

Compatibility Determination

Title

Compatibility Determination for Fishing (non-commercial and special events), Parker River National Wildlife Refuge.

Refuge Use Category

Fishing

Refuge Use Type(s)

Fishing (non-commercial), Fishing (special events)

Refuge

Parker River National Wildlife Refuge

Refuge Purpose(s) and Establishing and Acquisition Authority(ies)

... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds. 16 U.S.C. § 715d (Migratory Bird Conservation Act) "... suitable for— (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. § 460k-1 "... the Secretary ... may accept and use ... real ... property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors ..." 16 U.S.C. § 460k-2 (Refuge Recreation Act [16 U.S.C. § 460k-460k-4], as amended).

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System, otherwise known as Refuge System, is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (Pub. L. 105-57; 111 Stat. 1252).

Description of Use

Is this an existing use?

Yes

This compatibility determination reviews and replaces the 2005 compatibility determination for recreational fishing.

What is the use?

Recreational saltwater fishing at Parker River National Wildlife Refuge (NWR) includes surfcasting from the beach and fishing Plum Island Sound from the shores of Stage Island and Nelson Island in accordance with State seasons and regulations with some modifications. Fishing is typically done by individuals or small groups of friends and family members, but occasionally the Refuge conducts organized events, such as “Let's Get Outside” and “Juniors Fishing Day” to increase exposure and educate the public about saltwater fishing. There is no freshwater fishing access at the refuge.

Is the use a priority public use?

Yes

Where would the use be conducted?

Surf-casting may occur along the entire stretch of Parker River NWR beach that is open to public access (6.2 miles), and anglers may also fish Plum Island Sound from the shores of Stage Island (about 0.6 mile of accessible shoreline) and Nelson Island (550 ft of shoreline, Figure 1).

Refuge Beach (Plum Island):

Surfcasting along the entire length of the Refuge's ocean beach is allowed from September to March 30 with boardwalk access via parking lots 1, 2, 3, 6 and 7. Distance from parking to the beach ranges from 65 yards at Lot 7 to 426 yards at Lot 3. On April 1, the beach south of Lot 1 is closed to all public access to protect nesting shorebirds. Sections of the beach begin to reopen as the nesting season concludes, and typically it is completely open by mid-August to early September. During closures, surfcasters can fish from beach areas open to the public, which typically includes Lot 1, Stage Island, and Nelson Island.

Walk-on night-fishing is permitted when sections of beach reopen as nesting shorebirds fledge (typically from mid-July). The walk-on night fishing season concludes November 15.

Nelson Island

Anglers can access Nelson Island via Stackyard Road from Route 1A in Rowley, MA. From the Nelson Island parking lot, anglers can reach Plum Island Sound by walking along the designated foot trail leading through the salt marsh and across the drumlin (0.94 miles). Casting is allowed from the eastern shore at the end of the trail, and within about 250 ft feet on either side of the trail within a natural cove borderd by salt marsh. Fishing beyond the 550-ft cove is prohibited to prevent trampling of salt marsh habitat. From September to mid-February, Nelson Island is closed to all public use except waterfowl hunting and commercial clamming to ensure public safety. Fishing is allowed on Sundays during this period when no hunting is allowed by state law. Night fishing is prohibited at Nelson Island.

Stage Island

Anglers can fish from the shores of Stage Island, but fishing is strictly limited to the waters of Plum Island Sound (fishing is not allowed in Stage Island Pool). Access to Stage Island's shores is by foot only, from the Lot 6 Stage Island Trail (opened in 2017) and through Sandy Point State Reservation, a total walking distance of 0.55 mi and 1.34 mi, respectively. Night fishing is prohibited at Stage Island.

When would the use be conducted?

Parker River NWR is open to the public for recreational fishing year-round, during normal hours of operation (sunrise to sunset). Additionally, 'walk-on' (i.e., pedestrian) fishing is allowed at night on the Refuge beach, by permit, from roughly mid-July until November 15.

Fishing along the ocean (i.e., Atlantic-facing) shoreline is subject to seasonal closures. As stated above, along the ocean beach, only Lot 1 will remain open, and only if shorebirds do not nest within 150 ft of the beach stairway. The other boardwalks reopen through the summer as chicks fledge.

How would the use be conducted?

