

Michigan DNR Trails Inventory on Beaver Island Summer of 2016 Report

Introduction:

Beaver Island state-owned land has ten trails managed by the Michigan DNR Wildlife Division. The trails are primarily southern half of the island and traverse variable forest types and openings. The trails are open to the public and range from gravel roads to two tracks and foot paths. Birders and wildlife enthusiasts, nature lovers, and hunters often use these trails. Local community volunteers have maintained these trails in the past.

The trails included in this report are: Seven Bridges Trail, Blue Trail, Buffalo's Camp Trail, Camp Three Trail, Doty's Camp Trail, Greene's Lake Trail, Johnny Martin's Trail, Middle Perron's Trail, Cable's Creek and French Bay Road. The purpose of this report is to describe the status of the trails, indicate problem areas, document locations and nature of structures, and record invasive species occurrences.

Methods:

A team of two seasonal DNR Wildlife Division employees inventoried the trails in summer, 2016. Problem areas, structures, and invasive species were mapped and documented. Problem areas could include mud holes, deep ruts, or wet spots which would impede use on foot or by vehicle. The team recorded information related to problem areas on data sheets and used GPS to document the locations. They took photographs of problem areas for future reference and documented locations of structures, such as bridges and culverts. Occurrences of invasive species, relevant data, and locations were also recorded. Clearing of fallen trees and obstacles from the trails also occurred. The trails were marked with spray paint on trees as needed. Information regarding the waypoints of problem areas, invasive species, and structures was organized into both paper documents and separate Excel spreadsheets then later transferred to a Geographic Information System (GIS). A trail map available online along with other maps provided by local islanders was used as a primary reference for locating trails (Figure 1).

Problem Areas

Problem areas were defined as areas along the trails that impeded or disrupted hiking or passage of maintenance vehicles. These included deep puddles, puddles with deep mud, extreme ruts, thick vegetation, and other issues. Most problem area locations were marked at or near the center, with the waypoint designation of "PA" followed by an identification number. If the problem area stretched a significant portion of the trail, or included many smaller problem areas close together, they were marked with PA#B to mark the beginning, and PA#E to mark the end. The length of these areas was estimated using the measuring tool in ArcMap. On the map, these are displayed as "Pair" while the smaller individual problem areas are marked as "Single". When applicable, the depth, width, and length of the problem area were recorded. This information is also included in the attribute table of the Problem Areas feature class. Potential hazards were included with problem areas, and included trees hanging over the trail with a potential to fall and could not be removed safely by the team. These areas were marked as PAH#.

Invasive Species

The invasive species waypoints were used to record the locations, specific species, density, and area covered by any invasive species found. Spotted knapweed was excluded as it is well established throughout in suitable habitats, and would have been impractical to record everywhere it occurs. At the outset, the team marked locations that included only a few plants of

European Swamp Thistle (EST), but after finding that EST was also thoroughly established; they marked only locations of heavy swamp thistle presence.

Structures

Structure waypoints mark the locations of culverts, bridges, and other manmade structures along the trails. Bridges were marked with the designator BRG# and the following were recorded: material, length, width, and height. Culverts were marked with CUL# and the following was recorded: material, length, width, height, shape, substrate inside and over culvert, any plugged portion and percentage, any rust, any crushed portion and percentage, interior type, depth of water at inlet and outlet, and trail width. If erosion was found, the team recorded the location, length, width, depth, and material of the eroded spot, and if it reached the stream. Fords were locations where running water crossed the trail and had been driven through and were marked with FRD#. Stream crossings were similar, but were located on footpaths and places not accessible to vehicles, and marked with STC#. For both of these, the length, depth, and width were recorded.

Results:

Problem Areas

Trails were walked and tracked using GPS to mark their locations (Figure 2). Many trails had fallen trees blocking the path, or needed trimming of limbs or stick removal. After a period of high wind, it was not uncommon to have newly fallen trees on trails that had already been cleared. Certain trails have patches of abundant berry bushes, and these areas may need to be trimmed back every couple of years to prevent the bushes from taking over the trail. Sections further along the trails, especially on Blue Trail and Johnny Martin's Trail, were overgrown with grasses, ferns, and young woody shrubs. This is most likely due to infrequent use, but if left untrimmed may fill in and become difficult to pass. The use of brush hogs, weed-whackers, or other equipment may prove helpful at maintaining these sections if used every few years to keep shrubs and other large plants from establishing and blocking the path. Many of the trails were adequately marked; however, both the Seven Bridges Trail and Johnny Martian's Trail needed some marking which was completed. Several problem areas were encountered on the various trails (Figure 3). The most common problem areas were large muddy permanent puddles that either blocked maintenance vehicles or foot traffic. Ruts were also common and often muddy. Occasionally, wet areas had small workarounds, but these side paths had also been used by vehicles, which created new ruts and areas for water to pool.

Seven Bridges Trail

Starting from the end closest to the Bill Wagner Campground, the Seven Bridges Trail has few issues (Figure 4). There are some posts that are missing the small eagle markers, but the trail is easy to follow. PA6 is a stand of woody young plants that blocks the trail; however, someone has since cleared a path around this stand to continue on the trail. Similar clearing once a year may help keep the stand from taking over this part of the trail. At the opposite end, the start of the trail is very swampy and easy to lose. This swampy portion stretches between PA3 and PAH4, and may be fixed through a series of slightly raised foot bridges or boardwalks. Note: PAH5 was a group of leaning trees that has since been removed. Orange paint was used to mark areas where the trail was easily lost and to delineate a section of trail that was created prior to this project (Figure 5).

Buffalo's Camp Trail

Buffalo's Camp Trail, starting at Lake Geneserath, has mild ruts and a few muddy areas (Figure 6). A very large tree that had been blocking the main trail was removed, though a path had been cleared as a work around large enough for vehicles to one side. Much of the trail after the

second culvert is clear of ruts and lacks problem areas. This trail also has a dense area of raspberry and blackberry bushes that could be trimmed periodically to keep them from growing into the trail. After the bridge, the trail does not get bad again until it passes through a swampy area with a stream and very tall grasses. Buffalo's Camp Trail is quite muddy at the north end connecting with Doty's Trail and Camp Three Trail, and someone attempted to fix a few of these areas by cutting down small trees and laying them across the trail making it difficult for hikers to walk over.

There is some disagreement between the color of trail markers and color of trails on the trail map used for reference (Figure 1). Blue and orange markers are on the trails, but not necessarily along the trails labeled blue and orange on the map.

Camp Three Trail

The Camp Three Trail begins as a gravel road and is passable with a vehicle for most of its length. After the intersection with the Johnny Martin's Trail and Greene's Lake Trail, however, it has a series of large and muddy permanent puddles (Figure 7). Many of these are deeper than one would expect, or have soft mud bottoms. PA16, marked with PA16B and PA16E, is a long, muddy rut running down a slight hill, and makes the trail impassable from the south.

Middle Perron's Trail

The Middle Perron's Trail is completely passable by maintenance vehicle and has few problem areas (Figure 8). There are a couple of large and permanent puddles along its length. After a period of heavy rain, they may become difficult to hike around. The largest and perhaps easiest of these to fix is PA58.

Doty's Trail

Doty's Trail is also passable with a maintenance vehicle. The problem areas are large and permanent puddles, but these do not stop a vehicle and can be hiked around when the water is low. The largest area of concern is a long stretch of trail right before the intersection with Blue Trail, marked by PA19B and PA19E, which has deep ruts (Figure 9). This section is around 500 ft. long, but does not necessarily impede vehicles.

Johnny Martin's Trail

Beginning from the west, Johnny Martin's Trail has a series of puddles that do not impede driving, but may be difficult to hike around (Figures 10 and 11). The worst of these is PA21, as it has been widened by frequent use and an alternative workaround that has also become part of the problem. A large section of this trail after the intersection with Middle Perron's Trail is in good condition. Here, the only problems encountered were overgrown berry bushes and branches reaching into the trail, which were trimmed back. Around PA37, the trail is largely unable to be driven due to soft muddy ruts and soon after narrows to passage by foot traffic only. This area is marked as PA38B and PA38E as it runs through an open wet area with standing water. Logs have been placed in many areas to help hikers pass these areas, but a small foot bridge may provide a better fix. After this, the trail widens more and returns to woodlands again. Another issue is not encountered until PA40B and PA40E. After this point, the trail is largely overgrown with tall grasses and young woody shrubs, and has many deep wet sections. This was the muddiest hike of all of the trails, however, it is important to note that on a later date, the trail had largely dried up and was easy to hike through, with only the tall thick areas of grasses causing any issue. After the culvert, the trail then has very few issues and eventually turns into Johnny Martin's Trail, which is not portrayed well on the map used for reference. Much of this trail was overgrown with grasses, and would benefit from periodic clearing or more foot traffic to keep the plants at bay. Many of the colored marks on the trees

had been covered with gray spray paint just west of the culvert. The main trail is now marked with red spray paint from the intersection with Middle Perron's Trail to the culvert.

