2020 Survey of Aquatic Plant Species in Mississippi Waterbodies

A report submitted to the Mississippi Aquatic Invasive Species Council

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Executive Summary

Conclusions

- Only two lakes (George and Lower) and three rivers/creeks (Homochitto and Little Hatchie rivers and Hickahala creek) in this survey had a plant assemblages entirely composed of native aquatic and riparian plant species.
- There were 40 new plant species observed in the lake survey; of which, 6 were non-native species (all riparian).
- Overall, there were 119 aquatic and riparian plant species observed in the river/creek surveys; of which, 18 were non-native.
- Alligatorweed (*Alternanthera philoxeroides*: 7 waterbodies), water hyacinth (*Eichhornia crassipes*: 4 waterbodies, and Chinese tallow (*Triadica sebifera*: 4 waterbodies) were the most widespread non-native aquatic plant species found in lakes.
- Alligatorweed (*Alternanthera philoxeroides*: 14 waterbodies), Chinese tallow (*Triadica sebifera*: 7 waterbodies), and common reed (*Phragmites australis*: 5 waterbodies were the most widespread non-native aquatic plant species found in rivers and lakes.

Recommendations

- Continue monitoring waterbodies within Mississippi for the presence of non-native aquatic plant species.
- Implement early detection, rapid response (EDRR) management options on populations of those non-native aquatic plant species known to be in Mississippi, specifically small isolated populations before they spread to other sites.
- Determine suitable goals for management of large populations of non-native aquatic plant species.
- Implement management strategies on those populations of native species that have grown to nuisance levels in Mississippi waterbodies.

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Introduction

The state of Mississippi (MS) has significant water resources that, many times, are impaired by invasive aquatic and wetland plant species. Impaired waterbodies can then act as source populations to introduce non-native vegetation to other waterbodies in the region. The likelihood of being a source population increases if the waterbody in question has a high frequency of boat traffic. Many times, small waterbodies that have significant amounts of boat traffic are overlooked due to the size of the waterbody. Approximately 192,050 acres of MS are covered by small waterbodies (<100 acres; Willis and Neal 2012) which is greater than the five largest reservoirs (117,840 acres; Ross Barnett, Sardis, Grenada, Enid, and Arkabutla reservoirs) in the state combined (USACE 2017). The state has more small waterbodies (> 160,000) and a greater density (1 per 0.51 mi^2) of small waterbodies than any other state in the MidSouth (MS, AL, AR, TN, LA, and GA) region of the United States (Willis and Neal 2012).

Many waterbodies in the state that receive the highest amount of traffic are those owned and managed by the state of MS (via the Mississippi Department of Wildlife, Fisheries, and Parks - MDWFP). Other lakes that receive a significant amount of traffic are federal lakes operated by the US Fish and Wildlife Service (USFWS), the US Forest Service (USFS), or the US Army Corps of Engineers (USACE). Aside from state and federally operated waterbodies, there are also waterbodies that are operated by private entities (e.g. Pat Harrison Waterway District) or homeowners associations within the state. Many of these waterbodies are known to have problematic vegetation while others have never been surveyed.

Two federally listed noxious weeds have been found within the state: *Hydrilla verticillata* (Hydrilla or Waterthyme) and *Salvinia molesta* (giant salvinia). Additionally, torpedo grass (*Panicum repens*) is another invasive species that is listed on the MS noxious weed but not the federal list; torpedo grass is known to cause localized problems in the waterbodies it infests.

To date, only two statewide surveys of small and medium sized (100 – 7,500 acres) waterbodies in MS has been conducted within a single growing season (Turnage and Shoemaker 2018; Turnage et al. 2019). However, those surveys did not visit all the public waterbodies in the state in this size class. Additionally, only Turnage et al. (2019) surveyed any flowing system (Tennessee-Tombigbee Waterway) in MS. The purpose of this work was to survey small and medium sized lentic waterbodies and flowing (lotic) waterbodies (i.e., rivers and streams) for the presence of invasive or problematic aquatic vegetation that were not visited in 2017, 2019, or that warranted a revisit.

Methodology

Water bodies were selected based on a combination of size, frequency of boat traffic, location within the state, and previous survey status. All waterbodies surveyed were within the geographic boundaries of the state of Mississippi. A total of 11 lakes and 33 rivers/streams (hereafter lotic waters) were surveyed from June through August 2020. Surveyed waterbodies were located across the state (Figures 1 and 2).

Lentic waterbodies were surveyed using a random walk (semi-quantitative) survey methodology. Survey points were taken by boat at intervals ranging from 150-2,000 m, depending on overall lake shoreline length (Figure 2). In general, increased length of shoreline resulted in increased distances between sampling points. Survey points were taken in the littoral zone of each waterbody, which was determined through Secchi readings (3 times the average secchi depth). At each survey point the GPS location and water depth were recorded. Plant assemblages at each point were documented via species presence for all aquatic plants (submersed rooted, floating leaved, emergent, and free-floating submersed growth forms; Sculthorpe 1967) along with certain macrophytic algae (i.e., *Nitella* spp., *Chara* spp.). All visible plants within 3.05 m (10 ft) of any part of the boat were recorded. At each survey point, a plant rake was deployed to determine the presence and identity of submersed plants. Plants that were observed on a waterbody but not within a sampling point were noted.

Lotic waterbodies were surveyed in one of two methods: boat surveys for larger or isolated systems (river deltas and coastal rivers) or shoreline assessment. Boat based survey methodology was similar to that used in lentic waters. Shoreline surveys were conducted by accessing boat launches and road crossings over lotic waters. At each survey point, a visual assessment was conducted for emergent and floating species along a stretch of shoreline and/or by deploying a plant rake for assessment of submersed species. Surveys of lotic waters were subdivided into eight of the 10 drainage basins listed in the MS Aquatic Invasive Species Management Plan (Loshbaugh et al. 2013); smaller drainages flowing to the Tennessee and Mississippi River Basins were not surveyed.

Species diversity and evenness were assessed and reported for lentic and lotic waterbodies (2 separate analyses; R Core Team 2020).

Plant identification followed Godfrey and Wooten (1981a, b) and naming is consistent with the USDA-PLANTS database (plants.usda.gov).

Species lists for each waterbody were compiled, including total points surveyed, percent of littoral zone vegetated, points present, and percent frequency per species and the native/non-native status of each species.

Results and Discussion

Lentic Waters

Columbus Lake (USACE):

Columbus Lake (33.52474, -88.47202) was surveyed from June 10-12, 2020. The three (3) most common species by presence were 1) *Taxodium distichum* (present at 50.9% of points), 2) *Zizaniopsis miliacea* (present at 50.9% of points), and 3) *Justicia americana* (present at 40.4% of points; Table 1). Non-native species (6 species) accounted for 14.3% of the 42 species observed. *Hydrilla verticillata*, a federal noxious weed, was not observed in Columbus Lake during this survey; however, it was observed in the lake by G. Turnage during the 2020 growing season as part of another project. *Salvinia molesta* (giant salvinia), another federal noxious weed, was observed in Columbus Lake at 8.8% survey points. *Panicum repens* (torpedograss), a state listed

noxious weed, was not observed at any points during this survey; but was observed elsewhere on the lake during the 2020 growing season. Torpedograss was found during the 2019 survey (Turnage et al. 2019). Of the 11 lakes surveyed, the Columbus Lake plant assemblage was the 2nd most diverse (42 species; Shannon-Weaver H Index) and ranked 5th in evenness.

Doyle Arm (USFS):

Doyle Arm Lake (33.272845, -88.790483) was surveyed on May 21, 2020. The most common species by presence were American white waterlily (present at 88.2% of points), watershield, American lotus, and bald cypress (each present at 58.8% of points; Table 2). Non-native species (3 species) accounted for 13.0% of the 23 species observed. The federal and state listed noxious weed Hydrilla was found at 1 survey point in Doyle Arm Lake. The aquatic invasive plant species brittle naiad (1 point) and Cuban bulrush (3 points) were also observed in Doyle Arm Lake. Of the 11 waterbodies surveyed, the Doyle Arm Lake plant assemblage was the 7th most diverse (23 species) and ranked 6th in evenness out of the 11 waterbodies surveyed.

Dalewood Shore (Private):

Dalewood Shore Lake (32.492671, -88.517768) was surveyed on June 19, 2020. The three (3) most common species by presence were 1) *Chara* (present at 32.3% of points), 2) *Paspalum spp.* (present at 29.0% of points), and 3) *Sacciolepis striata* & *Saururus cernuus* (each present at 25.8% of points; Table 3). Non-native species (4 species) accounted for 15.4% of the 26 species observed. Federal noxious weeds were not observed in Dalewood Shore Lake during this survey. Of the 10 waterbodies surveyed, the Dalewood Shore Lake plant assemblage was the 6th most diverse (26 species) and ranked 3rd in evenness out of the 11 waterbodies surveyed.

Horseshoe Lake (Private):

Horseshoe Lake (33.226083, -90.252542) was surveyed on June 26-30, 2020. The three (3) most common species by presence were 1) *Alternanthera philoxeroides* (present at 100% of points), 2) *Eichhornia crassipes* (present at 96.7% of points), 3) *Lemna minor* (present at 93.3% of points; Table 4). Non-native species (9 species) accounted for 23.7% of the 38 species observed. Federally and state listed noxious weeds were not observed in Horseshoe Lake. Horseshoe Lake ranked 5th in diversity (38 species; Shannon-Weaver H Index) and 10th in evenness out of the 11 waterbodies surveyed.

Lake George (Private):

Lake George (32.736873, -90.609116) was surveyed on July 1, 2020. The three (3) most common species by presence were 1) *Carya aquatica* (a riparian species present at 62.5% of points), 2) *Planera aquatica* (a riparian species present at 60.0% of points), 3) and *Foresteria acuminata* (another riparian species present at 47.5% of points; Table 5). Only native plant

species were observed in Lake George. Lake George ranked 10th in diversity (13 species; Shannon-Weaver H Index) and 7th in evenness out of the 11 waterbodies surveyed.

Little Eagle Lake (MDWFP):

Little Eagle Lake (33.140157, -90.360045) was surveyed on June 23, 2020. The three (3) most common species by presence were 1) *Eichhornia crassipes* (present at 100% of points), 2) *Nyssa aquatica* (a riparian species present at 88.9% of points), 3) and *Taxodium distichum* (present at 77.8% of points; Table 6). Non-native species (3 species) accounted for 50.0% of the 6 species observed. State and federally listed noxious weeds were not observed in Little Eagle Lake. Little Eagle Lake ranked 11th in diversity (6 species; Shannon-Weaver H Index) and 2nd in evenness out of the 11 waterbodies surveyed.

Lower Lake (USACE):

Lower Lake (34.406687, -89.803517) catches the tailwaters below Sardis Lake and was surveyed on June 22, 2020. The three (3) most common species by presence were 1) *Polygonum hydropiperoides* (present at 45.5% of points), 2) *Juncus effusus* (present at 36.4% of points), and 3) *Cephalanthus occidentalis* & *Sesbania herbacea* (each present at 31.8% of points; Table 7). Non-native species were not observed in Lower Lake. Lower Lake ranked 1st in diversity (46 species; Shannon-Weaver H Index) and 1st in evenness out of the 11 waterbodies surveyed.

Okatibbee Lake (MDWFP):

Lake Okatibbee (32.521112, -88.807738) was surveyed on June 16-17, 2020. The three (3) most common species by presence were 1) *Leersia oryzoides* (present at 86.6% of points), 2) *Alternanthera philoxeroides* (present at 71.6% of points), and 3) *Cephalanthus occidentalis* (present at 52.2% of points; Table 8). Non-native species (3 species) accounted for 7.7% of the 39 species observed in Lake Okatibbee. Lake Okatibbee ranked 4th in diversity (39 species; Shannon-Weaver H Index) and last in evenness out of the 11 waterbodies surveyed.

Roebuck Lake (USACE):

Roebuck Lake (33.479596, -90.269456) was surveyed on June 24-26, 2020. The three (3) most common species by presence were 1) *Taxodium distichum* (present at 92.0% of points), 2) *Planera aquatica* (a riparian species present at 56.0% of points), and 3) *Cephalanthus occidentalis* (present at 48.0% of points; Table 9). Non-native species (2 species) accounted for 11.8% of the 17 species observed. Roebuck Lake ranked 8th in diversity (17 species; Shannon-Weaver H Index) and 8th in evenness out of the 11 waterbodies surveyed.

Trace State Park Lake (MDWFP):

Trace State Park Lake (34.255036, -88.889951) was surveyed from June 15, 2020. The three (3) most common species by presence were 1) *Juncus effusus* (present 63.6% of points), 2) *Leersia oryzoides* (present at 57.6% of points), and 3) *Paspalum spp.* (a riparian species present at 42.4% of points; Table 10). Non-native species were not observed in Trace State Park Lake; it should be noted that many riparian species were located in the lake due to the recent drawdown that allowed these species to establish in habitat not normally suited for them. It is likely that the plant community of Trace State Park Lake will change significantly over the next year. Repeated surveys of this lake should be conducted to document this change. The lake at Trace State Park ranked 3rd in diversity (30 species; Shannon-Weaver H Index) and 4th in evenness out of the 11 waterbodies surveyed.

Wasp Lake (Private):

Wasp Lake (33.235523, -90.483924) was surveyed from June 24-25, 2020. The three (3) most common species by presence were 1) *Carya aquatica*, 2) *Foresteria acuminata* (each a riparian species present at 73.7% of points), and 3) *Brunnichia ovata* (a riparian species present at 44.7% of points; Table 11). Non-native species (1 species) accounted for 5.8% of the 17 species observed. Wasp Lake ranked 9th in diversity (17 species; Shannon-Weaver H Index) and 9th in evenness out of the 11 waterbodies surveyed.

Lotic Waters

North Independent Streams Basin (NISB):

Hatchie River: The Hatchie river rises in Union county, MS and flows north into TN; its tributary, the Little Hatchie river, joins it near Ripley in Tippah county, MS. Aquatic and riparian vegetation was surveyed at 4 points along the Hatchie River in Union, Tippah, and Alcorn counties, MS. The Hatchie river had a total of 16 plant species present; 2 of which were non-native riparian species (yellow nutsedge and Johnson grass). The most prevalent aquatic plants were Pennsylvania smartweed (75% of survey points) and American water willow (50% of points; Table 12). No true aquatic invasive plants were found at survey sites along the Hatchie river or the Little Hatchie River. The Hatchie river ranked 10th in diversity (16 species; Shannon-Weaver H Index) and 6th in evenness out of the 33 rivers/streams surveyed.

Little Hatchie River: Aquatic and riparian vegetation were surveyed at 3 points on the Little Hatchie river in Tippah county, MS. A total of 10 species encountered, all of which are native to MS. The most common aquatic plants were spike rush and lizards' tail (each found at 33.3 % of points; Table 12). The Little Hatchie river ranked 22nd in diversity (10 species; Shannon-Weaver H Index) and 13th in evenness out of the 33 rivers/streams surveyed.

Summary: No aquatic invasive plant species were encountered in the NISB. However, vegetation was only surveyed at 7 points across the basin on the Hatchie and Little Hatchie rivers due to a lack of access points to either river.

Yazoo River Drainage Basin (YRDB):

Yazoo River: The Yazoo river is formed in Leflore county near Greenwood, MS where the Yalobusha and Tallahatchie rivers converge; the other major tributary of the Yazoo is the Sunflower river. Vegetation was surveyed at 5 points along the Yazoo river between Greenwood and Vicksburg, MS. A total of 13 aquatic and riparian plant species were encountered on the Yazoo; of which, 4 are non-native to MS (alligatorweed, yellow nutsedge, water hyacinth, and Johnson grass; Table 13). Alligatorweed (aquatic) and yellow nutsedge (riparian) were the most commonly encountered species (each found at 60% of survey points; Table 13). The Yazoo river ranked 17th in diversity (13 species; Shannon-Weaver H Index) and 20th in evenness out of the 33 rivers/streams surveyed.

