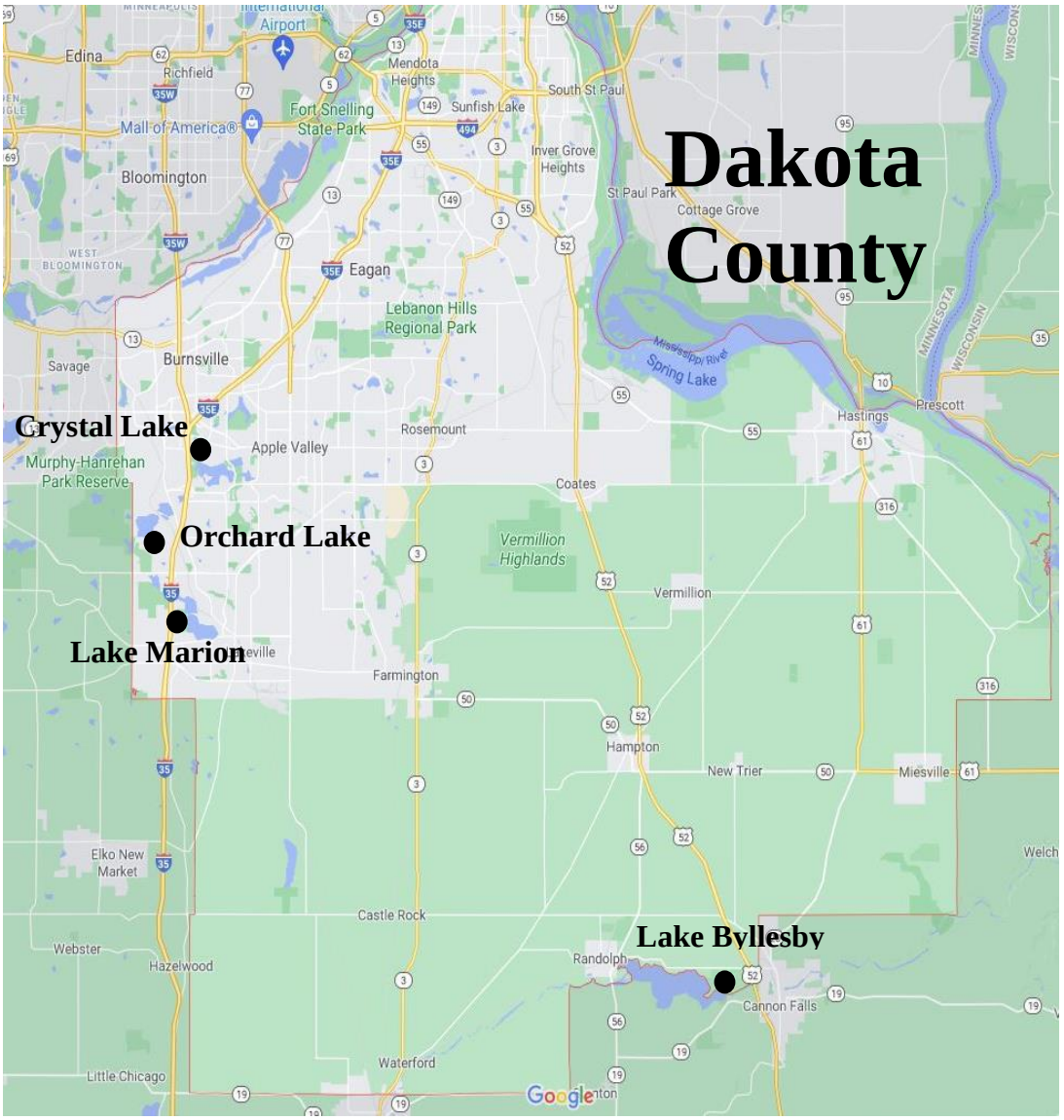
2021 Season Report



Dakota County
Watercraft Inspections

Waterfront Restoration, LLC
December 15, 2021

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2021 Dakota County Watercraft Inspection Program

Watercraft Inspection Summary

Waterfront Restoration was contracted to administer the Dakota County's 2021 Aquatic Invasive Species (AIS) watercraft inspection program. The city provided a list of the four lake launches on which they desired watercraft inspector coverage, as well as the days and hours during which the inspector coverage was to take place. The staffed launches were located at Crystal Lake, Lake Byllesby, Lake Marion and Orchard Lake. For the majority of the season (5/15/21 through 9/6/21) it was requested that Lake Byllesby and Crystal Lake have inspector coverage from 8:00 A.M. – 4:30 P.M. every Friday through Sunday and holidays. Lake Marion and Orchard Lake was requested to have inspector coverage from 10:00 A.M. – 5:00 P.M. on Fridays, 8:00 A.M. – 6 P.M. on Saturdays, and 8 A.M. – 4:30 P.M on Sundays and holidays.

Table 1: 2021 Watercraft Inspection Totals

Lake Name	Inspections	Inspection Hours
Crystal Lake	2,429	439
Lake Byllesby	2,241	880
Lake Marion	2,907	476
Orchard Lake	744	400
Total	**8,321**	**2,194**

The 2021 AIS inspection program kicked-off on Friday May 21st and concluded on Sunday October 3rd. According to official MN DNR inspector survey data, 8,321 watercraft inspections were completed during the 2021 program season (Table 1). Of that total, 5,236 were entering inspections, 3,072 were exiting inspections. There were also six lift and seven courtesy inspections. Lake Marion accounted for the largest portion of inspections at 35%, (Figure 1). Crystal Lake and Lake Byllesby accounted for 29% and 27% respectively. Orchard Lake accounted for 9% of the total inspection.

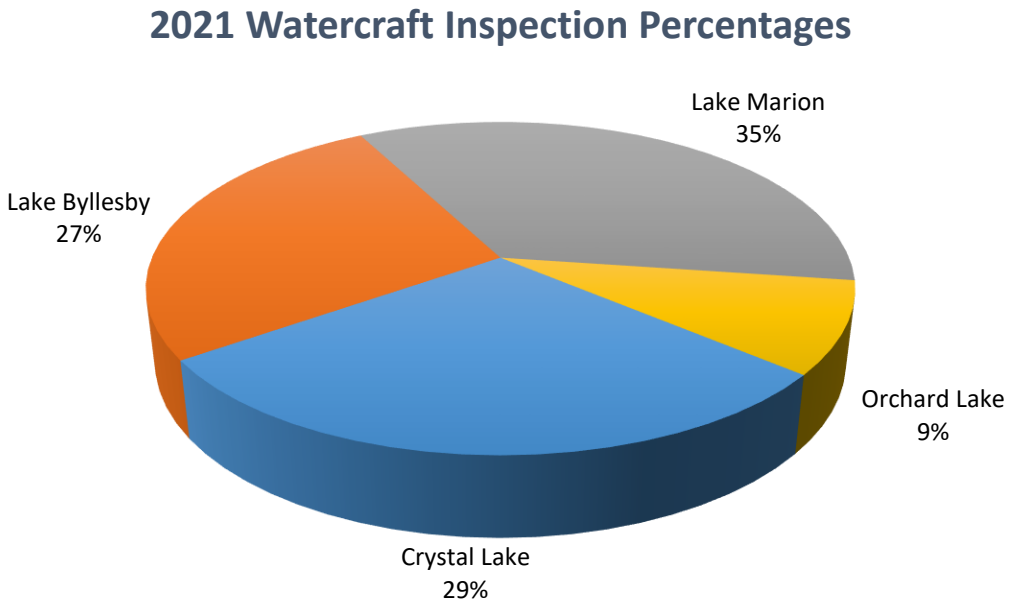


Figure 1: Chart (above) reflects the percentage of total inspections completed at each lake during the 2021 inspection season.

The inspection survey data reveals that 46% of all inspections were conducted on fishing boats, while runabouts were the second most inspected watercraft at 32% (Figure 2). Pontoons, personal watercrafts, and wakeboards accounted for 8%, 7%, and 4% of the total inspections, respectively. Jon Boats, Canoe/Kayaks, Sailboats and Boat Lifts/Docks accounted for 2%, 1%, 0% and 0% respectively.

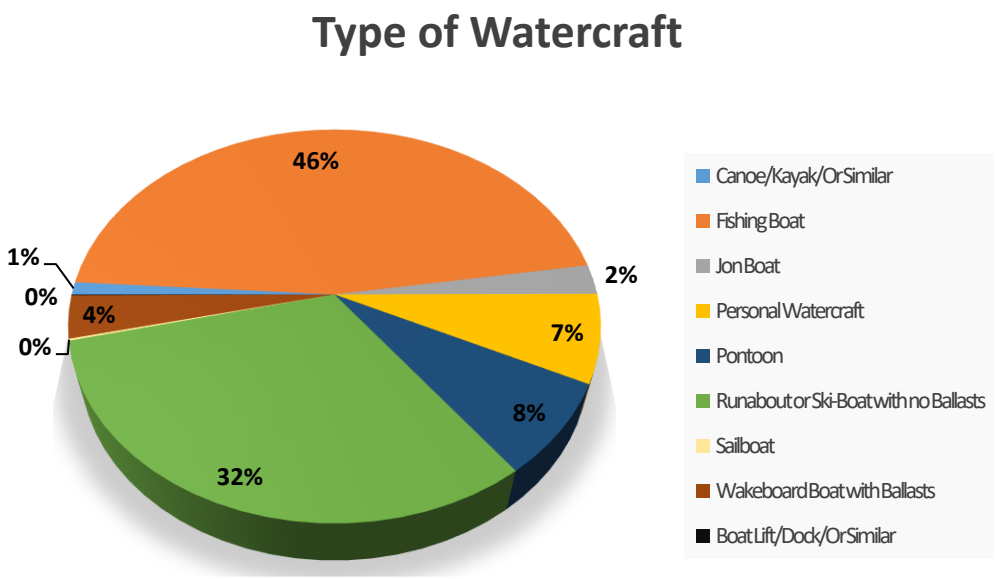
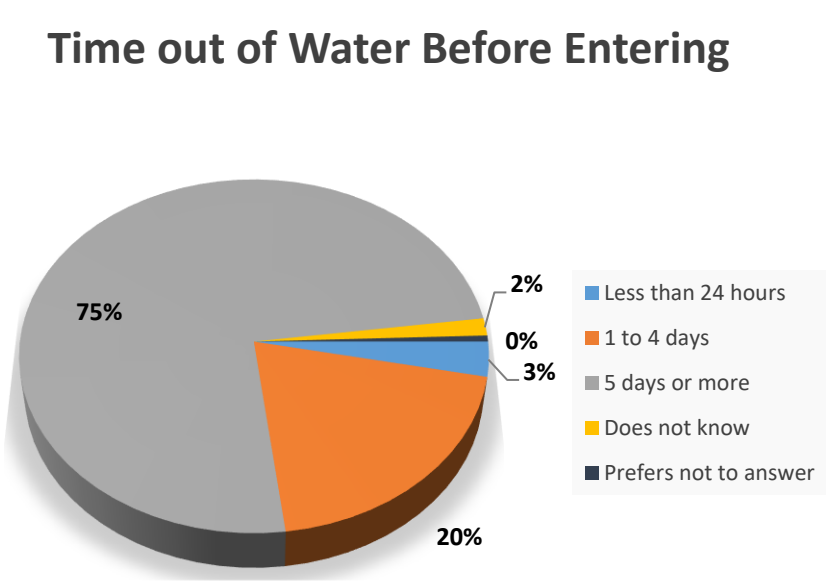


Figure 2: Chart (above) reflects the percentage of total inspections conducted on watercraft types during the 2021 inspection season.



The data also shows that throughout the 2021 inspection season 75% of watercrafts entering had been kept out water for the recommended 5 days or more, while 20% were reported as only being out for 1-4 days (Figure 3). However, 3% of entering watercrafts were reported as being out of the water for less than 24 hours. The remaining 2% of boaters reported that they did not know how long the watercraft had been out of the water for, and 29 boaters preferred not to answer.

Figure 3: Chart (above) reflects the percent of responses from entering boaters regarding the amount of time their watercraft had been out of the water prior to entering a staffed lake.

While the majority of inspected watercrafts were recorded as being trailered by vehicles from Minnesota, the remaining watercrafts were recorded as being brought in by out-of-state vehicles. The most common out-of-state vehicles trailering a watercraft were from Iowa at 24, followed by Wisconsin at 20 and Alabama at 19 (Figure 4). Note that when determining what state, a watercraft is from, only the license number of the vehicle pulling the watercraft is recorded.

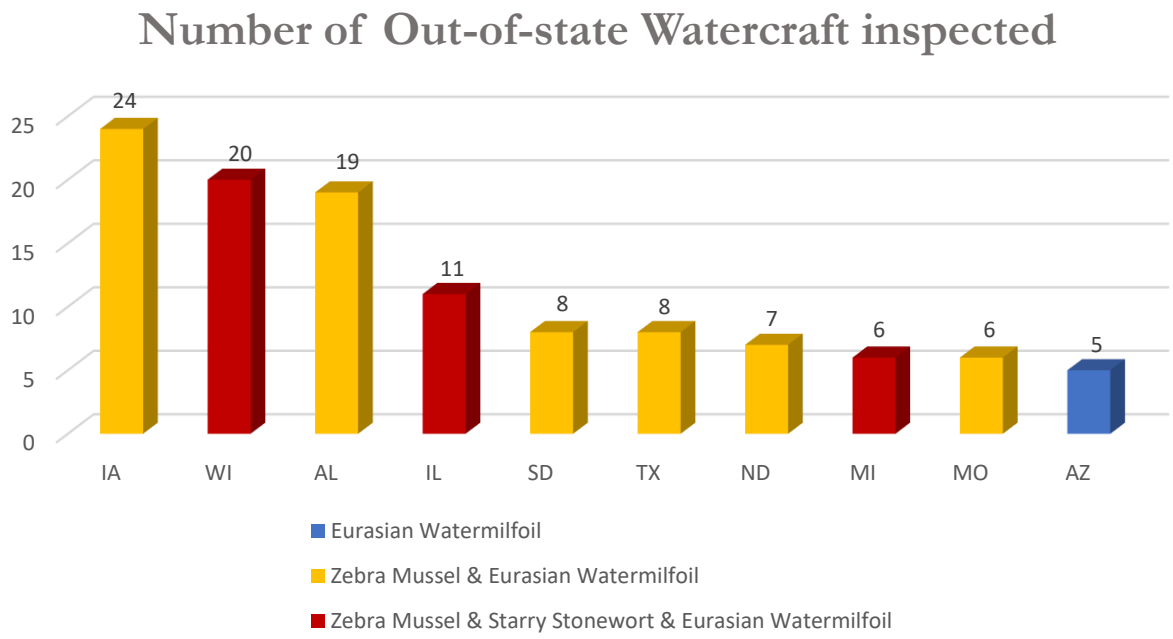


Figure 4: Graph (above) reflects the number of watercrafts recorded as being from out-of-state. Each state is color coded to indicate certain AIS that have been reported in each state. **Note, "No infestation" only suggests that neither zebra mussels, Eurasian Watermilfoil nor Starry Stonewort have been recorded in the given state.**

The four Dakota County launches were staffed for a total of 2,194 hours in 2021. Lake Byllesby received the highest percent of inspection hours at 40% (880 hours). (Figure 5). Lake Marion received 22% (476 hours) and Crystal Lake received 20% (439 hours) of the inspection hours. Orchard Lake received 18% (744 hours) of the inspection hours.

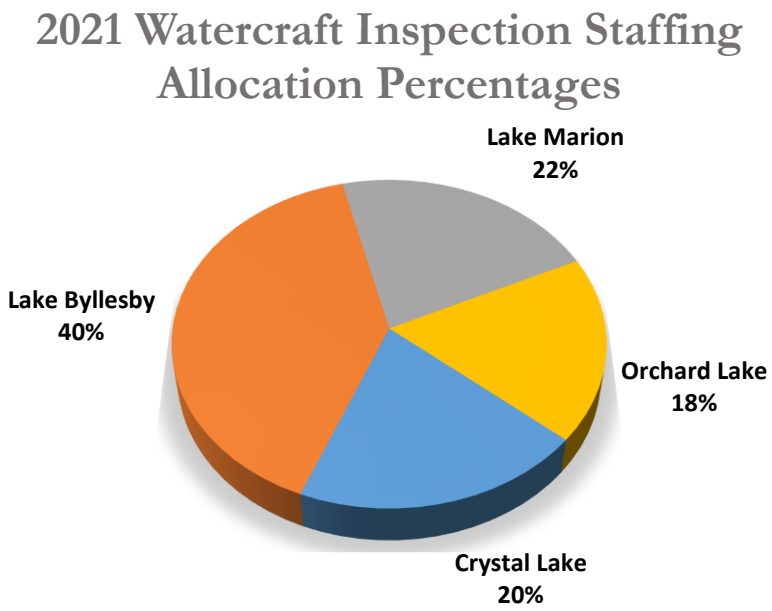


Figure 5: Chart (above) reflects the percent of total hours received by each lake during the 2021 inspection season.

From the survey data we determined that the busiest month for watercraft inspections was July, with 2,794 completed surveys. June and Aug followed close by at 2,374 and 1,565 surveys logged (Figure 6). May, August, and September have understandably lower inspection counts since coverage hours significantly decreased and it is at the end of the season. Further detail by week can be found in Figure 7, where it shows that the last week of May has the highest count of inspection surveys at 825.

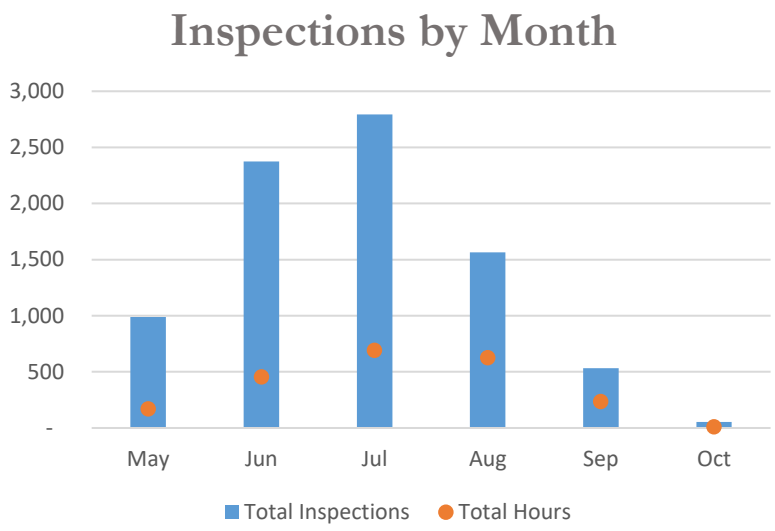


Figure 6: Graph (above) reflects the number of inspection surveys, and the hours of inspector coverage logged each month during the 2021 inspection season.

