# Iowa Chapter Report

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Greg Gelwicks
Iowa DNR Fisheries Research

**Iowa Fisheries Management Boone District**

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*Des Moines, Iowa downtown dam creel survey:*

The Scott Avenue and Center Street dams (Polk County) are two popular low-heads dams on the Des Moines River, near the confluence of the Raccoon River and Des Moines River, in downtown Des Moines. The Scott Avenue dam currently provides a seasonal connection between Red Rock Lake and several river systems (Middle, North, South, Raccoon, and the Middle Des Moines) for stronger swimming fishes when the dam is inundated. A U.S. D.O.T. Build grant was recently awarded to a local water trails group to eliminate dangerous undertow currents and incorporate whitewater park features at the Scott Avenue dam. Iowa DNR fisheries managers collaborated with the Iowa DNR Rivers Program and the contracted design team to provide input on fish passage and angler amenities during the design phase of the project.

The Scott Avenue Bridge (on the Des Moines River) provides exceptional angler opportunities, particularly for elderly and physically disabled anglers since parking is available along the bridge. Unfortunately, angling from 1/3$^{rd}$ of the city-owned bridge will likely be restricted due to liability concerns over potential angler-paddler conflict. An open water creel survey was implemented (April through mid-October) to gather baseline data that documents the importance of these dams to the angling community prior to the dam modification/whitewater park development. An estimated 3,768 Scott Avenue dam anglers expended 7,005 hours over the course of 2,980 trips. Anglers caught 3,312 fish (1.1 fish/trip) and harvested 2,488 fish. At Center Street dam, an estimated 532 anglers expended 1,386 hours during 380 trips. Anglers caught 435 fish (1.2 fish/trip) and harvested 131 fish. The Iowa DNR plans to repeat this creel survey in 2022 to gather additional pre dam modification/whitewater park development data.

**East-Central Iowa Fisheries Management Manchester District**

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*Assessment of Fish Community Impacts of Dam Removal Buffalo Creek, Iowa.*

During summer 2021 the Iowa DNR Fisheries Management Teams from Manchester and Lake MacBride surveyed the fish community in seven segments of Buffalo Creek spanning Buchanan, Delaware, and Linn Counties as a means for assessing change in the fishery from 2014 (pre-dam removal) to 2021 (post-dam removal). Analyses are ongoing.

*Removal of a Brown Trout Population using Electrofishing: a means towards Establishing Native Brook Trout*

The Manchester Fisheries Management team has used multiple-pass electrofishing during 2020-2021 to suppress a non-native Brown Trout population located in a spring-run in Clayton County, Iowa. This management effort has removed and relocated 7119 Brown Trout weighing 471 pounds from the 0.4-

mile stream. This removal is concurrent with the introduction of a "native strain" Brook Trout at the same location and a long-term goal to re-establish native Brook Trout in northeast Iowa.

*Mill Creek Floodplain Restoration*
Manchester Fisheries Management developed a public outreach video https://youtu.be/1UcJiiA4SaA in cooperation with Iowa DNR 319 program staff regarding Mill Creek Floodplain restoration that occurred in Jackson County Iowa during 2014 – 2020.

*Eastern Iowa Trout Stream Fish and Fishing Habitat*
During 2021 the Manchester Fisheries Management team developed and installed fisheries improvement practices on the Maquoketa River, Catfish Creek, and Mill Creek including cross-vane structures, trout bankhides, rootwad revetment, removal of concrete armoring, and bank shaping.

**Aquatic Invasive Species (AIS) in Iowa Rivers and Streams**
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Bighead Carp and Silver Carp have been reported in increasing numbers throughout the Mississippi and Missouri Rivers and their tributaries in Iowa since the mid-2000s. Low water levels due to drought conditions made sampling in rivers difficult in 2021; however, DNR-AIS staff continued to survey Bighead Carp, Silver Carp, and Grass Carp in the Des Moines, Cedar, and Iowa Rivers when possible to monitor reproduction and the upstream advance of their populations.

DNR-AIS staff serve as appointed members to the Upper Mississippi River Asian Carp Coordination Team and the Missouri River Basin Asian Carp Technical Committee. Federal funding was allocated for 2021 for these river basins for Asian carp management and control. The DNR-AIS collaborated with Iowa State University (ISU) and the U.S. Fish and Wildlife Service to acquire grants totaling $859,000 for Asian carp projects in Iowa. These projects include monitoring movement of Asian carp in the Des Moines, Iowa and Cedar Rivers, sampling for Asian carp larvae in Iowa tributaries and monitoring Asian carp movement in the Little Sioux River and the effectiveness of the electric barrier below Lower Gar Lake. DNR-AIS staff assisted ISU students install telemetry receivers in the Little Sioux River watershed during summer 2021 and tag Silver Carp in the Des Moines, Iowa and Cedar Rivers in fall 2021.