Yalobusha River: The Yalobusha river is a tributary of the Yazoo river and rises in Chickasaw county, MS and flows through Calhoun, Grenada, and Leflore counties, MS. Near Grenada, MS the river has been impounded to form Grenada Lake which covers parts of Grenada and Calhoun counties, MS. Grenada Lake is one of 4 major flood control reservoirs in MS. The Grenada Lake impoundment also captures the flow of the Skuna river which is a tributary to the Yalobusha. Vegetation was surveyed at 6 points along the Yalobusha river; a total of 18 species were recorded with only 2 non-native riparian species recorded (Table 14). No invasive aquatic plants were encountered at points along the Yalobusha river or its tributary, the Skuna river (Table 14). The Yalobusha river ranked 7th in diversity (18 species; Shannon-Weaver H Index) and 5th in evenness out of the 33 rivers/streams surveyed.

Skuna River: The Skuna river rises near Pontotoc, MS and flows through Chickasaw and Calhoun counties, MS; it flows into Grenada Lake in Calhoun county, MS. Vegetation was surveyed at 3 points along the Skuna river; 6 species were encountered with only 1 non-native riparian species recorded (Table 14). No aquatic invasive plant species were encountered along the Skuna river. The Skuna river ranked 32nd in diversity (6 species; Shannon-Weaver H Index) and 26th in evenness out of the 33 rivers/streams surveyed.

Tallahatchie River: The Tallahatchie river is a tributary of the Yazoo that forms at the confluence of the Little Tallahatchie and Coldwater rivers south of Marks, MS. Two points were surveyed for aquatic and riparian vegetation along the Tallahatchie river with only one non-native riparian species (yellow nutsedge) found at one survey point (Table 15). No aquatic invasive species were observed on the Tallahatchie or Little Tallahatchie rivers; however, the invasive aquatic plant alligatorweed was present in the Yocona river. The Tallahatchie river ranked 33rd in diversity (5 species; Shannon-Weaver H Index) and 7th in evenness out of the 33 rivers/streams surveyed.

Little Tallahatchie River: The Little Tallahatchie river rises in Tippah county, MS and flows through Union, Marshall, Lafayette, Panola, and Tallahatchie counties, MS. The Little Tallahatchie was impounded near Batesville, MS to form Sardis Lake that covers parts of Panola and Lafayette counties, MS; Sardis Lake is one of the 4 major flood control reservoirs in MS. The Yocona river is a tributary that converges with the Little Tallahatchie near Crowder, MS. Vegetation was surveyed at 8 points along the Little Tallahatchie; only 2 non-native riparian species (yellow nutsedge and Johnson grass) were documented on the Little Tallahatchie (Table 15). The Little Tallahatchie river ranked 8th in diversity (19 species; Shannon-Weaver H Index) and 22nd in evenness out of the 33 rivers/streams surveyed.

> *Yocona River*: The Yocona river is a tributary of the Little Tallahatchie river. The Yocona river was impounded near Enid, MS to form Enid Lake that covers parts of Panola, Yalobusha, and Lafayette counties, MS. Enid Lake is one of the 4 major flood control reservoirs in MS. Aquatic and riparian vegetation was surveyed at 6 points on the Yocona river. Three non-native riparian species and the aquatic invasive plant alligatorweed were present in the Yocona; alligatorweed was found at 33.3% of survey points (Table 16). The Yocona river ranked 5th in diversity (20 species; Shannon-Weaver H Index) and 19th in evenness out of the 33 rivers/streams surveyed.

Coldwater River: The Coldwater river rises in Marshall county, MS and flows through Benton, DeSoto, Tate, Tunica, and Quitman counties. The Coldwater river was impounded near Arkabutla, MS to form Arkabutla Lake, one of the 4 major flood control reservoirs in MS. Arkabutla Lake also captures water from Hurricane and Hickahala creeks which are two tributaries of the Coldwater river. Vegetation was surveyed at 7 points along the Coldwater river. A total of 17 species were observed on the Coldwater with only 2 non-native riparian species recorded (Table 17). No aquatic invasive species were observed along the Coldwater river or its tributaries. The Coldwater river ranked 9th in diversity (17 species; Shannon-Weaver H Index) and 10th in evenness out of the 33 rivers/streams surveyed.

> *Hurricane Creek*: Hurricane creek flows into the north end of Arkabutla Lake; the historic confluence of Hurricane Creek and the Coldwater river now lies under Arkabutla Lake. Vegetation was surveyed at 3 points along Hurricane creek; a total of 12 species were recorded with only 2 non-native riparian species observed (Table 18). Hurricane creek ranked 18th in diversity (12 species; Shannon-Weaver H Index) and 17th in evenness out of the 33 rivers/streams surveyed.
>
> *Hickahala Creek*: Hickahala creek joins the Coldwater river from the South a few miles before the Coldwater flows into Arkabutla Lake.

Vegetation was surveyed at 3 points along Hickahala creek; a total of 10 species were recorded with no non-native species observed (Table 18). Hickahala creek ranked 21st in diversity (10 species; Shannon-Weaver H Index) and 12th in evenness out of the 33 rivers/streams surveyed.

Sunflower River: The Sunflower river rises in DeSoto county, MS and flows south through Tunica, Coahoma, Sunflower, Bolivar, Washington, Humphreys, Sharkey, and Yazoo counties before joining the Yazoo river near Holly Bluff, MS. Vegetation was surveyed at 5 points along the Sunflower river. A total of 9 species were recorded on the Sunflower river; of which, 1 was a non-native riparian species and another was the aquatic invasive plant species alligatorweed that was found at 80% of the survey points (Table 19). The Sunflower river ranked 26th in diversity (9 species; Shannon-Weaver H Index) and 30th in evenness out of the 33 rivers/streams surveyed.

Summary: A total of 48 points were surveyed for aquatic vegetation in the YRDB. The aquatic invasive plant species alligatorweed and water hyacinth were recorded in the YRDB. Alligatorweed was found at 19% of survey points (9 points) in the YRDB and was present in the main stem of Yazoo river and its tributaries the Yocona and Sunflower rivers. Water hyacinth was found at 2% of survey points (1 point) in the YRDB along the main stem of the Yazoo river.

Tombigbee River Drainage Basin (TRDB)):

Buttahatchee River: The Buttahatchee river rises in Alabama and flows into MS in Monroe county and continues through Monroe and Lowndes counties where it historically joined the Tombigbee river from the East. The historic confluence of the Tombigbee and Buttahatchee rivers is now part of the riverine section of Lake Columbus on the Tennessee-Tombigbee Waterway (TTW). Vegetation was surveyed at 4 points along the Buttahatchee river in MS. A total of 10 species were recorded on the Buttahatchee river; of which, 1 was a non-native riparian species (Table 20). There were no invasive aquatic plant species encountered at any survey points for this work; however, alligatorweed and water hyacinth have both been observed in the Buttahatchee in the past (Turnage, personal observation). The Buttahatchee river ranked 24th in diversity (10 species; Shannon-Weaver H Index) and 23rd in evenness out of the 33 rivers/streams surveyed.

Town Creek: Town creek is a tributary of the Tombigbee river; it now joins the TTW from the west side of Aberdeen Lake in Monroe county, MS. Vegetation was surveyed at 3 points along Town creek. A total of 10 species were recorded in Town creek (Table 20). One non-native riparian and one invasive aquatic plant (Cuban bulrush) were recorded in Town creek; Cuban bulrush was present at 33.3% of survey points (Table 21). Town creek ranked 25th in diversity (10 species; Shannon-Weaver H Index) and 24th in evenness out of the 33 rivers/streams surveyed.

Chiwapa Creek: Chiwapa creek is a tributary of Town creek; the 2 converge near the town of Nettleton in northeast MS. Vegetation was surveyed at 3 points along Chiwapa

creek. A total of 7 riparian and aquatic plant species were recorded on Chiwapa creek; of these 7 only one non-native riparian species was recorded (Johnson grass; Table 21). No aquatic invasive plant species were recorded along Chiwapa creek. Chiwapa creek ranked 29th in diversity (7 species; Shannon-Weaver H Index) and 29th in evenness out of the 33 rivers/streams surveyed.

Tibbee Creek: Tibbee creek rises near West Point in Clay county MS and joined the Tombigbee from the west near Columbus, MS. The historic confluence is now part of Columbus Lake on the TTW. Vegetation was surveyed at 3 points along Tibbee creek; two non-native riparian plant species (mimosa and yellow nutsedge) were recorded along Tibbee creek (Table 22). No aquatic invasive plant species were recorded during this survey; however, the aquatic invasive plants hydrilla, water hyacinth, alligatorweed, and Cuban bulrush have been observed in the lower reaches of Tibbee creek (Turnage, personal observation). Tibbee creek ranked 28th in diversity (7 species; Shannon-Weaver H Index) and 8th in evenness out of the 33 rivers/streams surveyed.

Line Creek: Line creek is a tributary that joins Tibbee creek near West Point, MS. Aquatic and riparian vegetation was surveyed at 1 point on Line creek. A total of 6 species were recorded on Line creek; one of which was a non-native riparian species and two of which were aquatic invasive species (alligatorweed and common reed; Table 22). Line creek ranked 30th in diversity (6 species; Shannon-Weaver H Index) and was one of two flowing waters that ranked 1st in evenness (the Homochitto river being the other) out of the 33 rivers/streams surveyed.

Luxapallila Creek: Luxapallila creek rises in Alabama and flows into Lowndes county, MS. Luxapallila creek historically joined the Tombigbee river from the east at Columbus, MS; the confluence is now part of the riverine section at the northern end of Aliceville, Lake on the TTW. Aquatic and riparian vegetation was surveyed at 5 points along Luxapallila creek (Table 22). A total of 15 species were observed along Luxapallila creek; of which, 11 were native plant species, 3 were non-native riparian species, and one was the aquatic invasive plant species alligatorweed which was present at 40% of survey points (Table 23). Luxapallila creek ranked 13th in diversity (15 species; Shannon-Weaver H Index) and 14th in evenness out of the 33 rivers/streams surveyed.

Summary: A total of 19 points were surveyed for aquatic vegetation in the TRDB. The aquatic invasive plant species alligatorweed, Cuban bulrush, and common reed were recorded in the TRDB; additionally, the aquatic invasive species water hyacinth, torpedograss, wild taro, giant salvinia, common salvinia, hydrilla, and parrots feather are known to be in the TRDB (Turnage, personal observation). Alligatorweed was found at 16% of survey points (3 points) in the TRDB and was observed in Line and Luxapallila creeks. Cuban bulrush was found at one point on Town creek and common reed was found at one point on Line creek (5% of survey points for each species in the TRDB).

<u>Big Black River Drainage Basin:</u>

Big Black River: The Big Black river rises in Webster county, MS and flows through Choctaw, Montgomery, Carrol, Attala, Holmes, Yazoo, Madison, Hinds, Warren, and Claiborne counties where it flows into the Mississippi river south of Vicksburg, MS. Vegetation was surveyed at 4 points along the Big Black river. A total of 10 aquatic and riparian species were recorded along the Big Black. Two non-native riparian species and the aquatic invasive species alligatorweed were recorded in the Big Black river (Table 24). Alligatorweed was present at 50% of the points surveyed. The Big Black river ranked 23rd in diversity (10 species; Shannon-Weaver H Index) and 18th in evenness out of the 33 rivers/streams surveyed.

Pearl River Drainage Basin (PRDB):

Pearl River: The Pearl river rises in Neshoba county, MS and flows through Leake, Scott, Madison, Rankin, Hinds, Copiah, Simpson, Lawrence, Marion, Pearl River, and Hancock counties in MS where it empties into the Gulf of Mexico. Aquatic and riparian vegetation was surveyed at 6 points along the Pearl river. A total of 14 plant species were recorded at survey points; none of the recorded species were aquatic invasive species and only one was a non-native riparian species (Table 25). However, this river system is known to be impacted by water hyacinth, hydrilla, alligatorweed, torpedograss, common reed, and giant salvinia (Turnage, personal observation). The Pearl river ranked 15th in diversity (14 species; Shannon-Weaver H Index) and 15th in evenness out of the 33 rivers/streams surveyed.

> *Bogue Chitto River*: The Bogue Chitto river rises in Lincoln county, MS and flows south through Pike county, MS and then into Louisiana before joining the Pearl river from the west near Picayune, MS. Riparian and aquatic vegetation were surveyed at 4 points along the Bogue Chitto river in MS. A total of 10 native plant species were observed while one invasive aquatic plant species (Wild taro) was observed at 50% of survey points (Table 25). The Bogue Chitto river ranked 19th in diversity (11 species; Shannon-Weaver H Index) and 16th in evenness out of the 33 rivers/streams surveyed.

Pearl River Delta: The Pearl river divides the southern reaches of the states of Mississippi and Louisiana. The mouth of the Pearl river at the Gulf of Mexico has is an extensive delta complex of braded channels, bayous, and canals. network where it flows into the Gulf of Mexico. Because of the transition from fresh, to brackish, to salt water environments this region has a very high diversity of aquatic and riparian plant species. Vegetation in the MS portion of the Pearl river delta was surveyed by boat. A total of 48 aquatic and riparian species were recorded across 17 survey points; of which, 7 were aquatic invasive species (alligatorweed – 47% of survey points, water hyacinth – 18%, Eurasian watermilfoil – 53%, brittle naiad – 24%, torpedo grass – 11%, common reed – 59%, and common salvinia – 53%; Table 26). The Pearl river delta ranked 1st in diversity (48 species; Shannon-Weaver H Index) and 27th in evenness out of the 33 rivers/streams surveyed.

Summary: A total of 27 points were surveyed for aquatic vegetation in the PRDB. The aquatic invasive plant species alligatorweed, water hyacinth, Eurasian watermilfoil, brittle naiad, torpedo grass, common reed, common salvinia, and wild taro were observed in the PRDB. Alligatorweed

was found at 30% of survey points (8 points) in the PRDB and was observed in the Pearl river delta. Water hyacinth was found at 11% of survey points (3 points) in the PRDB and was observed in the Pearl river delta. Eurasian watermilfoil was found at 33% of survey points (9 points) in the PRDB and was observed in the Pearl river delta. Brittle naiad was found at 15% of survey points (4 points) in the PRDB and was observed in the Pearl river delta. Torpedo grass was found at 7% of survey points (2 points) in the PRDB and was observed in the Pearl river delta. Common reed was found at 37% of survey points (10 points) in the PRDB and was observed in the Pearl river delta. Common salvinia was found at 33% of survey points (9 points) in the PRDB and was observed in the Pearl river delta. Wild taro was found at 7% of survey points (2 points) in the PRDB and was observed in the Bogue Chitto river.

South Independent Streams Basin (SISB):

Homochitto River: The Homochitto river rises in Copiah county, MS and flows through Lincoln, Franklin, Amite, Wilkinson, and Adams counties before emptying into the Mississippi river south of Natchez, MS. Aquatic and riparian vegetation were surveyed at 3 points along the Homochitto river. A total of 7 species were observed; of which, no aquatic invasive species were recorded (Table 27). The Homochitto river ranked 27th in diversity (7 species; Shannon-Weaver H Index) and was one of two flowing waters that ranked 1st in evenness (Line creek being the other) out of the 33 rivers/streams surveyed.

Pascagoula River Drainage Basin (PARDB):

Pascagoula River: The Pascagoula river is formed in George county, MS where the Leaf and Chickasawhay rivers converge and flows south through Jackson county to the Gulf of Mexico. Aquatic and riparian vegetation were surveyed at 4 points along the Pascagoula river. A total of 15 plant species were recorded; of which, two were non-native riparian species (yellow nutsedge and Johnson grass) and two were aquatic invasive species (alligatorweed and Chinese tallow; Table 28). Alligatorweed and Chinese tallow were each recorded at 25% of the points surveyed (Table 28). The Pascagoula river ranked 11th in diversity (15 species; Shannon-Weaver H Index) and 3rd in evenness out of the 33 rivers/streams surveyed.