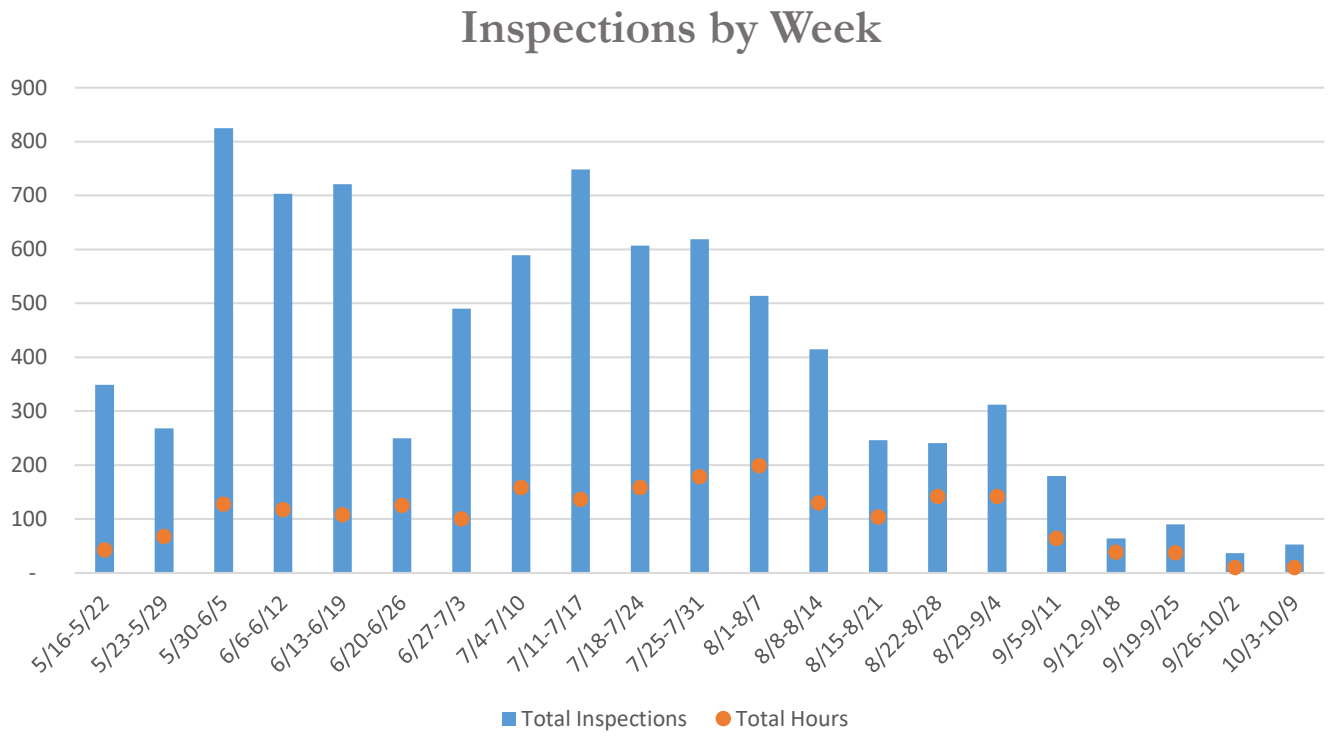
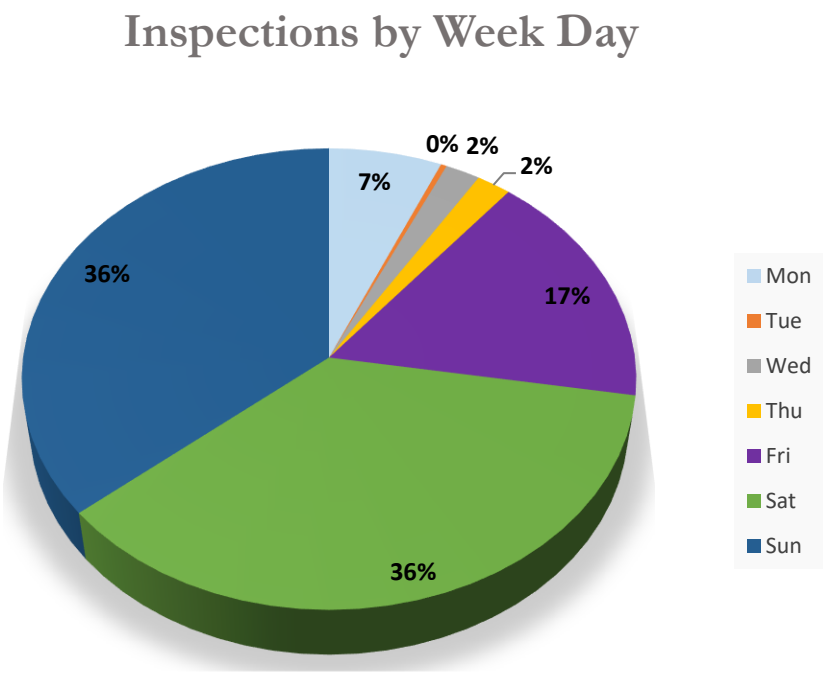


Figure 7: Graph (above) reflects the number of inspection surveys, and the hours of inspector coverage logged each week during the 2021 inspection season.



The data shows that the busiest days for inspections were Saturday and Sunday, which each accounted for 36% of inspections (Figure 8). Friday followed with 17% of the total inspections being completed. On all days, the data shows that the busiest time of day for inspections is between 11 A.M. to 4 P.M. The second busiest time is between 6 A.M. to 11 A.M. (Figure 9).

Figure 8: Chart (above) reflects the distribution of completed inspection surveys by day of week during the 2021 inspection season.

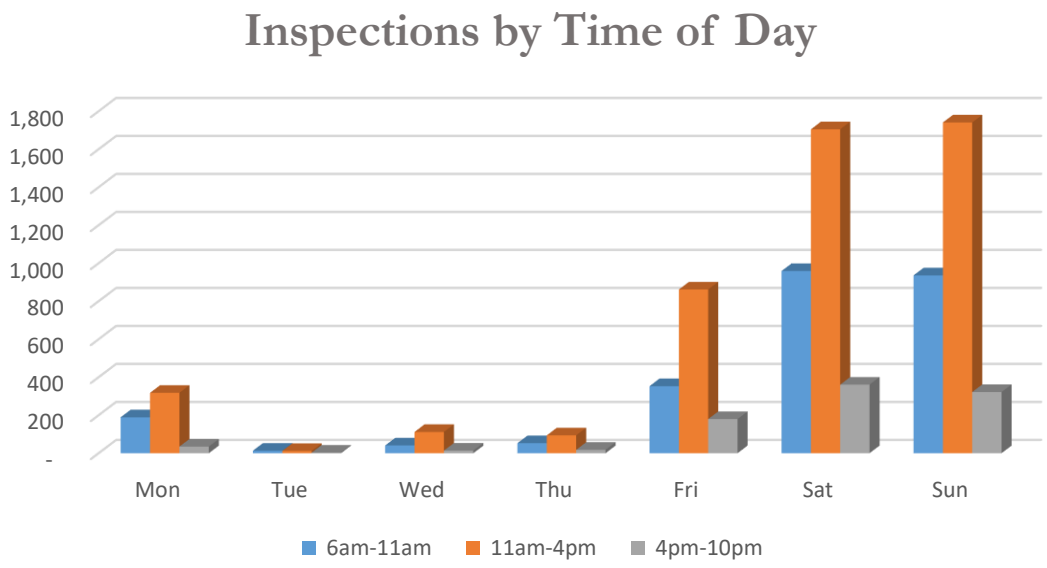


Figure 9: Graph (above) reflects the number of inspection surveys completed at specific times of day, and by day of week during the 2021 inspection season.

Of the entering inspections, the waterbody most visited by boaters prior to entering an inspector staffed launch within Dakota County was Lake Marion, with 1,215 boaters reporting last being there (Figure 10). The other most common responses were Crystal Lake (835), Lake Byllesby (794) and Orchard Lake (266). This information can help us understand where new AIS infestations arise from since AIS are often unintentionally transported between bodies of water via watercrafts, trailers, and other water-related equipment.

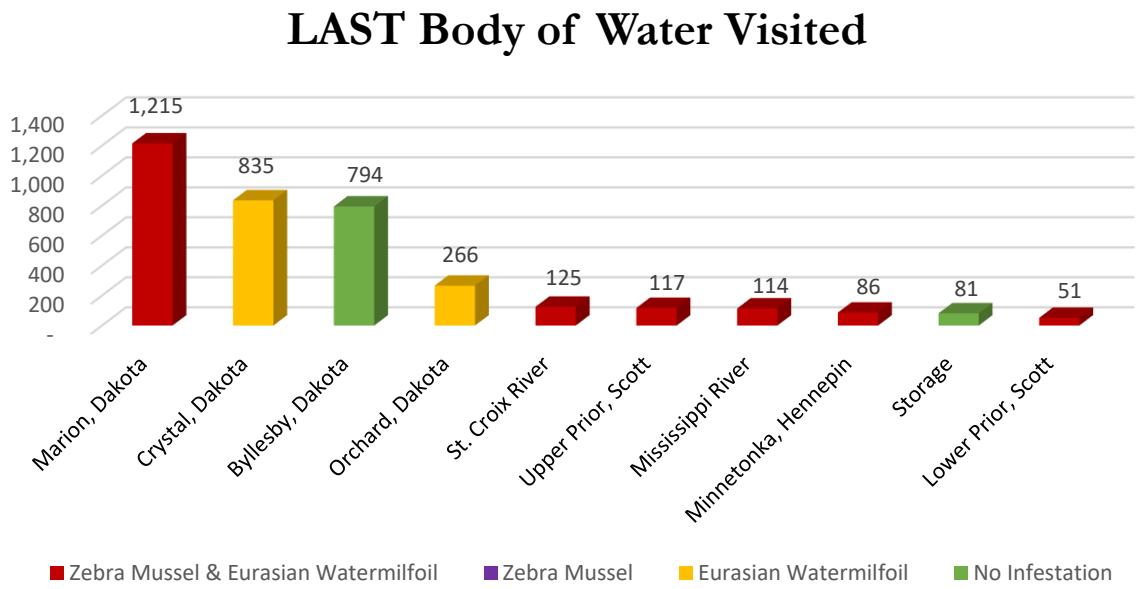


Figure 10: Graph (above) reflects the number of boaters that reported the last lake visited prior to entering another waterbody via one of the Dakota County staffed launches during the 2021 inspection season. **Note: "No infestation" only means that such lakes are not infested with the mentioned AIS. Graph only shows the top ten responses.**

Likewise, of the same entering inspections, the boater responses pertaining to which waterbody they would be visiting next, showed that the majority of boaters leaving an inspector staffed launch within Dakota County would head to Lake Marion (580), Byllesby (493), Crystal Lake (436), and Orchard Lake (193) (Figure 11).

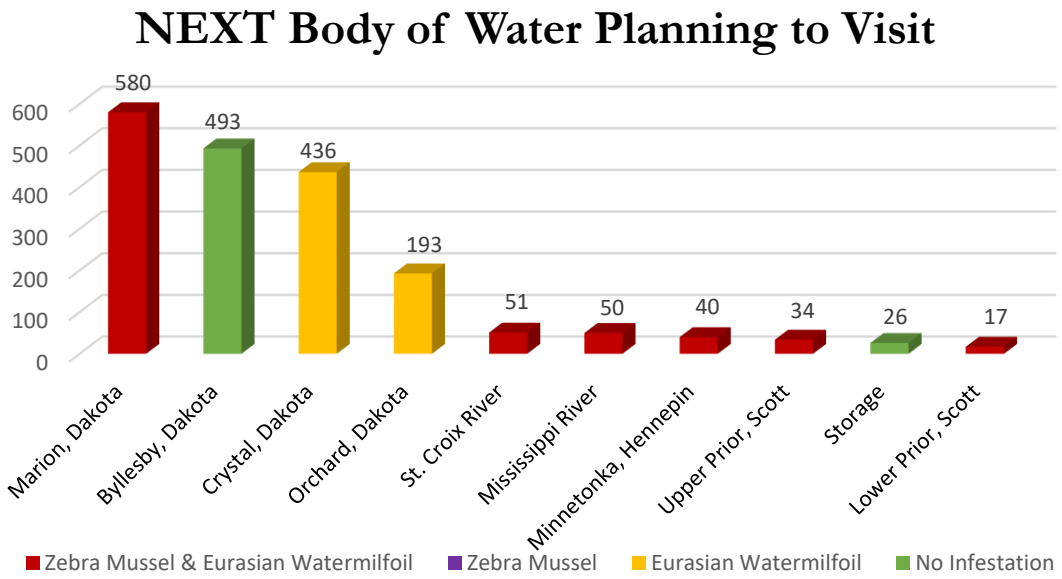


Figure 11: Graph (above) reflects the number of boaters that reported the next lake they expected to visit after exiting a Dakota County inspector staffed launch during the 2021 inspection season. **Note: "No infestation" only means that such lakes are not infested with the mentioned AIS. Graph only shows the top ten responses.**

Inspection Findings, Violations, and Decontaminations

There were 149 entering inspections that were in violation of Minnesota AIS laws (nearly 2% of all inspections), of which 66 were drain plug violations. On 435 exiting watercrafts there was at least one finding on and/or in the watercraft, trailer, or equipment. However, exiting inspection findings are not considered AIS violations since they were caught prior to the boater leaving the launch. Regardless, these findings during exiting inspections provide useful information when determining what could potentially be leaving an infested lake and entering a new lake if an inspector was not present.

87% of the entering inspections were plants (removeable by hand) (Figure 12). The rest were mud (7%), water (4%), plants (removable by hand) (1%) and zebra mussels (will require decon) (1%).

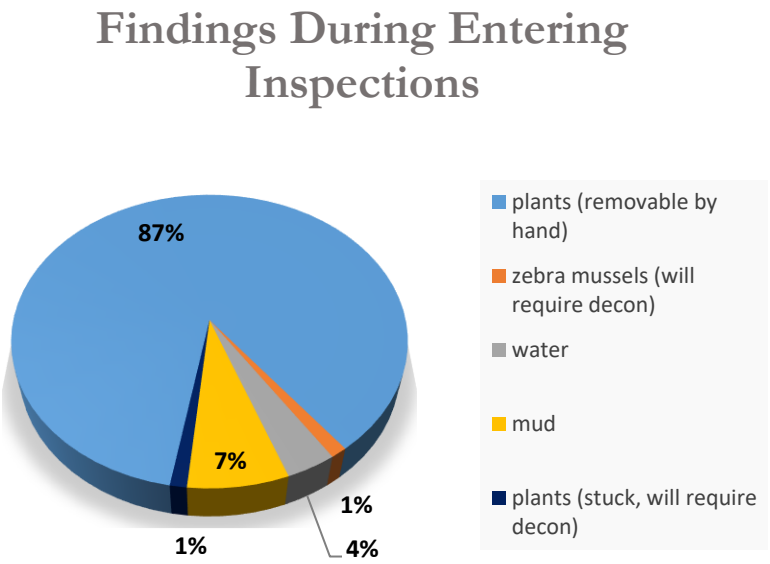


Figure 12: Chart (above) reflects the distribution of findings during entering inspections during the 2021 inspector season.

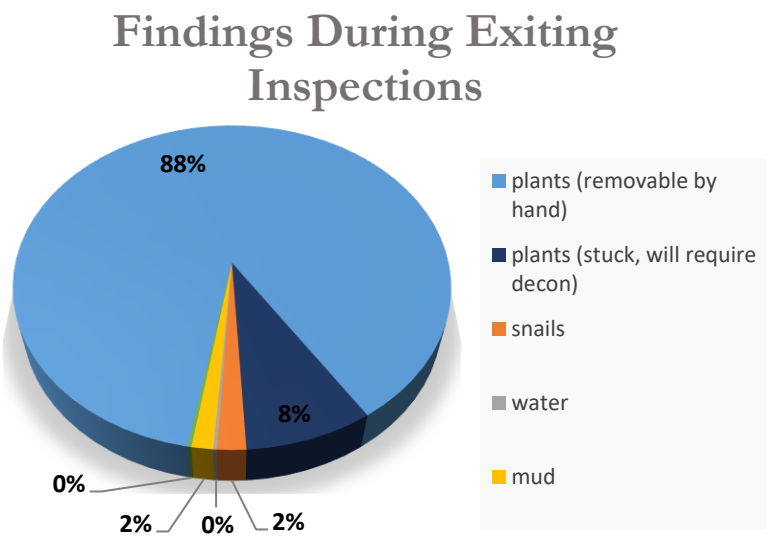


Figure 13: Chart (above) reflects the distribution of findings during exiting inspections during the 2021 inspection season. Watercraft requiring decontamination were encouraged to go to a nearby decon station (i.e., DNR staffed decon, Lake Byllesby, or to a professional watercraft dealer service for cleaning before entering the next body of water.)

The most common finding during exiting inspections were plants (removable by hand) at 88% (Figure 13). The rest were plants (stuck, will require decon) (8%), mud (2%), snails (2%), and one instance of water and zebra mussels each. None of the 435 exiting inspections that contained findings were deemed as AIS violations since they were caught and resolved prior to the watercraft leaving the launch.

The data shows that 58 entering findings were reported from Crystal Lake, 46 were reported from Lake Byllesby, 40 were reported from Lake Marion and 5 were reported from Orchard Lake (Figure 14).