Recreational fishing must be conducted in accordance with Federal and State regulations and refuge-specific regulations and policies; including seasonal closures, access/area restrictions, and gear restrictions. In addition to fishing from refuge property, recreational fishing may occur by boat in state-managed waters just offshore. Non-motorized anglers may launch canoes or kayaks from the refuge boat ramp across from Lot 1 to access Plum Island Sound. All anglers 16 years or older must have a MA Division of Marine Fisheries recreational saltwater fishing permit. Non-residents may use a saltwater fishing permit from ME, NH, RI, and CT in lieu of a MA permit (but see current reciprocity agreements by state).

Special, refuge-sponsored public fishing days occur irregularly, including 'Let's Go Outside' in May or June each year, and during 'Juniors Fishing Days' in the summer months. These events typically take place on Saturdays with up to 20 people per session.

Total refuge fishing visits are estimated to be 35,000 annually.

The Refuge has allowed limited seasonal drive-on beach access using off-road vehicles (ORVs) to facilitate fishing. However, we are discontinuing public ORV use. Rationale for this change is outlined below, but for greater detail, see 'Effects of Off-Road Vehicles on Beaches: a Literature Review' (available for download at <https://ecos.fws.gov/ecp/>). Briefly, the reasons are:

1. Regional, continental, and global shorebird populations have declined drastically and ORVs have been shown to negatively affect shorebirds and their habitats more than other recreational uses. Notably, since 2005 when the last

Compatibility Determination (CD) for fishing was finalized, the Red Knot (*rufa* subspecies) – which migrates through the refuge during the ORV season – was federally listed as threatened in 2014. (Note: discontinuing ORVs is primarily to benefit migrating shorebirds in the fall months; any benefits to locally-nesting species such as piping plovers, which generally depart by September, would be secondary).

2. The stipulations to ensure compatibility as outlined in the 2005 CD, such as not driving over the wrack line, within the intertidal zone, or on the toe of the dune, are no longer possible due to erosion and a narrowing beach front. As a result, ORV access has been limited or periodically closed each year since 2011.
3. The effects of climate change – including sea level rise and increased storm intensity – have accelerated rates of erosion and flooding of the beach and ORV access trail (Figure 2). Numerous studies have shown ORVs to further contribute to beach and dune erosion (USFWS 2022).
4. Due to all of the above, ORV driving on beaches detracts from the core purpose of refuge establishment as an “...inviolable sanctuary for... migratory birds.” Further, the refuge already provides, and will continue to provide, robust fishing opportunities, including 24-hour access, five boardwalks to the beach, and free beach wheelchair access.

Why is this use being proposed or reevaluated?

Recreational fishing is identified as a priority public use in the National Wildlife Refuge System Improvement Act of 1997. Parker River NWR is a premier destination for fishing and recreational fishing is one of the primary reasons people visit the refuge. Offering a variety of fishing opportunities at Parker River NWR, including organized events such as "Let's Go Outside," will increase visitor appreciation and awareness of the importance of the National Wildlife Refuge System. The refuge also contains over 200 beach parking spots and easier access for anglers compared to other locations on Plum Island, where public parking is more limited. The use is being renewed per USFWS policy (603 FW 2.11 H)

Availability of Resources

Existing resources are adequate to administer the use properly and safely. The estimated cost of allowing walk-on fishing is relatively small because there is little infrastructure involved and law enforcement officers check anglers as part of routine duties. In addition, officers adjust hours specifically to ensure compliance of nighttime fishing regulations. The added patrols, signage, gear purchase and rentals (for public programs), and other staff time to manage the program is estimated at \$8,000 annually (Table 1).

Table 1. Costs to administer and manage recreational fishing on Parker River National Wildlife Refuge.

Category and Itemization	One-time Cost	Recurring Annual Expenses
Develop Plan/NEPA document/opening package	\$3,000	--
Construct facilities	--	--
Develop signage and brochures	\$2,000	\$500
Survey and post use area boundary	\$1,000	--
Staff time (LE, administration and management)	--	\$5,000
Maintenance	--	\$1,500
Monitoring	--	\$1,000
Total one-time expenses	\$6,000	
Total recurring annual expenses		\$8,000
Offsetting revenues	--	--
Total expenses	\$6,000	\$8,000

Anticipated Impacts of the Use

Potential impacts of a proposed use on the refuge's purpose(s) and the Refuge System mission

The effects of the proposed use to refuge resources, whether adverse or beneficial, are those that are reasonably foreseeable and have a reasonably close causal relationship to the proposed use of recreational fishing. This CD includes the written analyses of the environmental consequences on a resource only when the impacts on that resource could be more than negligible and therefore considered an “affected resource.” Resources that will not be more than negligibly impacted by the action have been dismissed from further analyses.