Blue Trail

The Blue Trail begins as a small gravel road that leads to a small parking area. Many of the problem areas near the beginning of this trail are deep ruts, with mild stretches of ruts in between (Figures 12 and 13). After the last of these ruts, the trail is in good condition until further on. There are many side trails branching off the Blue Trail, and maps used for reference were inconsistent. There is a Y intersection on this trail that leads to a number of different footpaths. Some of these side trails may make it difficult to stay on the main path.

Shortly after the 100ft bridge, there is a muddy section, but then the trail clears up again until it splits at the directions sign. The only issues up until this point had been branches that were trimmed back and a large tree that had blocked much of the trail. Much of this trail was trimmed and enough of the tree was removed to continue the path.

In many of the open sections of this part of the Blue Trail, berry bushes are beginning to establish and are growing directly in the trail. Many of these were trimmed, but this may need to be monitored to keep the trail open. The part of Blue Trail that splits to meet with Buffalo's Camp Trail is a narrow path with a few muddy sections, but is largely able to be hiked. This section was a little overgrown with branches, but was trimmed. The opposite side of the split meets up with Doty's Trail and has many muddy problem areas; however, most of these could be hiked around.

French Bay Road, Cable's Bay Trail, Greene's Lake Trail

No problem areas were located on the remaining trails at French Bay Road, Cable's Bay Trail, and Greene's Lake Trail. These trails were in good condition and needed little to no maintenance.

Invasive species

Aside from spotted knapweed, the only other invasive species that we encountered on the trails was European swamp thistle (EST). EST was found to be prevalent on many of the trails throughout the island (Figure 14). Some trails only had a few small groupings of plants, while others had large pockets and individual plants throughout the entire length of the trail. Many of the waypoints mark large groupings of EST, which may help direct where to begin control efforts if desirable.

Structures

Many of the structures found on the trails were in fair condition. There are 13 bridges and 7 culverts on the trails, most of which are either on the Blue Trail or the Seven Bridges Trail (Figure 15).

Seven Bridges Trail

The Seven Bridges Trail has eight different bridges, one of which is a foot bridge (Figure 16). A tree had fallen on BRG5 and has since been removed, but requires repair. It had appeared as though someone placed a few of the spare boards nearby next to the bridge to allow for an ATV to cross, which is marked FRD1. The other bridges were in no need of repair.

Buffalo's Camp Trail

Buffalo's Camp Trail has two culverts and one bridge, as well as one section where the trail crosses a stream (Figure 17). Both culverts are clear and undamaged; however CUL1 appears

to have some erosion. This erosion looks to have been made by someone trying to drain the low spot of the trail directly above the culvert, but this will most likely only erode more and become a larger problem. The bridge on this trail only has light cosmetic damage from an ATV. The stream crossing is past this bridge and may be fixed with a small bridge.

Johnny Martin's Trail

There are two culverts on Johnny Martin's Trail, one of which is located along the road, while the other is further along (Figure 18). Both are in good repair.

Blue Trail

The Blue Trail has two bridges, both of which are in good condition. The 100ft bridge, marked BRG11, has a few warped boards, but is passable (Figure 19). There are also three culverts on this trail. The first culvert, CUL5, is found along the gravel road leading from the main road to the parking area for the trail, and is clear and uncrushed. The remaining two culverts, CUL6 and CUL7, however, are both in bad condition. The ground around CUL6 has collapsed and obscures the culvert itself, making it difficult to see if the culvert is collapsed, rusted or plugged. The ground at both ends is wet; however, it appeared as though there was no movement of water through the culvert. CUL7 allows for a nearby wet area to drain, but has collapsed from above, making a large dip in the trail. It is possible that this culvert is made from a hollowed log, and should be replaced.

French Bay Road and Cable's Creek

The bridges on both French Bay Road and Cable's Creek are also in good condition (Figures 20 and 21). However, there is a small occurrence of erosion at the bottom of the foot bridge on French Bay Road that should be monitored.

Discussion:

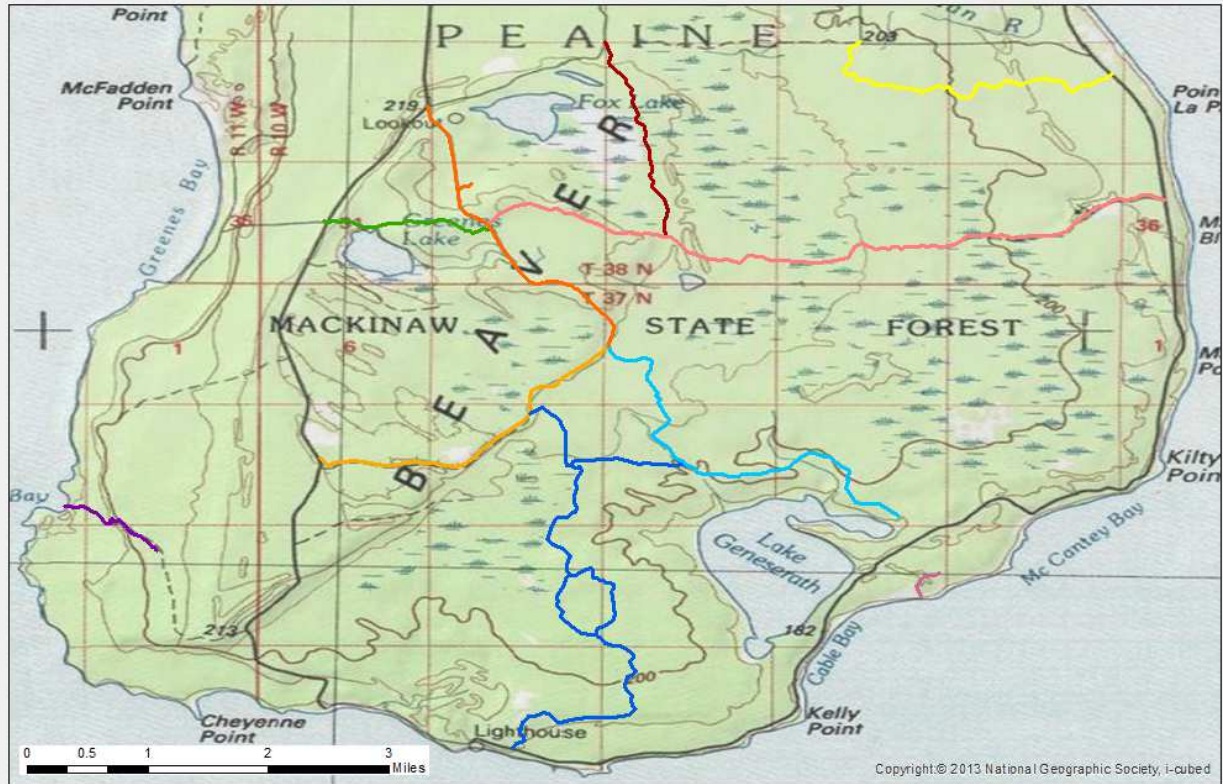
This project was intended to survey the trails and indicate any problem areas that could be fixed. Many of the trails are in good condition, but have certain sections that host a number of problem areas. These sections may inhibit or discourage people from using the trails in their entirety. Also, some sections of trail did not appear to be widely used or maintained. The most prevalent invasive species were spotted knapweed and EST, both of which can be found throughout the island. Many of the structures found on the trails are in good condition, with only one bridge and two culverts needing repairs. Concerning side trails and foot paths that branch off from the main trails, if it is desired to have a map containing these branches, it may be best to have these mapped out in the winter using a GPS and snowmobile. This would allow the process of mapping to be much faster than on foot, but would also mean that any issues, such as muddy areas, would not be able to be assessed. However, a complete map of the trails and side trails may be beneficial for safety and management purposes. Furthermore, the side trails exemplify the beautiful scenery that would otherwise be inaccessible, such as the footpath which connects the Blue Trail to a unique area on Lake Geneserath.

The next step will be to address the problem areas laid out in this report. This may be best approached from the perspective of what the most important aspect of the trails is. Some areas do not pose a problem to hikers, birders, and hunters, but may prevent the passage of maintenance vehicles. If it's decided that access to vehicles for maintenance is not a high priority, then these problem areas can be set aside until the areas that inconvenience foot traffic are dealt with. Some trails may also have higher priority than others, as they are more frequently used by the community, and so these trails would be important places to begin work.