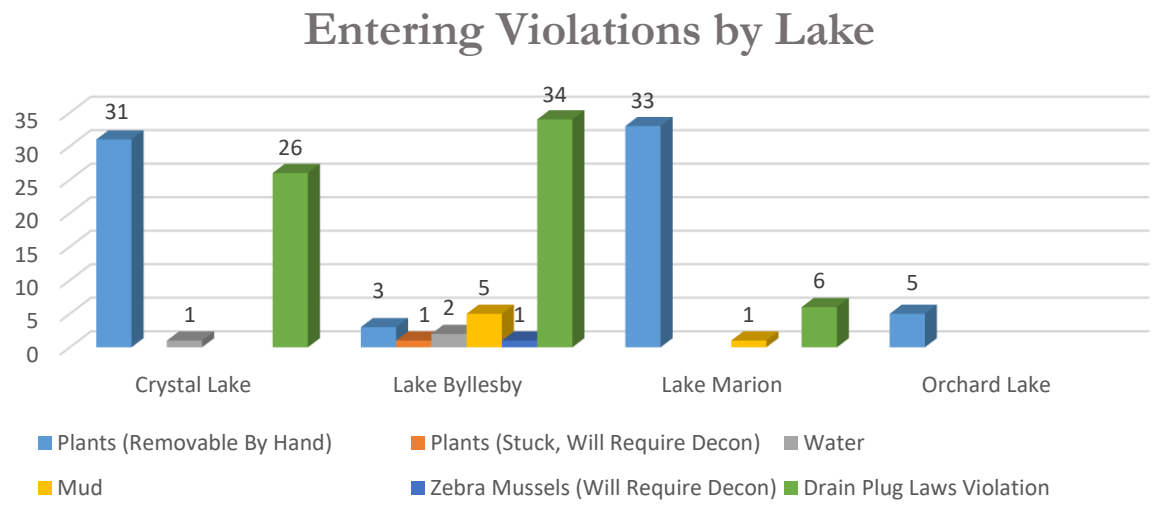


Figure 14: Graph (above) reflects the number of findings by lake during entering inspections during the 2021 inspection season.

Looking at potential exiting violations, Crystal Lake comes in with the highest number of "plants (removable by hand)" at 166 (Figure 15). The second most common lake reporting findings of "plants (removable by hand)" was Lake Byllesby at 133, followed by Lake Marion at 66.

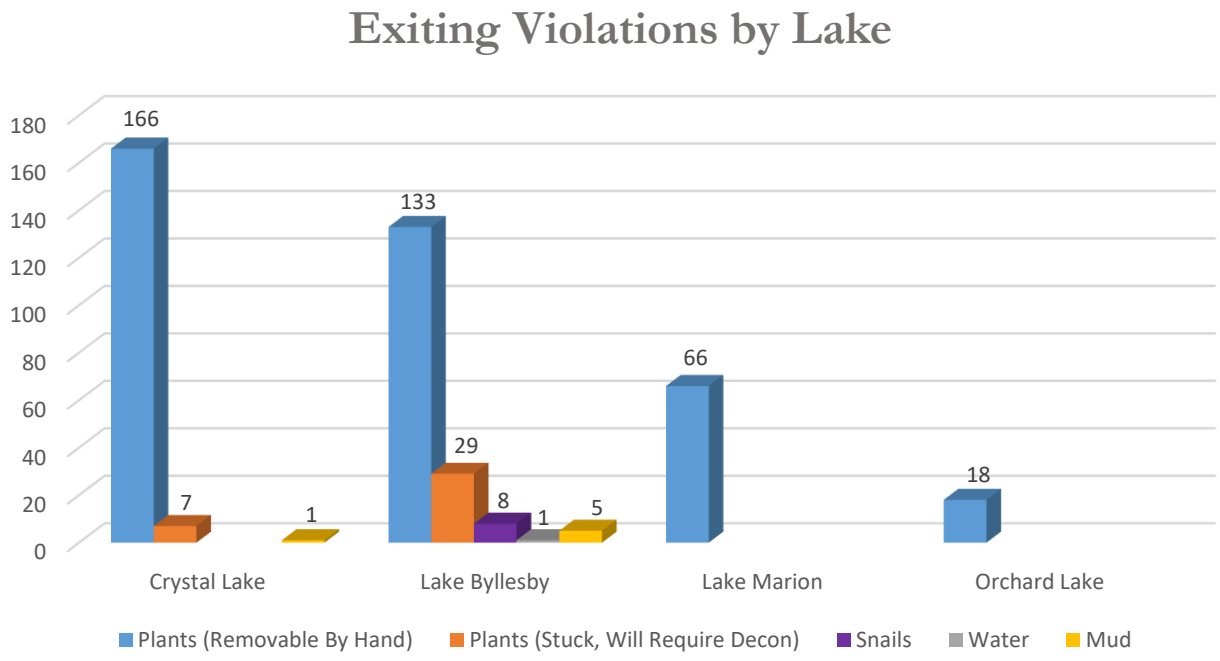


Figure 15: Graph (above) reflects the distribution of findings during exiting inspections during the 2021 inspection season. Watercraft requiring decontamination were encouraged to go to a decontamination site (i.e., a DNR staffed location, the Lake Byllesby launch, or to a professional watercraft dealer service for cleaning before entering the next body of water.)

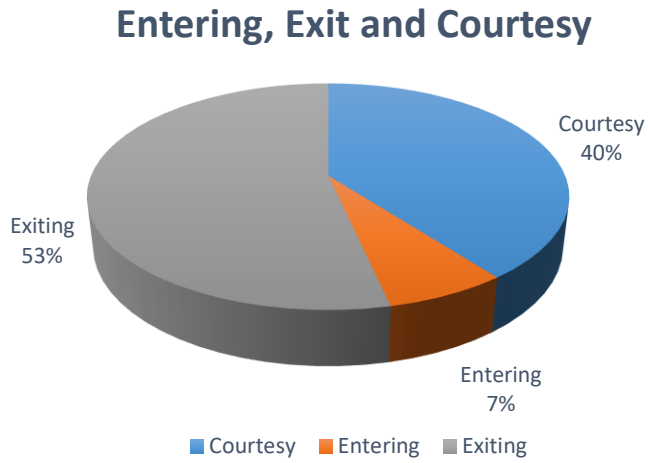
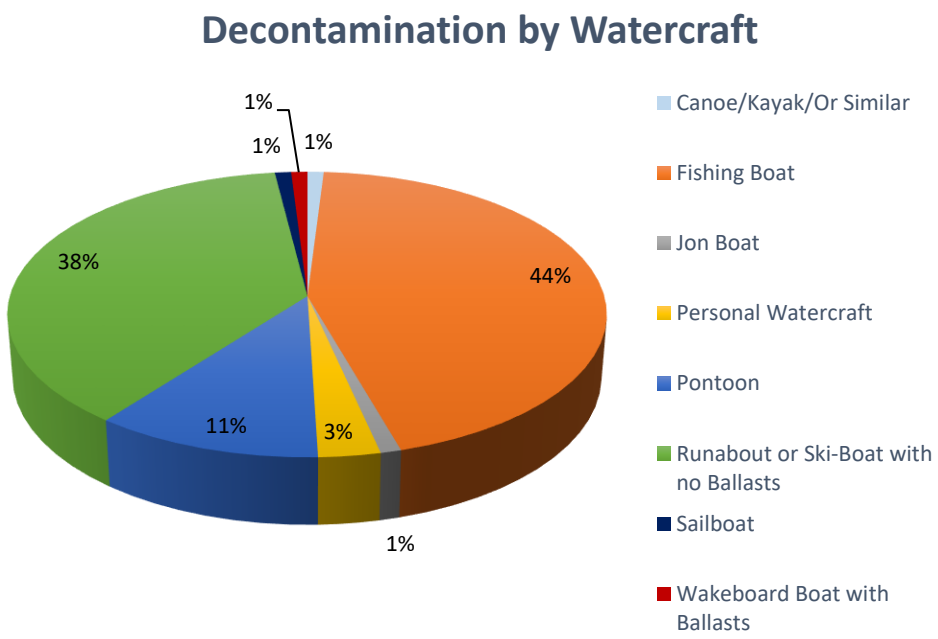


Figure 16: Above graph reflects the total number of decontaminations completed during the 2021 inspection season.

Of the 101 decontaminations completed, 53% were conducted on exiting watercrafts and/or other water related equipment (Figure 16). Courtesy decontamination accounted for approximately 40%, while the remaining 7% of decontaminations were conducted on entering watercrafts and/or other water related equipment. All recorded decontaminations were conducted at the Lake Byllesby Regional Park decontamination station.

The most common watercraft to receive a decontamination was fishing boats which accounted for 44%, followed by runabout watercrafts at 38% and pontoons at 11% (Figure 17).

Figure 17: Chart (right) reflects the distribution of decontaminations by watercraft type during the 2020 inspection season.



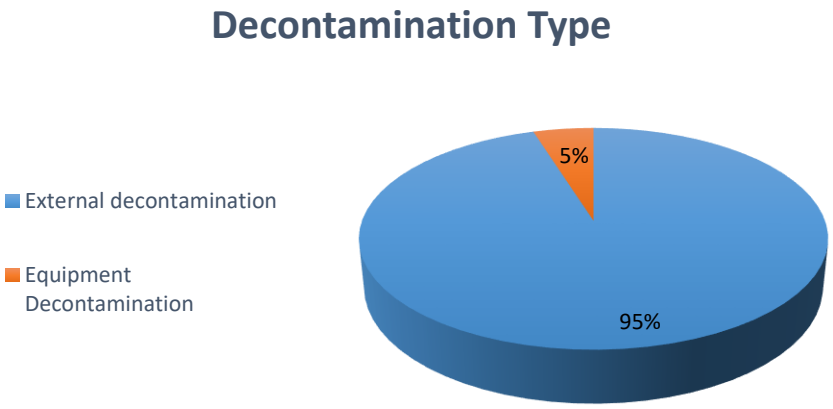


Figure 18: Chart (above) reflects the distribution of decontaminations by type during the 2021 inspection season.

The majority of decontaminations conducted were external (95%), followed by equipment decontaminations (5%) (Figure 18).

Crystal Lake

In total, Crystal Lake was staffed for 439 hours from May 22nd through October 3rd and had 2,426 inspections completed (Table 4). Dakota County required inspector staffing 8.5 hours every Friday, Saturday, and Sunday. This schedule was accomplished, with only a few exceptions due to sick inspectors and limited availability to shift coverage around.

Table 2: Crystal Lake 2021 Inspection Types

Month	Enter	Exit	Inspection Hours
May	201	123	34
Jun	385	244	86
Jul	525	319	135
Aug	277	185	136
Sep	68	46	37
Oct	27	26	10
Total	**1,483**	**943**	**439**

The survey data reveals that 56% of all inspections were conducted on fishing boats, while runabouts were the second most inspected watercraft at 26% (Figure 19). Personal watercrafts and pontoons accounted for 5% of the total inspections, each. Wakeboards, John boats, Canoe/kayaks Pontoons and Sailboats accounted for 3%, 3%, 2% and 0% of the total inspections, respectively.

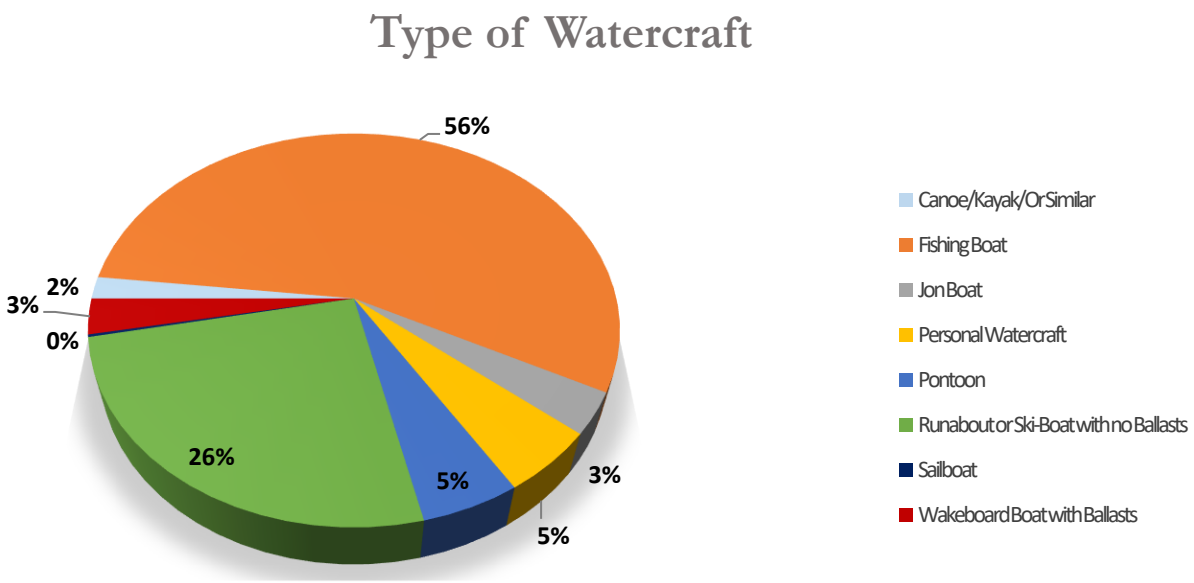


Figure 19: Chart (above) reflects the percentage of total inspections conducted on watercraft types at Crystal Lake during the 2021 inspection season.

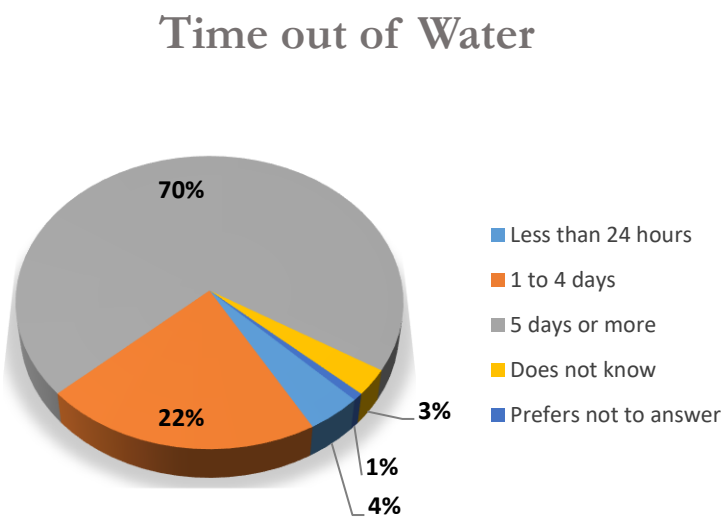


Figure 20: Chart (above) reflects the percent of responses from entering boaters at Crystal Lake regarding the amount of time their watercraft had been out of the water prior to entering.

The data also shows that throughout the 2021 inspection season 70% of watercrafts entering had been kept out of water for the recommended 5 days or more, while 22% were reported as only being out for 1-4 days (Figure 20). However, another 4% of entering watercrafts were recorded as being out the water for less than 24 hours. 3% of boaters reported that they did not know how long the watercraft had been out of the water for and the remaining 1% of boaters preferred not to answer.

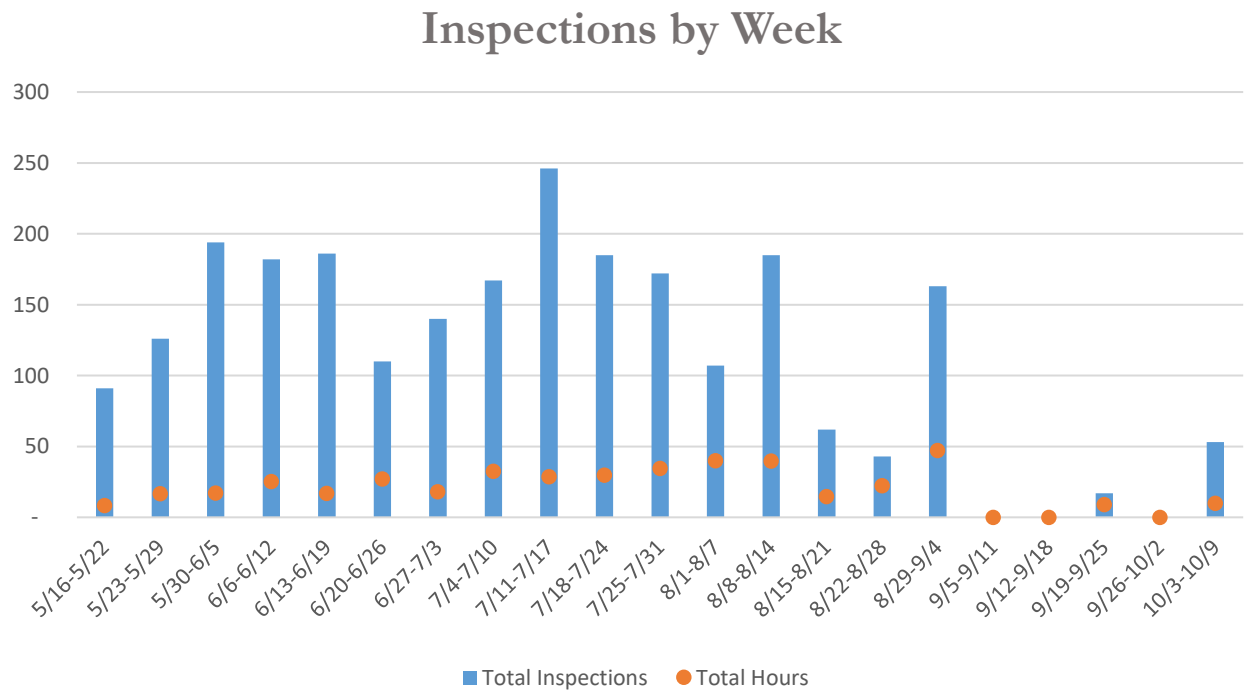


Figure 21: Graph (above) reflects the number of inspection surveys and the hours of inspector coverage logged at Crystal Lake each week during the 2021 inspection season.

From the survey data we determined that the busiest month for watercraft inspections at Crystal Lake was July at 845 surveys logged, followed by June at 630 surveys logged. Further detail by week can be found in Figure 21, where it shows that the second week of July has the highest count of inspection surveys at 246 surveys logged.