The U.S. Geological Survey, U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service developed a project to test an acoustic deterrent system for Asian carp at Lock and Dam 19 on the Mississippi River. DNR-AIS staff are members of the project's Planning Team, Science Advisory Team, and Communications Team. Testing of the barrier began in May 2021, and DNR-AIS staff participated in the site visit and media day in June.

The rivers and streams in Iowa where zebra mussels have been documented include the following: Mississippi River, Winnebago River, Shell Rock River, Cedar River, Iowa River, Missouri River, Little Sioux River.

**Iowa Stream Biological Monitoring and Assessment – 2021/2022**
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Iowa Department of Natural Resources, Water Quality Monitoring and Assessment Section, Stream Bioassessment Program. https://programs.iowadnr.gov/bionet/Docs/About

The Iowa Department of Natural Resources Water Quality Monitoring and Assessment Section (DNR-WQMA) and the State Hygienic Laboratory (SHL) Limnology Section continue gathering benthic macroinvertebrate, fish assemblage and stream habitat data throughout the State to assess the biological condition of Iowa's rivers and streams in accordance with Federal Clean Water Act monitoring and reporting requirements. The bioassessment program currently has five primary focus areas: 1) status and trend monitoring; 2) reference (benchmark) biological criteria development; 3) random site survey sampling; 4) impaired stream assessment (both fish kill and biological impairments); and 5) nutrient criteria development.

*Status and Trend Monitoring*

Status and trend monitoring continues according to a four-year rotational schedule established for approximately 100 warm water *wadeable stream reference sites*. In 2021, 28 sites were sampled and in 2022, 25 wadeable stream reference sites are scheduled to be sampled. In the next few years, the current population of wadeable reference sites, along with other sites that have been sampled historically, will be reviewed to see if changes (additions and/or subtractions) need to be made to the wadeable reference site population.

Status and trend monitoring continues according to a four-year rotational schedule established for 16 *coldwater stream reference and candidate reference sites.* The Iowa coldwater reference site network is sampled on a four year rotation with three or four sites sampled annually. In 2021, three CW reference sites were sampled and four sites are planned for 2022. A report on the *coldwater stream benthic macroinvertebrate IBI (CBI)* is available on the web at http://publications.iowa.gov/21843/.

*Biological Trend Sampling*

In 2016, the Iowa DNR chose nine reference sites (seven WW and two CW) to be sampled annually for fish, benthic macroinvertebrates and physical habitat. Also in 2016, equipment was installed at the nine biological trend sites to record continuous water and air temperature and stream stage. These sites will be part of EPA Region VII's Regional Monitoring Network (RMN). The biological trend sampling was continued in 2021 and will continue at the same nine sites for the foreseeable future.

*Reference condition development*

The focus of *reference condition development* work continued/continues on candidate reference sites representing *small (headwater) warm water perennial streams*. More intensive sampling was conducted from 2013-2017 on headwater streams than occurred in the past. The DNR WQMA is in the process of analyzing all the HW data and developing fish and macroinvertebrate IBIs for HW streams.

The DNR Bioassessment program is also continuing to work on the development of a non-wadeable river benthic macroinvertebrate IBI. Benthic macroinvertebrate samples were collected in non-wadeable rivers across the state at both existing and new sites in 2012-2016. In 2017, a four-year rotational schedule of sampling 15 ambient monthly WQ sites annually (60 total sites) began. In 2021, 15 ambient WQ sites were sampled and sampling at 15 sites is planned for 2022.

*Random survey sampling*

Beginning in 2017, DNR-WQMA began a new random survey. The survey involves sampling 150 total sites in a five year period. The breakdown of sites includes sampling 15 repeat REMAP (originally sampled in 2002-2006) sites/year for 5 years (75 total sites) and also sampling 15 new random sites (REMAP2) sites/year for 5 years (75 total sites). In 2022, three REMAP2 sites will be sampled to finalize the sample collection for the project.

*Impaired stream assessment*
Historically intensive water quality monitoring and bioassessments were completed as part of the *Stressor Identification (SI)* process. Due to budgetary constraints, future SI monitoring and development is on hold.

In 2021, no fish assemblage sampling was conducted in stream segments needing *status updates* following *fishkill events* that occurred several years ago resulting in Section 303(d) impairment listings for the aquatic life use. However, with the 2021 addition of staff to the section, the fishkill follow-up program plans to sample approximately 20 sites in 2022.