Figures



Figure 1: Trail map used for reference

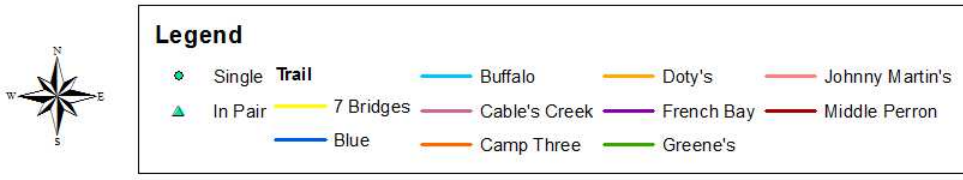
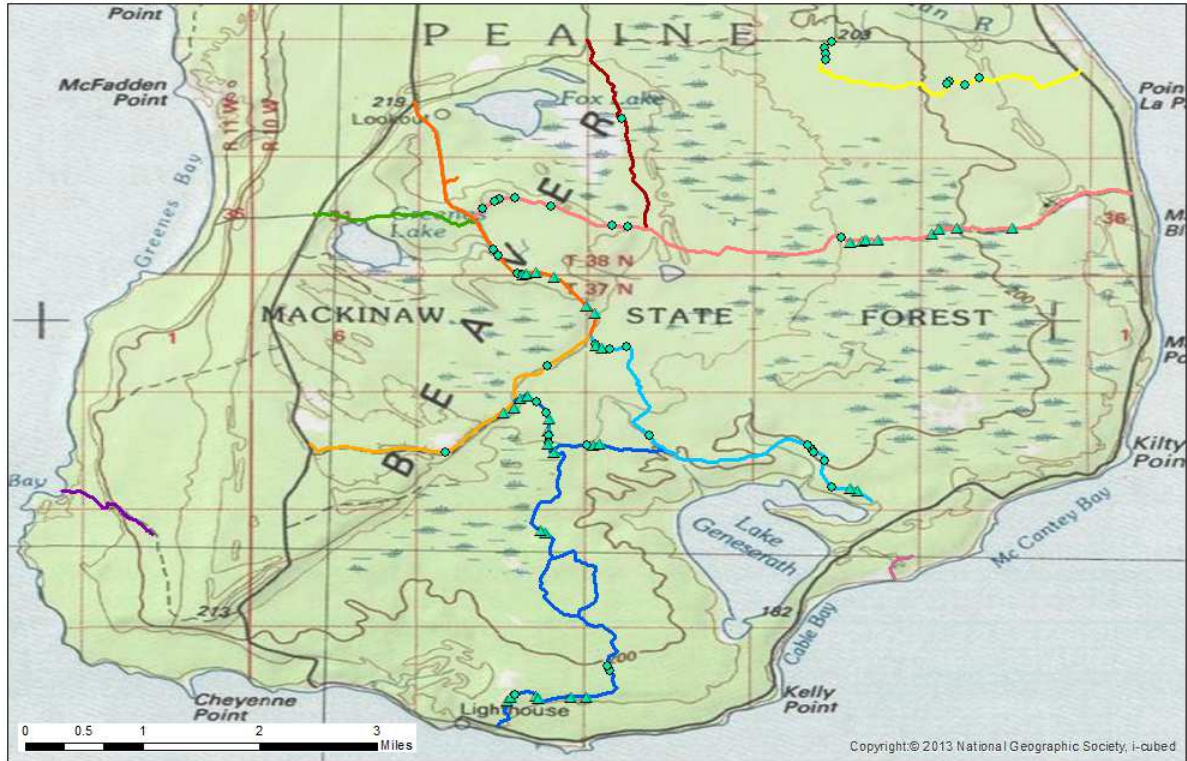


Legend

Trail	Color	Trail Name
Buffalo	Light Blue	Buffalo
Doty's	Orange	Doty's
Johnny Martin's	Pink	Johnny Martin's
7 Bridges	Yellow	7 Bridges
Cable's Creek	Purple	Cable's Creek
French Bay	Dark Purple	French Bay
Middle Perron	Brown	Middle Perron
Blue	Dark Blue	Blue
Camp Three	Red	Camp Three
Greene's	Green	Greene's

Data collected by DNR Wildlife Assistants
 Base map obtained through ArcMap
 Data collected and created: June-July 2016

Figure 2: Trail map created in 2016.



Data collected by DNR Wildlife Assistants
 Base map obtained through ArcMap
 Data collected and created: June-July 2016

