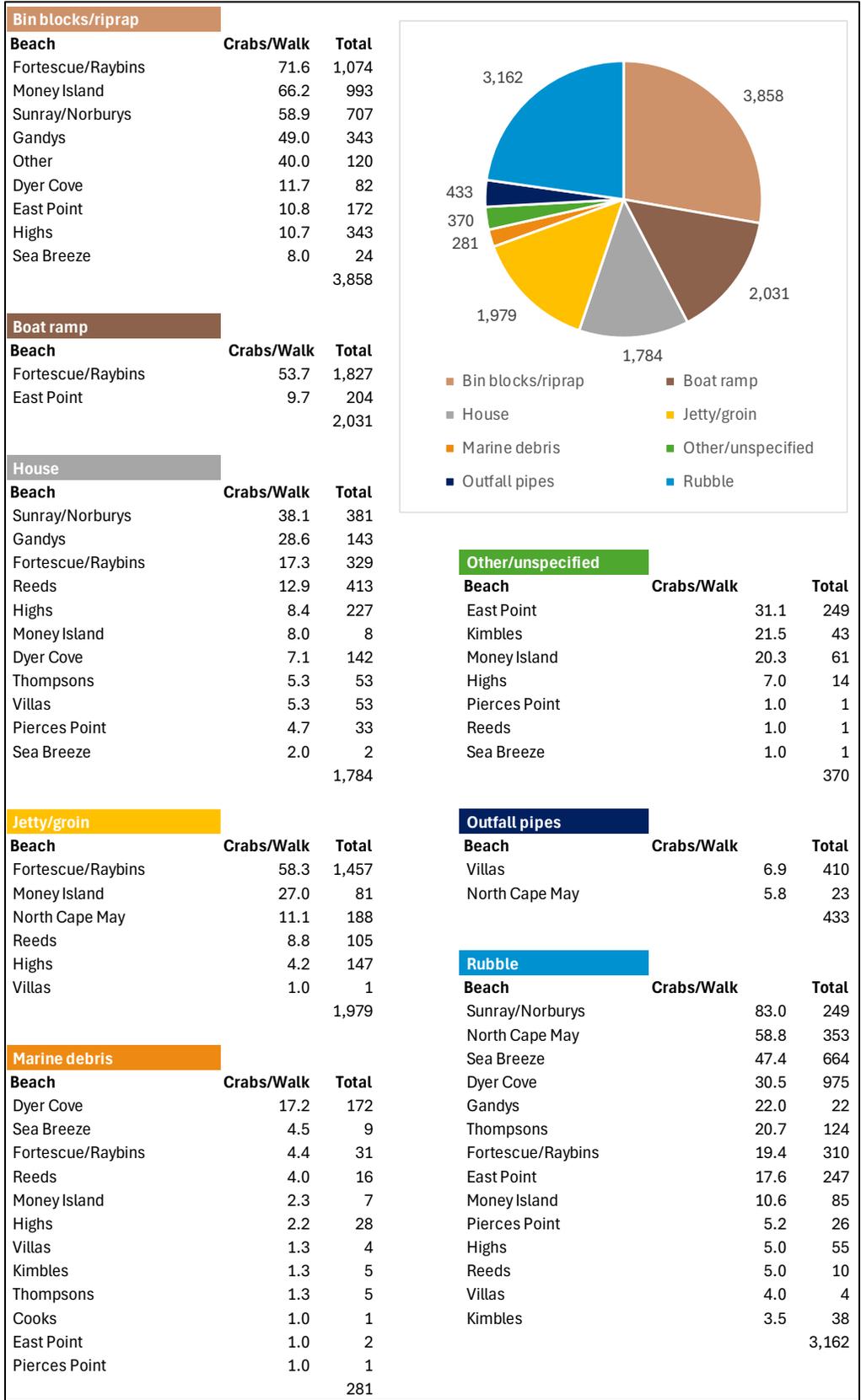


Figure 5. Number of crabs rescued from man-made impingements in 2025 by hazard type and beach.