Short-term impacts

Positive effects of a refuge fishing program include connecting people to nature, connecting with the communities we serve, inspiring conservationists, educating the public about the refuge system, and promoting ethical and sustainable use of fisheries resources.

Anticipated negative short-term impacts include litter (e.g., monofilament fishing line and discarded hooks, bait, and fish entrails) and changes in patterns of wildlife behavior. Discarded or lost fishing line and hooks can entangle migratory birds, marine mammals, and fish, often resulting in injury or death (Gregory 1991, 2009). Discarded bait and fish entrails (from fish cleaned on site) can attract scavengers that may opportunistically prey on nesting or roosting shorebirds, including the federally threatened Piping Plover and *Rufa* Red Knot.

Shorebirds: Fishing on the refuge occurs in areas preferred by shorebirds and the peak of fall shorebird migration is often simultaneous with peak fishing season. Research has consistently demonstrated at least temporary effects on the behavior and movement of birds within a localized area from human presence (Burger 1981, 1986, Klein 1993, Rodgers and Smith 1997, Burger and Gochfeld 1998, Bennett and Zuelke 1999). In a study of human disturbance to shorebirds at six (6) NWRs (including Parker River), Harrington and Drilling (1996) found that shorebirds feeding on the beach responded to human disturbance (82%) more than those using impoundments (30%). Compared to other beach users, pedestrian anglers are the least likely to disturb shorebirds as they tend to stay in one place for extended periods of time (Knight and Cole 1995b).

Migratory species overall are more sensitive to disturbance than resident birds, perhaps because of the increased energy demand and critical timing of migration (Bennett and Zuelke 1999). Disturbance can cause shorebirds to spend more time being alert and less time resting or foraging (Lafferty 2001; Thomas et al. 2003), expend more energy to avoid disturbance (Helmers 1992), and can lead them to abandon an area all together (Burger 1986; Pfister et al. 1992; Harrington and Drilling 1996). Pfister et al. (1992) found that certain shorebird species (red knots and short-billed dowitchers) that use the beach front where public use was high showed more regional population decline (as much as 50%) compared to species that used the back dune. Additionally, species abundance declined more at disturbed beaches compared to less disturbed beaches.

Vegetation: The current number of anglers comprises only about 10% of the refuge's total visitation. Negative impacts of recreational fishing include the temporary trampling of vegetation and light soil erosion. The physical effects on refuge vegetation from fishing is expected to be minimal based on anticipated levels of use.

Soils: We anticipate that fishing on the refuge will have minor impacts to soils. The fishing program has the potential to cause some compaction and/or erosion because off-trail foot travel does occur, including into posted closed areas. At the anticipated levels of use, fishing is expected to have minimal adverse cumulative impacts on soils.

Water Resources: Paths used by anglers can affect the hydrology of an area by altering drainage patterns. Some anglers may walk off-trail to access a fishing area, thereby creating new trails and affecting drainage. At the anticipated levels of use, fishing is expected to have minimal cumulative impacts on water resources

Wetlands: Anglers are permitted to saltwater fish from refuge shorelines. All shorelines are open-sand beach habitat, and most access is by elevated boardwalk. Further, as the ORV access trail at BB1 that intersects a cranberry bog will be closed to recreational ORVs, there are no anticipated impacts on refuge wetlands.

Fish Species: Recreational fishing could potentially cause negative impacts to fish populations if it occurs at unsustainably high levels or is not managed properly. Potential impacts from fishing include direct mortality from harvest and injury to fish caught and released (Klein 1993, Lewin et al. 2006). However, the state closely manages fish populations and adapts catch restrictions accordingly.

Other Wildlife: Fishing has the potential to increase disturbance to other wildlife that use fishable waters, including waterfowl and wading birds. Human activity, including walking trails and boat use, has the potential to affect the behavior, distribution, and abundance of water birds. Several studies have examined the effects of recreation on birds using habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States. Overall, the existing research demonstrates that disturbance from recreational activities has at least temporary effects on the behavior and movement of birds and other animals within a habitat or localized area.