Figure 3: Problem areas along Beaver Island trails

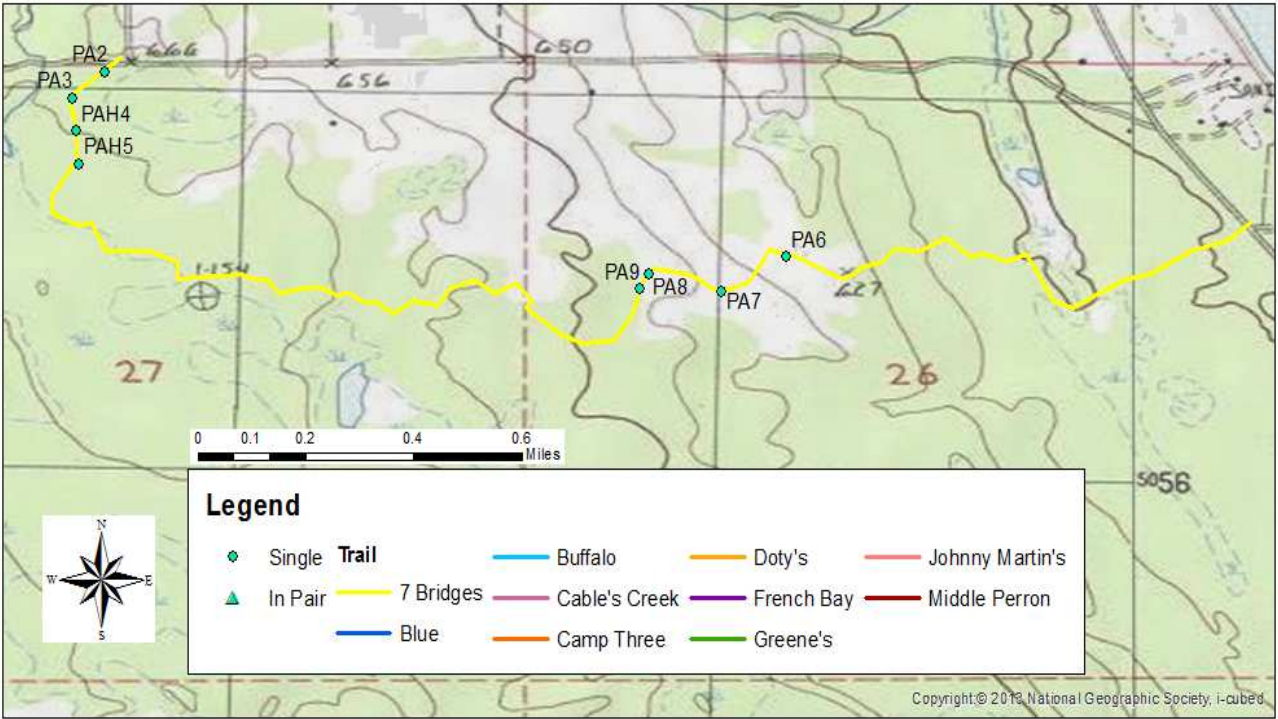


Figure 4: Problem areas along the Seven Bridges Trail

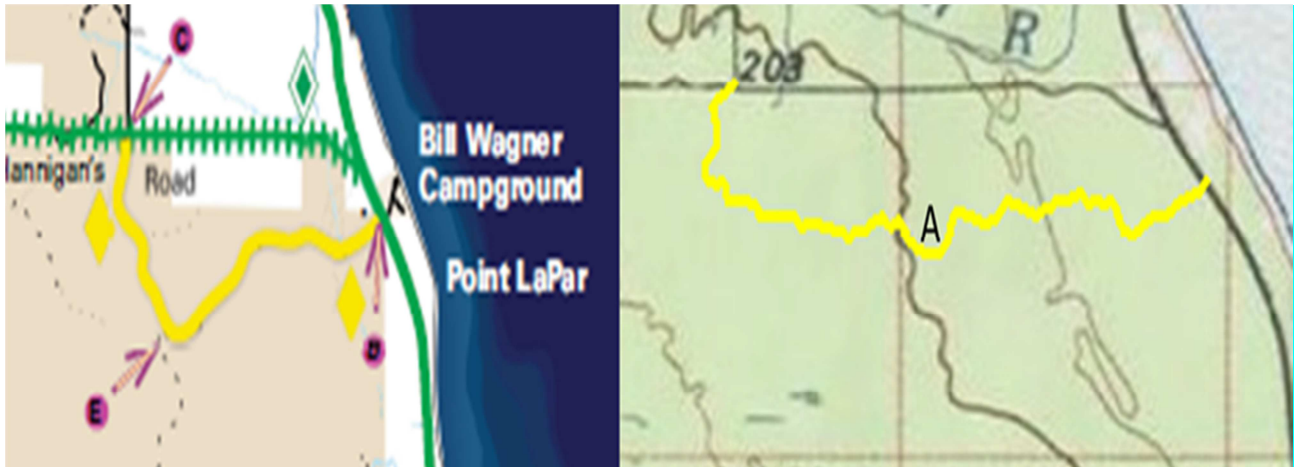


Figure 5: Seven Bridges Trail modification based on inventory

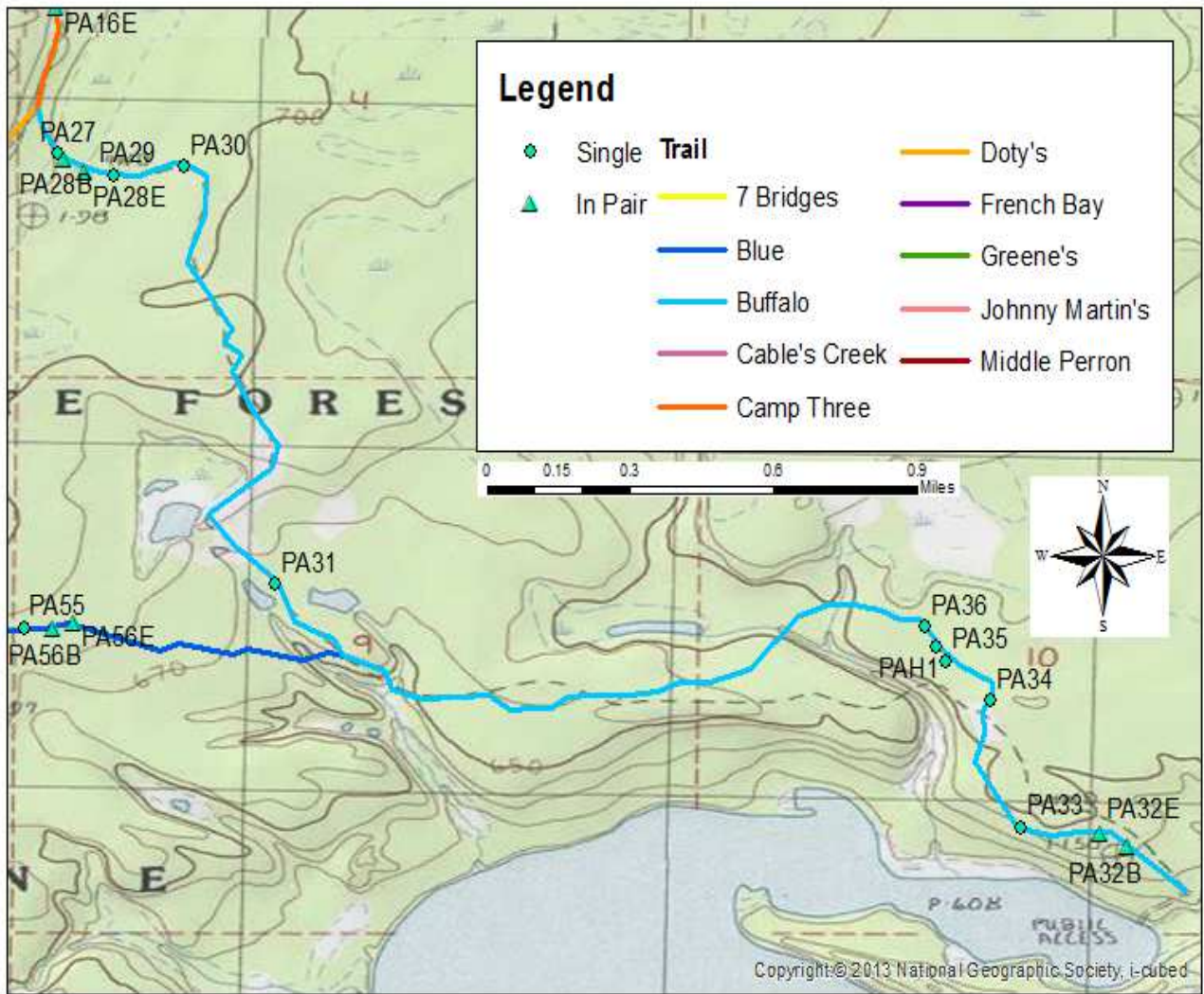


Figure 6: Problem areas along Buffalo's Camp trail