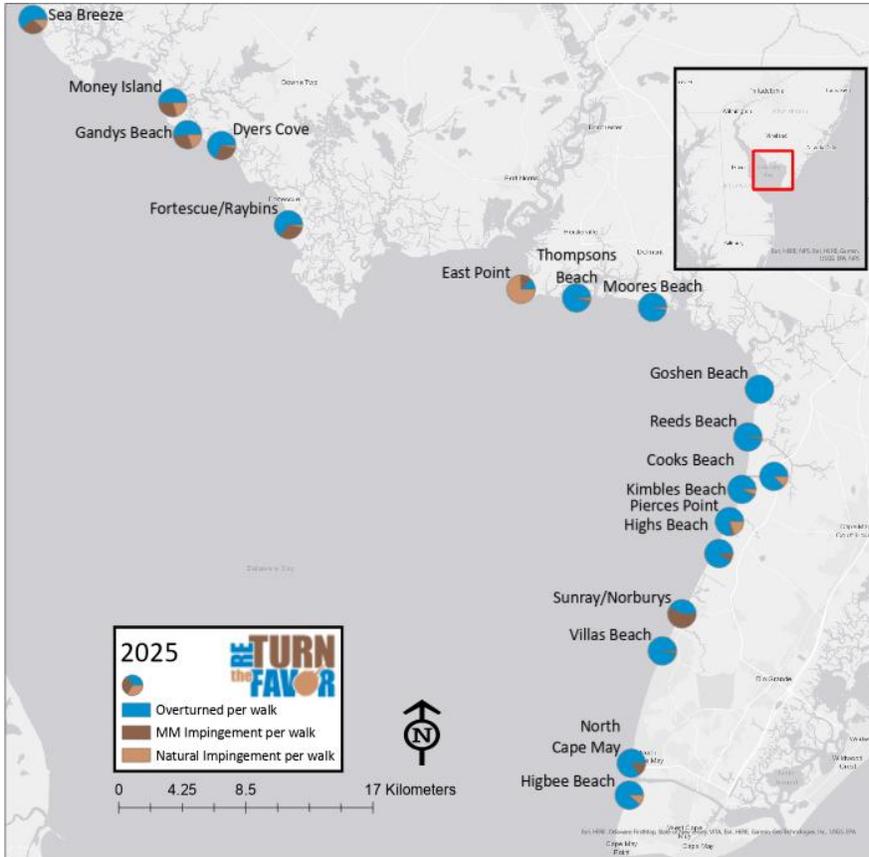


Figure 6. Each symbol indicates the proportion of rescued horseshoe crabs that were overturned or stranded in man-made (MM) or natural impingements per walk by RTF volunteers in 2025.

Other results

Of all crabs rescued in 2025, 98,547 or 69.9% were male, and 42,411 or 30.1% were female, a 2.32 M:F sex ratio, which is lower than the average of the ratios among years (2013-2024: 2.59 ± 0.32). The ratio was similar for overturned crabs (M:F = 2.28) and overwashed crabs (M:F = 2.27), slightly lower for natural impinged crabs (M:F = 1.98), and a bit higher for man-made impinged crabs (M:F = 2.98).

In total, 124 tagged crabs from 14 beaches were documented during 81 walks for reporting to U.S. Fish and Wildlife Service to contribute to studies of population trends and movements.

Volunteers incidentally recorded observations of other stranded species and notable wildlife observed. Volunteers in 2025 were not asked to take pictures of dead diamondback terrapins (*Malaclemys terrapin*) as they were in 2020-2022, and tallying carcasses often found dead on the beaches was optional. In total, 314 observations of carcasses were reported from 17 of the monitored beaches over 143 walks, with as many as 19 terrapin carcasses on one walk. The bloated or partially decayed condition of the terrapins indicated likely drowning in crab traps. The results of terrapin carcass data collected by volunteers in previous years are being analyzed.



Conclusions

The RTF program benefits from devoted partners and volunteers who rescue horseshoe crabs at New Jersey's primary spawning sites year over year. This dedication results in increased survival of spawning horseshoe crabs and allows us to learn more about current and changing conditions. Though RTF walks are not standardized surveys, these volunteer efforts have the added benefit of providing insights on changes in phenology, distribution, hazards, and habitat conditions for horseshoe crabs.

Acknowledgements

The successes of the reTURN the Favor program are due to the dedication of volunteers and program partners who contribute to horseshoe crabs and the Delaware Bay in so many ways. We are grateful to every person who joins to help, who spreads the word about horseshoe crab conservation, and supports this program. Special thanks to volunteers who took on beach coordination and behind the scenes coordination roles, and who spread the word through social media engagement and organizing groups, troops, families, friends, and students. We extend thanks to NJ Fish and Wildlife for providing a scientific collecting permit and permission to conduct walks. In 2025, The Wetlands Institute and partners participating in the program supported their efforts through their organization, including but not limited to grants, donations, foundations, and general operating funds. The production by Ze Frank brought new attention and needed support to the program and the conservation of the incredible turtle spider.

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January 2026

Ferguson, L. and M. Kolk. 2025. reTURN the Favor: Horseshoe crab rescue program 2025 report.

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