Other Visitors and Users: The Refuge is open to all six of the System's priority public uses (hunting, fishing, wildlife observation, wildlife photography, environmental education and interpretation). All fishing occurs in designated areas and is not expected to cause significant conflicts with other user groups.

The benefits of providing this wildlife-dependent activity, even with modest increases, include helping meet the existing and future demands for outdoor recreation and education. Only negligible, short-term impacts to user groups have occurred and are anticipated to occur in the future. If conflicts arise among user groups, mitigation efforts can be implemented to ensure that the proposed action will not have significant impacts to other user groups.

Long-term impacts

Taken cumulatively, the short-term behavioral effects to shorebirds in response to disturbance listed above may lead to long-term demographic consequences. Many shorebirds that nest, migrate, and/or over-winter in the United States are in decline and are of conservation concern due to threats and pressures they experience throughout their annual cycle. Over the last 40 years, shorebird populations across North America have declined by 70% (NABCI 2016). Moreover, Arctic-breeding shorebirds, including the species that depend on the refuge as a stopover site, have experienced among the most dramatic global population declines (Andres et. al 2012).

Parker River NWR was identified by the Atlantic Flyway Shorebird Initiative [AFSI] Business Plan (AFSI 2015) as a top shorebird stopover habitat, mandated by its mission and founding legislation to manage habitat for wildlife with an added responsibility to provide high-quality foraging and roosting habitat for shorebirds during migration. The importance of areas like the refuge to shorebird conservation will only increase in the future with increased development, storm frequency, and sea level rise.

The refuge portion of Plum Island contains the largest undeveloped barrier island North of Cape Cod in Massachusetts. The importance of the refuge and surrounding protected lands as a stopover location for migrating shorebirds is recognized through its designation as a Western Hemisphere Shorebird Reserve Network (WHSRN) site in 2004; 1 of 8 along the Atlantic Coast. During fall migration (mid-July through November) thousands of shorebirds use the refuge daily to forage and roost. Bi-weekly surveys of the refuge beach during fall migration result in seasonal totals ranging from 6,000 to 8,000 birds. The most common species are sanderling, semipalmated sandpiper, black-bellied plover, semipalmated plover; all listed as 'priority' species in Bird Conservation Region for New England and Mid-Atlantic States (BCR 30). The Refuge beach is also important migratory stopover habitat for the federally listed Piping Plover, several species of terns, and the federally listed *Rufa* Red Knot.

Wildlife Disturbance:

Numerous studies have implicated human disturbance in the decline of shorebirds. The above-referenced 'Business Plan' recognized the dramatic recent decline in shorebird populations and the need to increase populations by 10% by 2025. For Canada and the eastern US, it identified human disturbance and habitat loss and change as the top threats and set a goal of reducing human disturbance by 90% on all actively managed sites by 2025. Strategies include developing and implementing best management practices while increasing outreach, education, and public support for shorebirds. The plan noted that current regulations on conservation lands overlook non-breeding birds, and that impacts to migrating shorebirds must be addressed.

A major factor in population declines of shorebirds is repeated disturbance, which can be defined as “*a human activity that causes an individual or group of shorebirds to alter their normal behavior, leading to an additional energy expenditure by the birds. It disrupts or prevents shorebirds from effectively using important habitats and from conducting the activities of their annual cycle that would occur in the absence of humans. Productivity and survival rates may also be reduced*” (Mengak & Dayer, 2020). Human disturbance can be caused by both intentional and unintentional actions. Unfortunately, the impacts of disturbance will likely increase in the future as the human population in coastal areas is projected to grow (NOAA 2013) and as quality shorebird habitats decrease due to coastal development and sea-level rise driven by climate change (Comber et al., 2021, p.2).

Disturbance can impact shorebirds throughout the entire annual cycle. During the breeding season, disturbance can degrade the quality of nesting habitat. Flushed adult shorebirds have decreased nest attendance and reduced incubation rates. In addition to indirect impacts, disturbance can result in direct mortality of adults, chicks, and nests. Disturbance during the nonbreeding season can have significant impacts on the survival and fitness of shorebirds. Disturbance can initiate flight response and displace shorebirds from important habitats, increase vigilance while roosting, reduce foraging time, reduce prey availability, and subsequently decrease feeding rates. The negative impacts of disturbance can have severe energetic costs for individual shorebirds, such as reduced body mass, and can lead to lower annual survival rates of individuals at disturbed sites. When extrinsic factors, such as disturbance, are experienced by shorebirds during the non-breeding season, their ability to reproduce during the breeding season can be affected (*from* Comber et al., 2021, p.1).