Chickasawhay River: The Chickasawhay river is formed by the confluence of the Chunky and Okatibbee rivers in Clarke county, MS. The Chickasawhay river flows through Wayne, Greene, and George counties where it joins the Leaf river to form the Pascagoula river. Riparian and aquatic vegetation was surveyed at 4 points on the Chickasawhay river. A total of 12 plant species were observed; of which, one non-native riparian species (mimosa) and one aquatic invasive species (alligatorweed) were recorded at 25% of survey points, respectively (Table 29). The Chickasawhay river ranked 20th in diversity (12 species; Shannon-Weaver H Index) and 21st in evenness out of the 33 rivers/streams surveyed.

Chunky River: The Chunky river rises in Newton county, MS and flows through Lauderdale and Clarke county where it converges with the Okatibbee river to

form the Chickasawhay river. Riparian and aquatic vegetation was surveyed at 2 points on the Chunky river. A total of 6 plant species were observed; of which, one aquatic invasive species (alligatorweed) was recorded at 50% of survey points (one point; Table 30). The Chunky river ranked 31st in diversity (6 species; Shannon-Weaver H Index) and 4th in evenness out of the 33 rivers/streams surveyed.

Okatibbee River: The Okatibbee river flows out of Okatibbee Lake in Lauderdale county; Okatibbee Lake was formed by impounding Okatibbee creek and other tributary creeks of the Okatibbee river. The Okatibbee river flows through Clarke county where it converges with the Chunky river to form the Chickasawhay river. Riparian and aquatic vegetation was surveyed at 4 points on the Okatibbee river. A total of 14 plant species were observed; of which, 2 are aquatic invasive species (alligatorweed and Chinese tallow; Table 30). Each aquatic invasive species was recorded 25% of the points surveyed (Table 30). The Okatibbee river ranked 14th in diversity (14 species; Shannon-Weaver H Index) and 9th in evenness out of the 33 rivers/streams surveyed.

Leaf River: The Leaf river rises in Scott county, MS and flows through Smith, Covington, Jones, Forrest, Perry, Greene, and George counties where if converges with the Chickasawhay river to form the Pascagoula river. Riparian and aquatic vegetation was surveyed at 5 points on the Leaf river. A total of 13 plant species were observed; of which, one non-native riparian species (Johnson grass) and 3 aquatic invasive species (alligatorweed, wild taro, and Chinese tallow) were recorded (Table 30). Alligatorweed was found at 40% of survey points, while wild taro and Chinese tallow were each found at 20% of survey points (Table 31). The Chunky river ranked 16th in diversity (13 species; Shannon-Weaver H Index) and 11th in evenness out of the 33 rivers/streams surveyed.

Pascagoula River Delta: The Pascagoula river delta is in Jackson county, MS where the Pascagoula river flows into the Gulf of Mexico. The river delta follows a gradient from north to south of fresh, brackish, and salt water and therefore has a high plant diversity due plant adaptations for each water salinity environment. Vegetation in the Pascagoula river delta was surveyed by boat. A total of 39 aquatic and riparian species were recorded across 16 survey points; of which, 8 were aquatic invasive species (alligatorweed – 25% of survey points, water hyacinth – 63%, Eurasian watermilfoil – 44%, common reed – 38%, common salvinia – 6%, giant salvinia – 69%, scarlet sesbania – 19%, and Chinese tallow – 6%; Table 32). Parrotfeather has also been observed in the Pascagoula river delta (M. Pursley, personal observation). The Pascagoula river delta ranked 4th in diversity (39 species; Shannon-Weaver H Index) and 33rd in evenness out of the 33 rivers/streams surveyed.

Summary: A total of 35 points were surveyed for aquatic and riparian vegetation in the PARDB. The aquatic invasive plant species alligatorweed, water hyacinth, Eurasian watermilfoil, common reed, common salvinia, giant salvinia, scarlet sesbania, wild taro, and Chinese tallow were observed in the PARDB. Alligatorweed was found at 29% of survey points (10 points) in the

PARDB and was observed in every water body surveyed. Water hyacinth, Eurasian watermilfoil, and giant salvinia were each found at 3% of survey points (1 point) in the PARDB and were observed in the Pascagoula river delta. Common reed was found at 9% of survey points (3 points) in the PARDB and was observed in the Okatibbee river and the Pascagoula river delta. Common salvinia was found at 9% of survey points (3 points) in the PARDB and was observed in the Pascagoula river delta. Scarlet sesbania was found at 9% of survey points (3 points) in the PARDB and was observed in the Pascagoula river delta. Wild taro was found at 3% of survey points (1 point) in the PARDB and was observed in the Leaf river. Chinese tallow was found at 11% of survey points (4 points) in the PARDB and was observed in the Pascagoula, Okatibbee, and Leaf rivers as well as the Pascagoula river delta.

Coastal Streams Drainage Basin (CSDB):

Jourdan River: The Jourdan river rises in Hancock county, MS and flows into the western side of the Bay of St. Louis on the Gulf of Mexico. Aquatic and riparian vegetation was surveyed by boat at 10 points on the Jourdan river. A total of 17 plant species were observed; of which, 2 are aquatic invasive species (common reed and Chinese tallow; Table 33). Common reed and Chinese tallow were found at 30 and 10% of survey points, respectively (Table 33). Common salvinia has also been observed in the Jourdan river (M. Pursley, personal communication). The Jourdan river ranked 12th in diversity (17 species; Shannon-Weaver H Index) and 32nd in evenness out of the 33 rivers/streams surveyed.

Wolf River: The Wolf river rises in Pearl River county, MS and flows through Hancock and Harrison counties where it flows into the eastern side of the Bay of St. Louis on the Gulf of Mexico. Aquatic and riparian vegetation was surveyed by boat at 12 points on the Wolf river. A total of 21 plant species were observed; of which, 2 are aquatic invasive species (common salvinia and Chinese tallow; Table 34). Common salvinia and Chinese tallow were found at 58 and 25% of survey points, respectively (Table 34). The Wolf river ranked 6th in diversity (21 species; Shannon-Weaver H Index) and 31st in evenness out of the 33 rivers/streams surveyed.

Biloxi River: The Biloxi river rises in Stone county, MS and flows through Harrison county to the Back Bay of Biloxi on the Gulf of Mexico. Aquatic and riparian vegetation was surveyed by boat at 12 points on the Biloxi river. A total of 39 plant species were observed; of which, one is a non-native riparian species (Chinese privet) and one is an aquatic invasive species (torpedo grass; Table 35). Torpedo grass was found at 36% of survey points (Table 35). The Biloxi river ranked 3rd in diversity (39 species; Shannon-Weaver H Index) and 28th in evenness out of the 33 rivers/streams surveyed.

Tchoutacabuffa River: The Tchoutacabuffa river rises in Harrison county and flows into the northern end of the Back Bay of Biloxi on the Gulf of Mexico. Aquatic and riparian vegetation was surveyed by boat at 14 points on the Tchoutacabuffa river. A total of 46 plant species were observed; of which, two are non-native riparian species (English holly and camphor tree) and 4 are aquatic invasive species (alligatorweed, torpedo grass, scarlet sesbania, and Chinese tallow; Table 36). Alligatorweed, torpedo grass, scarlet sesbania, and Chinese tallow were found at 21,

57, 21, and 14% of survey points, respectively (Table 36). The Tchoutacabuffa river ranked 2nd in diversity (46 species; Shannon-Weaver H Index) and 25th in evenness out of the 33 rivers/streams surveyed.

Summary: A total of 48 points were surveyed for aquatic and riparian vegetation in the CSDB. The aquatic invasive plant species alligatorweed, common reed, common salvinia, scarlet sesbania, torpedo grass, and Chinese tallow were observed in the CSDB. Alligatorweed and scarlet sesbania were each found at 6% of survey points (3 points) in the CSDB and were observed in the Tchoutacabuffa river. Common reed was found at 6% of survey points (3 points) in the CSDB and was observed in the Jourdan river. Common salvinia was found at 15% of survey points (7 points) in the CSDB and was observed in the Wolf river. Torpedo grass was found at 27% of survey points (13 points) in the CSDB and was observed in the Biloxi and Tchoutacabuffa rivers. Chinese tallow was found at 13% of survey points (6 points) in the CSDB and was observed in the Jourdan, Wolf, and Tchoutacabuffa rivers.

Total Survey:

In total, 106 distinct species were encountered in lakes (Table 37) and 119 in the rivers and streams survey (Table 38); however, these are not comprehensive lists of plant species known to occur at aquatic locations in MS. Some species were only identified to the taxonomic level of Genus. Of the 11 lakes surveyed (Table 39), only two had plant assemblages composed entirely of native aquatic plant species: Lake George and Lower Lake. Only three rivers and streams had plant assemblages composed entirely of native aquatic plant species: Homochitto river, Little Hatchie river, and Hickahala creek (Table 40). In total, 559 points were surveyed across 11 lakes and 33 rivers and streams in MS. The federal noxious weed hydrilla was observed in Doyle Arm Lake for the first time during this survey.

Conclusions

- Only two lakes (George and Lower) and three rivers/creeks (Homochitto and Little Hatchie rivers and Hickahala creek) in this survey had a plant assemblages entirely composed of native aquatic and riparian plant species.
- There were 40 new plant species observed in the lake survey; of which, 6 were non-native species (all riparian).
- Overall, there were 119 aquatic and riparian plant species observed in the river/creek surveys; of which, 18 were non-native.
- Alligatorweed (*Alternanthera philoxeroides*: 7 waterbodies), water hyacinth (*Eichhornia crassipes*: 4 waterbodies, and Chinese tallow (*Triadica sebifera*: 4 waterbodies) were the most widespread non-native aquatic plant species found in lakes.
- Alligatorweed (*Alternanthera philoxeroides*: 14 waterbodies), Chinese tallow (*Triadica sebifera*: 7 waterbodies), and common reed (*Phragmites australis*: 5 waterbodies were the most widespread non-native aquatic plant species found in rivers and lakes.

Recommendations

- Continue monitoring waterbodies within Mississippi for the presence of non-native aquatic plant species.
- Implement early detection, rapid response (EDRR) management options on populations of those non-native aquatic plant species known to be in Mississippi, specifically small isolated populations before they spread to other sites.
- Determine suitable goals for management of large populations of non-native aquatic plant species.
- Implement management strategies on those populations of native species that have grown to nuisance levels in Mississippi waterbodies.

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Tables and Figures

Table 1. Plant community of Columbus Lake, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

COLUMBUS LAKE			
Littoral Depth	6.5’	**Date Surveyed**	June10-12, 2020
Species Richness	42	**Total Pts. Sur**	57
Native Species Richness	35	**Total Pts. Veg**	56
		%-Littoral Veg	98.2
Scientific Name	**Common Name**	**# Pts. Present**	**%-Frequency**
Alnus spp.	Alder	2	3.5
Alternanthera philoxeroides	Alligatorweed	8	14.0
Bacopa caroliniana	Lemon bacopa	2	3.5
Boehmeria cylindrica	Smallspike false nettle	7	12.3
Brasenia schreberi	Watershield	1	1.8
Carex spp.	Sedge	2	3.5
Cephalanthus occidentalis	Common buttonbush	1	1.8
Ceratophyllum demersum	Coontail	4	7.0
Eichhornia crassipes	Water hyacinth	15	26.3
Eleocharis obtusa	Blunt spikerush	3	5.3
Eleocharis quadrangulata	Squarestem spikerush	2	3.5
Hibiscus moscheutos	Swamp mallow	7	12.3
Hydrocotyle ranunculoides	Floating marshpennywort	7	12.3
Hydrocotyle umbellata	Manyflower marshpennywort	11	19.3
Juncus acuminatus	Tapertip rush	2	3.5
Juncus effusus	Common rush	5	8.8
Justicia americana	American water willow	23	40.4
Landoltia punctata	Dotted duckweed	9	15.8
Lemna minor	Common duckweed	5	8.8
Limnobium spongia	American frogbit	3	5.3
Ludwigia leptocarpa	Anglestem primrose	15	26.3
Ludwigia peploides	Floating primrose-willow	15	26.3
Myriophyllum aquaticum	Parrotfeather	2	3.5
Nelumbo lutea	American lotus	7	12.3
Oxycaryum cubense	Cuban bulrush	11	19.3
Paspalum distichum	Knotgrass	1	1.8
Paspalum spp.	Paspalum	2	3.5
Peltandra virginica	Green arrow arum	1	1.8
Potamogeton nodosus	Longleaf pondweed	10	17.5

Sagittaria latifolia	Broadleaf arrowhead	6	10.5
Salix nigra	Black willow	2	3.5
Salvinia molesta	**Giant salvinia**	5	8.8
Saururus cernuus	Lizard's tail	17	29.8
Schoenoplectus tabernaemontani	Softstem bulrush	1	1.8
Sesbania herbacea	Bigpod sesbania	5	8.8
Taxodium distichum	Bald cypress	29	50.9
Triadenum walteri	Marsh St. Johnswort	3	5.3
Triadica sebifera	Chinese tallow	1	1.8
Typha latifolia	Broadleaf cattail	2	3.5
Utricularia vulgaris	Common bladderwort	1	1.8
Zizaniopsis miliacea	Giant cutgrass	29	50.9

Table 2. Plant community of Doyle Arm Lake, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

DOYLE ARM LAKE			
Littoral Depth	5.5’	**Date Surveyed**	June10-12, 2020
Species Richness	23	**Total Pts. Sur**	17
Native Species Richness	35	**Total Pts. Veg**	17
		%-Littoral Veg	100
Scientific Name	**Common Name**	**# Pts. Present**	**%-Frequency**
Alternanthera philoxeroides	Alligatorweed	3	17.6
Azolla caroliniana	Mosquitofern	3	17.6
Brasenia schreberi	Watershield	10	58.8
Cephalanthus occidentalis	Common buttonbush	6	35.2
Ceratophyllum demersum	Coontail	1	5.8
Eleocharis quadrangulata	Squarestem spikerush	1	5.8
Hydrilla verticillata	**Hydrilla**	1	5.8
Lemna minor	Common duckweed	3	17.6
Limnobium spongia	American frogbit	12	70.6
Najas minor	Brittle naiad	1	5.8
Nelumbo lutea	American lotus	10	58.8
Nymphaea odorata	American white waterlily	15	88.2
Oxycaryum cubense	Cuban bulrush	3	17.6
Peltandra virginica	Green arrow arum	1	5.8
Polygonum hydropiperoides	Swamp smartweed	5	29.4
Polygonum pennsylvanicum	Pennsylvania smartweed	1	5.8
Sagittaria latifolia	Broadleaf arrowhead	2	11.7
Salix nigra	Black willow	1	5.8
Taxodium distichum	Bald cypress	2	11.7
Triadenum walteri	Marsh St. Johnswort	10	58.8
Utricularia vulgaris	Common bladderwort	3	17.6
Vallisneria americana	American eelgrass	1	5.8
Zizaniopsis miliacea	Giant cutgrass	1	5.8

Table 3. Plant community of Dalewood Shores Lake, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

DALEWOOD SHORES LAKE			
Littoral Depth	12.2’	**Date Surveyed**	June 19, 2020
Species Richness	26	**Total Pts. Sur**	31
Native Species Richness	22	**Total Pts. Veg**	21
		%-Littoral Veg	67.7
Scientific Name	**Common Name**	**# Pts. Present**	**%-Frequency**
Albizia julibrissin	Mimosa	1	3.2
Alnus spp.	Alder	4	12.9
Alternanthera philoxeroides	Alligatorweed	4	12.9
Baccharis halimifolia	Eastern baccharis	1	3.2
Bacopa caroliniana	Lemon bacopa	2	6.5
Boehmeria cylindrica	Smallspike false nettle	2	6.5
Carex spp.	Sedge	1	3.2
Cephalanthus occidentalis	Common buttonbush	1	3.2
Ceratophyllum demersum	Coontail	1	3.2
Chara spp.	Chara	10	32.3
Cyperus esculentus	Yellow nutsedge	5	16.1
Diospyros virginiana	Common persimmon	1	3.2
Eleocharis vivipara	Angelhair spikerush	3	9.7
Hydrocotyle umbellata	Manyflower marshpennywort	1	3.2
Juncus effusus	Common rush	1	3.2
Justicia americana	American water willow	2	6.5
Leersia oryzoides	Rice cutgrass	4	12.9
Ludwigia leptocarpa	Anglestem primrose	6	19.4
Ludwigia peploides	Floating primrose-willow	2	6.5
Nyssa biflora	Swamp tupelo	1	3.2
Paspalum spp.	Paspalum	9	29.0
Platanus occidentalis	Sycamore	1	3.2
Sacciolepis striata	Cupscale	8	25.8
Saururus cernuus	Lizard’s tail	8	25.8
Triadenum walteri	Marsh St. Johnswort	3	9.7
Triadica sebifera	Chinese tallow	4	12.9