The data also allowed us to determine the busiest days and busiest times of day over the course of the inspection season. It is shown that the busiest days for inspections were Saturday at 40% and Sunday at 37%. (Figure 22).

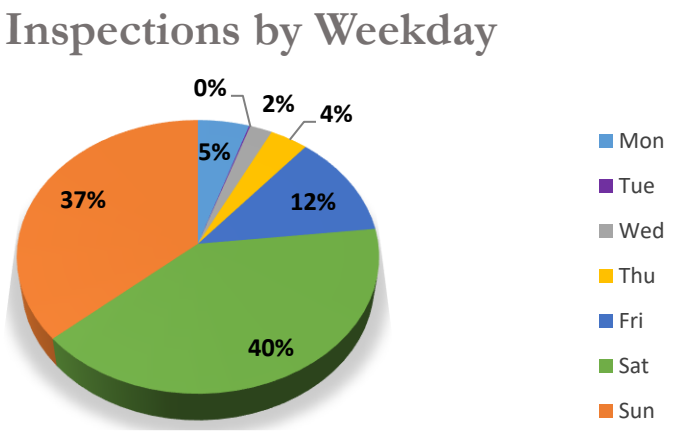


Figure 22: Chart (above) reflects the distribution of completed inspection surveys on Crystal Lake by day of week during the 2021 inspection season.

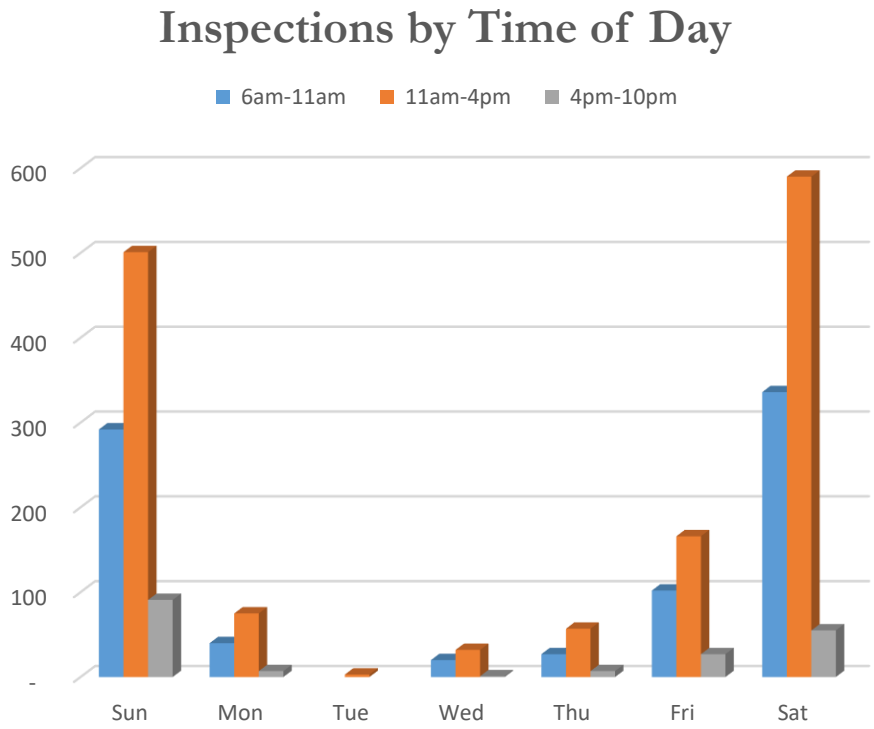


Figure 23: Graph (above) reflects the number of inspection surveys reported by the time of day, and day of week at Crystal Lake during the 2021 inspection season.

On all days, the busiest time of day for inspections was between 11 A.M. to 4 P.M. (Figure 23). The second busiest time of day was shown to be from 6 A.M. to 11 A.M.

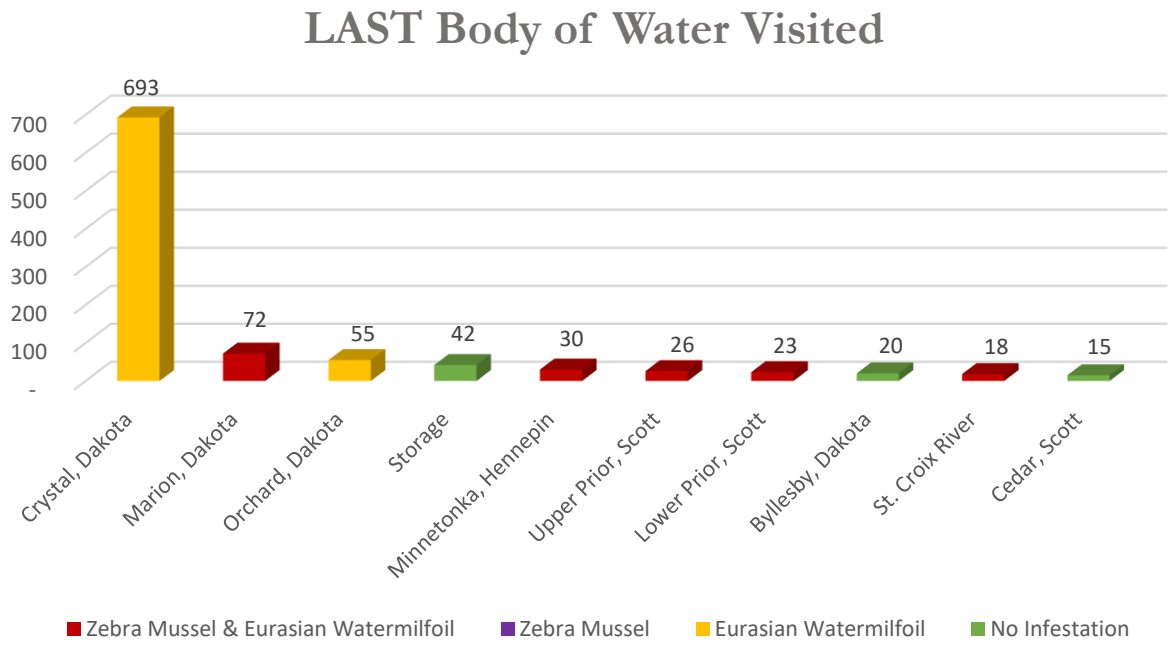


Figure 24: Graph (above) reflects the number of boaters that reported the last lake visited prior to entering Crystal Lake during the 2021 inspection season. **Note: "No infestation" only means that such lakes are not infested with the mentioned AIS. Graph only shows the top ten responses.**

Of the entering inspections, the waterbody most visited by boaters prior to entering Crystal Lake was Crystal Lake itself, with 693 boaters reporting last being there (Figure 24). The other most common responses were Lake Marion (72), Orchard Lake (55) and back to Storage (42).

The boater responses pertaining to which waterbody they would be visiting next, showed that the majority of boaters leaving Crystal Lake would head back to Crystal Lake (391), or go to Orchard Lake (36) (Figure 25).

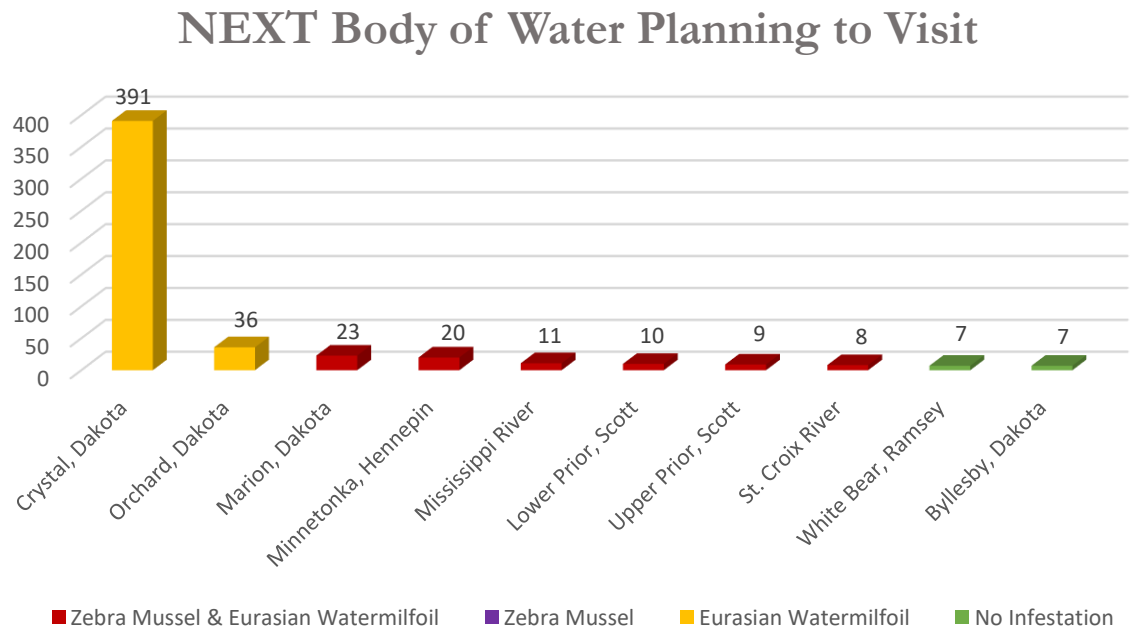


Figure 25: Graph (above) reflects the number of boaters that reported the next lake they expected to visit after Crystal Lake during the 2021 inspection season. **Note: "No infestation" only means that such lakes are not infested with the mentioned AIS. Graph only shows the top ten responses.**

Lake Byllesby

Lake Byllesby received the highest inspector coverage of 880 hours from May 22nd through September 12th and had 2,239 visual inspections and 101 decontaminations completed (Table 3). Dakota County required Level 1 and a Level 2 inspector staffed for 8.5 hours every Friday through Sunday. This coverage expectation was met with only a few exceptions throughout the season.

Table 3: Lake Byllesby 2021 Watercraft Inspection Totals

Month	Enter	Exit	Inspection Hours
May	197	108	77
Jun	394	215	194
Jul	529	294	291
Aug	221	147	252
Sep	73	61	67
Total	**1,414**	**825**	**880**

The inspection survey data reveals that more than 45% of all inspections were conducted on fishing boats, while runabouts were the second most inspected watercraft at 34% (Figure 26). Pontoons, personal watercrafts, and wake boats accounted for 13%, 5% and 2% of the total inspections, respectively.

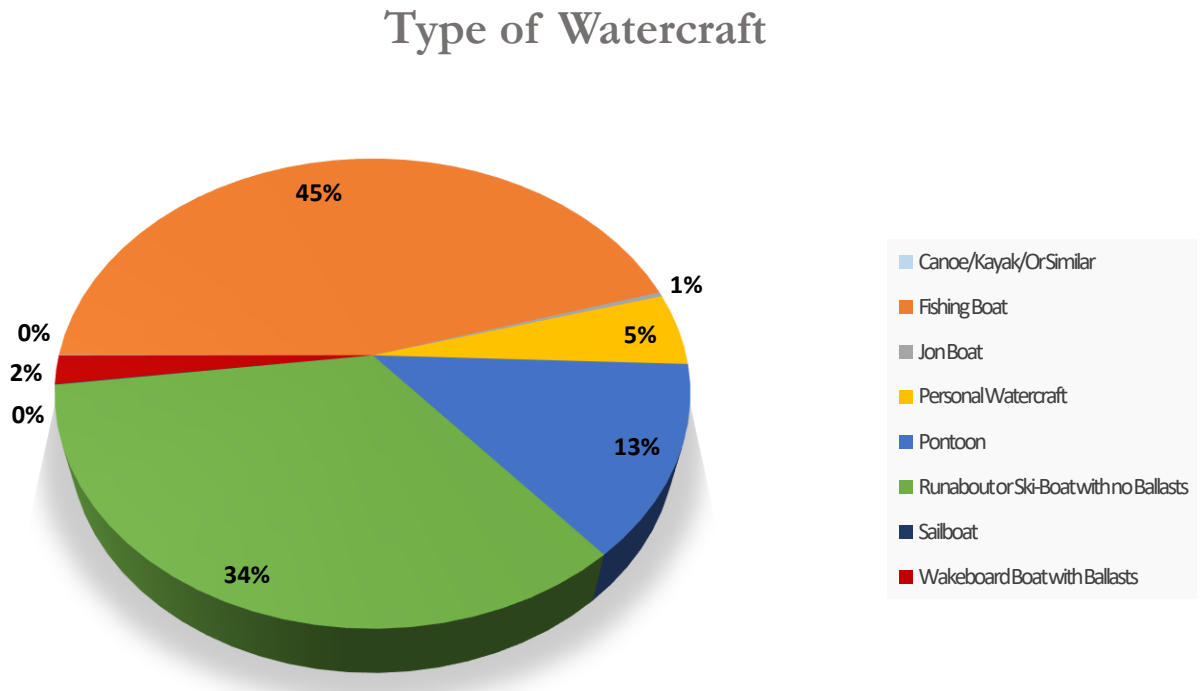
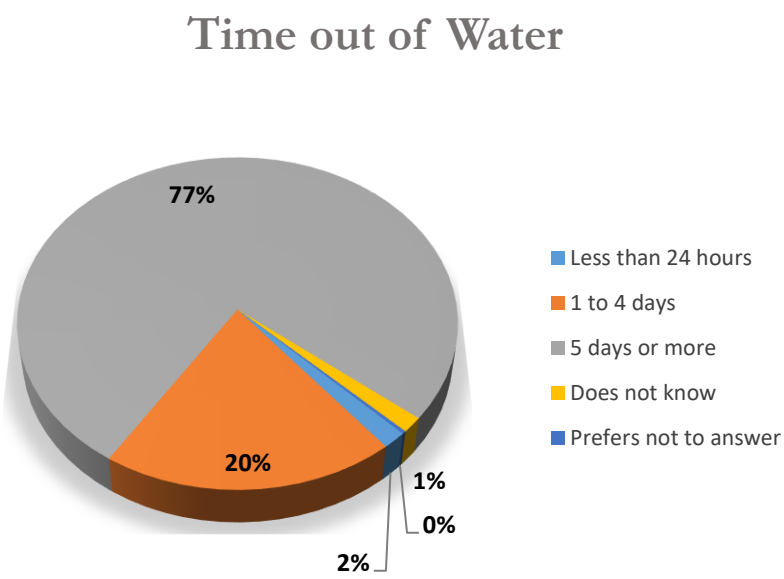


Figure 26: Chart (above) reflects the percentage of total inspections conducted on watercraft types during the 2021 inspection season.



The data also shows that throughout the 2021 inspection season 77% of watercrafts entering had been left out of any body of water for the recommended 5 days or more, while 20% were reported as only being out for 1-4 days (Figure 27). However, 2% of entering watercrafts were recorded as being out the water for less than 24 hours. 1% of boaters reported that they either did not know how long the watercraft had been out of the water for and 4 boaters reported that they preferred not to answer.

Figure 27: Chart (above) reflects the percent of responses from entering boaters at Lake Byllesby regarding the amount of time their watercraft had been out of the water prior to entering.

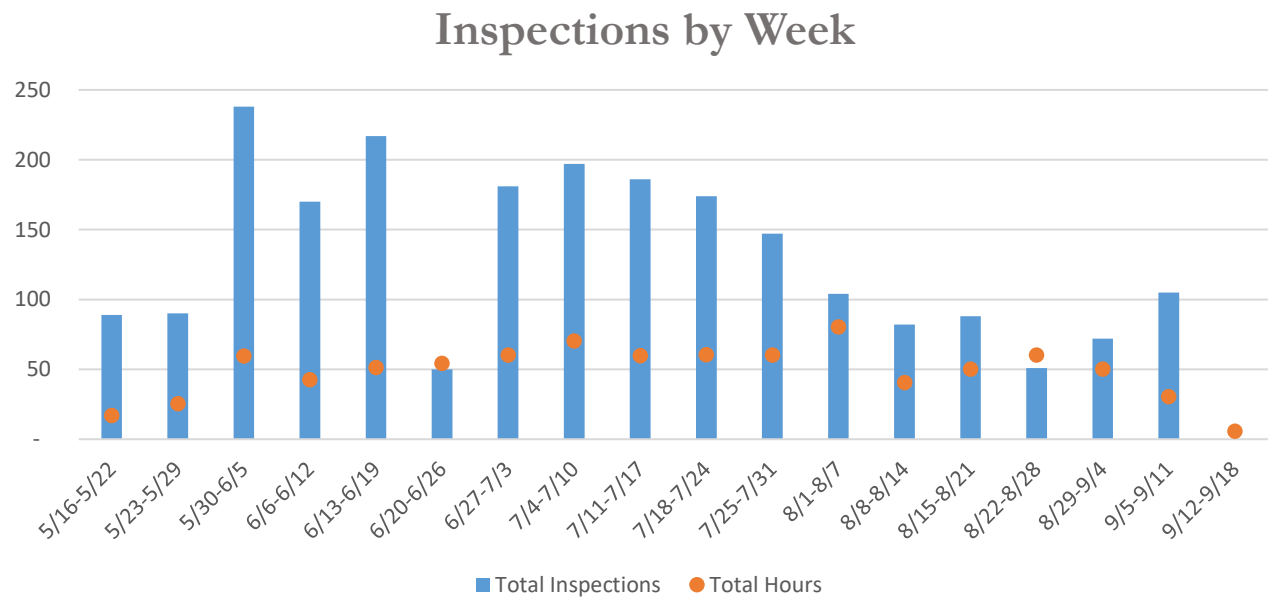


Figure 28: Graph (above) reflects the number of inspection surveys and the hours of inspector coverage logged at Lake Byllesby each week during the 2021 inspection season.

From the survey data we determined that the busiest month for watercraft inspections was July, with 825 completed surveys. June followed close by at 609 surveys logged. September has predictably lower inspection counts since coverage hours significantly decreased and it is at the end of the season. Further detail by week can be found in Figure 28, where it shows that the last week of May had the highest count of inspection surveys at 238.

The data also allowed us to determine the busiest days and busiest times of day over the course of the inspection season. It is shown that the busiest days for inspections were evenly split between Saturday and Sunday (Figure 31).