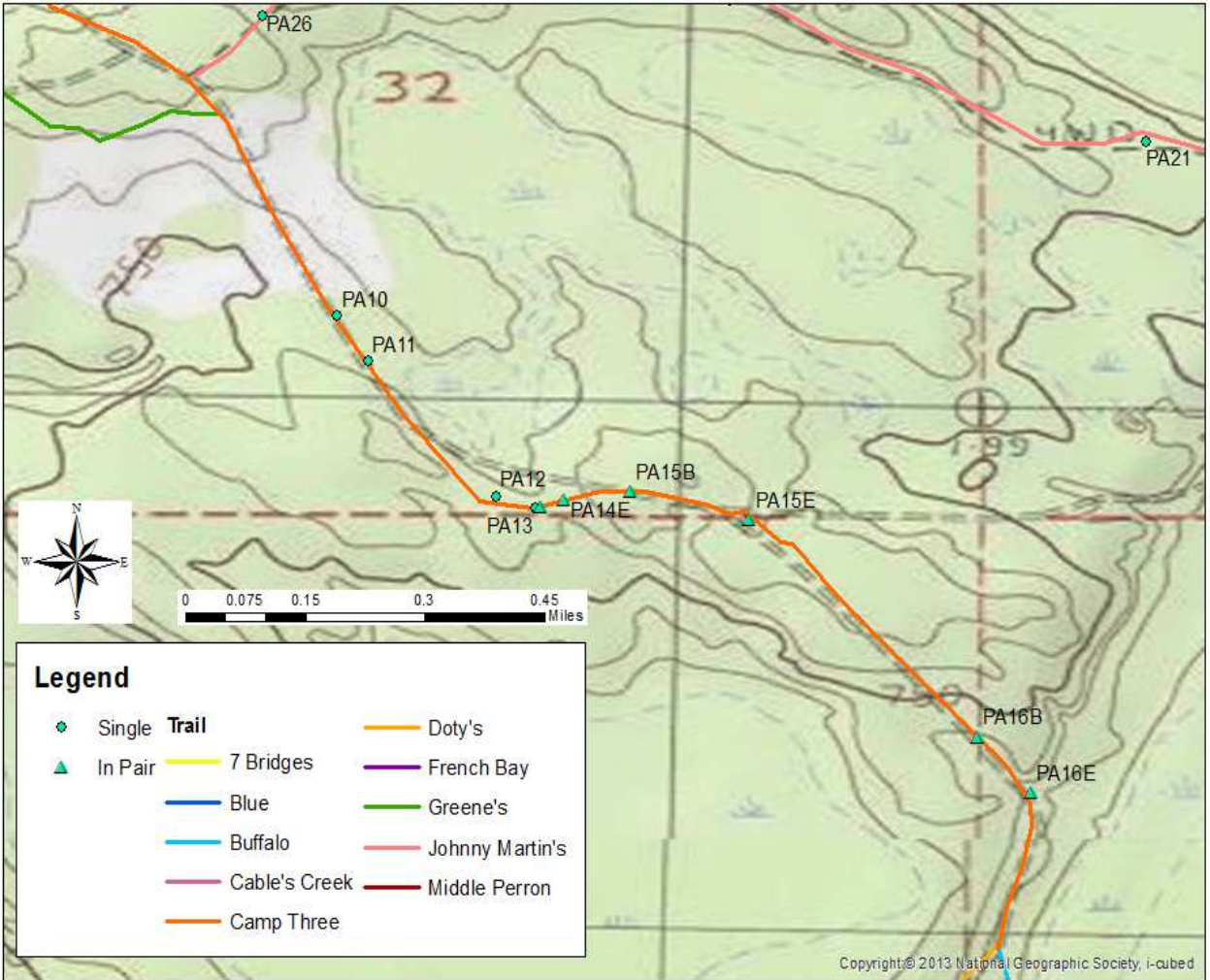


Figure 7: Problem areas along Camp Three trail

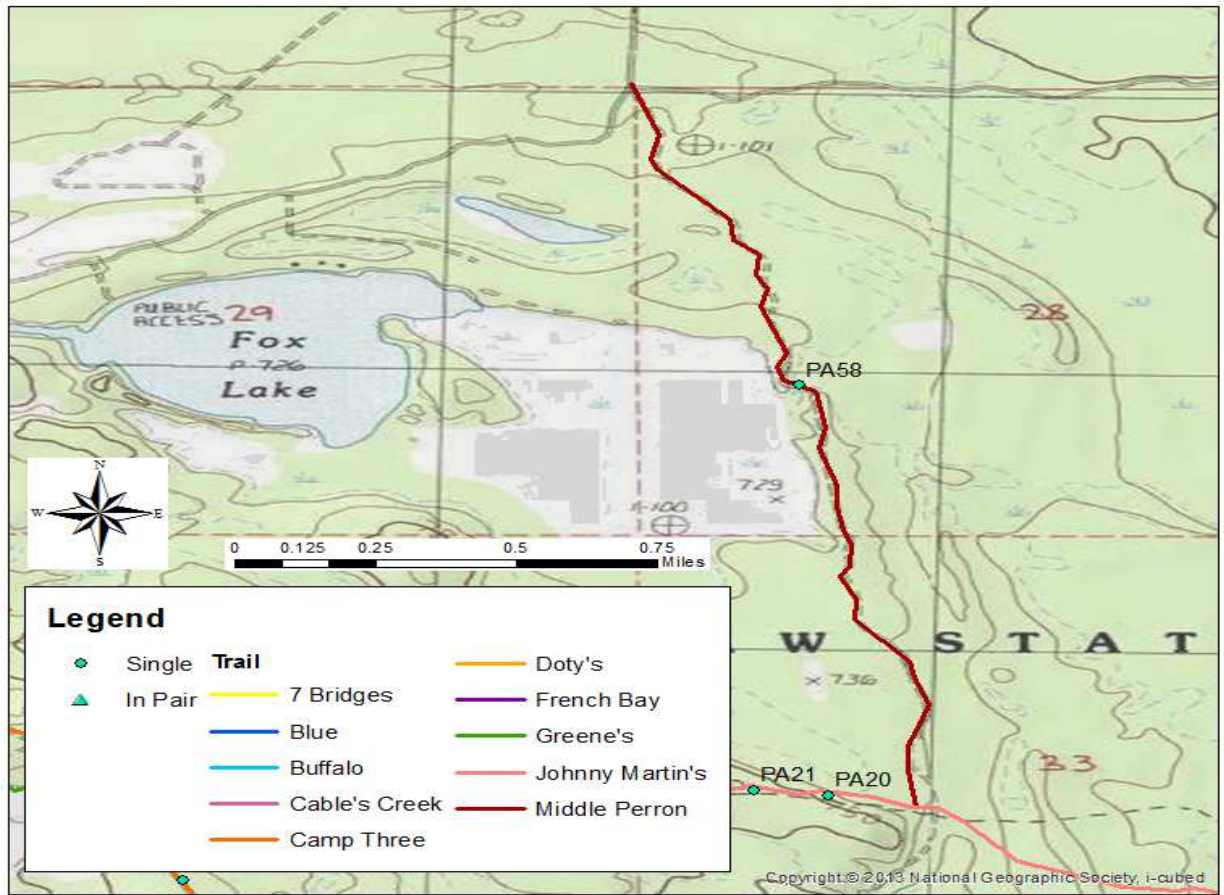


Figure 8: Problem areas along Middle Perron's trail

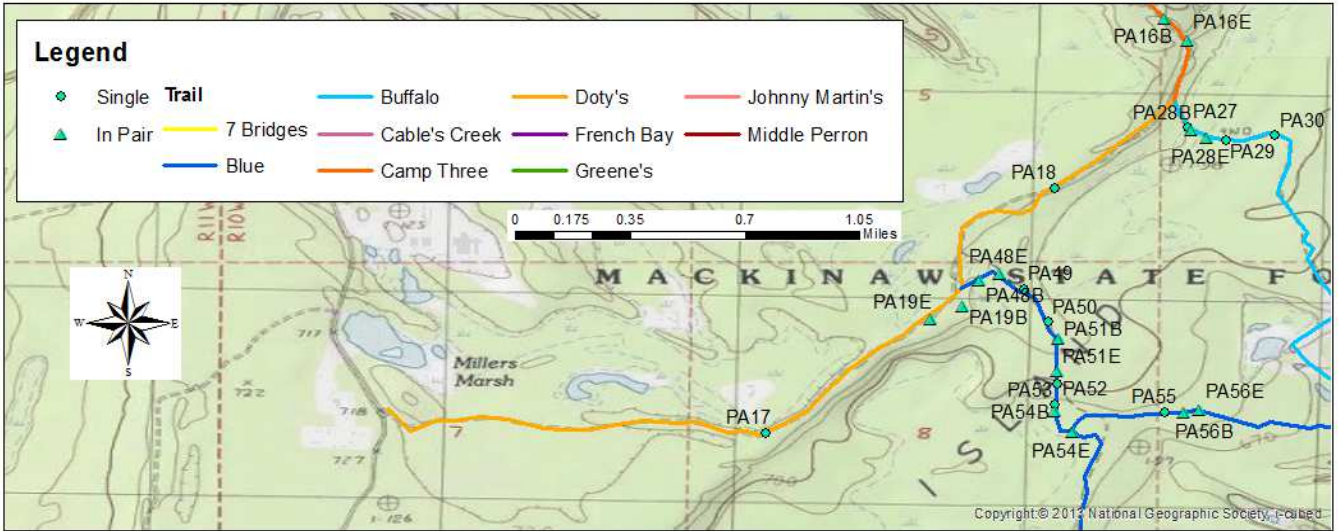


Figure 9: Problem areas along Doty's trail

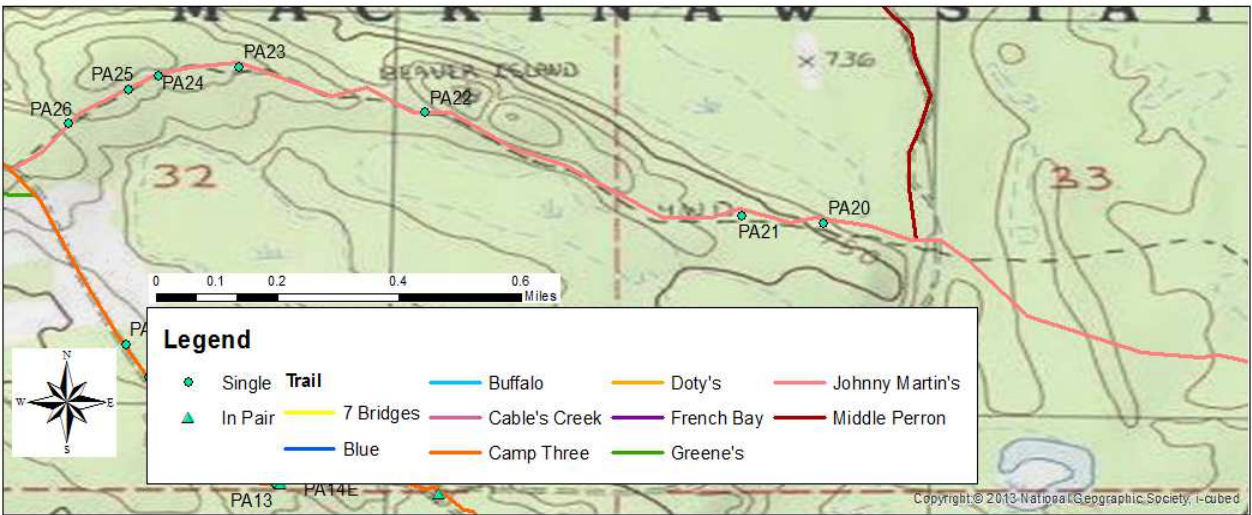