Table 4. Plant community of Horseshoe Lake, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

HORSESHOE LAKE			
Littoral Depth	6.7’	**Date Surveyed**	June 26-30, 2020
Species Richness	38	**Total Pts. Sur**	30
Native Species Richness	29	**Total Pts. Veg**	30
		%-Littoral Veg	100
Scientific Name	**Common Name**	**# Pts. Present**	**%-Frequency**
Alternanthera philoxeroides	Alligatorweed	30	100
Azolla caroliniana	Mosquito fern	23	76.7
Bidens spp.	Beggartick	8	26.7
Boehmeria cylindrica	Smallspike false nettle	2	6.7
Brunnichia ovata	American buckwheat vine	4	13.3
Carex spp.	Sedge	8	26.7
Cephalanthus occidentalis	Common buttonbush	7	23.3
Cyperus esculentus	Yellow nutsedge	7	23.3
Cyperus iria	Rice flatsedge	2	6.7
Cyperus virens	Green flatsedge	1	3.3
Diodia virginiana	Virginia buttonweed	1	3.3
Echinochloa crus-galli	Barnyard grass	4	13.3
Eichondorrus cordifolius	Creeping burhead	2	6.7
Eichhornia crassipes	Water hyacinth	29	96.7
Eleocharis obtusa	Blunt spikerush	2	6.7
Equisetum spp.	Horsetail	1	3.3
Foresteria acuminata	Eastern swamp privet	3	10.0
Gleditsia aquatica	Water locust	5	16.7
Hibiscus lasiocarpos	Wooly rose mallow	1	3.3
Hibiscus mascheutos	Swamp mallow	4	13.3
Landoltia punctata	Dotted duckweed	26	86.7
Lemna minor	Common duckweed	28	93.3
Leptochloa panicoides	Amazon sprangletop	3	10.0
Ludwigia leptocarpa	Anglestem primrose	27	90.0
Najas minor	Brittle naiad	1	3.3
Oxycaryum cubense	Cuban bulrush	1	3.3
Paspalum distichum	Knotgrass	1	3.3
Paspalum floridanum	Florida paspalum	1	3.3
Paspalum urvillei	Vasey’s grass	1	3.3
Planera aquatica	Water elm	3	10.0
Polygonum hydropiperoides	Swamp smartweed	4	13.3
Ricciocarpos natans	Liverwort	1	3.3
Salix nigra	Black willow	1	3.3
Setaria pumila	Yellow foxtail	1	3.3
Sorghum halepense	Johnsons grass	1	3.3
Taxodium distichum	Bald cypress	19	63.3
Typha latifolia	Broadleaf cattail	1	3.3
Utricularia vulgaris	Common bladderwort	5	16.7

Table 5. Plant community of Lake George, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

LAKE GEORGE			
Littoral Depth	1.5’	**Date Surveyed**	July 1, 2020
Species Richness	13	**Total Pts. Sur**	39
Native Species Richness	13	**Total Pts. Veg**	39
		%-Littoral Veg	100
Scientific Name	**Common Name**	**# Pts. Present**	**%-Frequency**
Brunnichia ovata	American buckwheat vine	14	35.0
Carya aquatica	Water hickory	25	62.5
Cephalanthus occidentalis	Common buttonbush	9	22.5
Foresteria acuminata	Eastern swamp privet	19	47.5
Fraxinus pennsylvanica	Green ash	1	2.5
Gleditsia aquatica	Water locust	3	7.5
Landoltia punctata	Dotted duckweed	1	2.5
Lemna minor	Common duckweed	9	22.5
Planera aquatica	Water elm	24	60.0
Quercus lyrata	Overcup oak	11	27.5
Quercus phellos	Willow oak	1	2.5
Taxodium distichum	Bald cypress	2	5.0
Vitis vulpina	Frost grape	9	22.5

Table 6. Plant community of Little Eagle Lake, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

LITTLE EAGLE LAKE			
Littoral Depth	4.7’	**Date Surveyed**	June 23, 2020
Species Richness	6	**Total Pts. Sur**	9
Native Species Richness	3	**Total Pts. Veg**	9
		%-Littoral Veg	100
Scientific Name	**Common Name**	**# Pts. Present**	**%-Frequency**
Alternanthera philoxeroides	Alligatorweed	4	44.4
Boehmeria cylindrica	Smallspike false nettle	3	33.3
Eichhornia crassipes	Water hyacinth	9	100
Nyssa aquatica	Black tupelo	8	88.9
Taxodium distichum	Bald cypress	7	77.8
Triadica sebifera	Chinese tallow	1	11.1

Table 7. Plant community of Lower Lake, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

LOWER LAKE			
Littoral Depth	4.8’	**Date Surveyed**	June 22, 2020
Species Richness	46	**Total Pts. Sur**	22
Native Species Richness	46	**Total Pts. Veg**	21
		%-Littoral Veg	95.5
Scientific Name	**Common Name**	**# Pts. Present**	**%-Frequency**
Acer rubrum	Red maple	1	4.5
Alnus serrulata	Smooth alder	6	27.3
Arnoglossum ovatum	Ovateleaf cacalia	3	13.6
Asimina triloba	Pawpaw	3	13.6
Baccharis halimifolia	Eastern baccharis	3	13.6
Betula nigra	River birch	1	4.5
Boehmeria cylindrica	Smallspike false nettle	3	13.6
Carex spp.	Sedge	4	18.2
Carya glabra	Pignut hickory	2	9.1
Celtis laevigata	Hackberry	1	4.5
Cephalanthus occidentalis	Common buttonbush	7	31.8
Cynodon dactylon	Bermuda grass	3	13.6
Cyperus spp.	Cyperus	3	13.6
Dicanthelium latifolium	Broadleaf panicgrass	2	9.1
Dicanthelium spp.	Panic grass	1	4.5
Diospyros virginiana	Common persimmon	1	4.5
Eleocharis obtusa	Blunt spikerush	1	4.5
Eleocharis palustris	Common spikerush	2	9.1
Hibiscus mascheutos	Swamp mallow	2	9.1
Juncus acuminatus	Tapertip rush	4	18.2
Juncus effusus	Common rush	8	36.4
Leersia oryzoides	Rice cutgrass	2	9.1
Mikania scandens	Climbing hempvine	2	9.1
Nekemias arborea	Peppervine	2	9.1
Paspalum distichum	Knotgrass	6	27.3
Paspalum floridanum	Florida paspalum	4	18.2
Paspalum spp.	Paspalum	3	13.6
Platanus occidentalis	Sycamore	4	18.2
Polygonum hydropiperoides	Swamp smartweed	10	45.5
Polygonum pennsylvanicum	Pennsylvania smartweed	6	27.3
Ptilimnium capillaceum	Eastern bishopweed	2	9.1
Quercus alba	White oak	1	4.5
Quercus nigra	Water oak	3	13.6
Quercus rubra	Red oak	2	9.1
Sacciolepis striata	Cupscale	1	4.5
Salix nigra	Black willow	2	9.1
Saururus cernuus	Lizard’s tail	1	4.5
Sesbania herbacea	Bigpod sesbania	7	31.8
Sideroxylon lanuginosum	Gum bumelia	2	9.1

Solidago spp.	Goldenrod	1	4.5
Sparganium americanum	American bur reed	2	9.1
Symphyotrichum divaricatum	Southern annual saltmarsh aster	2	9.1
Symphyotrichum lanceolatum	Lance-leafed aster	6	27.3
Taxodium distichum	Bald cypress	3	13.6
Ulmus alata	Winged elm	2	9.1
Ulmus americana	American elm	3	13.6

Table 8. Plant community of Lake Okatibbee, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

LAKE OKATIBBEE			
Littoral Depth	6.8’	**Date Surveyed**	June 16-17, 2020
Species Richness	39	**Total Pts. Sur**	67
Native Species Richness	36	**Total Pts. Veg**	67
		%-Littoral Veg	100
Scientific Name	**Common Name**	**# Pts. Present**	**%-Frequency**
Alternanthera philoxeroides	Alligatorweed	48	71.6
Betula nigra	River birch	3	4.5
Boehmeria cylindrica	Smallspike false nettle	3	4.5
Brasenia schreberi	Water shield	7	10.4
Cabomba caroliniana	Fanwort	5	7.5
Carex spp.	Sedge	6	9.0
Carya aquatica	Water hickory	1	1.5
Cephalanthus occidentalis	Common buttonbush	35	52.2
Ceratophyllum demersum	Coontail	3	4.5
Diospyros virginiana	Common persimmon	8	11.9
Eleocharis quadrangulata	Squarestem spikerush	2	3.0
Hydrocotyle umbellata	Manyflower marshpennywort	10	14.9
Juncus acuminatus	Tapertip rush	5	7.5
Juncus effusus	Common rush	3	4.5
Justicia americana	American water willow	2	3.0
Leersia oryzoides	Rice cutgrass	58	86.6
Liquidambar styraciflua	Sweetgum	6	9.0
Ludwigia leptocarpa	Anglestem primrose	1	1.5
Ludwigia peploides	Creeping water primrose	1	1.5
Myrica cerifera	Southern was myrtle	3	4.5
Myriophyllum aquaticum	Parrotsfeather	1	1.5
Nelumbo lutea	American lotus	16	23.9
Nymphaea odorata	Fragrant water lily	20	29.9
Paspalum distichum	Knotgrass	3	4.5
Paspalum spp.	Paspalum	3	4.5
Pinus spp.	Pine	3	4.5
Polygonum pennsylvanicum	Pennsylvania smartweed	12	17.9
Potamogeton nodosus	American pondweed	12	17.9
Quercus alba	White oak	1	1.5
Quercus nigra	Water oak	3	4.5
Quercus phellos	Willow oak	2	3.0
Sagittaria latifolia	Bulltongue arrowhead	1	1.5
Salix nigra	Black willow	16	23.9
Saururus cernuus	Lizard’s tail	2	3.0
Sesbania herbacea	Bigpod sesbania	8	11.9
Taxodium distichum	Bald cypress	25	37.3
Triadica sebifera	Chinese tallow	15	22.4
Typha latifolia	Broadleaf cattail	1	1.5
Utricularia vulgaris	Common bladderwort	3	4.5

Table 9. Plant community of Roebuck Lake, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

ROEBUCK LAKE			
Littoral Depth	3.5’	**Date Surveyed**	June 24-26, 2020
Species Richness	17	**Total Pts. Sur**	25
Native Species Richness	15	**Total Pts. Veg**	24
		%-Littoral Veg	96.0
Scientific Name	**Common Name**	**# Pts. Present**	**%-Frequency**
Alternanthera philoxeroides	Alligatorweed	11	44.0
Boehmeria cylindrica	Smallspike false nettle	5	20.0
Brunnichia ovata	American buckwheat vine	6	24.0
Carex spp.	Sedge	1	4.0
Carya aquatica	Water hickory	5	20.0
Cephalanthus occidentalis	Common buttonbush	12	48.0
Diospyros virginiana	Common persimmon	2	8.0
Eichhornia crassipes	Water hyacinth	9	36.0
Foresteria acuminata	Eastern swamp privet	7	28.0
Gleditsia aquatica	Water locust	1	4.0
Ilex decidua	Possumhaw	1	4.0
Landoltia punctata	Dotted duckweed	1	4.0
Lemna minor	Common duckweed	1	4.0
Ludwigia leptocarpa	Anglestem primrose	1	4.0
Planera aquatica	Water elm	14	56.0
Taxodium distichum	Bald cypress	23	92.0
Vitis vulpina	Frost grape	1	4.0

Table 10. Plant community of Trace State Park Lake, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

TRACE STATE PARK LAKE			
Littoral Depth	20.6’	**Date Surveyed**	June 25, 2020
Species Richness	30	**Total Pts. Sur**	33
Native Species Richness	30	**Total Pts. Veg**	33
		%-Littoral Veg	100
Scientific Name	**Common Name**	**# Pts. Present**	**%-Frequency**
Baccharis halimifolia	Eastern baccharis	12	36.4
Boehmeria cylindrica	Smallspike false nettle	1	3.0
Carex spp.	Sedge	6	18.2
Cephalanthus occidentalis	Common buttonbush	2	6.1
Cercis canadensis	Eastern redbud	1	3.0
Chara spp.	Chara	5	15.2
Cyperus spp.	Cyperus	3	9.1
Diospyros virginiana	Common persimmon	1	3.0
Juncus acuminatus	Tapertip rush	4	12.1
Juncus effusus	Common rush	21	63.6
Leersia oryzoides	Rice cutgrass	19	57.6
Liquidambar styraciflua	Sweetgum	2	6.1
Ludwigia leptocarpa	Anglestem primrose	1	3.0
Najas guadalupensis	Southern naiad	1	3.0
Nelumbo lutea	American lotus	3	9.1
Paspalum spp.	Paspalum	14	42.4
Pinus spp.	Pine	13	39.4
Platanus occidentalis	Sycamore	5	15.2
Polygonum hydropiperoides	Swamp smartweed	8	24.2
Populus deltoides	Eastern cottonwood	3	9.1
Potamogeton nodosus	American pondweed	4	12.1
Quercus nigra	Water oak	8	24.2
Saururus cernuus	Lizard’s tail	3	9.1
Schoenoplectus tabernaemontani	Softstem bulrush	1	3.0
Sesbania herbacea	Bigpod sesbania	4	12.1
Solidago spp.	Goldenrod	6	18.2
Sparganium americanum	American burred	6	18.2
Symphyotrichum divaricatum	Southern annual saltmarsh aster	3	9.1
Ulmus americana	American elm	1	3.0
Utricularia vulgaris	Common bladderwort	3	9.1

Table 11. Plant community of Wasp Lake, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

WASP LAKE			
Littoral Depth	3.1’	**Date Surveyed**	June 24-25, 2020
Species Richness	17	**Total Pts. Sur**	38
Native Species Richness	16	**Total Pts. Veg**	38
		%-Littoral Veg	100
Scientific Name	**Common Name**	**# Pts. Present**	**%-Frequency**
Alternanthera philoxeroides	Alligatorweed	4	10.5
Amorpha fructicosa	False indigo bush	5	13.2
Brunnichia ovata	American buckwheat vine	17	44.7
Carya aquatica	Water hickory	28	73.7
Cephalanthus occidentalis	Common buttonbush	7	18.4
Diospyros virginiana	Common persimmon	3	7.9
Foresteria acuminata	Eastern swamp privet	28	73.7
Fraxinus pennsylvanica	Green ash	1	2.6
Gleditsia aquatica	Water locust	5	13.2
Hydrocotyle ranunculoides	Floating marshpennywort	1	2.6
Ilex decidua	Possumhaw	3	7.9
Lemna minor	Common duckweed	1	2.6
Mikania scandens	Climbing hemp-vine	1	2.6
Planera aquatica	Water elm	21	55.3
Quercus lyrata	Overcup oak	9	23.7
Quercus phellos	Willow oak	3	7.9
Vitis vulpina	Frost grape	6	15.8

Table 12. Plant community of the Hatchie and Little Hatchie rivers, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