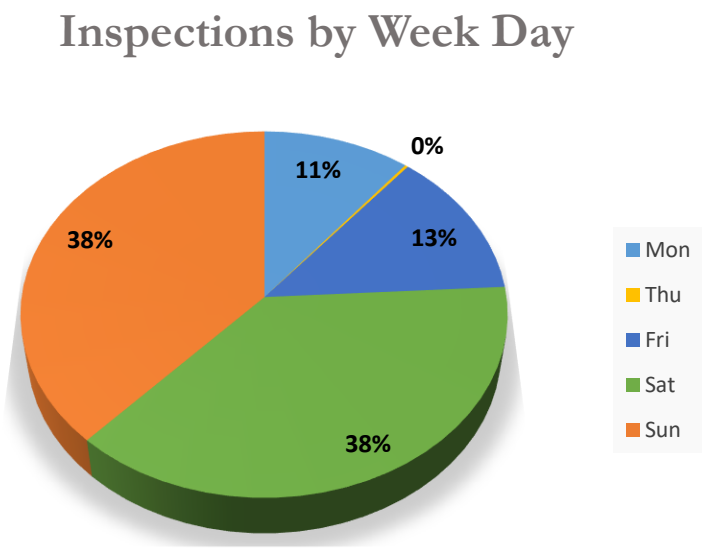


Figure 29: Chart (above) reflects the distribution of completed inspection surveys on Lake Byllesby by day of week during the 2021 inspection season.

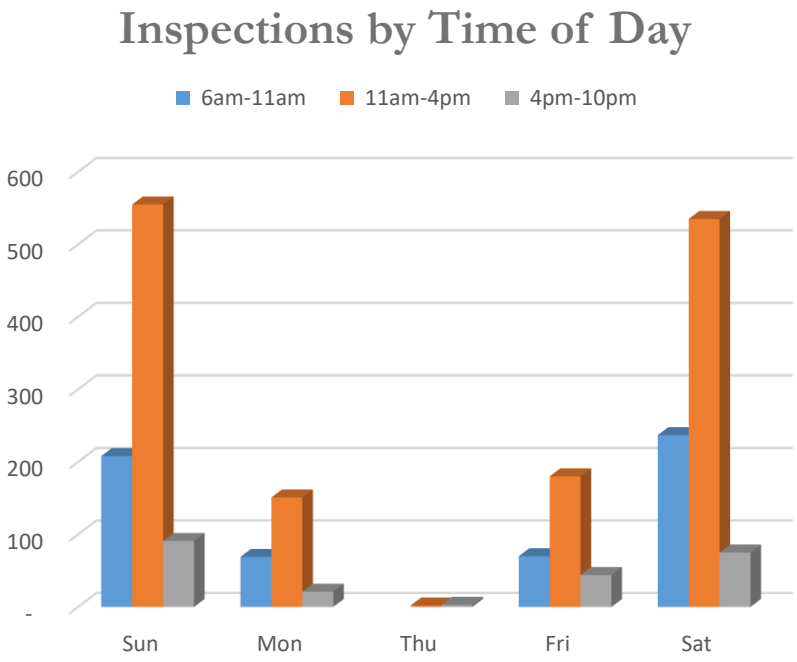


Figure 30: Graph (above) reflects the number of inspection surveys reported by day of week at Lake Byllesby during the 2021 inspection season.

On Sunday, Monday, Friday, and Saturday alike, the data shows that the busiest time of day for inspections is between 11AM to 4PM (Figure 30). The second busiest time of day is shown to be from 6AM to 11AM.

Of the entering inspections, the waterbody most visited by boaters prior to entering Lake Byllesby was Lake Byllesby itself, with 737 boaters reporting last being there (Figure 31). The other most common responses were Mississippi River (77) and St. Croix River (61). This information can help us understand where new AIS infestations arise from since AIS are often unintentionally transported between bodies of water via watercrafts, trailers, and other water-related equipment.

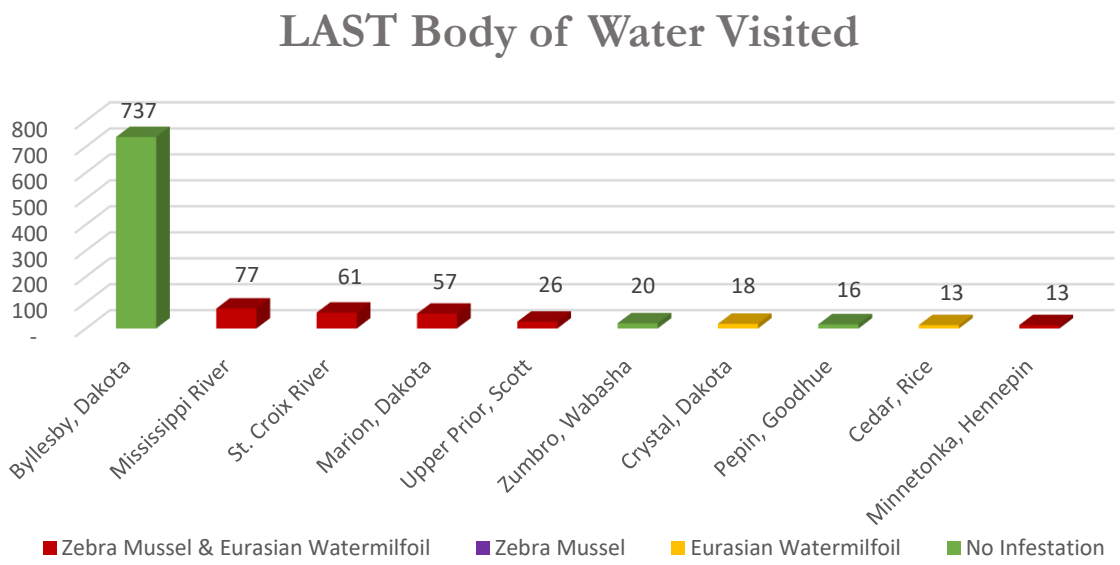


Figure 31: Graph (above) reflects the number of boaters that reported the last lake visited prior to entering Lake Byllesby during the 2021 inspection season. **Note: "No infestation" only means that such lakes are not infested with the mentioned AIS. Graph only shows the top ten responses.**

Likewise, of the same entering inspections, the boater responses pertaining to which waterbody they would be visiting next, showed that the majority of boaters leaving Lake Byllesby would be heading right back to Lake Byllesby (480). (Figure 32).

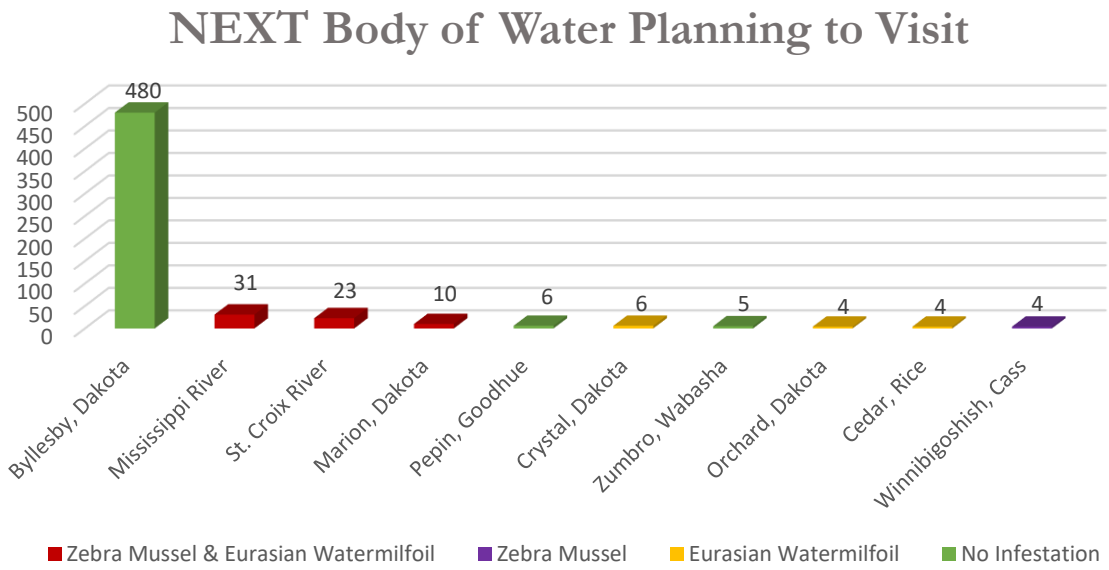


Figure 32: Graph (above) reflects the number of boaters that reported the next lake they expected to visit after Lake Byllesby during the 2021 inspection season. **Note: "No infestation" only means that such lakes are not infested with the mentioned AIS.**

Lake Marion

In total, Lake Marion was staffed for 476 hours from May 21st through September 6th and had 2,901 inspections completed (Table 4). Dakota County required inspector staffing for 7 hours on Fridays, 10 hours on Saturdays, and 8.5 hours on Sundays. The scheduling expectation was met minus only a couple of days when inspectors were sick and limited availability of other inspectors did not allow for management to shift coverage to the launch. The Lake Marion boat launch at Casperson Park is the busiest location in Dakota County as inspectors conducted an average of 6.1 inspections per hour.

Table 4: Lake Marion 2021 Watercraft Inspection Totals

Month	Enter	Exit	Inspection Hours
May	233	128	59
Jun	633	354	104
Jul	639	344	156
Aug	392	151	136
Sep	24	3	22
Total	**1,921**	**980**	**476**

The inspection survey data reveals that one third (37%) of all inspections were conducted on runabouts, while fishing boats were the second most inspected watercraft at 34% (Figure 33). Personal watercrafts, pontoons and wakeboards accounted for 12%, 7% and 6% of the total inspections, respectively. Jon boats, canoe/kayaks, sailboats, and boat lift/docks accounted for 4% of the total inspections.

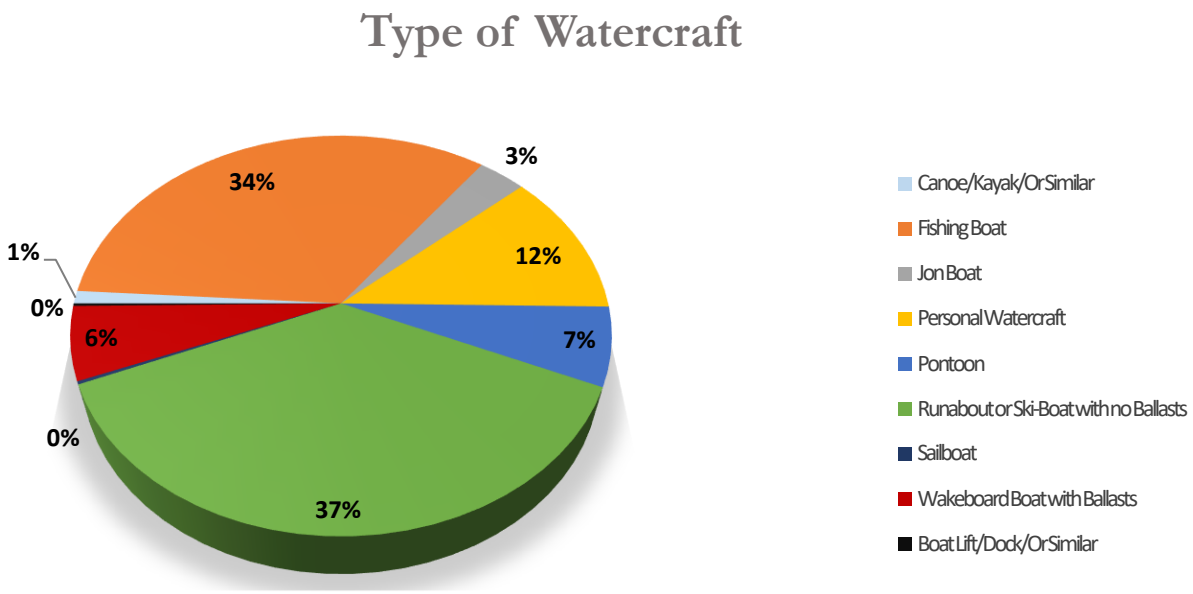
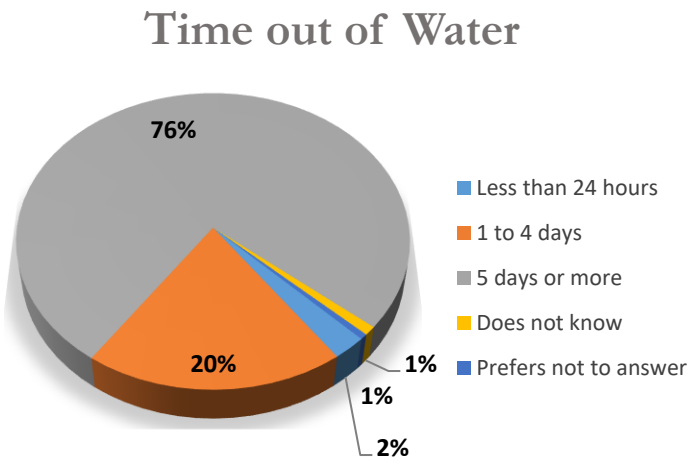


Figure 33: Chart (above) reflects the percentage of total inspections conducted on watercraft types during the 2021 inspection season.



The data also shows that throughout the 2021 inspection season 76% of watercrafts entering had been kept out of any body of water for the recommended 5 days or more, while 20% were reported as only being out for 1-4 days. However, another 2% of entering watercrafts were recorded as being out the water for less than 24 hours. The remaining 2% of boaters reported that they either did not know or preferred not to answer. (Figure 34).

Figure 34: Chart (above) reflects the percent of responses from entering boaters at Lake Marion regarding the amount of time their watercraft had been out of the water prior to entering.

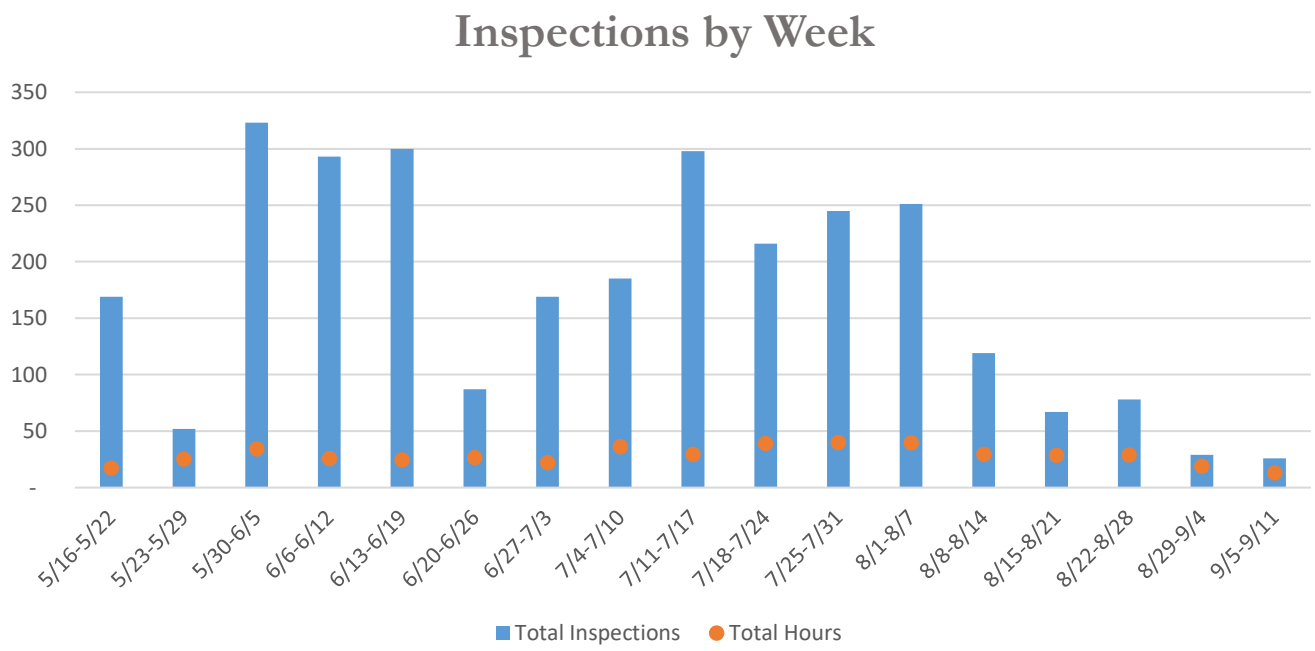


Figure 35: Graph (above) reflects the number of inspection surveys and the hours of inspector coverage logged at Lake Marion each week during the 2021 inspection season

From the survey data we determined that the busiest month for watercraft inspections was June and July, with 987 completed surveys, each. August followed close by at 543 surveys. September has understandably lower inspection counts since coverage hours significantly decreased and it is at the end of the season. Further detail by week can be found in Figure 35, where it shows that the last week of May had the highest count of inspection surveys at 323.

The data also allowed us to determine the busiest days and busiest times of day over the course of the inspection season. It is shown that the busiest days for inspections were Sundays, followed by Saturdays and Fridays. (Figure 36).