Fish species:

Potential long-term impacts of fishing include changes in age and size class distribution, changes in reproductive capacity and success, loss of genetic diversity, altered behavior, and changes in ecosystems and food webs (Lewin et al. 2006, Klein 1993). While fishing does remove individuals from the population, we do not anticipate that even modest increases in refuge fishing visits will affect fish populations. Anglers must abide by the State’s seasons, catch limits, and regulations, designed to protect the State’s fish populations. The refuge’s fishing pressure is projected to be relatively small and sustainable.

Public Review and Comment

The draft compatibility determination was available for public review and comment for 20 days. The public was made aware of this comment opportunity through the following: posting at refuge headquarters, posting on refuge websites and social media, hard copies for review at area libraries and the refuge visitor center, and press releases to local print and online newspapers. Local and state government agencies

were informed in advance of the opportunity to comment on the draft compatibility determination. All (508-compliant) documents were made available electronically on the refuge's website for the duration of the comment period (https://www.fws.gov/refuge/parker_river/) with information to contact the refuge if documents were needed in an alternative format. Concerns expressed during the public comment period were addressed in this final document.

Determination

Is the use compatible?

Yes

Stipulations Necessary to Ensure Compatibility

- Access for fishing will be limited to pedestrian use. Wheelchair access, and free use of beach wheelchairs, will be provided from Lot 1, at minimum.
- Increase education and outreach efforts to beach users, including anglers, on impacts of human disturbance to shorebirds and ways to minimize disturbance.
- Begin educational campaign on the harmful effects of lead fishing weights; promote existing alternatives to lead. Encourage use of non-lead fishing tackle.
- Monitor impacts to migratory shorebirds as necessary to ensure disturbance remains at acceptably low levels. The use may be modified accordingly to ensure continued compatibility.
- The refuge is a leave-no-trace, carry-in-carry out facility. All food containers, bottles, fishing gear, and other waste and refuse must be removed.
- Continue to restrict all public access during the breeding season to minimize adverse effects to nesting species (e.g., plovers and least terns). Implement adaptive beach closures as needed during fall migration.

Justification

The stipulations outlined above would help ensure that fishing is compatible at Parker River NWR. Recreational fishing, as outlined in this compatibility determination, would not conflict with the national policy to maintain the biological diversity, integrity, and environmental health of the refuge. Based on available science and best professional judgement, the Service has determined that fishing (non-commercial and special events) at Parker River NWR, in accordance with the stipulations provided here, would not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purpose of Parker River NWR. Rather, appropriate and compatible fishing would be a use through which the public can develop an appreciation for wildlife and wild lands.

Recreational fishing is a priority public use identified in the National Wildlife Refuge System Improvement Act of 1997. Parker River NWR is renowned for its saltwater fishing and allowing this use will foster a greater awareness and appreciation of the refuge system.

We do not expect walk-on fishing access to materially interfere with or detract from the mission of the refuge, nor diminish the purpose for which the refuge was established. Anglers accessing by foot will not pose significant adverse effects above existing levels of recreational beach access, nor cause an undue administrative burden.

With changing beach conditions, we have not been able to meet any of the stipulations outlined in the 2005 CD for allowing ORV use for fishing. ORV use negatively effects the quality of stopover habitat for migratory shorebirds. Additionally, ORVs exacerbate erosion on a beach that is extremely steep, reducing the resiliency of barrier beach habitat to adjust to climate impacts, and negatively affecting nesting habitat for federally listed Piping Plovers and State-listed least terns. ORV use on the beach also detracts from the natural beach experience of other users.

While ORV use does make surf-fishing easier and allow many comforts, surf-fishing is already accessible on the Refuge beach. There are 5 pedestrian beach access points, the shortest of which is 180 ft. Access for individuals with disabilities is also available at Lot 1, and beach wheelchairs are provided by the refuge free of charge. Given the ease of pedestrian access for surf fishing and the negative effects to habitat, wildlife, and other users, ORV use for fishing is discontinued with this CD.