Figure 10: Problem areas along the western half of Johnny Martin's trail

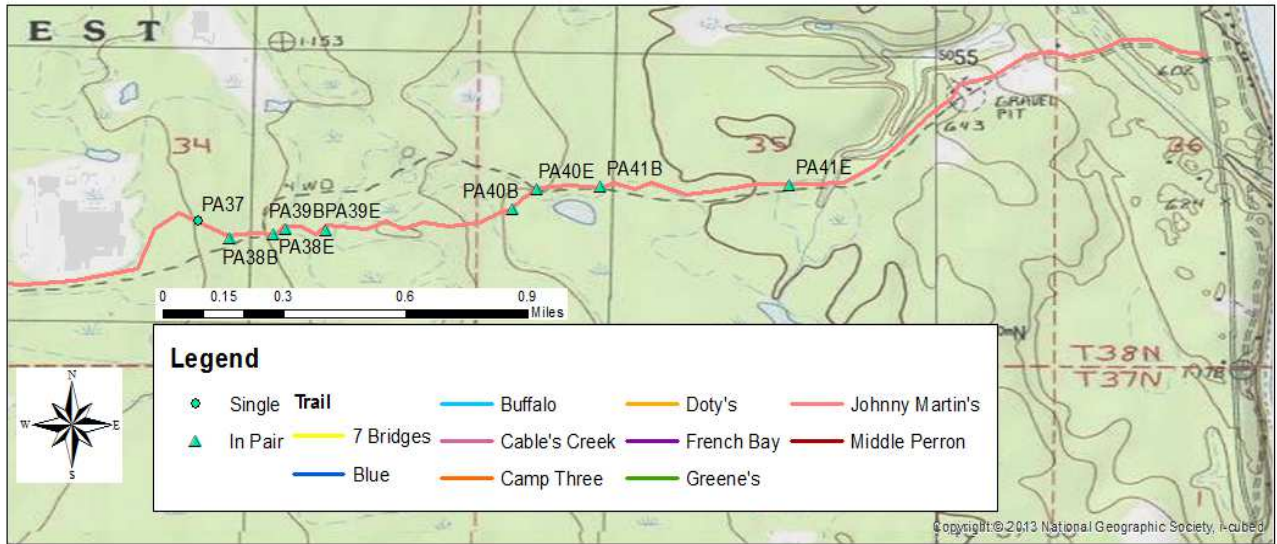


Figure 11: Problem areas along the eastern half of Johnny Martin's Trail

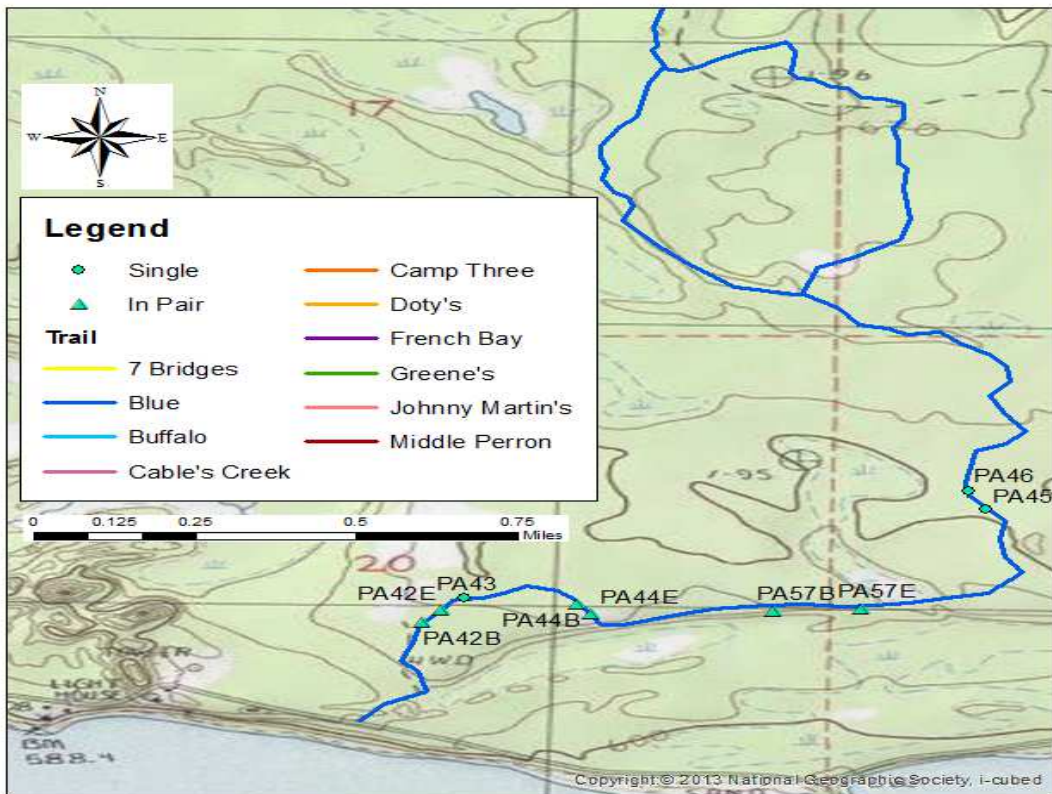


Figure 12: Problem areas along the southern half of Blue Trail

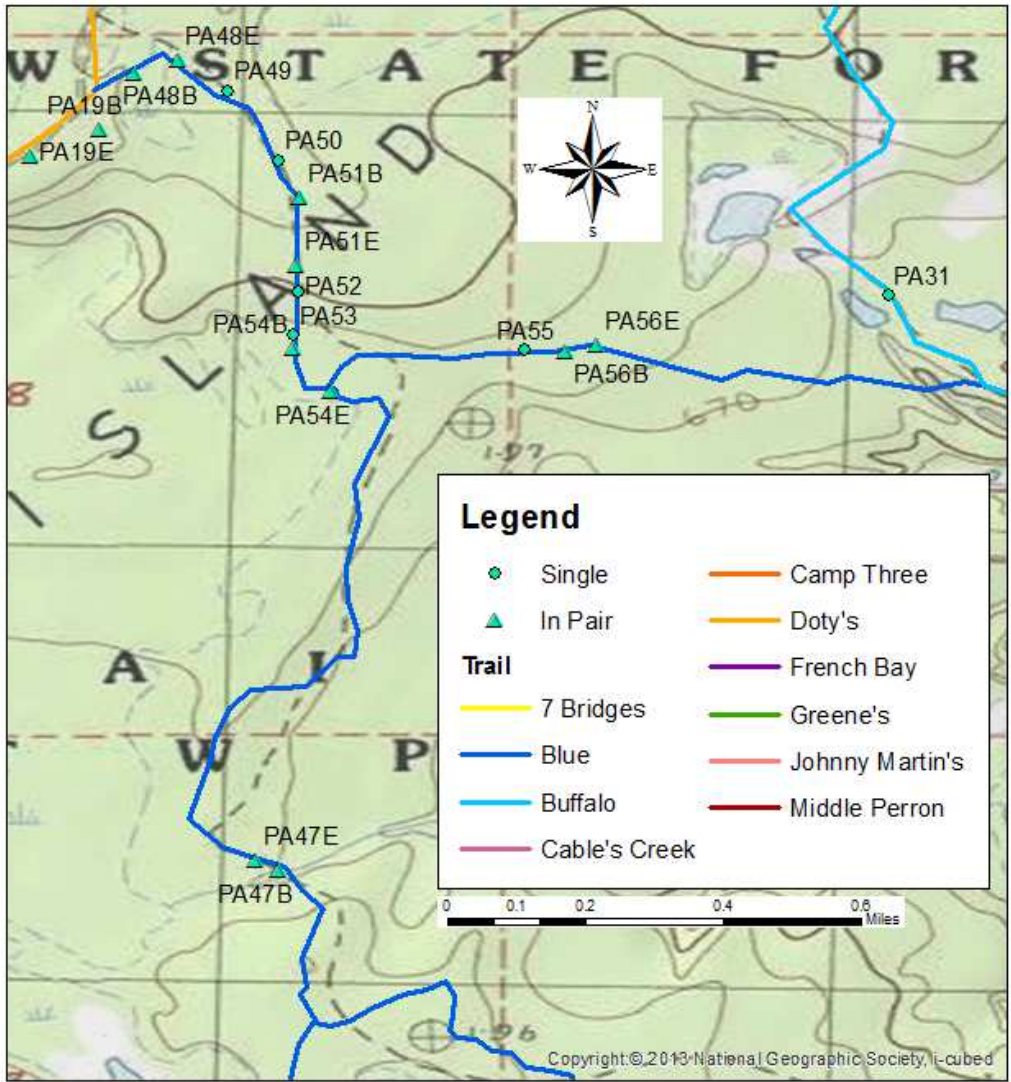
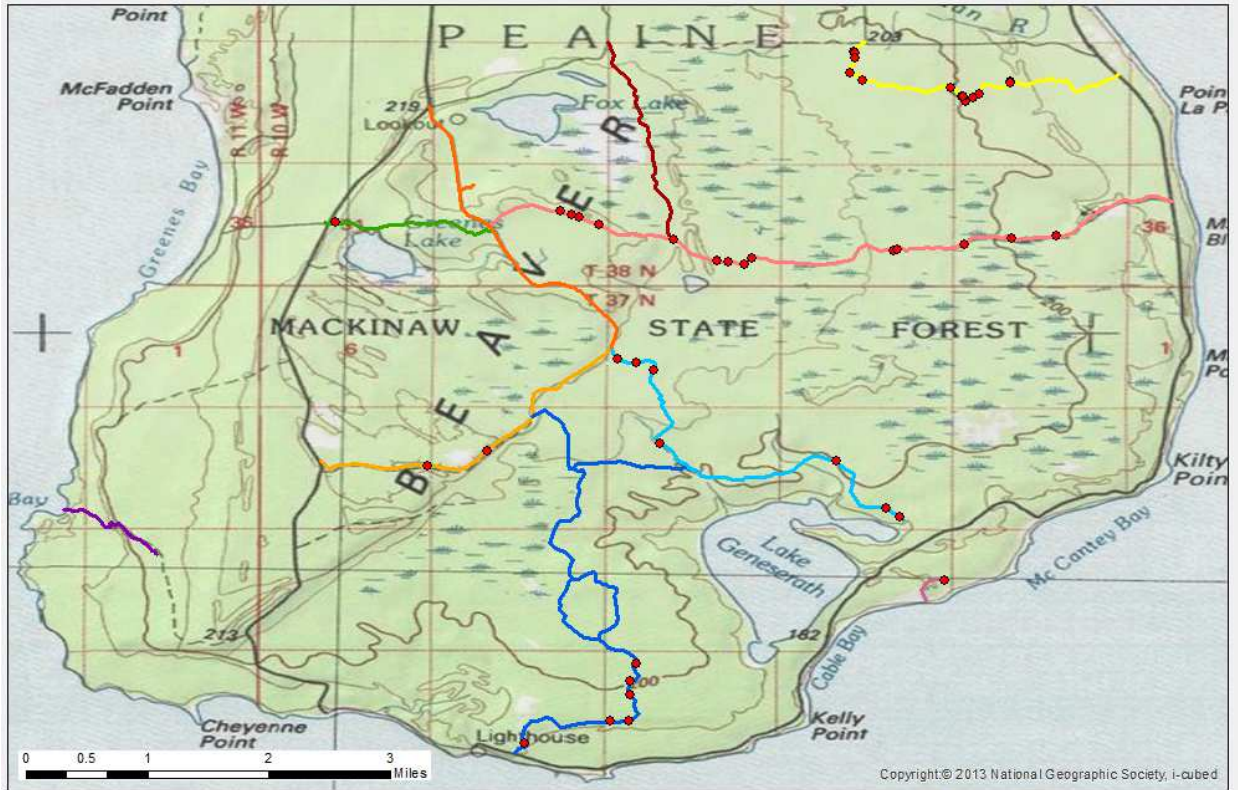