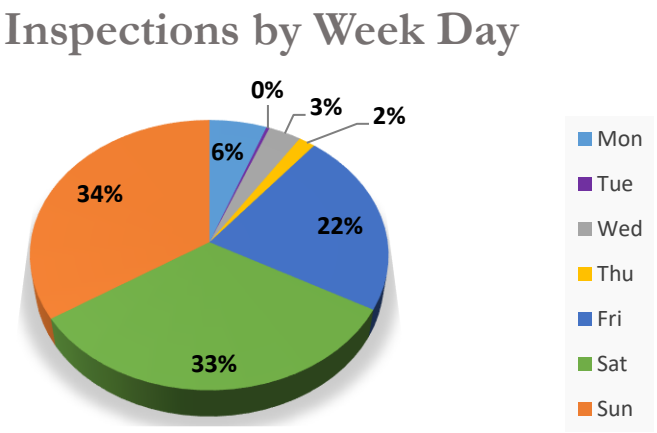
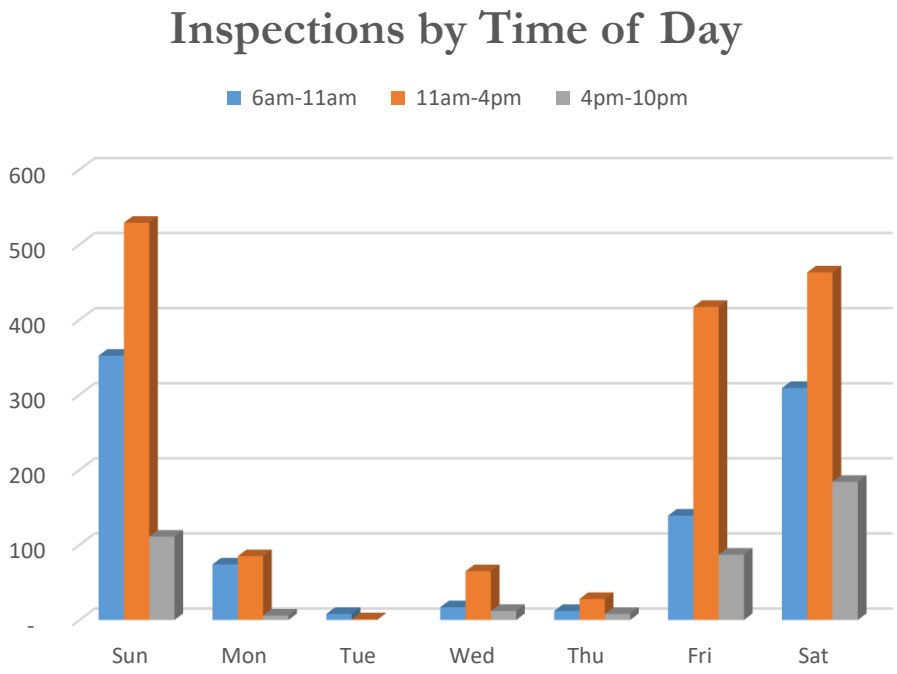


Figure 36: Chart (above) reflects the distribution of completed inspection surveys at Lake Marion by day of week during the 2021 inspection season.



On Mondays, Fridays, Saturdays, and Sundays alike, the data shows that the busiest time of day for inspections is between 11 A.M. to 4 P.M. (Figure 37). The second busiest time of day is shown to be from 6 A.M. to 11 A.M.

Figure 37: Graph (above) reflects the number of inspection surveys reported by day of week at Lake Marion during the 2021 inspection season.

Of the entering inspections, the waterbody most visited by boaters prior to entering Lake Marion was Lake Marion itself, with 1,064 boaters reporting last being there (Figure 38). The other most common responses were lakes Crystal (95) and Upper Prior (64). This boater traffic and lake specific AIS knowledge can help us understand where new AIS infestations arise from since AIS are often unintentionally transported between bodies of water via watercrafts, trailers, and other water-related equipment.

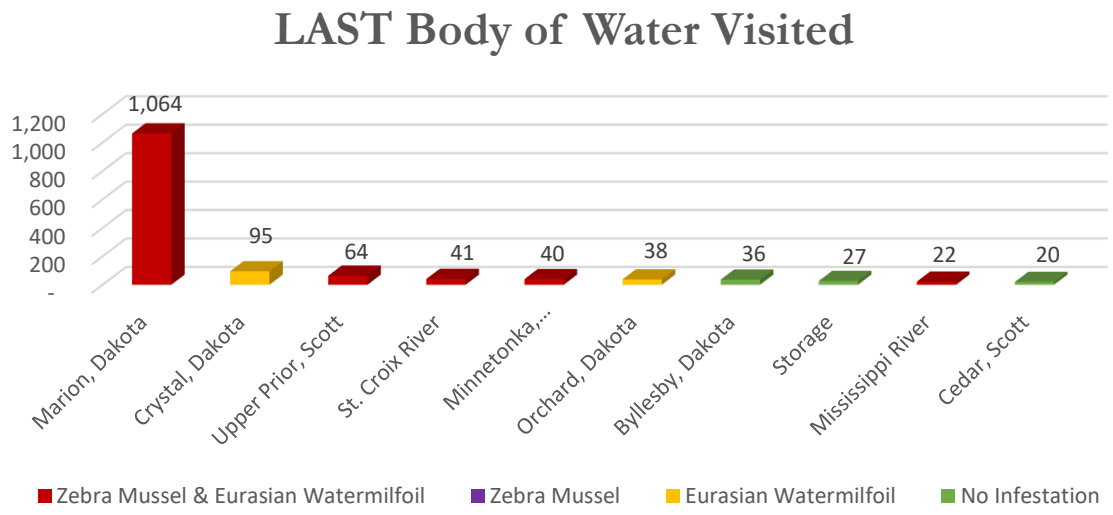


Figure 38: Graph (above) reflects the number of boaters that reported the last lake visited prior to entering Lake Marion during the 2021 inspection season.

Likewise, of the same entering inspections, the boater responses pertaining to which waterbody they would be visiting next, showed that the majority of boaters leaving Lake Marion would be going back to Lake Marion (544) (Figure 39).

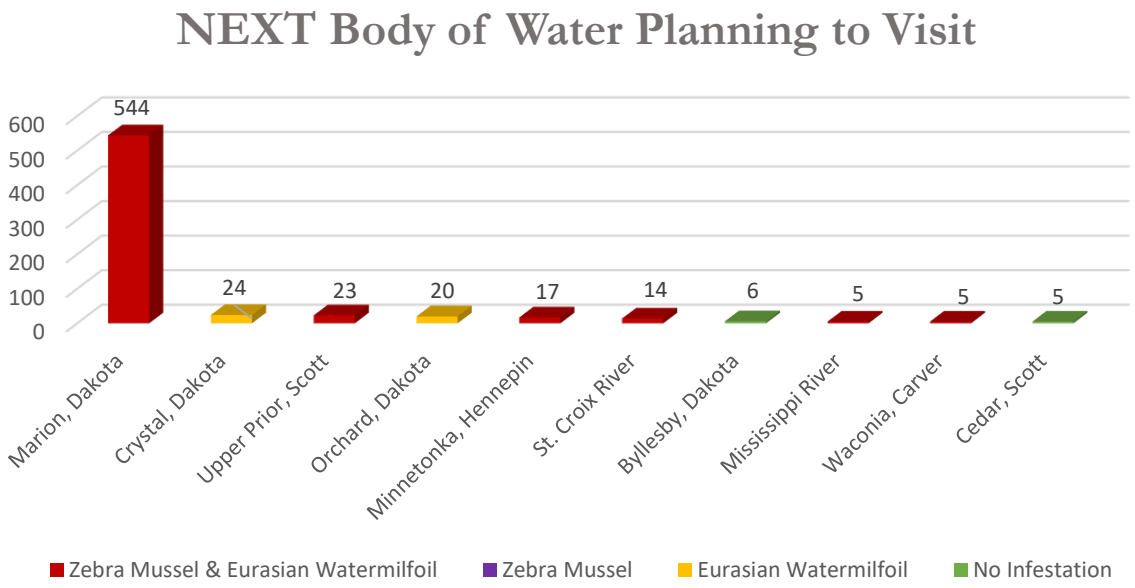


Figure 39: Graph (above) reflects the number of boaters that reported the next lake they expected to visit after Lake Marion during the 2021 inspection season. **Note: "No infestation" only means that such lakes are not infested with the mentioned AIS. Graph only shows the top ten responses.**

Orchard Lake

Orchard Lake had the lowest count of inspection surveys compared to the other three staffed lakes in the Dakota County. In total, Orchard Lake was staffed for 400 hours from June 4th through September 26th and had 742 inspections completed over this period (Table 2). Staffing was requested for 7 hours on Fridays, 10 hours on Saturdays, and 8.5 hours on Sundays. This schedule was accomplished, except for a few additional shifts that were put in place to make up for lost hours from the season start date delay.

Month	Enter	Exit	Inspection Hours
Jun	98	51	73
Jul	82	62	111
Aug	107	85	104
Sep	131	126	111
Total	**418**	**324**	**400**

The inspection survey data reveals that more than half (68%) of all inspections were conducted on fishing boats, while runabouts were the second most inspected watercraft at 22% (Figure 40). Pontoons and personal watercrafts accounted for 3% of the total inspections, each. The rest of the inspections were conducted on Jon boats (2%), Wake boats (1%), and canoe/kayaks (1%).

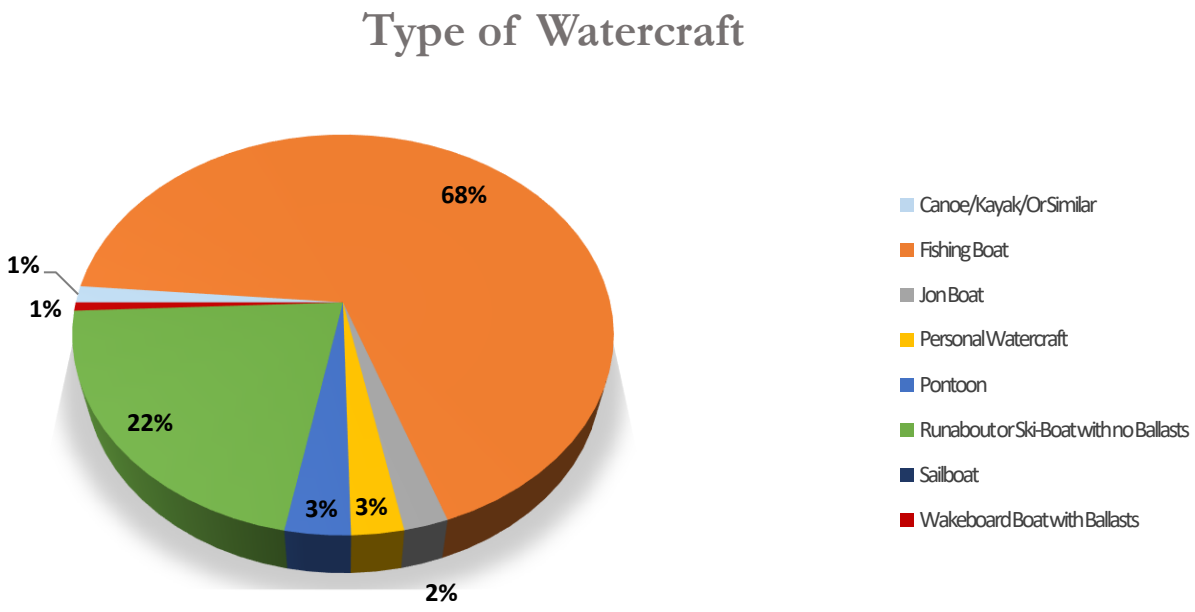
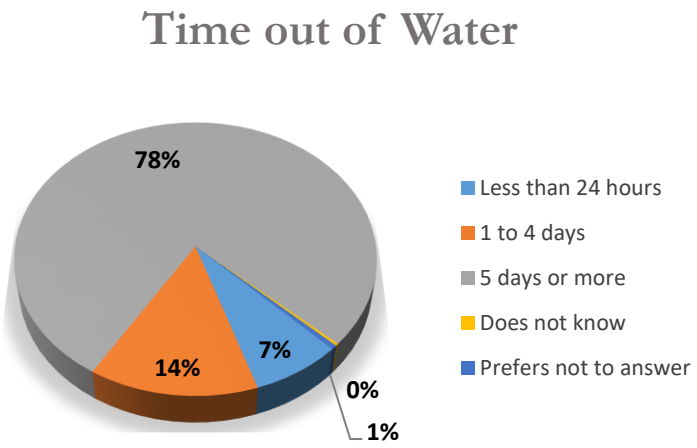


Figure 40: Chart (above) reflects the percentage of total inspections conducted on watercraft types during the 2021 inspection season.



The data also shows that throughout the 2021 inspection season 78% of watercrafts entering had been kept out of any body of water for the recommended 5 days or more, while 14% were reported as only being out for 1-4 days. However, another 7% of entering watercrafts were recorded as being out the water for less than 24 hours. The remaining 1% of boaters reported that they did not know or preferred not to answer. (Figure 41).

Figure 41: Chart (above) reflects the percent of responses from entering boaters at Orchard Lake regarding the amount of time their watercraft had been out of the water prior to entering.

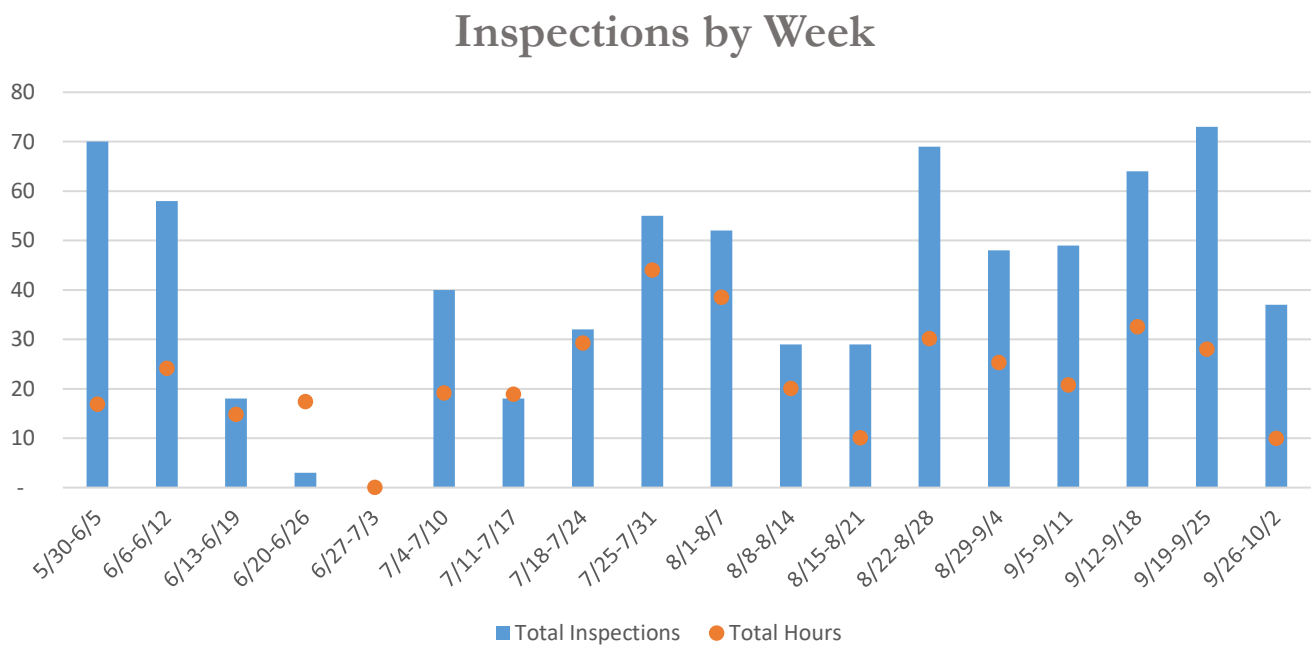


Figure 42: Graph (above) reflects the number of inspection surveys and the hours of inspector coverage logged at Orchard Lake each week during the 2021 inspection season

From the survey data we determined that the busiest month for watercraft inspections was September, with 258 completed surveys each. August followed close by at 192 surveys logged. May and June have understandably lower inspection counts since coverage hours significantly decreased. Further detail by week can be found in Figure 42, where it shows that the third week of September had the highest count of inspection surveys at 73.

The data also allowed us to determine the busiest days and busiest times of day over the course of the inspection season. It is shown that the busiest days for inspections were Sundays, followed by Saturdays. (Figure 43).

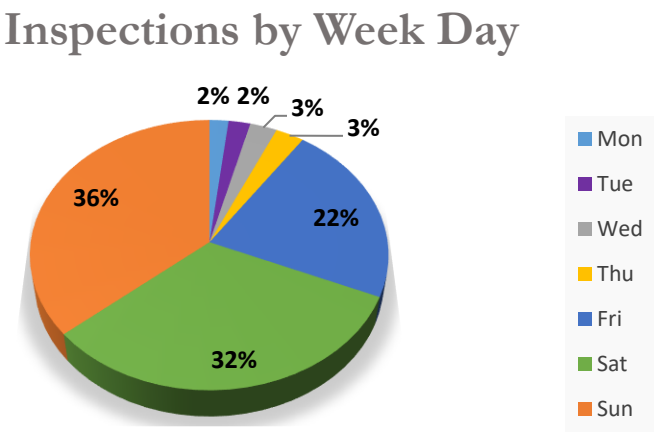
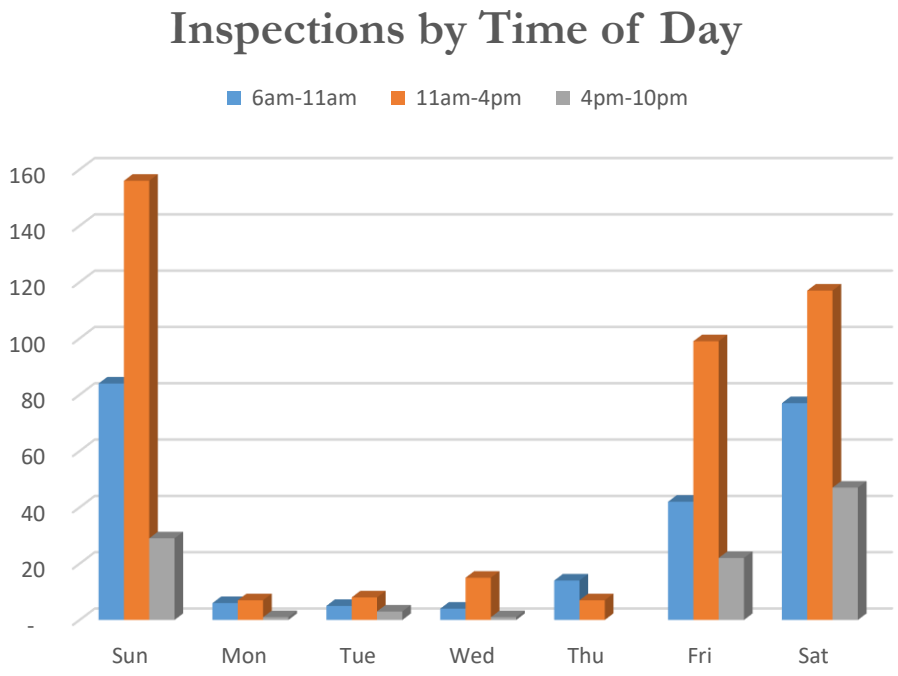


Figure 43: Chart (above) reflects the distribution of completed inspection surveys at Orchard Lake by day of week during the 2021 inspection season.