Signature of Determination

Refuge Manager Signature and Date

Signature of Concurrence

Assistant Regional Director Signature and Date

Mandatory Reevaluation Date

2037

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Figures

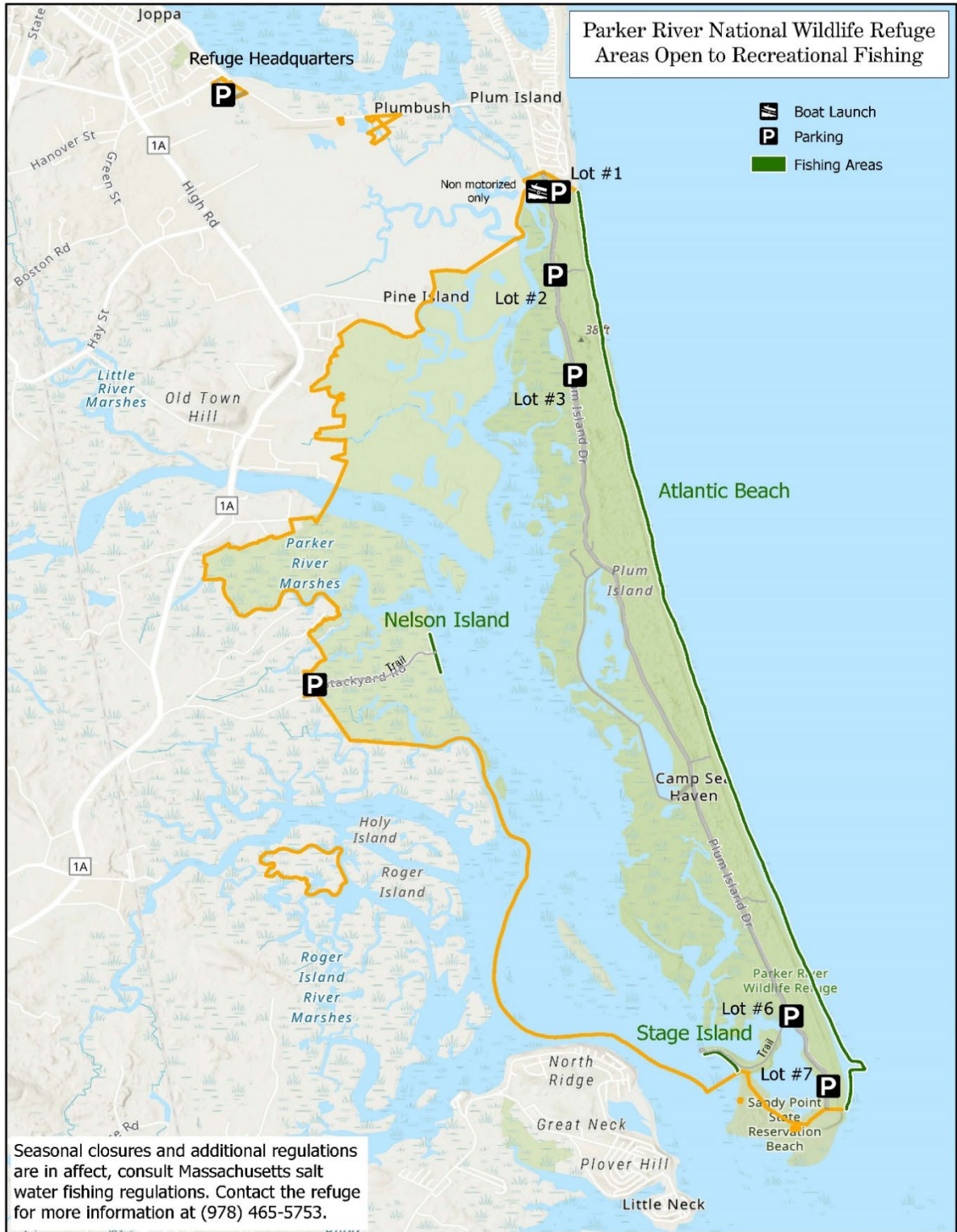


Figure 1. Map of Parker River National Wildlife Refuge beach access points.



a.

b.

Figure 2. Photos from September 2021 showing ORV access challenges at the (a) BB1 access trail with over 1 foot of standing water in a sensitive cranberry bog and (b) 100 yards south of where BB1 enters the beach. While the locations pictured above are constantly changing and not always flooded, based on field observations and current research, such conditions will continue to intensify, creating adverse effects to migrating shorebirds, resource damage to the refuge, and safety risks to ORV users.