HATCHIE RIVER			
Species Richness	16	**Date Surveyed**	July 15, 2020
Native Species Richness	14	**Total Pts. Sur**	4
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer negundo	Box elder	2	50
Acer rubrum	Red maple	1	25
Betula nigra	River birch	2	50
Carya aquatica	Water hickory	1	25
Cephalanthus occidentalis	Buttonbush	1	25
Commelina virginica	Virginia dayflower	2	50
Cyperus esculentus	Yellow nutsedge	1	25
Eupatorium serotinum	Late flowering throroughwort	1	25
Justicia americana	American water willow	2	50
Paspalum spp.	Paspalum	1	25
Platanus occidentalis	Sycamore	1	25
Polygonum pennsylvanicum	Pennsylvania Smartweed	3	75
Salix nigra	Black willow	1	25
Saururus cernuus	Lizard's tail	1	25
Sesbania spp.	Sesbania	2	50
Sorghum halepense	Johnson grass	1	25
LITTLE HATCHIE RIVER			
Species Richness	10	**Date Surveyed**	July 15, 2020
Native Species Richness	10	**Total Pts. Sur**	3
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer negundo	Box Elder	2	66.7
Boehmeria cylindrica	Smallspike False Nettle	1	33.3
Carya aquatica	Water Hickory	1	33.3
Commelina virginica	Virginia Dayflower	3	100
Eleocharis spp.	Spike rush	1	33.3
Paspalum spp.	Paspalum	1	33.3
Polygonum spp.	Smartweed	1	33.3
Saururus cernuss	Lizard's Tail	1	33.3
Sesbania spp.	Sesbania	1	33.3
Ulmus spp.	Elm	1	33.3

Table 13. Plant community of the Yazoo river, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

YAZOO RIVER			
Species Richness	13	**Date Surveyed**	July 6-7,2020
Native Species Richness	9	**Total Pts. Sur**	5
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Alternanthera philoxeroides	Alligatorweed	3	60
Betula nigra	River birch	1	20
Boehmeria cylindrica	Smallspike falsenettle	1	20
Cyperus esculentus	Yellow nutsedge	3	60
Eichhornia crassipes	Water hyacinth	1	20
Equisetum spp.	Horsetail	1	20
Lemna minor	Common duckweed	1	20
Ludwigia peploides	Floating primrose	1	20
Polygonum spp.	Smartweed	1	20
Populus deltoides	Sycamore	1	20
Sagittaria latifolia	Broadleaf arrowhead	1	20
Salix nigra	Black willow	2	40
Sorghum halepense	Johnson grass	1	20

Table 14. Plant community of the Yalobusha and Skuna rivers, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

YALOBUSHA RIVER			
Species Richness	18	**Date Surveyed**	June 4 – July 1, 2020
Native Species Richness	16	**Total Pts. Sur**	6
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer negundo	Box elder	1	16.7
Acer rubrum	Red maple	1	16.7
Betula nigra	River birch	1	16.7
Boehmeria cylindrica	Smallspike false nettle	1	16.7
Commelina virginica	Virginia dayflower	1	16.7
Cyperus esculentus	Yellow nutsedge	2	33.3
Justicia americana	American water willow	2	33.3
Landoltia spp.	Dotted duckweed	1	16.7
Lemna minor	Common duckweed	1	16.7
Ludwigia leptocarpa	Anglestem Primrose	1	16.7
Ludwigia peploides	Creeping water primrose	1	16.7
Paspalum spp.	Paspalum	3	50
Platanus occidentalis	Sycamore	2	33.3
Polygonum spp.	Smart weed	1	16.7
Salix nigra	Black Willow	2	33.3
Sorghum halepense	Johnson grass	2	33.3
Triadenum spp.	Triadenum	1	16.7
Ulmus spp.	Elm	1	16.7
SKUNA RIVER			
Species Richness	6	**Date Surveyed**	June 24, 2020
Native Species Richness	5	**Total Pts. Sur**	3
Acer rubrum	Morning glory	1	33.3
Hydrocotyle umbellata	Manyflower marsh pennywort	1	33.3
Paspalum spp.	Paspalum	1	33.3
Polygonum spp.	Smartweed	1	33.3
Salix nigra	Black willow	3	100
Sorghum halepense	Johnson grass	2	66.7

Table 15. Plant community of the Tallahatchie and Little Tallahatchie rivers, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

TALLAHATCHIE RIVER			
Species Richness	5	**Date Surveyed**	June 30 – July 6, 2020
Native Species Richness	4	**Total Pts. Sur**	2
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Cyperus esculentus	Yellow nutsedge	1	50
Justicia americana	American water willow	1	50
Platanus occidentalis	Sycamore	1	50
Polygonum pennsylvanicum	Pennsylvania smartweed	1	50
Salix nigra	Black willow	2	100
LITTLE TALLAHATCHIE RIVER			
Species Richness	19	**Date Surveyed**	June 25-30, 2020
Native Species Richness	17	**Total Pts. Sur**	8
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer negundo	Box elder	1	12.5
Betula nigra	River birch	1	12.5
Brunnichia ovata	Red vine	1	12.5
Carex spp.	Sedge	1	12.5
Castanea dentata	American chestnut	1	12.5
Cephalanthus occidentalis	Buttonbush	1	12.5
Commelina virginica	Virginia dayflower	1	12.5
Cyperus esculentus	Yellow nutsedge	1	12.5
Justicia americana	American water willow	2	25
Landoltia punctata	Dotted duckweed	1	12.5
Leersia spp.	Cutgrass	2	25
Lemna minor	Common duckweed	1	12.5
Ludwigia leptocarpa	Anglestem primrose	2	25
Paspalum spp.	Paspalum	2	25
Polygonum spp.	Smartweed	2	25
Salix nigra	Black willow	5	62.5
Sorghum halepense	Johnson grass	2	25
Ulmus spp.	Elm	3	37.5
Vitis riparia	Riverbank grape	1	12.5

Table 16. Plant community of the Yocona river, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

YOCONA RIVER			
Species Richness	20	**Date Surveyed**	June 24 – July 6, 2020
Native Species Richness	16	**Total Pts. Sur**	6
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer negundo	Box elder	1	16.7
Albizia julibrissin	Mimosa	1	16.7
Alternanthera philoxeroides	Alligatorweed	2	33.3
Boehmeria cylindrica	Smallspike false nettle	1	16.7
Commelina virginica	Virginia dayflower	2	33.3
Cyperus esculentus	Yellow nutsedge	1	16.7
Juncus acuminatus	Tapertip rush	1	16.7
Juncus effusus	Common rush	1	16.7
Justicia americana	American water willow	2	33.3
Landoltia punctata	Dotted duckweed	1	16.7
Leersia spp.	Cutgrass	1	16.7
Lemna minor	Common duckweed	1	16.7
Ludwigia leptocarpa	Anglestem primrose	2	33.3
Ludwigia peploides	Creeping primrose	1	16.7
Paspalum spp.	Paspalum	3	50
Platanus occidentalis	Sycamore	4	16.7
Polygonum spp.	Smartweed	2	33.3
Salix nigra	Black willow	4	66.7
Sorghum halepense	Johnson grass	1	16.7
Sparganium americanum	Burr reed	2	33.3

Table 17. Plant community of the Coldwater river, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

COLDWATER RIVER			
Species Richness	17	**Date Surveyed**	June 25-30, 2020
Native Species Richness	15	**Total Pts. Sur**	7
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer negundo	Box elder	3	42.9
Acer saccharinum	Silver maple	3	42.9
Boehmeria cylindrica	Smallspike false nettle	1	14.3
Commelina virginica	Virginia dayflower	2	28.6
Cyperus esculentus	Yellow nutsedge	2	28.6
Equisetum spp.	Horsetail	1	14.3
Foresteria acuminata	Swamp privet	1	14.3
Justicia americana	American water willow	1	28.6
Leersia spp.	Cutgrass	1	14.3
Lemna minor	Common duckweed	1	14.3
Ludwigia leptocarpa	Anglestem primrose	1	14.3
Paspalum spp.	Paspalum	1	14.3
Platanus occidentalis	Sycamore	2	42.9
Polygonum pennsylvanicum	Pennsylvania Smartweed	1	28.6
Salix nigra	Black willow	2	28.6
Sorghum halepense	Johnson grass	2	28.6
Ulmus spp.	Elm	2	28.6

Table 18. Plant community of the Hurricane and Hickahala creeks, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

HURRICANE CREEK			
Species Richness	12	**Date Surveyed**	June 25, 2020
Native Species Richness	10	**Total Pts. Sur**	3
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer saccharinum	Silver maple	2	66. 7
Cephalanthus occidentalis	Buttonbush	1	33.3
Cyperus esculentus	Yellow nutsedge	1	33.3
Landoltia punctata	Dotted duckweed	1	33.3
Paspalum spp.	Paspalum.	2	66. 7
Polygonum spp.	Smartweed	1	33. 3
Populus deltoides	Sycamore	2	66. 7
Salix nigra	Black willow	3	100
Sesbania spp.	Sesbania	3	100
Sorghum halepense	Johnson grass	1	33.3
Taxodium distichum	Bald cypress	1	33.3
Ulmus spp.	Elm	3	100
HICKAHALA CREEK			
Species Richness	10	**Date Surveyed**	June 25, 2020
Native Species Richness	10	**Total Pts. Sur**	3
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer saccharinum	Silver maple	1	33.3
Cephalanthus occidentalis	Buttonbush	2	66. 7
Commelina virginica	Virginia dayflower	1	33. 3
Landoltia punctata	Dotted duckweed	1	33. 3
Ludwigia leptocarpa	Anglestem primrose	2	66. 7
Nyssa spp.	Tupelo	1	33. 3
Paspalum spp.	Paspalum	1	33. 3
Polygonum spp.	Smartweed	1	33. 3
Salix nigra	Black willow	3	100
Ulmus spp.	Elm	2	66.7

Table 19. Plant community of the Sunflower river, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

SUNFLOWER RIVER			
Species Richness	9	**Date Surveyed**	June 30 – July 6, 2020
Native Species Richness	7	**Total Pts. Sur**	5
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Alternanthera philoxeroides	Alligatorweed	4	80
Boehmeria cylindrica	Smallspike false nettle	1	20
Cephalanthus occidentalis	Buttonbush	1	20
Cyperus esculentus	Yellow nutsedge	1	20
Foresteria acuminata	Swamp privet	1	20
Gleditsia aquatica	Water locust	1	20
Justicia americana	American water willow	2	40
Polygonum spp.	Smartweed	1	20
Ulmus spp.	Elm	1	20

Table 20. Plant community of the Buttahatchee river, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

BUTTAHATCHEE RIVER			
Species Richness	10	**Date Surveyed**	June 23, 2020
Native Species Richness	9	**Total Pts. Sur**	4
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Apocynum cannabinum	Hemp dogbane	1	25
Betula nigra	River birch	2	50
Boehmeria cyclindrica	Smallspike false nettle	1	25
Cyperus esculentus	Yellow nutsedge	2	50
Justicia americana	American water willow	3	75
Ludwigia leptocarpa	Anglestem primrose	2	50
Paspalum spp.	Paspalum	1	25
Salix nigra	Black willow	4	100
Sesbania spp.	Sesbania	1	25
Taxodium distichum	Bald cypress	2	50

Table 21. Plant community of the Town and Chiwapa creeks, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

TOWN CREEK			
Species Richness	10	**Date Surveyed**	June 23, 2020
Native Species Richness	8	**Total Pts. Sur**	3
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Baccharis spp.	Baccharis	1	33.3
Boehmeria cylindrica	Smallspike false nettle	1	33.3
Equisetum hyemale	Horsetail	2	66.7
Justicia americana	American water willow	1	33.3
Leersia spp.	Cutgrass	1	33.3
Ludwigia leptocarpa	Anglestem primrose	1	33.3
Oxycaryum cubense	Cuban bulrush	1	33.3
Polygonum pennsylvanicum	Pennsylvania smartweed	1	33.3
Salix nigra	Black willow	3	100
Sorghum halepense	Johnson grass	3	100
CHIWAPA CREEK			
Species Richness	7	**Date Surveyed**	June 23, 2020
Native Species Richness	6	**Total Pts. Sur**	3
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer negundo	Box elder	1	33.3
Equisetum hyemale	Horsetail	3	100
Hydrocotyle umbellata	Manyflower marsh pennywort	1	33.3
Paspalum spp.	Paspalum	1	33.3
Platanus occidentalis	Sycamore	1	33.3
Salix nigra	Black willow	3	100
Sorghum halepense	Johnson grass	3	100

Table 22. Plant community of the Tibbee and Line creeks, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

TIBBEE CREEK			
Species Richness	7	**Date Surveyed**	June 22, 2020
Native Species Richness	5	**Total Pts. Sur**	3
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Albizia julibrissin	Mimosa	1	33.3
Cyperus esculentus	Yellow nutsedge	1	33.3
Diospyros spp.	Persimmon	1	33.3
Justicia americana	American water willow	2	66.7
Paspalum spp.	Paspalum	1	33.3
Salix nigra	Black willow	2	66.7
Sesbania spp.	Sesbania	2	66.7
LINE CREEK			
Species Richness	6	**Date Surveyed**	June 22, 2020
Native Species Richness	3	**Total Pts. Sur**	1
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Alternanthera philoxeroides	Alligatorweed	1	100
Cyperus esculentus	Yellow nutsedge	1	100
Hydrocotyle umbellata	Manyflower marsh pennywort	1	100
Justicia americana	American water willow	1	100
Phragmites australis	Common reed	1	100
Saururus cernuus	Lizard's tail	1	100

Table 23. Plant community of the Luxapallila creek, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

LUXAPALLILA CREEK			
Species Richness	15	**Date Surveyed**	June 22, 2020
Native Species Richness	11	**Total Pts. Sur**	5
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Albizia julibrissin	Mimosa	2	40
Alternanthera philoxeroides	Alligatorweed	2	40
Apocynum cannabinum	Hemp dogbane	2	40
Baccharis spp.	Baccharis	1	20
Betula nigra	River birch	4	80
Cyperus esculentus	Yellow nutsedge	1	20
Juncus acuminatus	Tapertip rush	1	20
Justicia americana	American water willow	4	80
Leersia spp.	Cutgrass	3	60
Paspalum spp.	Paspalum	4	80
Salix nigra	Black willow	4	80
Saururus cernuus	Lizard's tail	2	40
Sorghum halepense	Johnson grass	2	40
Sparganium americanum	Burr reed	1	20
Taxodium distichum	Bald cypress	3	60

Table 24. Plant community of the Big Black river, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

BIG BLACK RIVER			
Species Richness	10	**Date Surveyed**	July 7, 2020
Native Species Richness	7	**Total Pts. Sur**	4
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer saccharinum	Silver maple	2	50
Alternanthera philoxeroides	Alligatorweed	1	25
Cyperus esculentus	Yellow nutsedge	3	75
Justicia americana	American water willow	2	50
Paspalum spp.	Paspalum	1	25
Polygonum spp.	Smartweed	2	50
Salix nigra	Black willow	3	75
Saururus cernuus	Lizard's tail	1	25
Sorghum halepense	Johnson grass	1	25
Ulmus spp.	Elm	1	25

Table 25. Plant community of the Pearl and Bogue Chitto rivers, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

PEARL RIVER			
Species Richness	14	**Date Surveyed**	July 7-10, 2020
Native Species Richness	13	**Total Pts. Sur**	6
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer rubrum	Red maple	3	50
Acer saccharinum	Silver maple	2	33.3
Betula nigra	River birch	1	16.7
Commelina virginica	Virginia dayflower	1	16.7
Cyperus esculentus	Yellow nutsedge	2	33.3
Equisetum spp.	Horsetail	1	16.7
Justicia americana	American water willow	3	50
Leersia spp.	Cutgrass	2	33.3
Paspalum spp.	Paspalum	1	16.7
Platanus occidentalis	Sycamore	2	33.3
Polygonum spp.	Smartweed	4	66.7
Salix nigra	Black willow	2	33.3
Saururus cernuus	Lizard's wail	1	16.7
Ulmus spp.	Elm	1	16.7
BOGUE CHITTO RIVER			
Species Richness	11	**Date Surveyed**	July 9, 2020
Native Species Richness	10	**Total Pts. Sur**	4
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer negundo	Box elder	2	50
Betula nigra	River birch	1	25
Boehmeria cylindrica	Smallspike false nettle	2	50
Colocasia esculenta	Wild taro	2	50
Hydrocotyle umbellata	Manyflower marsh pennywort	1	25
Justicia americana	American water willow	3	75
Paspalum spp.	Paspalum	1	25
Polygonum spp.	Smartweed	3	75
Salix nigra	Black willow	1	25
Saururus cernuus	Lizard's tail	1	25
Ulmus spp.	Elm	1	25

