



Manatees, Seagrass, and the Great Florida Riverway

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Manatee Use: Current and Potential

The Great Florida Riverway is a 217-mile system of rivers and springs that flows north from Lake Apopka and the Green Swamp in Central Florida to the Atlantic Ocean via the Ocklawaha, Silver, and St. Johns rivers. The Riverway provides very important current and potential warm water habitat for manatees. For one, the St. Johns River has been designated critical habitat for the manatee since 1976. Additionally, should the natural flow of the Riverway be restored, the Ocklawaha and Silver Rivers, as well as Silver Springs State Park, hold significant potential to provide essential warm water winter habitat for manatees.

Based on data from the Clearwater Marine Aquarium Research Institute current as of July 2021, 102 unique manatees use the Ocklawaha River system, despite it being impounded by the Rodman/Kirkpatrick Dam and accompanying lock system. Many of these manatees utilize the Buckman Lock, which connects the Rodman Reservoir to the St. Johns River. The Buckman Lock Tender recorded 437 manatee sightings in 2018 (the most recent available verified statistic). Note that sightings do not equate individual, unique manatees, as many of these sightings were of the same manatees using the lock system repeatedly.

The Ocklawaha River is connected to 20 freshwater springs; however, these springs are currently submerged beneath artificially high water levels caused by the dam, rendering them unsuitable as warm water refugia for manatees. Restoring the natural flow of the Ocklawaha River will provide essential warm water winter habitat to hundreds of manatees by opening up access to the Ocklawaha's springs. Some of the Ocklawaha's springs, including Marion Blue Spring, Hasty Greene Spring, and the Cannon Spring Complex could provide habitat for 100 manatees or more each and have food sources nearby. Additionally, restoring the Ocklawaha will allow manatees unimpeded access to the Silver River and Silver Springs, which could also serve as important warm water winter habitat for hundreds more manatees if adequate protections are put in place.

Why Natural, Warm Water Winter Habitat Matters to Manatees

Warm water habitat is essential for manatees' survival in the winter months. Despite their rotund appearance, manatees have incomplete fat layers and a low metabolic rate, making it difficult for them to keep warm. If water temperatures drop below 68°F, manatees can develop a condition called cold stress, which can cause them to become very sick or die. Unfortunately, human development and other pressures have degraded, altered, or caused natural warm water habitat sources such as springs to disappear entirely. At the same time, humans have built structures such as power plants that produce warm water outfalls as a byproduct of cooling the steam back to water, and 60% of Florida's manatees currently rely on these once-through cooling outfalls to stay warm in the winter. This is an unsustainable situation for the species, as these artificial warm water sources will likely be taken offline in the coming decades, and many do not have sufficient food sources nearby.

Habitat Quality of a Natural vs. Impounded System

A natural, free-flowing system of rivers and springs would provide more beneficial habitat to manatees than the Rodman Reservoir, particularly in terms of temperature and submerged aquatic vegetation (SAV).

Florida's springs are essential and natural winter habitat for manatees and on average maintain a temperature of 72°F, even in the winter. In contrast, impounded water bodies such as the Rodman Reservoir tend to be colder in the winter and warmer in the summer than natural rivers. Specifically, average water temperatures in Rodman Reservoir have been recorded in the 50 - 66°F degree range in the winters of 2018 – 2019, 2019 – 2020, and 2020 – 2021, sometimes dropping as low as 45°F – much too cold for manatees.

Additionally, much of the SAV in the Rodman Reservoir is the exotic species hydrilla, which harms and eliminates native aquatic plant competitors and has required regular herbicide spraying for management. While restoring the Ocklawaha River by breaching the dam could decrease overall SAV biomass, clearer waters post-restoration could support the return of native SAV communities that will provide a diversity of native plant species to allow manatees to meet their nutritional and metabolic needs. Additionally, this clearer water and additional fresh-water flow may help the recovery of SAV in the St. Johns River, which disappeared in 2017 and is struggling to recover.

Manatees and the Buckman Lock

As noted above, several manatees utilize the Buckman Lock system to travel between the Rodman Reservoir and the St. Johns River. The Buckman Lock system must be manually opened by a human operator for manatees to pass through.

Since 1977, 13 manatees have been confirmed as killed by the Buckman Lock, with 11 of these documented deaths occurring between 1977 – 2003 and the latter two occurring in 2019 and 2021. The installation of manatee exclusion devices in 2001 likely reduced the number of deaths directly attributable to the locks. Additionally, there have been 26 dead manatees documented in the area by the Florida Fish and Wildlife Conservation Commission (FWC) as being “unverified; decomposed” or “verified; not recovered.”

While the installed manatee exclusion device has reduced manatee deaths from the Buckman Lock, the Buckman Lock regardless presents an obstruction for manatees to freely access the Great Florida Riverway.

Restoration and Seagrass Communities

Restoring a free-flowing Ocklawaha will provide an additional 150 - 276 million gallons per day of cool, fresh water to the St. Johns River and estuary, supporting temperature and salinity balance to counteract saltwater intrusion. Breaching the dam will additionally restore over 15,000 acres of forested wetlands that are currently flooded by the Rodman Reservoir area or stressed by the artificially high water levels created by the dam, enhancing bio-filtration and improving water quality. These changes will support healthy SAV communities in the St. Johns River estuary. This is important for species such as manatees which depend on aquatic vegetation as a food source and habitat.

Conclusion

Experts such as Smith (1997), Taylor (2006), and Laist et al. (2013) have long recognized the benefits that a restored, free-flowing Ocklawaha River will provide to the Florida manatee. Current circumstances dictate that all tools available to protect manatees and restore their habitat must be utilized to ensure a sustainable future for this species.

This year, 2021, is the deadliest on record for manatees, having claimed over 10% of the estimated manatee population. Many of these deaths are connected to starvation caused by seagrass losses along the Atlantic coast (from the Indian River Lagoon and south), which have occurred in large part due to algal blooms fueled by water pollution of excess nutrients. Continued, immediate interventions, including rescue and rehabilitation efforts, will be essential to mitigating this ongoing mortality event. Looking beyond the current crisis, however, loss and degradation of natural habitat that provides forage and warm water essential to manatees' survival remains their greatest long-term threat, and could foreseeably result in additional future mass mortality events if natural alternatives to artificial warm water sources such as power plant outfalls are not made available. If conducted with adequate protections in place, restoring the Ocklawaha River will provide essential warm water winter habitat for hundreds of manatees, ensuring a brighter future for the species.

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