On Fridays, Saturdays, and Sundays alike, the data shows that the busiest time of day for inspections is between 11 A.M. to 4 P.M. (Figure 44). The second busiest time of day is shown to be from 6 A.M. to 11 A.M.

Figure 44: Graph (above) reflects the number of inspection surveys reported by day of week at Orchard Lake during the 2021 inspection season.

Of the entering inspections, the waterbody most visited by boaters prior to entering Orchard Lake was Orchard Lake itself, with 164 boaters reporting last being there (Figure 45). The other most common responses were Crystal Lake (29) and Lake Marion (22). This boater traffic and lake specific AIS knowledge can help us understand where new AIS infestations arise from since AIS are often unintentionally transported between bodies of water via watercrafts, trailers, and other water-related equipment.

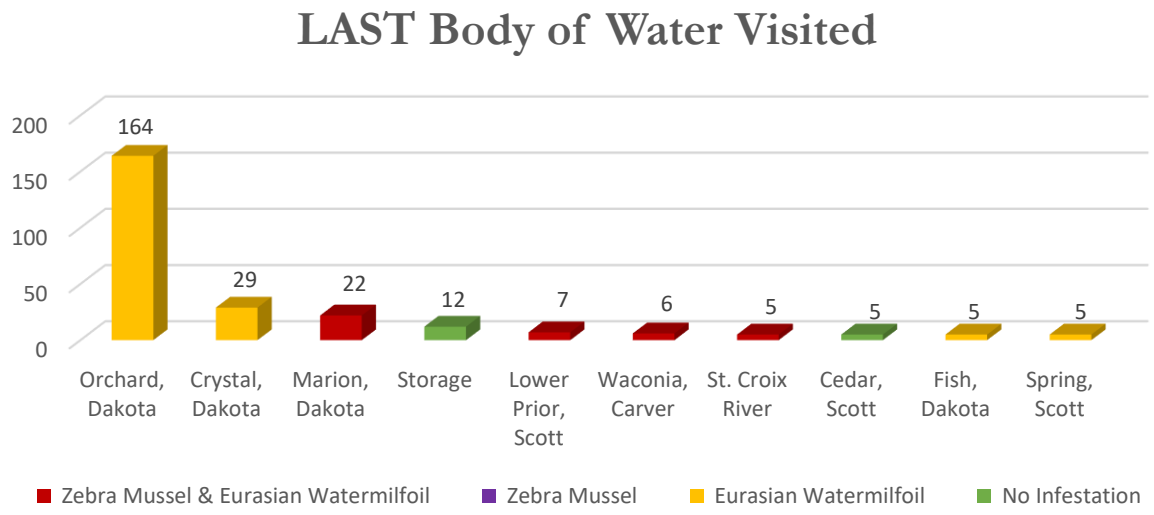


Figure 45: Graph (above) reflects the number of boaters that reported the last lake visited prior to entering Orchard Lake during the 2021 inspection season.

Likewise, of the same entering inspections, the boater responses pertaining to which waterbody they would be visiting next, showed that the majority of boaters leaving Orchard Lake would be going back to Orchard Lake (133) (Figure 46).

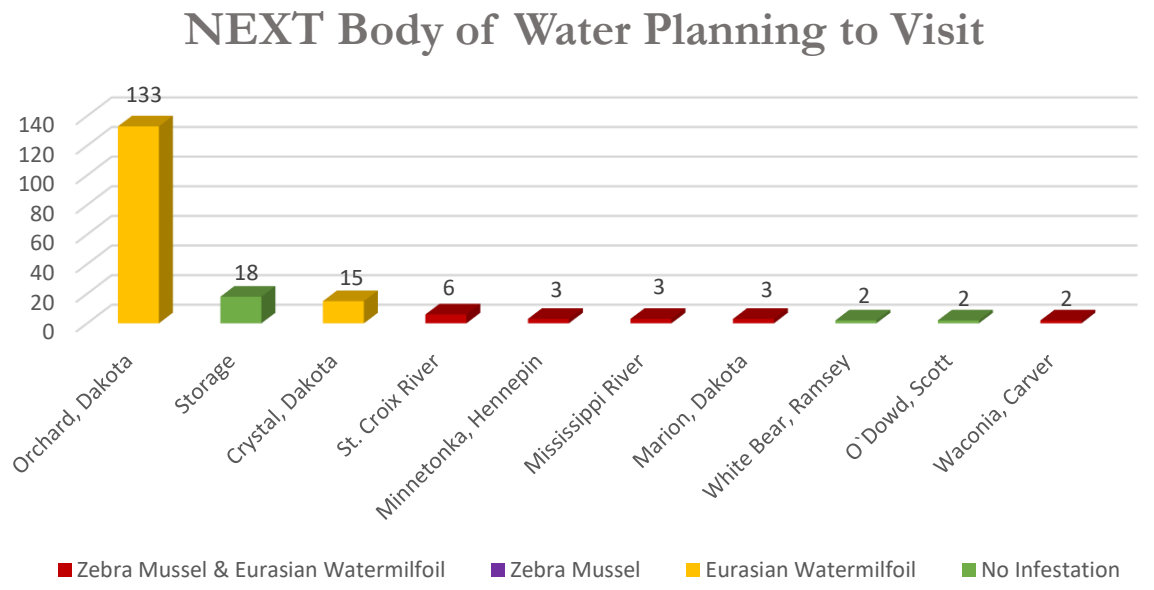


Figure 46: Graph (above) reflects the number of boaters that reported the next lake they expected to visit after Orchard Lake during the 2021 inspection season. **Note: "No infestation" only means that such lakes are not infested with the mentioned AIS. Graph only shows the top ten responses.**

Trends

The following graphs were created using the data gathered from the 2021 watercraft inspection program administered by Waterfront Restoration, while data collected from the DNR survey database was used to supply the 2019, 2020, and 2021 counts. Note that because Waterfront Restoration administered the 2019 and 2020 watercraft inspector program, we can compare the difference of inspector coverage hours by lake for each year.

Using this watercraft inspections survey data, we can create the following graphs and analyze them to check for trends from season to season within the inspections program. The knowledge gathered from the provided information can then be used by Dakota County to adjust and improve the inspection program as desired.

The percent of traffic on Orchard Lake significantly decreased in 2021, while traffic on Crystal Lake, Lake Byllesby and Lake Marion only slightly decreased (Figure 47). Lake Marion remains by far the busiest lake. The decrease in launch traffic can potentially be attributed to a number of factors including people returning to a version of their busy pre-COVID schedules. Unusually warm temperatures that led to less fish activity. As well as state-wide drought conditions during the second half of the summer that affected lake usage. Lastly, there were 186 less inspector hours in 2021 compared to 2020, which would naturally equate to less inspections.

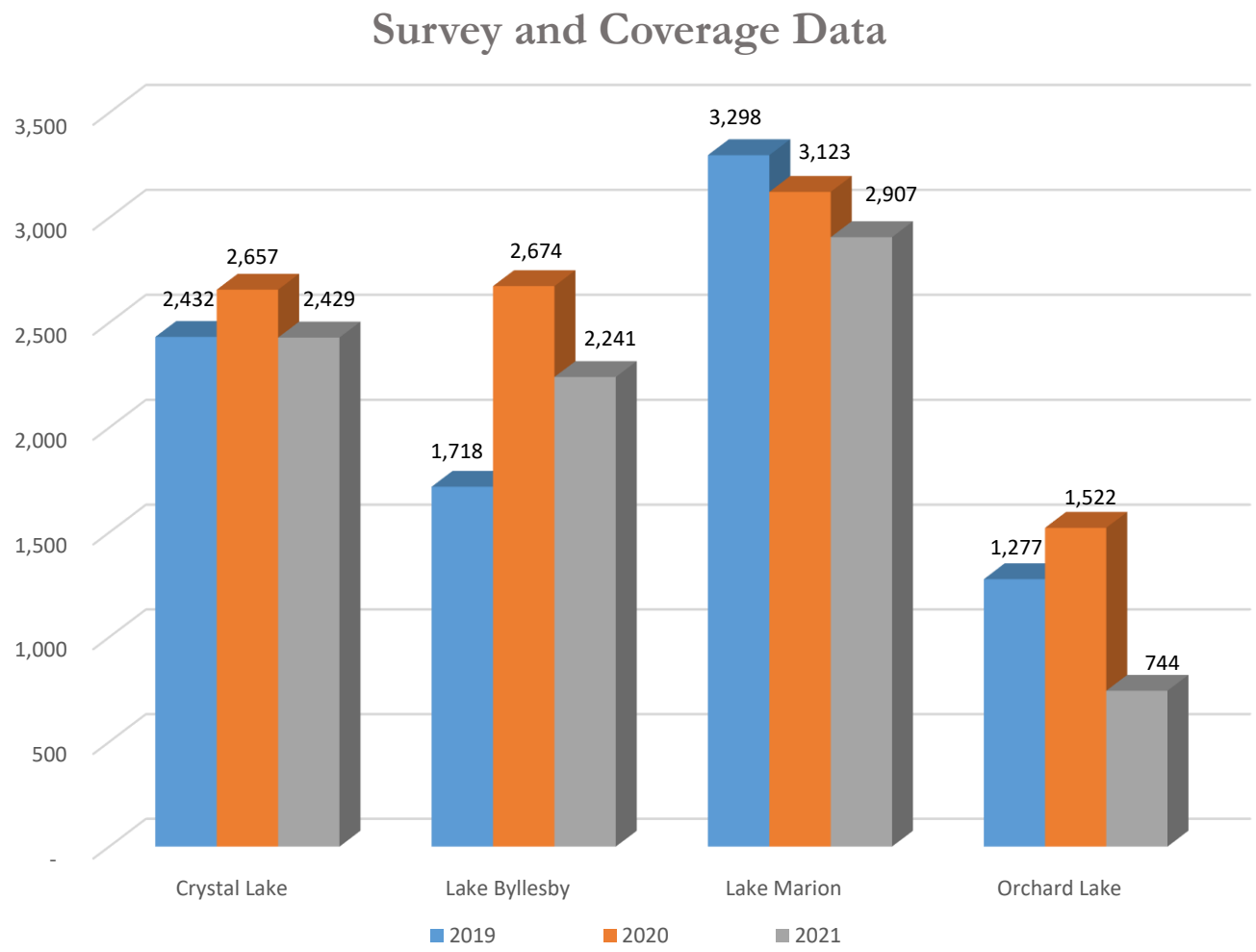


Figure 47: Graph (above) shows the comparison of inspection surveys counts and inspector staffing hours completed at each lake between 2019, 2020 and 2021

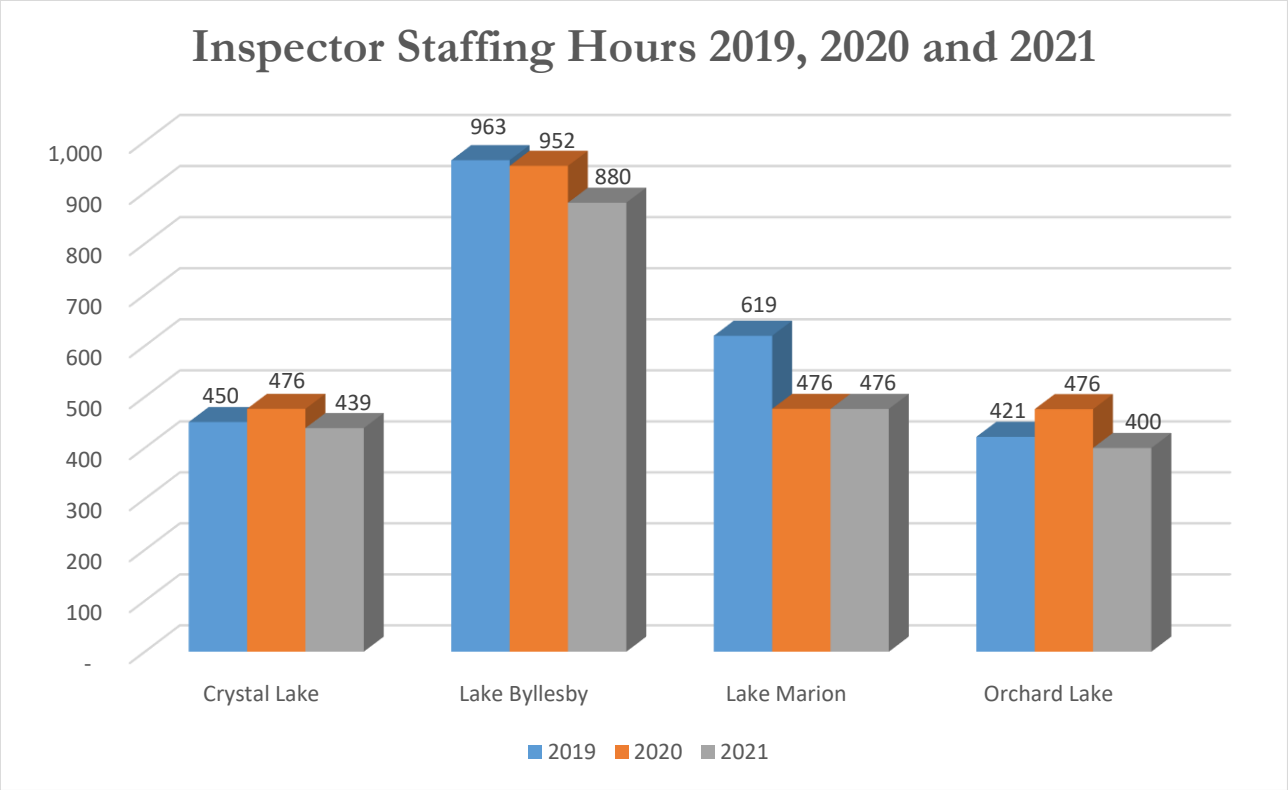


Figure 48: Graph (above) shows the comparison of inspection surveys counts and inspector staffing hours completed at each lake between 2019, 2020 and 2021

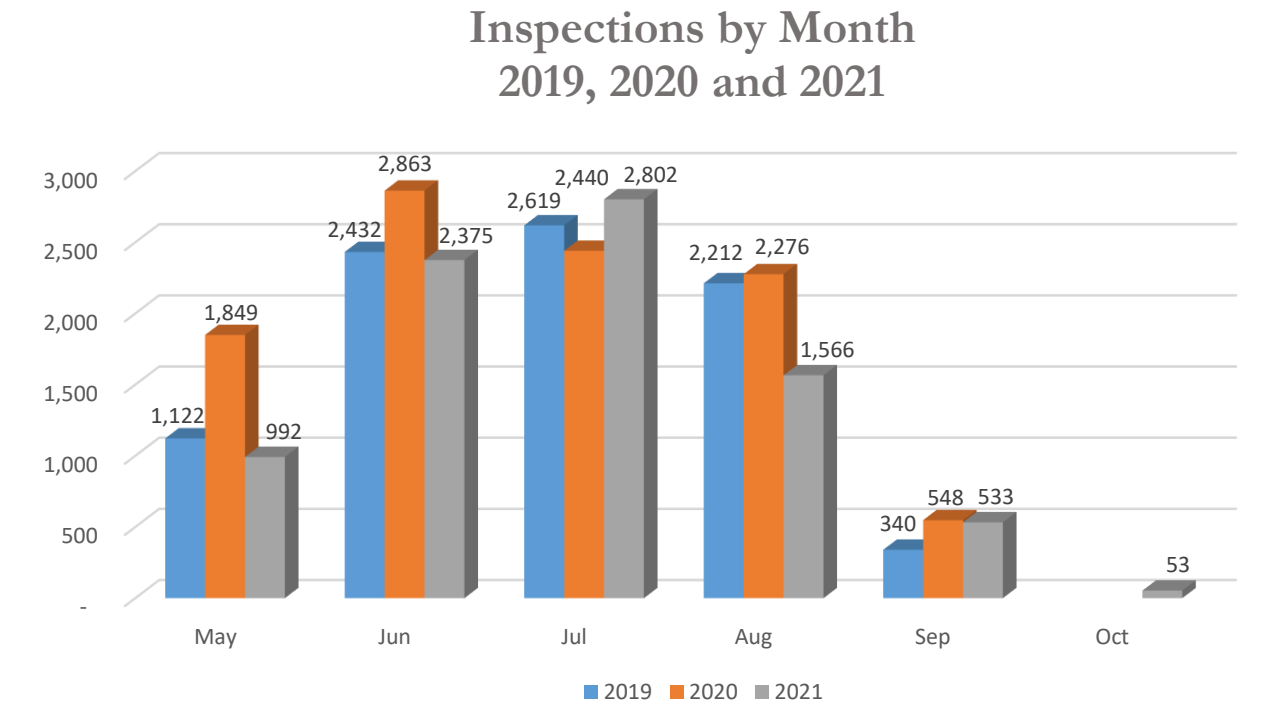


Figure 49: Graph (above) shows the comparison of inspection surveys completed by month in 2019, 2020 and 2021. **Note that survey counts for 2019 and 2020 excluded Mississippi River**