Table 26. Plant community of the Pearl river delta, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

PEARL RIVER DELTA			
Species Richness	48	**Date Surveyed**	July 8-9, 2020
Native Species Richness	41	**Total Pts. Sur**	17
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer rubrum	Red maple	2	11.8
Alternanthera philoxeroides	Alligatorweed	8	47.1
Baccharis halimifolia	Eastern baccharis	5	29.4
Cabomba caroliniana	Fanwort	8	47.1
Carya aquatica	Water hickory	1	5.9
Ceratophyllum demersum	Coontail	11	64.7
Chara spp.	Chara	10	58.8
Cladium mariscus	Sawtooth sedge	4	23.5
Diospyros virginiana	Common persimmon	1	5.9
Eichhornia crassipes	Water hyacinth	3	17.6
Elymus virginicus	Virginia wildrye	1	5.9
Hibiscus moscheutos	Crimsoneyed rosemallow	2	11.8
Ipomoea sagittata	Saltmarsh morning glory	5	29.4
Juncus roemerianus	Black needle rush	6	35.3
Ludwigia leptocarpa	Anglestem primrose-willow	5	29.4
Ludwigia peploides	Floating primrose-willow	8	47.1
Lythrum lineare	Saltmarsh loosestrife	3	17.6
Myrica cerifera	Southern wax myrtle	4	23.5
Myriophyllum spicatum	Eurasian watermilfoil	9	52.9
Najas minor	Brittle naiad	4	23.5
Nekemias arborea	Peppervine	4	23.5
Nuphar lutea	Yellow pondlily	5	29.4
Panicum repens	**Torpedo grass**	2	11.8
Phragmites australis	Common reed	10	58.8
Pinus elliottii	Slash pine	1	5.9
Polygonum hydropiperoides	Swamp smartweed	2	11.8
Pontederia cordata	Pickerelweed	5	29.4
Quercus laurifolia	Laurel oak	1	5.9
Quercus virginiana	Southern Live oak	1	5.9
Sagittaria lancifolia	Bulltongue arrowhead	14	82.4
Salvinia minima	Common salvinia	9	52.9
Saururus cernuus	Lizard's tail	1	5.9
Schoenoplectus americanus	Three-square bulrush	1	5.9
Schoenoplectus tabernaemontani	Softstem bulrush	10	58.8
Serenoa repens	Saw palmetto	3	17.6

Sesbania herbacea	Bigpod sesbania	2	11.8
Sium suave	Water parsnip	7	41.2
Solidago sempervirens	Seaside goldenrod	2	11.8
Spartina alterniflora	Smooth cordgrass	6	35.3
Spartina cynosuroides	Big cordgrass	6	35.3
Symphotrichum subulatum	Eastern annual saltmarsh aster	8	47.1
Taxodium distichum	Bald cypress	2	11.8
Toxicodendron radicans	Poison ivy	2	11.8
Typha latifolia	Broadleaf cattail	3	17.6
Utricularia vulgaris	Common bladderwort	1	5.9
Vallisneria americana	American eelgrass	13	76.5
Woodwardia areolata	Netted chainfern	2	11.8
Zizaniopsis miliacea	Giant cutgrass	9	52.9

Table 27. Plant community of the Homochitto river, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

HOMOCHITTO RIVER			
Species Richness	7	**Date Surveyed**	July 9-10, 2020
Native Species Richness	6	**Total Pts. Sur**	3
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Betula nigra	River birch	1	33.3
Commelina virginica	Virginia dayflower	1	33.3
Cyperus esculentus	Yellow nutsedge	1	33.3
Justicia americana	American water willow	1	33.3
Paspalum spp.	Paspalum	1	33.3
Salix nigra	Black willow	3	100
Ulmus spp.	Elm	1	33.3

Table 28. Plant community of the Pascagoula river, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

PASCAGOULA RIVER			
Species Richness	15	**Date Surveyed**	July 13, 2020
Native Species Richness	11	**Total Pts. Sur**	4
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Alternanthera philoxeroides	Alligatorweed	1	25
Betula nigra	River birch	1	25
Boehmeria cylindrica	Smallspike false nettle	1	25
Cyperus esculentus	Yellow nutsedge	1	25
Justicia americana	American water willow	1	25
Leersia spp.	Cutgrass	1	25
Ludwigia leptocarpa	Anglestem primrose	1	25
Platanus occidentalis	Sycamore	2	50
Polygonum spp.	Smartweed	1	25
Salix nigra	Black willow	2	50
Serenoa repens	Saw palmetto	1	25
Sorghum halepense	Johnson grass	1	25
Taxodium distichum	Bald cypress	2	50
Triadica sebifera	Chinese tallow	1	25
Ulmus spp.	Elm	1	25

Table 29. Plant community of the Chickasawhay river, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

CHICKASAWHAY RIVER			
Species Richness	12	**Date Surveyed**	July 8-13, 2020
Native Species Richness	10	**Total Pts. Sur**	4
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer negundo	Box elder	2	50
Albizia julibrissin	Mimosa	1	25
Alternanthera philoxeroides	Alligatorweed	1	25
Betula nigra	River birch	3	75
Commelina virginica	Virginia dayflower	1	25
Juncus effusus	Common rush	1	25
Justicia americana	American water willow	1	25
Paspalum spp.	Paspalum	1	25
Platanus occidentalis	Sycamore	2	50
Salix nigra	Black willow	1	25
Sparganium americanum	Burr reed	1	25
Ulmus spp.	Elm	3	75

Table 30. Plant community of the Chunky and Okatibbee rivers, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

CHUNKY RIVER			
Species Richness	6	**Date Surveyed**	July 8, 2020
Native Species Richness	4	**Total Pts. Sur**	2
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer negundo	Box elder	1	50
Alternanthera philoxeroides	Alligatorweed	1	50
Boehmeria cylindrica	Smallspike false nettle	1	50
Commelina virginica	Virginia dayflower	1	50
Cyperus esculentus	Yellow nutsedge	2	100
Justicia americana	American water willow	1	50
OKATIBBEE RIVER			
Species Richness	14	**Date Surveyed**	July 8, 2020
Native Species Richness	10	**Total Pts. Sur**	4
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Alternanthera philoxeroides	Alligatorweed	1	25
Betula nigra	River birch	3	75
Boehmeria cylindrica	Smallspike false nettle	1	25
Brunnichia ovata	Red vine	1	25
Cephalanthus occidentalis	Buttonbush	1	25
Cyperus esculentus	Yellow nutsedge	1	25
Leersia spp.	Cutgrass	2	50
Ludwigia leptocarpa	Anglestem primrose	1	25
Paspalum spp.	Paspalum	1	25
Phragmites australis	Common Reed	1	25
Platanus occidentalis	Sycamore	1	25
Salix nigra	Black willow	1	25
Sparganium americanum	Burr reed	1	25
Triadica sebifera	Chinese tallow	1	25

Table 31. Plant community of the Leaf river, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

LEAF RIVER			
Species Richness	13	**Date Surveyed**	July 10-13, 2020
Native Species Richness	9	**Total Pts. Sur**	5
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Alternanthera philoxeroides	Alligatorweed	2	40
Betula nigra	River birch	2	40
Boehmeria cylindrica	Smallspike false nettle	1	20
Carex spp.	Sedge	2	40
Carya aquatica	Water hickory	1	20
Colocasia esculenta	Wild taro	1	20
Paspalum spp.	Paspalum	2	40
Platanus occidentalis	Sycamore	1	40
Polygonum spp.	Smartweed	2	40
Salix nigra	Black willow	3	60
Sorghum halepense	Johnson grass	1	20
Triadica sebifera	Chinese tallow	1	20
Ulmus spp.	Elm	1	20

Table 32. Plant community of the Pascagoula river delta, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

PASCAGOULA RIVER DELTA			
Species Richness	39	**Date Surveyed**	July 9-10, 2020
Native Species Richness	31	**Total Pts. Sur**	16
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer rubrum	Red maple	1	6.3
Alternanthera philoxeroides	Alligatorweed	4	25.0
Baccharis halimifolia	Eastern baccharis	6	37.5
Bacopa monnieri	Water hyssop	1	6.3
Chara spp.	Chara	1	6.3
Eichhornia crassipes	Water hyacinth	1	6.3
Eleocharis parvula	Dwarf spikerush	10	62.5
Fraxinus caroliniana	Swamp ash	1	6.3
Ilex decidua	Possumhaw	1	6.3
Ipomoea sagittata	Saltmarsh morning glory	1	6.3
Juncus roemerianus	Black needle rush	3	18.8
Lythrum lineare	Saltmarsh loosestrife	11	38.8
Myrica cerifera	Southern wax myrtle	4	25.0
Myriophyllum spicatum	Eurasian watermilfoil	1	6.3
Nekemias arborea	Peppervine	7	43.8
Nuphar lutea	Yellow pondlily	1	6.3
Phragmites australis	Common reed	2	12.5
Pinus elliottii	Slash pine	6	37.5
Polygonum hydropiperoides	Swamp smartweed	1	6.3
Pontederia cordata	Pickerelweed	4	25.0
Sagittaria lancifolia	Bulltongue arrowhead	1	6.3
Salix nigra	Black willow	11	38.8
Salvinia minima	Common salvinia	3	18.8
Salvinia molesta	**Giant salvinia**	1	6.3
Schoenoplectus tabernaemontani	Softstem bulrush	11	38.8
Serenoa repens	Saw palmetto	1	6.3
Sesbania herbacea	Bigpod sesbania	2	12.5
Sesbania punicia	Scarlet sesbania	1	6.3
Sium suave	Water parsnip	3	18.8
Solidago spp.	Goldenrod	1	6.3
Spartina alterniflora	Smooth cordgrass	2	12.5
Spartina cynosuroides	Big cordgrass	7	43.8
Spartina patens	Saltmeadow cordgrass	6	37.5
Symphotrichum subulatum	Eastern annual saltmarsh aster	1	6.3
Taxodium distichum	Bald cypress	9	56.3

Triadica sebifera	Chinese tallow	1	6.3
Vallisneria americana	American eelgrass	11	38.8
Zizaniopsis miliacea	Giant cutgrass	6	37.5

Table 33. Plant community of the Jourdan river, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

JOURDAN RIVER			
Species Richness	17	**Date Surveyed**	July 6, 2020
Native Species Richness	15	**Total Pts. Sur**	10
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Baccharis halimifolia	Eastern baccharis	3	30
Chara spp.	Chara	2	20
Cladium mariscus	Sawtooth sedge	2	20
Crinum americanum	Florida swamp lily	2	20
Ipomoea sagittata	Saltmarsh morning glory	1	10
Juncus roemerianus	Black needle rush	1	10
Lythrum lineare	Saltmarsh loosestrife	5	50
Phragmites australis	Common reed	3	30
Pontederia cordata	Pickerelweed	2	20
Sagittaria lancifolia	Bulltongue arrowhead	7	70
Schoenoplectus tabernaemontani	Softstem bulrush	9	90
Serenoa repens	Saw palmetto	1	10
Spartina alterniflora	Smooth cordgrass	2	20
Spartina cynosuroides	Big cordgrass	8	80
Symphotrichum subulatum	Eastern annual saltmarsh aster	5	50
Triadica sebifera	Chinese tallow	1	10
Utricularia vulgaris	Common bladderwort	1	10
Vallisneria americana	American eelgrass	5	50

Table 34. Plant community of the Wolf river, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

WOLF RIVER			
Species Richness	21	**Date Surveyed**	July 8, 2020
Native Species Richness	19	**Total Pts. Sur**	12
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Quercus nigra	Water oak	1	8.3
Rubus spp.	Blackberry	1	8.3
Sabatia calycina	Coastal rose gentian	1	8.3
Sagittaria lancifolia	Bulltongue arrowhead	6	50.0
Salvinia minima	Common salvinia	7	58.3
Schoenoplectus tabernaemontani	Softstem bulrush	3	25.0
Senna spp,	Senna	1	8.3
Serenoa repens	Saw palmetto	2	16.7
Sideroxylon lanuginosum	Gum bumelia	1	8.3
Sium suave	Water parsnip	1	8.3
Smilax spp.	Greenbriar	2	16.7
Spartina alterniflora	Smooth cordgrass	6	50.0
Spartina cynosuroides	Big cordgrass	6	50.0
Stuckenia pectinata	Sago pondweed	1	8.3
Symphotrichum subulatum	Eastern annual saltmarsh aster	4	33.3
Taxodium distichum	Bald cypress	4	33.3
Triadica sebifera	Chinese tallow	3	25.0
Typha latifolia	Broadleaf cattail	2	16.7
Vallisneria americana	American eelgrass	4	33.3
Woodwardia areolata	Netted chainfern	1	8.3
Zizaniopsis miliacea	Giant cutgrass	2	16.7

Table 35. Plant community of the Biloxi river, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

BILOXI RIVER			
Species Richness	39	**Date Surveyed**	July 7, 2020
Native Species Richness	37	**Total Pts. Sur**	12
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer rubrum	Red maple	2	14.3
Amaranthus tuberculatus	Rough fruited water hemp	1	7.1
Baccharis halimifolia	Eastern baccharis	8	57.1
Bambusa vulgaris	Common bamboo	1	7.1
Ceratophyllum demersum	Coontail	5	35.7
Chara spp.	Chara	5	35.7
Cladium mariscus	Sawtooth sedge	5	35.7
Crinum americanum	Florida swamp lily	1	7.1
Cyperus virens	Green flatsedge	1	7.1
Cyrilla racemiflora	Swamp titi	2	14.3
Ipomoea sagittata	Saltmarsh morning glory	4	28.6
Juncus roemerianus	Black needle rush	8	57.1
Ligustrum sinense	Chinese privet	1	7.1
Liquidambar styraciflua	Sweetgum	2	14.3
Lythrum lineare	Saltmarsh loosestrife	5	35.7
Myrica cerifera	Southern wax myrtle	3	21.4
Nekemias arborea	Peppervine	1	7.1
Nuphar lutea	Yellow pondlily	3	21.4
Panicum repens	**Torpedo grass**	5	35.7
Parthenocissus quinquefolia	Virginia creeper	1	7.1
Persea palustris	Swamp bay	1	7.1
Pinus elliottii	Slash pine	3	21.4
Pontederia cordata	Pickerelweed	3	21.4
Quercus nigra	Water oak	3	21.4
Quercus stellata	Post oak	1	7.1
Rubus spp.	Blackberry	1	7.1
Sagittaria lancifolia	Bulltongue arrowhead	6	42.9
Schoenoplectus tabernaemontani	Softstem bulrush	1	7.1
Serenoa repens	Saw palmetto	1	7.1
Smilax spp.	Greenbriar	2	14.3
Solidago spp.	Goldenrod	2	14.3
Spartina cynosuroides	Big cordgrass	5	35.7
Symphotrichum subulatum	Eastern annual saltmarsh aster	2	14.3
Taxodium distichum	Bald cypress	1	7.1
Typha latifolia	Broadleaf cattail	1	7.1

Utricularia vulgaris	Common bladderwort	2	14.3
Vallisneria americana	American eelgrass	7	50.0
Vitis spp.	Grape	1	7.1
Zizaniopsis miliacea	Giant cutgrass	1	7.1

Table 36. Plant community of the Tchoutacabuffa river, those species in red are non-native, species in bold font are listed on the federal and/or MS state noxious weed lists.