Figure 13: Problem areas along the northern half of Blue Trail



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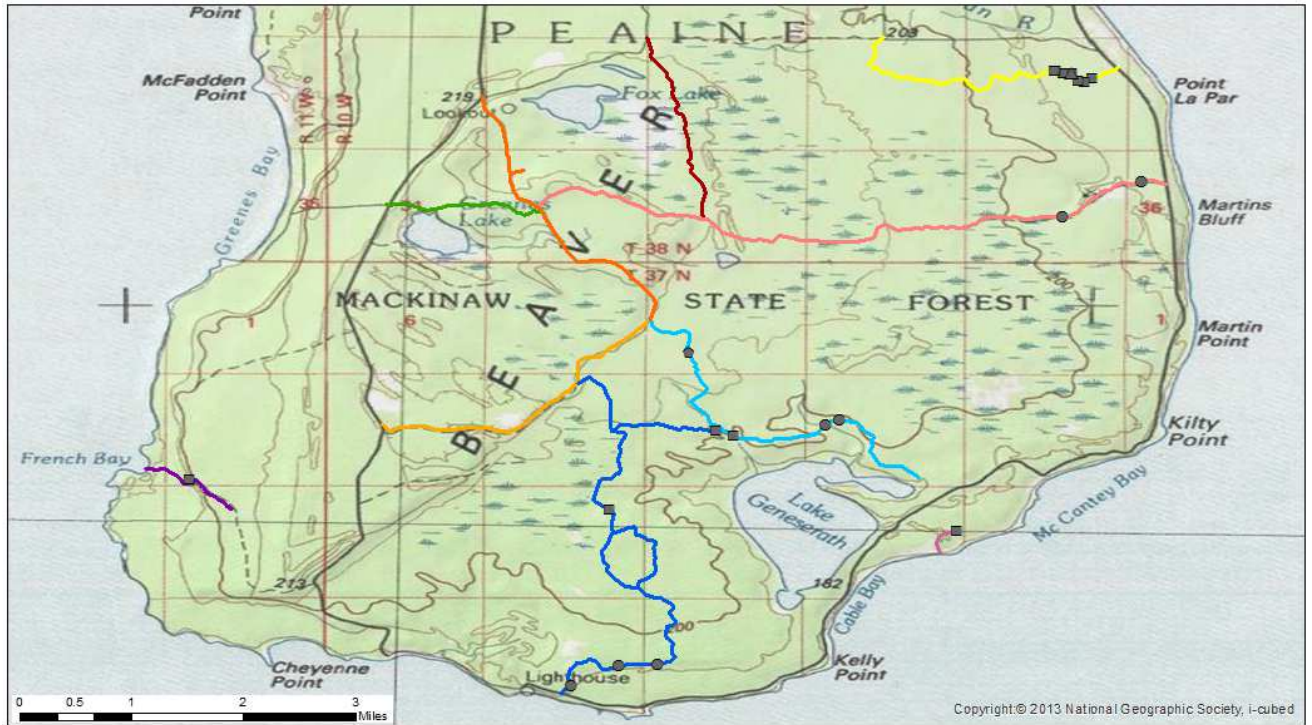


Legend

- Invasive Species
- Blue
- Camp Three
- Greene's
- Buffalo
- Doty's
- Johnny Martin's
- 7 Bridges
- Cable's Creek
- French Bay
- Middle Perron

Data collected by DNR Wildlife Assistants
 Base map obtained through ArcMap
 Data collected and created: June-July 2016

Figure 14. Invasive species occurrences along trails



Legend	
Structures	Trail
■ Bridge	— Cable's Creek
● Culvert	— 7 Bridges
▲ Ford	— Camp Three
◆ Stream crossing	— Blue
	— Buffalo
	— French Bay
	— Greene's
	— Johnny Martin's
	— Middle Perron

Data collected by DNR Wildlife Assistants
 Base map obtained through ArcMap
 Data collected and created: June-July 2016