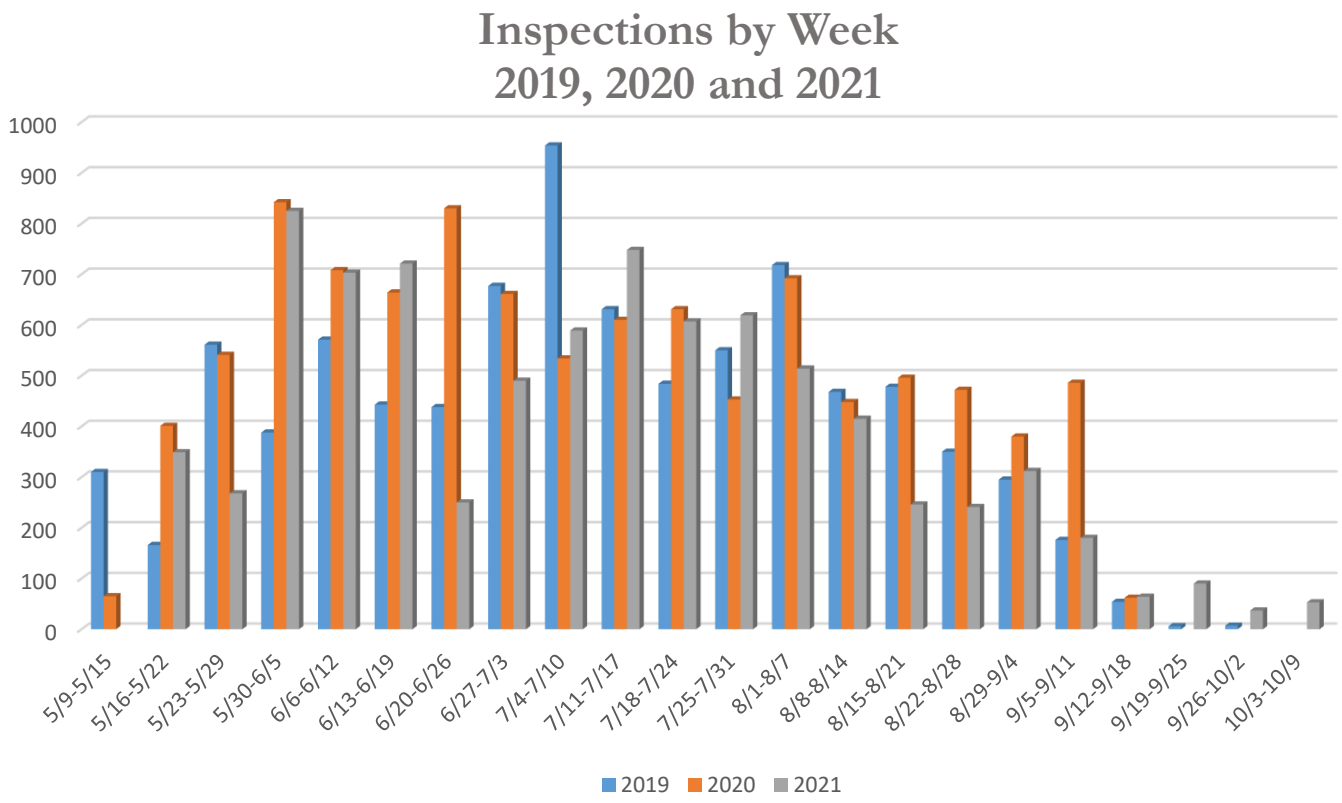


Figure 50: Graph (above) shows the comparison of inspection surveys completed by week in 2019, 2020 and 2021. **Note that survey counts for 2019 and 2020 excluded Mississippi River**

Entering watercraft that arrive at a lake access with their drain-plug in and/or arrive with aquatic plants, water, or mud in or on their watercraft are in violation of MN law. Figure 51 shows the number of these cases reported over the last three years. In 2021 MN AIS law violations decreased by 0.02% while drain plug violations also decreased by 0.42% from 2020.

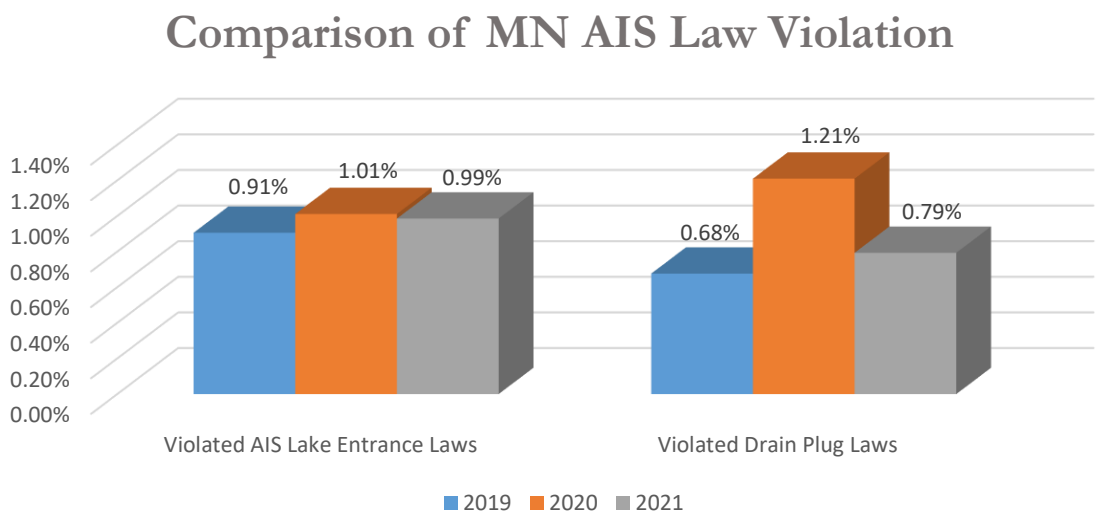


Figure 51: Graph (above) shows the comparison of the percent of total boaters that violated Minnesota Aquatic Invasive Species (AIS) Laws between 2019, 2020, and 2021. **Note that violation and survey count for 2019 and 2020 excluded Mississippi River**

Over the past three years, the most common finding remains to be plants removable by hands (Figure 52). It also shows that in 2021 plants (removable by hand) dropped significantly at entering but have increased at exiting compared to 2020. Plants (stuck, will require decon) also increased compared to 2020.

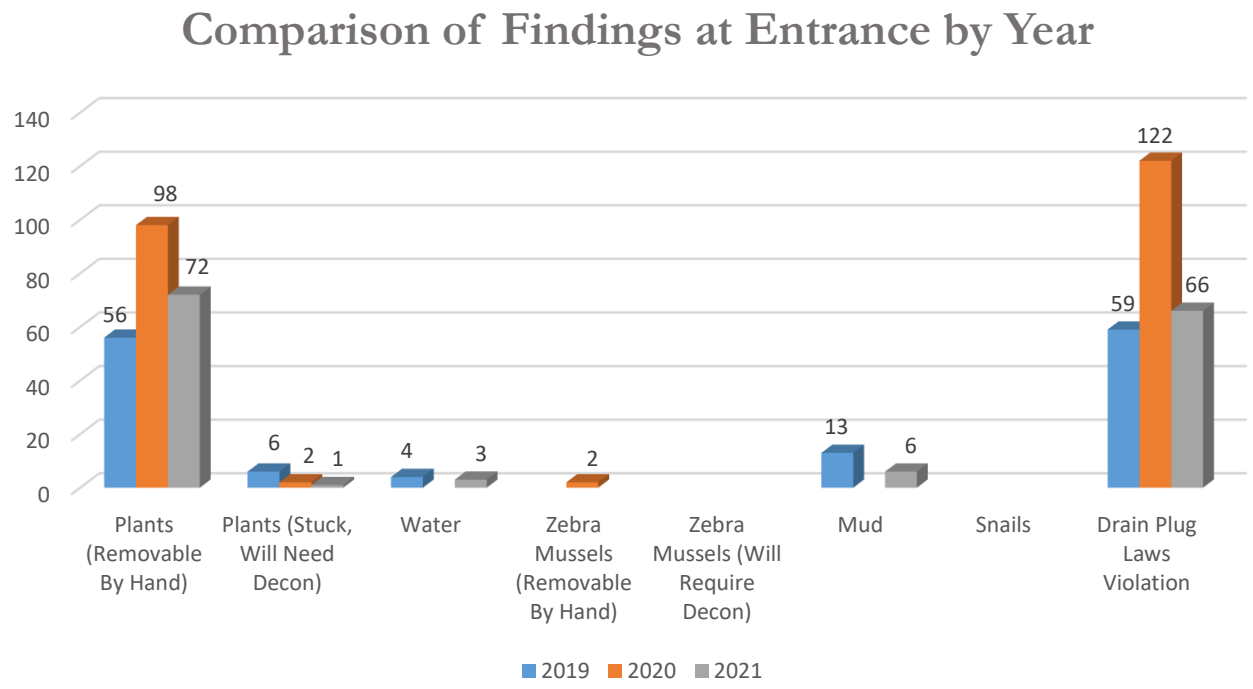


Figure 52: Graph (above) the comparison of findings during entering inspections between 2019, 2020, and 2021. **Note that violation count for 2019 and 2020 excluded Mississippi River**

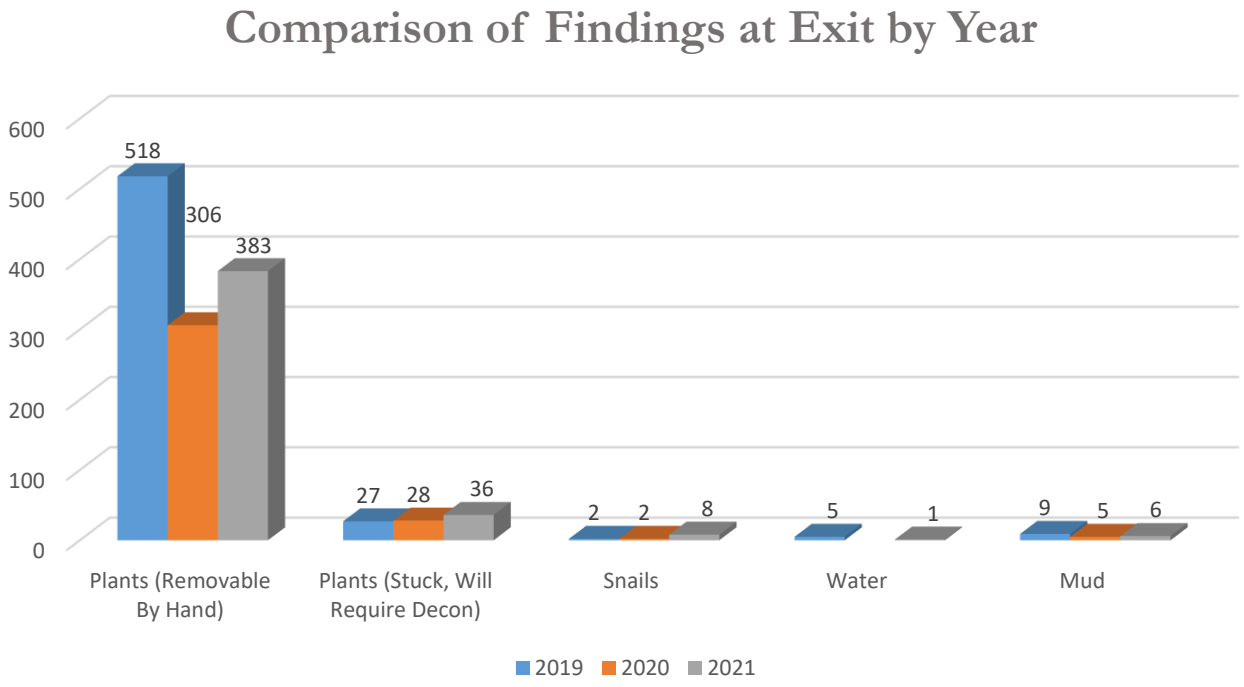


Figure 53: Graph (above) the comparison of findings during exiting inspections between 2019, 2020, and 2021. **Note that violation count for 2019 and 2020 excluded Mississippi River**

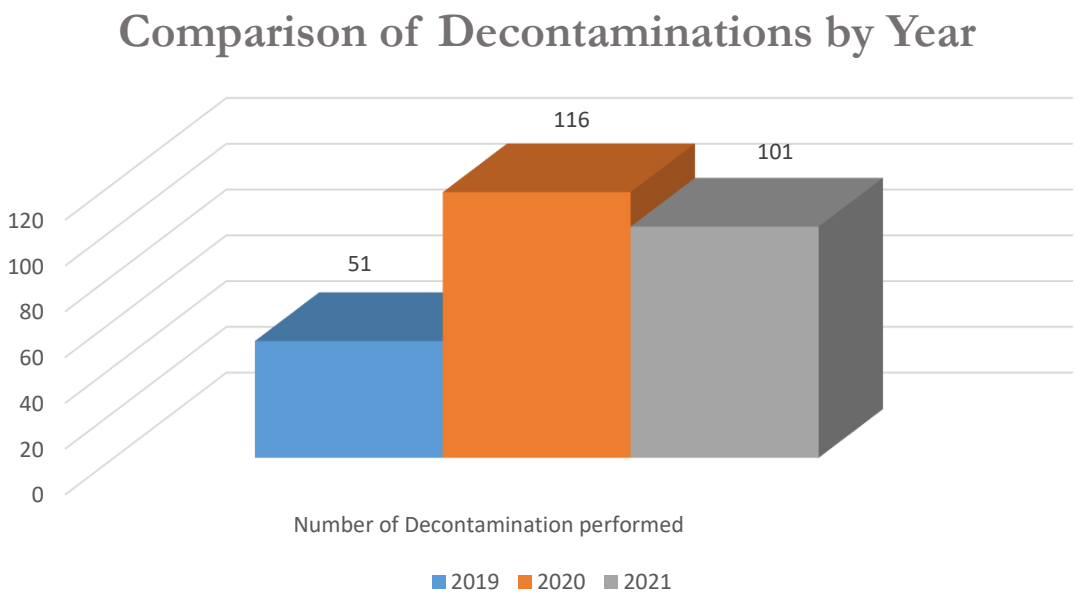


Figure 54: Graph (above) the comparison of findings during exiting inspections between 2019, 2020, and 2021

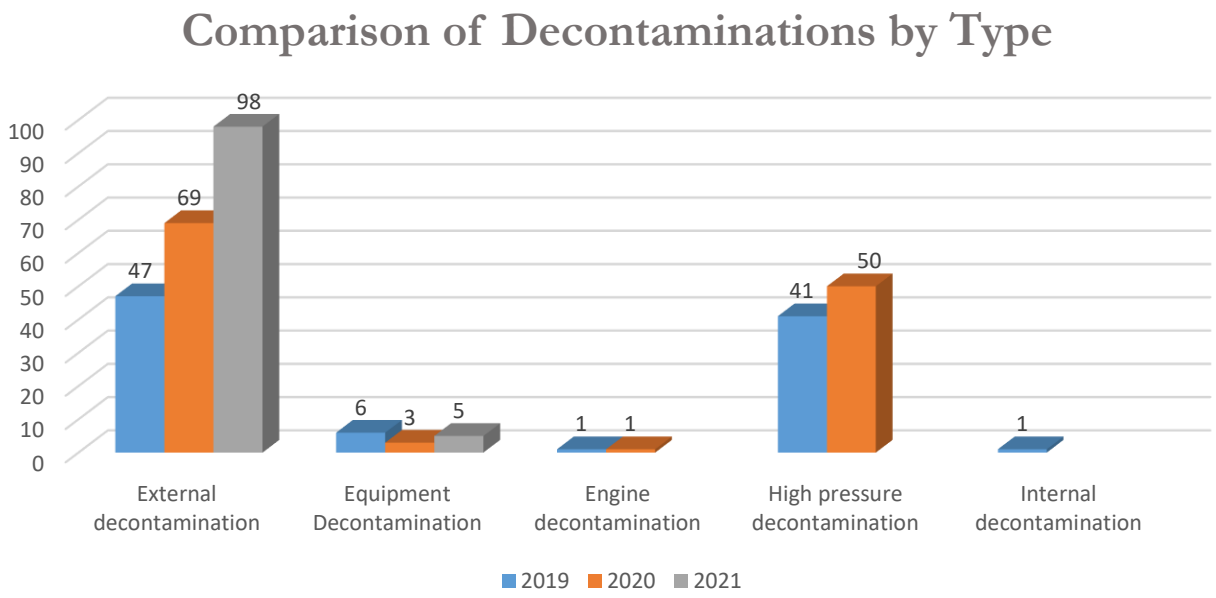


Figure 55: Graph (above) the comparison of findings during exiting inspections between 2019, 2020, and 2021

Summary and Comments

The 2021 watercraft inspection staffing began on May 21st and concluded on October 3rd. Of the 2,213contracted inspector hours for the season, 2,194 hours were worked. 99.16% of all contracted hours were fulfilled during the 2021 season.

Key impacts from 2021 watercraft inspection season:

- In total, Inspectors conducted 3.8 inspections per hour. The breakdown by lake is as follows: Crystal 5.5 inspections/hour, Byllesby (Level 1 and 2) 2.5 inspections/hour, Marion 6.1 inspections/hour, and Orchard 1.9 inspections/hour.
- Inspectors denied launch on two separate occasions of boat owners attempting to enter Lake Byllesby with attached zebra mussel. This action by the inspectors potentially prevented a ZM infestation in the lake.
- AIS law compliance improved slightly and drain plug violations were about half as many as in 2020. Inspectors made numerous comments to management throughout the season that most boaters seem to have a strong understanding on their responsibility in preventing the spread of AIS.
- Inspectors offered public assistance at the boat ramp. At times this included offering advice on navigating the lake, directing traffic in the parking lot, or holding a watercraft on the dock while a vehicle was retrieved.
- Represented the company and Dakota County in a polite and professional manner.
- Successfully enforced the state AIS statues.

Recommendations for 2022 watercraft inspection season:

- Continue with at least the same level of coverage and consider more randomized weekday coverage throughout the season to help reach people accessing the lakes primarily during the week.
- Expand inspector weekend coverage to other Dakota County lakes.
- 4 of the counties 15 motorized boat launches were staffed with inspectors in 2021. Fund a “Roaming Inspector” that will travel between the other eleven motorized boat launches each weekend to educate and inspect the public on AIS law compliance.
- Continue to provide and refresh educational AIS material handouts that Inspectors can give to boaters.

Overall, the watercraft inspection season was another success! Thank you for trusting Waterfront Restoration to recruit, staff, train, and manage a team of dedicated inspectors to help protect the Dakota County lakes. We look forward to continuing our services to the city, and the people who enjoy the lakes next season.

Appendix