TCHOUTACABUFFA RIVER			
Species Richness	46	**Date Surveyed**	July 7, 2020
Native Species Richness	41	**Total Pts. Sur**	14
Scientific Name	**Common Name**	**# Pts. Present**	**%- Frequency**
Acer rubrum	Red maple	4	28.6
Alternanthera philoxeroides	Alligatorweed	3	21.4
Amaranthus tuberculatus	Rough fruited water hemp	2	14.3
Baccharis halimifolia	Eastern baccharis	2	14.3
Cabomba caroliniana	Fanwort	1	7.1
Cephalanthus occidentalis	Buttonbush	1	7.1
Ceratophyllum demersum	Coontail	8	57.1
Chara spp.	Chara	8	57.1
Chasmanthium sessiflorum	Longleaf woodoats	1	7.1
Cinnamomum camphora	Camphor tree	1	7.1
Cladium mariscus	Sawtooth sedge	6	42.9
Clethra alnifolia	Coastal pepperbush	1	7.1
Crinum americanum	Florida swamp lily	2	14.3
Diospyros virginiana	Common persimmon	1	7.1
Ilex aquifolium	English holly	1	7.1
Ilex decidua	Possumhaw	4	28.6
Ipomoea sagittata	Saltmarsh morning glory	3	21.4
Juncus roemerianus	Black needle rush	10	71.4
Liquidambar styraciflua	Sweetgum	1	7.1
Lythrum lineare	Saltmarsh loosestrife	2	14.3
Magnolia grandiflora	Southern magnolia	3	21.4
Magnolia virginiana	Sweetbay	2	14.3
Myrica cerifera	Southern wax myrtle	8	57.1
Nekemias arborea	Peppervine	2	14.3
Panicum repens	**Torpedo grass**	8	57.1
Persea palustris	Swamp bay	3	21.4
Pinus elliottii	Slash pine	6	42.9
Pontederia cordata	Pickerelweed	3	21.4
Quercus nigra	Water oak	4	28.6
Quercus virginiana	Southern live oak	2	14.3
Rubus spp.	Blackberry	2	14.3
Sagittaria lancifolia	Bulltongue arrowhead	8	57.1
Schoenoplectus tabernaemontani	Softstem bulrush	2	14.3
Serenoa repens	Saw palmetto	4	28.6
Sesbania punicia	Scarlet sesbania	3	21.4

Smilax spp.	Greenbriar	3	21.4
Spartina alterniflora	Smooth cordgrass	2	14.3
Spartina cynosuroides	Big cordgrass	4	28.6
Symphotrichum subulatum	Eastern annual saltmarsh aster	7	50.0
Taxodium distichum	Bald cypress	4	28.6
Tillandsia usneoides	Spanish moss	1	7.1
Triadica sebifera	Chinese tallow	2	14.3
Vallisneria americana	American eelgrass	8	57.1
Vitis spp.	Grape	3	21.4
Woodwardia areolata	Netted chainfern	4	28.6
Zizaniopsis miliacea	Giant cutgrass	3	21.4

Table 37. List of all species encountered in lentic water bodies during this survey; in the Status column, a '-' indicates that the native status is not known; in the year columns, numbers represent the lakes where a species was encountered.

Scientific Name	Common Native	Status	2017	2019	2020
Acer rubrum	Red maple	Nat	1	3	1
Albizia julibrissin	Mimosa	Non-nat	-	8	1
Algae spp.	Algae	-	7	-	-
Alnus spp.	Alder	Nat	-	9	1
Alnus serrulata	Smooth alder	Nat	-	-	1
Alternanthera philoxeroides	Alligatorweed	Non-nat	30	7	8
Arundinaria gigantea	Giant cane	Nat	2	3	-
Azolla caroliniana	Carolina mosquitofern	Nat	1	-	2
Baccharis halimifolia	Eastern baccharis	Nat	5	5	3
Bacopa caroliniana	Blue waterhyssop	Nat	4	1	1
Bacopa spp.	Waterhyssop	-	2	-	-
Boehmeria cylindrica	Smallspike false nettle	Nat	2	1	8
Brasenia schreberi	Watershield	Nat	16	3	2
Callicarpa americana	American beautyberry	Nat	1	-	-
Carex spp.	Sedge	-	1	2	7
Carya aquatica	Water hickory	Nat	2	-	4
Carya glabra	Pignut hickory	Nat	-	-	1
Cephalanthus occidentalis	Common buttonbush	Nat	21	8	10
Ceratophyllum demersum	Coontail	Nat	10	8	4
Cercis canadensis	Eastern redbud	Nat	-	-	1
Chara spp.	Muskgrass	Nat	11	5	2
Colocasia esculenta	Wild taro	Non-nat	8	5	-
Crataegus spp.	Hawthorn	Nat	1	-	-
Crotalaria spp.	Rattlebox	-	-	1	-
Cynodon dactylon	Bermuda grass	Non-nat	-	-	1
Cyperus esculentus	Yellow nutsedge	Non-nat	4	-	2
Cyperus iria	Rice flatsedge	Non-nat	-	-	1
Cyperus odoratus	Fragrant flatsedge	Nat	4	-	-
Cyperus spp.	Flatsedge	-	1	-	-
Cyperus virens	Green Flatsedge	Nat	-	-	1
Dicanthelium latifolia	Broadleaf panicgrass	Nat	-	-	1
Digitaria spp.	Crabgrass	-	2	-	-
Diodia virginiana	Virginia buttonweed	Nat	-	-	1
Diospyros virginiana	Common persimmon	Nat	-	-	6
Drepanocladus spp.	Watermoss	-	1	-	-
Dulichium arundinaceum	Three-way sedge	Nat	1	-	-
Echinochloa crus-galli	Barnyard grass	Non-nat	-	-	1

Echinodorus cordifolius	Creeping burhead	Nat	5	-	1
Eichhornia crassipes	Water hyacinth	Non-nat	8	5	4
Eleocharis obtusa	Blunt spikerush	Nat	4	2	3
Eleocharis palustris	Common spikerush	Nat	-	-	1
Eleocharis quadrangulata	Squarestem spikerush	Nat	2	6	3
Eleocharis spp.	Spikerush	-	1	-	-
Eleocharis vivipara	Viviparous spikerush	Nat	14	2	1
Equisetum spp.	Horsetail	-	2	5	1
Eupatorium serotinum	Lateflowering thoroughwort	Nat	3	-	1
Foresteria acuminata	Eastern swamp privet	Nat	-	-	4
Fraxinus pennsylvanica	Green ash	Nat	3	-	2
Gleditsia aquatica	Water locust	Nat	-	-	4
Hibiscus lasiocarpos	Wooly rosemallow	Nat	-	-	1
Hibiscus laevis	Halberdleaf rosemallow	Nat	2	-	-
Hibiscus moscheutos	Crimsoneyed rosemallow	Nat	1	-	3
Hydrilla verticillata	Hydrilla	Non-nat	5	9	1
Hydrocotyle ranunculoides	Floating marshpennywort	Nat	2	5	2
Hydrocotyle spp.	Pennywort	-	4	-	-
Hydrocotyle umbellata	Manyflower marshpennywort	Nat	12	7	3
Hydrolea quadrivalvis	Waterpod	Nat	6	2	-
Ilex decidua	Possumhaw	Nat	-	-	2
Juncus acuminatus	Tapertip rush	Nat	-	-	4
Juncus effusus	Common rush	Nat	15	12	5
Juncus repens	Lesser creeping rush	Nat	3	-	-
Juncus spp.	Rush	-	3	-	-
Justicia americana	American water-willow	Nat	6	11	3
Landoltia punctata	Spotted duckweed	Nat	-	4	4
Leersia oryzoides	Rice cutgrass	Nat	2	-	4
Lemna minor	Common duckweed	Nat	3	4	6
Lemna spp.	Duckweed	-	3	-	-
Leptochloa panicoides	Amazon sprangletop	Nat	-	-	1
Limnobium spongia	American frogbit	Nat	3	4	2
Lindera benzoin	Northern spicebush	Nat	4	-	-
Liquidambar styraciflua	Sweetgum	Nat	4	-	2
Ludwigia arcuata	Piedmont primrose-willow	Nat	2	-	-
Ludwigia leptocarpa	Anglestem primrose-willow	Nat	-	6	6
Ludwigia palustris	Marsh seedbox	Nat	3	-	-
Ludwigia peploides	Floating primrose-willow	Nat	18	8	3
Ludwigia spp.	Primrose	Nat	2	-	-
Mayaca fluviatilis	Stream bogmoss	Nat	1	-	-
Mikania scandens	Climbing hempvine	Nat	-	-	2

Myrica cerifera	Southern wax myrtle	Nat	-	-	2
Myriophyllum aquaticum	Parrotfeather	Non-nat	6	6	2
Myriophyllum heterophyllum	Variableleaf watermilfoil	Nat	1	-	-
Myriophyllum spicatum	Eurasian watermilfoil	Non-nat	3	4	-
Najas guadalupensis	Southern naiad	Nat	10	-	1
Najas minor	Brittle naiad	Non-nat	12	2	2
Nekemias arborea	Peppervine	Nat	-	-	2
Nelumbo lutea	American lotus	Nat	11	6	4
Nitella spp.	Stonewort	-	7	-	-
Nuphar lutea	Spatterdock	Nat	4	-	-
Nymphaea odorata	American white waterlily	Nat	20	3	2
Nyssa aquatica	Water tupelo	Nat	4	-	2
Oxycaryum cubense	Cuban bulrush	Non-nat	7	3	3
Panicum hemitomon	Maidencane	Nat	1	-	-
Panicum repens	Torpedo grass	Non-nat	15	4	-
Panicum rigidulum	Redtop panicgrass	Nat	1	-	-
Panicum spp.	Panicgrass	-	4	-	-
Paspalum distichum	Knotgrass	Nat	-	-	4
Paspalum floridanum	Florida paspalum	Nat	-	-	2
Paspalum spp.	Paspalum	-	-	-	5
Paspalum urvillei	Vasey's grass	Non-nat	-	-	1
Peltandra virginica	Green arrow arum	Nat	2	8	2
Phragmites australis	Common reed	Non-nat	1	-	-
Pinus spp.	Pine	Nat	-	-	2
Platanus occidentalis	American sycamore	Nat	7	3	3
Pluchea camphorata	Camphorweed	Nat	2	-	-
Polygonum amphibium	Water knotweed	Nat	3	-	-
Polygonum hydropiperoides	Swamp smartweed	Nat	7	-	4
Polygonum pennsylvanicum	Pennsylvania smartweed	Nat	1	1	3
Polygonum spp.	Knotweed	-	10	-	-
Populus deltoides	Eastern cottonwood	Nat	-	-	1
Potamogeton crispus	Curlyleaf pondweed	Non-Nat	1	-	-
Potamogeton diversifolius	Waterthread pondweed	Nat	8	-	-
Potamogeton foliosus	Leafy pondweed	Nat	10	-	-
Potamogeton illinoensis	Illinois pondweed	Nat	2	-	-
Potamogeton nodosus	Longleaf pondweed	Nat	6	9	3
Ptilium capillaceum	Eastern bishopweed	Nat	-	-	1
Quercus alba	White oak	Nat	-	-	2
Quercus lyrata	Overcup oak	Nat	-	-	2
Quercus nigra	Water oak	Nat	1	2	3
Quercus phellos	Willow oak	Nat	-	-	3

Quercus rubra	Red oak	Nat	-	-	1
Rhynchospora corniculata	Shortbristle horned beaksedge	Nat	5	-	-
Ricciocarpos natans	Liverwort	Nat	-	-	1
Saccharum giganteum	Sugarcane plumegrass	Nat	6	-	-
Sacciolepis striata	American cupscale	Nat	5	1	2
Sagittaria graminea	Grassy arrowhead	Nat	3	3	-
Sagittaria lancifolia	Bulltongue arrowhead	Nat	11	5	-
Sagittaria latifolia	Broadleaf arrowhead	Nat	9	10	3
Sagittaria montevidensis	Giant arrowhead	Non-nat	2	-	-
Salix nigra	Black willow	Nat	12	3	5
Salvinia minima	Common salvinia	Non-nat	3	2	-
Salvinia molesta	Giant salvinia	Non-nat	-	2	1
Saururus cernuus	Lizard's tail	Nat	17	9	5
Scirpus cyperinus	Woolgrass	Nat	9	7	-
Schoenoplectus tabernaemontani	Softstem bulrush	Nat	-	-	2
Sesbania herbacea	Bigpod sesbania	Nat	1	7	4
Setaria pumila	Yellow foxtail	Non-nat	-	-	1
Sparganium americanum	American bur-reed	Nat	7	1	2
Sideroxylon lanuginosum	Gum bumelia	Nat	-	-	1
Solidago canadensis	Canada goldenrod	Nat	-	-	2
Sorghum halepense	Johnson’s grass	Non-nat	-	-	1
Stuckenia pectinata	Sago pondweed	Nat	4	-	-
Symphyotrichum divaricatum	Southern annual saltmarsh aster	Nat	-	-	2
Symphyotrichum lanceolatum	Lance-leafed aster	Nat	-	-	1
Taxodium distichum	Bald cypress	Nat	19	12	8
Tillandsia usneoides	Spanish moss	Nat	1	-	-
Triadenum walteri	Greater marsh St. Johnswort	Nat	2	-	3
Triadica sebifera	Chinese tallow	Non-nat	1	3	4
Typha latifolia	Broadleaf cattail	Nat	-	8	2
Typha spp.	Cattail	-	23	-	-
Ulmus alata	Winged elm	Nat	-	-	2
Ulmus americana	American elm	Nat	-	-	1
Utricularia spp.	Bladderwort	-	16	-	4
Utricularia vulgaris	Common bladderwort	Nat	-	2	5
Vallisneria americana	American eelgrass	Nat	-	2	1
Vitis vulpina	Frost grape	Nat	-	-	3
Zizaniopsis miliacea	Giant cutgrass	Nat	7	8	2

Table 38. List of all species encountered in lotic water bodies during this survey; in the Status column, a '-' indicates that the native status is not known; in the year columns, numbers represent the lotic waterbodies where a species was encountered.

Scientific Name	Common Native	Status	2020
Acer negundo	Box elder	Nat	10
Acer rubrum	Red maple	Nat	8
Acer saccharinum	Silver maple	Nat	5
Albizia julibrissin	Mimosa	Non-nat	4
Alternanthera philoxeroides	Alligatorweed	Non-nat	14
Amaranthus tuberculatus	Rough fruited water hemp	Nat	2
Apocynum cannabinum	Hemp dogbane	Nat	2
Baccharis halimifolia	Eastern baccharis	Nat	7
Bacopa monnieri	Waterhyssop	Nat	1
Bambusa vulgaris	Common bamboo	Nat	1
Betula nigra	River birch	Nat	13
Boehmeria cylindrica	Smallspike false nettle	Nat	13
Brunnichia ovata	Red vine	Nat	2
Cabomba caroliniana	Fanwort	Nat	2
Carex spp.	Sedge	-	2
Carya aquatica	Water hickory	Nat	4
Castanea dentata	American chestnut	Nat	1
Cephalanthus occidentalis	Common buttonbush	Nat	7
Ceratophyllum demersum	Coontail	Nat	3
Chara spp.	Muskgrass	Nat	5
Chasmanthium sessiflorum	Longleaf woodoats	Nat	1
Cinnamomum camphora	Camphor tree	Non-nat	1
Cladium mariscus	Sawtooth sedge	Nat	4
Clethra alnifolia	Coastal pepperbush	Nat	1
Colocasia esculenta	Wild taro	Non-nat	2
Commelina virginica	Virginia dayflower	Nat	11
Crinum americanum	Florid swamp lily	Nat	3
Cyperus esculentus	Yellow nutsedge	Non-nat	19
Cyperus virens	Green Flatsedge	Nat	1
Cyrilla racemiflora	Swamp titi	Nat	1
Diospyros virginiana	Common persimmon	Nat	3
Eichhornia crassipes	Water hyacinth	Non-nat	3
Eleocharis parvula	Dwarf spikerush	Nat	1
Eleocharis spp.	Spikerush	-	1
Elymus virginicus	Virginia wildrye	Nat	1
Equisetum spp.	Horsetail	-	5
Eupatorium serotinum	Lateflowering thoroughwort	Nat	1