Figure 15. Structures found along trails

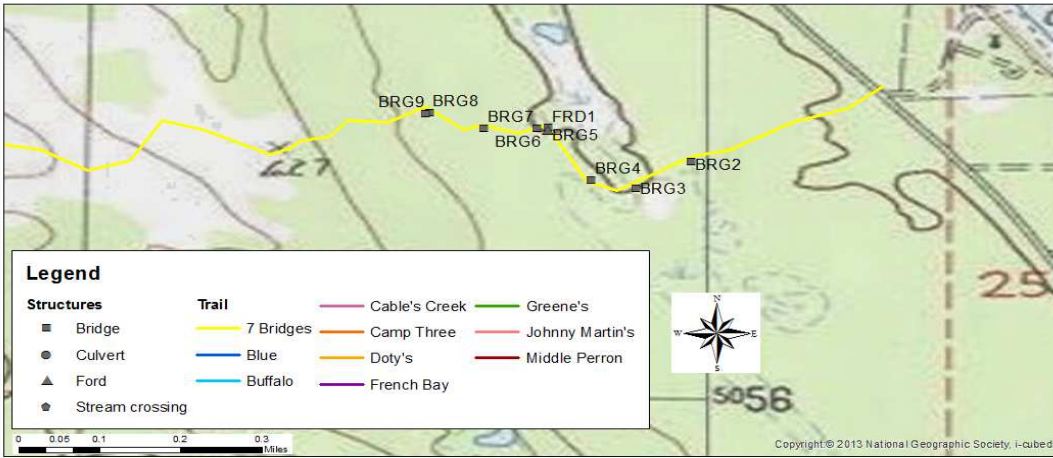


Figure 16: Structures found along the Seven Bridges Trail

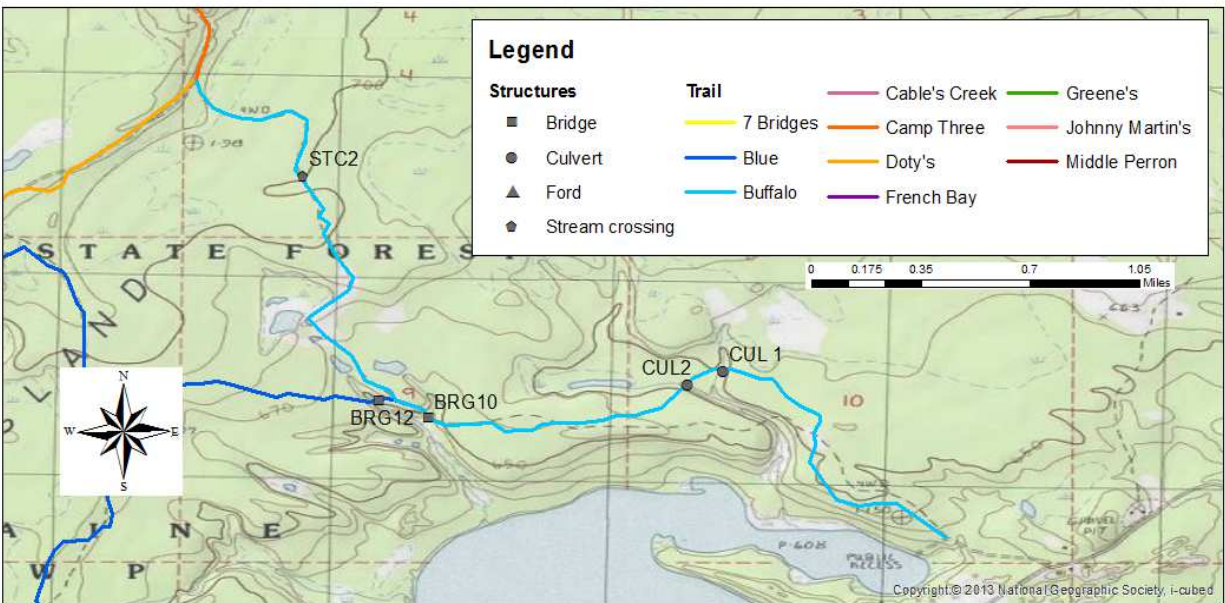


Figure 17: Structures found along the Buffalo's Camp Trail

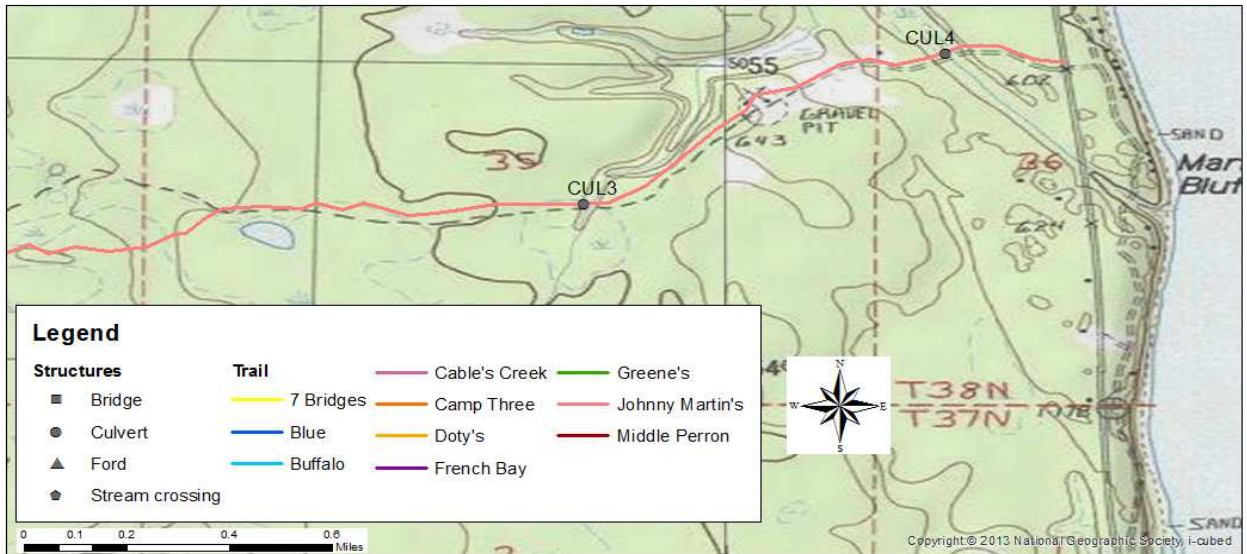


Figure 18: Structures found along the Johnny Martin's Trail

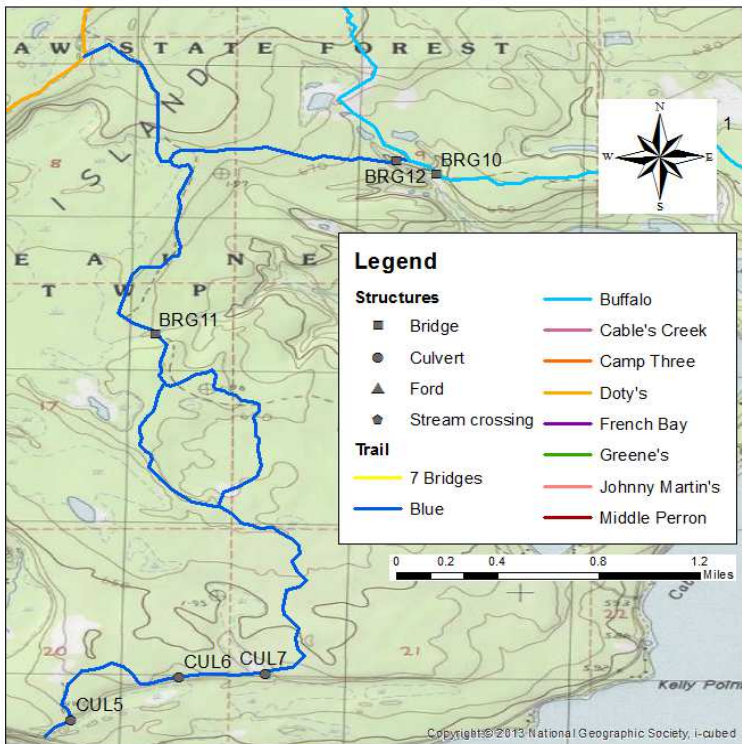


Figure 19: Structures found along the Blue Trail

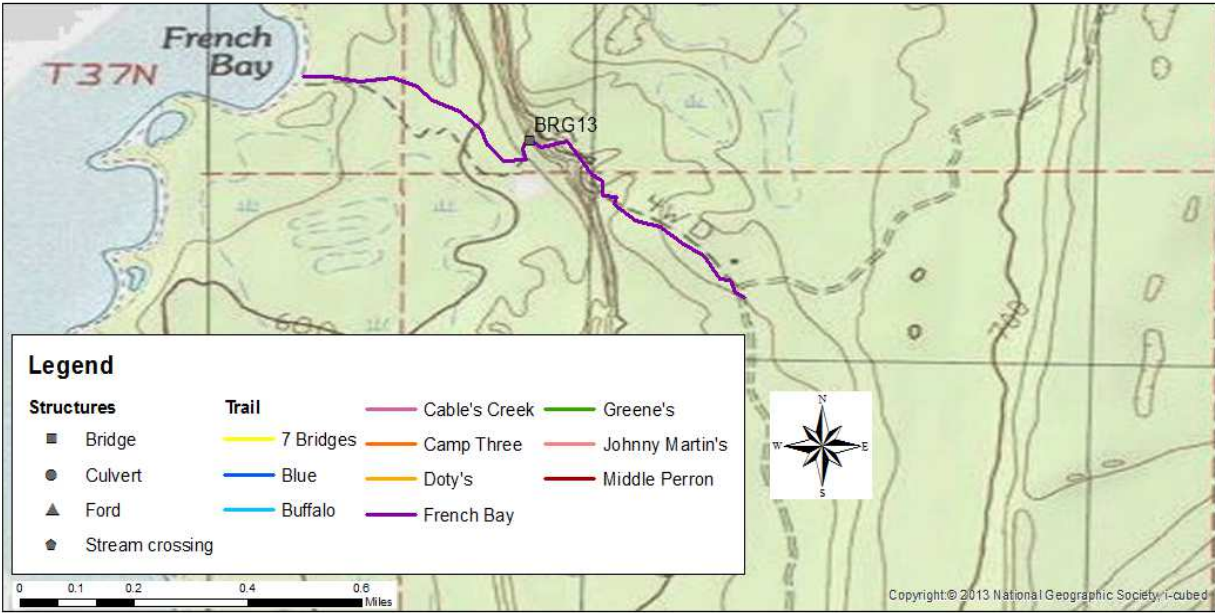


Figure 20: Structures found along the French Bay Trail

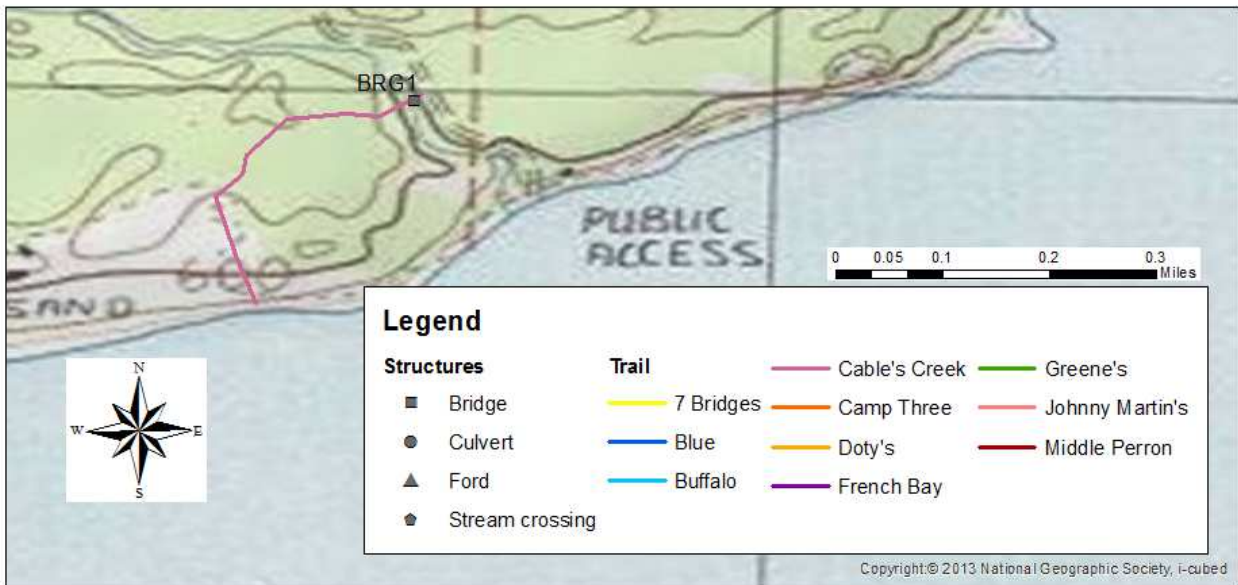


Figure 21: Structures found along the Cable's Bay Trail