Foresteria acuminata	Eastern swamp privet	Nat	2
Fraxinus caroliniana	Swamp ash	Nat	1
Gleditsia aquatica	Water locust	Nat	1
Hibiscus moscheutos	Crimsoneyed rosemallow	Nat	1
Hydrocotyle umbellata	Manyflower marshpennywort	Nat	4
Ilex aquifolium	English holly	Non-nat	1
Ilex decidua	Possumhaw	Nat	2
Ipomoea sagittata	Saltmarsh morning glory	Nat	5
Juncus acuminatus	Tapertip rush	Nat	2
Juncus effusus	Common rush	Nat	2
Juncus roemerianus	Black needle rush	Nat	5
Justicia americana	American water-willow	Nat	19
Landoltia punctata	Spotted duckweed	Nat	5
Leersia oryzoides	Rice cutgrass	Nat	8
Lemna minor	Common duckweed	Nat	5
Ligustrum sinense	Chinese privet	Non-nat	1
Liquidambar styraciflua	Sweetgum	Nat	2
Ludwigia leptocarpa	Anglestem primrose-willow	Nat	4
Ludwigia peploides	Floating primrose-willow	Nat	4
Lythrum lineare	Saltmarsh loosestrife	Nat	5
Magnolia grandiflora	Southern magnolia	Nat	1
Magnolia virginiana	Sweetbay	Nat	1
Myrica cerifera	Southern wax myrtle	Nat	4
Myriophyllum spicatum	Eurasian watermilfoil	Non-nat	2
Najas minor	Brittle naiad	Non-nat	1
Nekemias arborea	Peppervine	Nat	4
Nuphar lutea	Spatterdock	Nat	3
Nyssa aquatica	Water tupelo	Nat	1
Oxycaryum cubense	Cuban bulrush	Non-nat	1
Panicum repens	Torpedo grass	Non-nat	3
Parthenocissus quinquefolia	Virginia creeper	Nat	1
Paspalum spp.	Paspalum	-	20
Persea palustris	Swamp bay	Nat	2
Phragmites australis	Common reed	Non-nat	5
Pinus elliottii	Slash pine	Nat	4
Platanus occidentalis	American sycamore	Nat	11
Polygonum hydropiperoides	Swamp smartweed	Nat	2
Polygonum pennsylvanicum	Pennsylvania smartweed	Nat	4
Polygonum spp.	Knotweed	-	14
Pontederia cordata	Pickerelweed	Nat	5
Populus deltoides	Eastern cottonwood	Nat	3

Quercus laurifolia	Laurel oak	Nat	1
Quercus nigra	Water oak	Nat	3
Quercus stellata	Post oak	Nat	1
Quercus virginiana	Southern live oak	Nat	2
Rubus spp.	Blackberry	Nat	3
Sabatia calycina	Coastal rose gentian	Nat	1
Sagittaria lancifolia	Bulltongue arrowhead	Nat	6
Sagittaria latifolia	Broadleaf arrowhead	Nat	1
Salix nigra	Black willow	Nat	23
Salvinia minima	Common salvinia	Non-nat	3
Salvinia molesta	Giant salvinia	Non-nat	1
Saururus cernuus	Lizard's tail	Nat	8
Schoenoplectus americanus	Three-square bulrush	Nat	3
Schoenoplectus tabernaemontani	Softstem bulrush	Nat	4
Senna spp.	Senna	-	1
Sesbania herbacea	Bigpod sesbania	Nat	1
Sesbania punicia	Scarlet sesbania	Non-nat	2
Serenoa repens	Saw palmetto	Nat	7
Sideroxylon lanuginosum	Gum bumelia	Nat	1
Sium suave	Water parsnip	Nat	3
Smilax spp.	Greenbriar	Nat	3
Solidago canadensis	Canada goldenrod	Nat	3
Sorghum halepense	Johnson’s grass	Non-nat	14
Sparganium americanum	Bur reed	Nat	4
Spartina alterniflora	Smooth cordgrass	Nat	5
Spartina cyonsuroides	Big cordgrass	Nat	6
Spartina patens	Saltmeadow cordgrass	Nat	2
Stuckenia pectinata	Sago pondweed	Nat	1
Symphyotrichum subulatum	Eastern annual saltmarsh aster	Nat	6
Taxodium distichum	Bald cypress	Nat	9
Tillandsia usneoides	Spanish moss	Nat	1
Triadenum walteri	Greater marsh St. Johnswort	Nat	1
Triadica sebifera	Chinese tallow	Non-nat	7
Toxicodendron radicans	Poison ivy	Nat	1
Typha latifolia	Broadleaf cattail	Nat	3
Ulmus spp.	Elm	Nat	14
Utricularia vulgaris	Common bladderwort	Nat	3
Vallisneria americana	American eelgrass	Nat	5
Vitis spp.	Grape	-	3
Woodwardia areolata	Netted chainfern	Nat	3
Zizaniopsis miliacea	Giant cutgrass	Nat	6

Table 39. Lentic waterbodies surveyed in 2017, 2019, and 2020; an 'X' denotes a survey was conducted int that year; waterbodies in red font had non-native species present while those in **bold font** had federally or state listed noxious weeds present.

Lakes	2017	2019	2020	Management Entity*
Aberdeen (TTW)		X		USACE
Amory (TTW)		X		USACE
Anchor	X			Private
Archusa Creek	X			PHW
Bay Springs (TTW)	X			USACE
Bee	X			Private
Bill Waller	X			MDWFP
Bogue Homa	X			MDWFP
Bluff	X			USFWS
Calling Panther	X			MDWFP
Caroline	X			Private
Clarkco Lake	X			MDWFP
Claude Bennett	X			MDWFP
Columbia	X			MDWFP
Columbus (TTW)	X		X	USACE
Dalewood Shore			X	Private
Doyle Arm			X	USFWS
Dry Creek	X			PHW
Elvis Presley	X	X		MDWFP
English	X			MDWFP
Flint Creek	X			PHW
Fulton (TTW)		X		USACE
Geiger	X			MDWFP
George			X	Private
Hideaway	X			Private
Horseshoe			X	Private
Kemper	X			MDWFP
Lamar Bruce	X	X		MDWFP
Lincoln	X			MDWFP
Little Eagle			X	Private
Loakfoma	X			USFWS
Lower			X	USACE
Lowndes	X			MDWFP
Mary	X			Private
Mary Crawford	X			MDWFP
Maynor Creek	X			PHW
Mike Connor	X			MDWFP

Moon	X	X		Private
Natchez	X			Private
Okatibbee			X	MDWFP
Okhissa	X			USFS
Perry	X			MDWFP
Pickwick (TTW/TVA)		X		USACE/TVA
Pool D (TTW)		X		USACE
Pool E (TTW)		X		USACE
Prentiss Walker	X			MDWFP
Roebuck			X	Private
Roosevelt	X			MDWFP
Simpson-Legion	X			MDWFP
Smithville (TTW)		X		USACE
Spring		X		MDWFP
Tangipahoa	X			MDWFP
Tippah	X			MDWFP
Tombigbee	X			MDWFP
Trace State Park			X	MDWFP
TTW AL-Col		X		USACE
TTW Canal		X		USACE
Turkey Creek	X			PHW
Turkey Fork	X			PHW
Walthall	X			MDWFP
Washington	X	X		Private
Wasp			X	Private

*In the Management Entity column: USACE is U.S. Army Corps of Engineers; PHW is Pat Harrison Waterway District; MDWFP is MS Department of Wildlife, Fisheries, and Parks; USFWS is U.S. Fish and Wildlife Service; USFS is the U.S. Forest Service; and TVA is the Tennessee Valley Authority.

Table 40. Lotic waterbodies surveyed in 2020; an 'X' denotes a survey was conducted int that year; waterbodies in red font had non-native species present while those in **bold font** had federally or state listed noxious weeds present.

BASIN	RIVER/CREEK
North Independent Streams Basin	Hatchie R.
	Little Hatchie R.
Yazoo River Drainage Basin	Yazoo R.
	Yalobusha R.
	Skuna R.
	Tallahatchie R.
	Little Tallahatchie R.
	Yocona R.
	Coldwater R.
	Hurricane C.
	Hickahala C.
	Sunflower R.
Tombigbee River Drainage Basin	Buttahatchee R.
	Town C.
	Tibbee C.
	Line C.
	Luxapallila C.
Big Black River Drainage Basin	Big Black R.
Pearl River Drainage Basin	**Pearl R.**
	Bogue Chitto R.
	Pearl River Delta
South Independent Streams Basin	Homochitto R.
Pascagoula River Drainage Basin	Pascagoula R.
	Chickasawhay R.
	Chunky R.
	Okatibbee R.
	Leaf R.
	Pascagoula River Delta
Coastal Streams Drainage Basin	Jourdan R.
	Wolf R.
	Biloxi R.
	Tchoutacabuffa R.

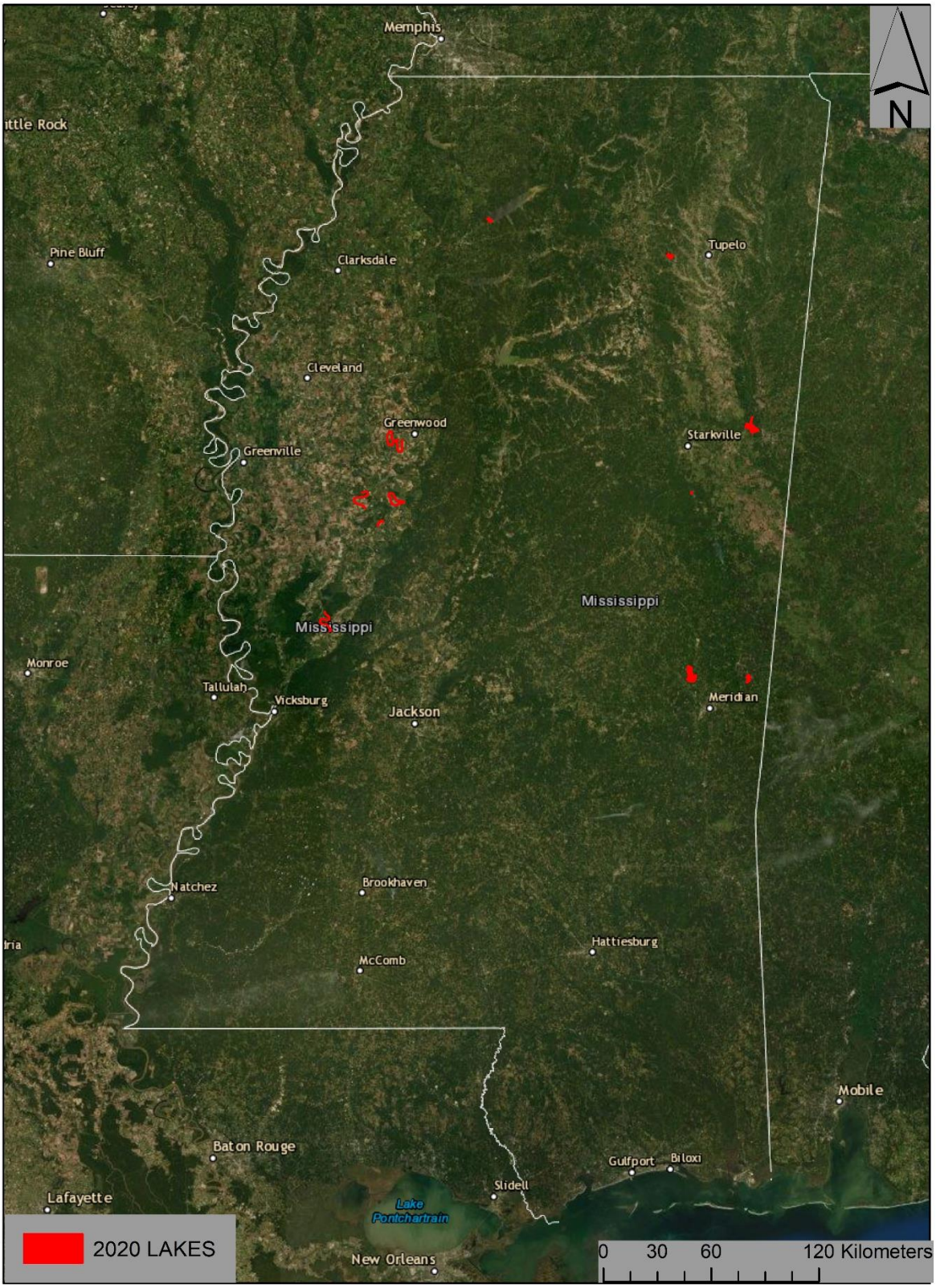

Figure 1. Location of Mississippi lentic waterbodies surveyed in 2020.

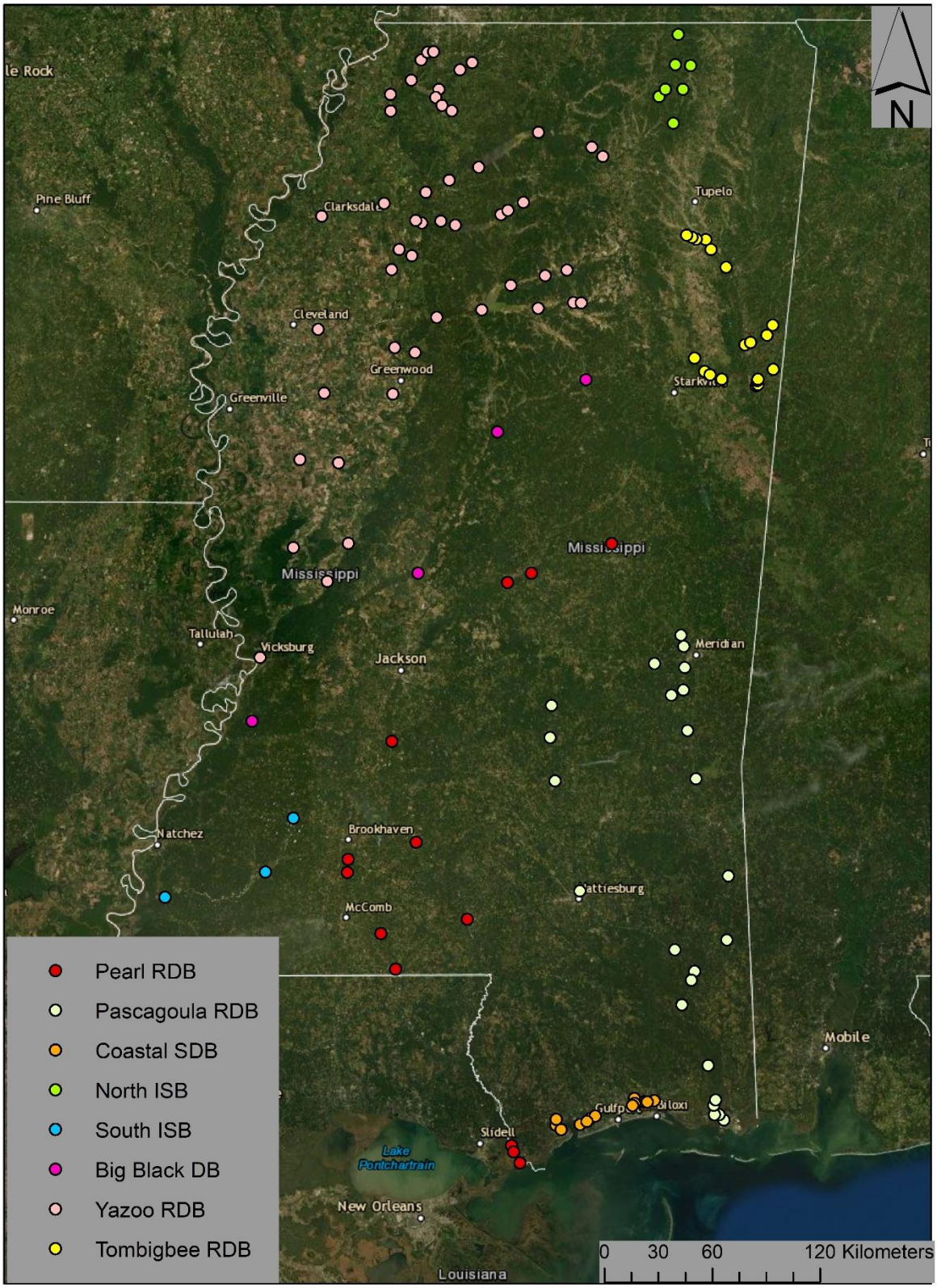

Figure 2. Location of 2020 river and stream survey points; basin names match those found in Table 40.