*Nutrient criteria development*
Sampling and analysis of benthic macroinvertebrate, fish and water quality data continues to be done to support the development and evaluation of *nutrient criteria* for the protection of *stream aquatic communities*. The current work is focusing on collecting and analyzing data for nutrient stressor and response parameters including nitrogen, phosphorus, benthic and sestonic algal chlorophyll A, and diel dissolved oxygen flux. Biological, nutrient and other WQ data were collected at six sites in 2021. Those six sites (part of a South Fork Iowa River Study) will be sampled again in 2022 and two additional sites (one stable site and one test site) will be added to the project.

*Stream habitat indicators*
Physical habitat characteristics such as stream width, depth, instream cover, and substrate composition are important environmental factors that shape Iowa's stream fish species assemblages. The DNR's stream biological assessment program collects physical habitat data to help interpret fish assemblage sampling results in order to assess stream health condition and the attainment status of designated aquatic life uses. In 2015, a study was completed from which quantitative habitat indicators and interpretative guidelines were developed for specific applications within the stream bioassessment program. These tools might also be useful to natural resource managers for purposes such as stream habitat improvement prioritization, goal-setting, and performance assessment. The final report is available at http://publications.iowa.gov/id/eprint/21408.

*Online Fish, Benthic Macroinvertebrate, Habitat and Water Quality Data*
*BioNet*, the Iowa bioassessment *internet database* (https://programs.iowadnr.gov/bionet/), stores and provides public access to data from the Iowa DNR's stream bioassessment program. BioNet summarizes sampling data for benthic macroinvertebrates, fish, and stream habitat from 1994 to the present and also links to both water quality data collected at the sites and the assessments developed for the sites. BioNet is also the repository for stream fish sampling data collected by the Fisheries Bureau of the Iowa DNR. BioNet is continually updated and improved.

**Iowa State University Research**
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*Silver Carp Telemetry in Upper Mississippi River Tributaries*
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Silver Carp are found in many tributaries of the Upper Mississippi River (UMR) throughout the year but individuals are also known to make seasonal movements into tributaries for spawning. However, the

overall temporal and spatial use of these systems is generally unknown. We are interested in whether Silver Carp within UMR tributaries are residents, migrants, or a combination of the two. We initiated an acoustic telemetry project in fall 2021 to evaluate Silver Carp movements within the Des Moines, Iowa, and Cedar rivers. We deployed 39 acoustic receivers in three tributaries: 17 receivers in the Des Moines River, six receivers in the Cedar River, and six receivers in the Iowa River. An additional two receivers will be deployed in the Iowa River during spring 2022. During fall 2021, we implanted acoustic transmitters in 86 Silver Carp across three sites, including two sites on the Des Moines River [Red Rock Dam (N = 38) and near Cliffland, IA (N = 39)] and one site on the Cedar River [Cedar Rapids, IA (N = 9)]. We plan on tagging an additional 24 Silver Carp in the Cedar River and 33 Silver Carp in the Iowa River during spring 2022 prior to spawning.

*Invasive Carp Reproduction in the Upper Mississippi River*

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The Upper Mississippi River (UMR) represents one invasion front to invasive carp (*Hypopthalmichthys* sp.) in North America. We sampled pools 14-20 and their major tributaries from 2014-2019 to assess the extent of invasive carp reproduction along this invasion front. We have captured invasive carp larvae annually in pools 17-20 whereas we have not documented invasive carp reproduction in pools 14-16 across all years. During 2021, we increased sampling frequency and focused on pools 14-16, but still did not detect invasive carp larvae in this reach. To assess and improve the efficacy of larval sampling, we used occupancy models to estimate detection probability of invasive carp and native fishes and assess how Julian date, river discharge, and water temperature affect larval fish occupancy based on pools and years that invasive carp reproduction occurred (2014-2018 and pools 18-20). We collected invasive carp larvae at 64 of 1,776 sampling occasions compared to native taxa collected on 172-375 occassions. Freshwater Drum and invasive carp larval detections were best described by volume of water filtered. Invasive carp had lower detection probability ($p$=0.16) than Freshwater Drum ($p$=0.34), Gizzard Shad ($p$=0.28), and Percids ($p$=0.28). Occupancy was best described by Julian date. Thermal variation was the next important occupancy covariate in the top model for Freshwater Drum, Gizzard Shad, and Percids while invasive carp occupancy probability was improved by the addition of river discharge. Invasive carp occupancy probability ($\Psi$=0.35, 95% CI=0.18-0.57) confidence intervals overlapped with Gizzard Shad ($\Psi$=0.61, 95% CI=0.40-0.79) and Percids ($\Psi$=0.25, 95% CI=0.17-0.37) but were lower than Freshwater Drum ($\Psi$=0.76, 95% CI=0.57-0.88). Our results indicate invasive carp larvae are harder to detect than some native taxa and can help improve future sampling efforts. Our results also provide evidence that river discharge is more important for invasive carp reproduction than thermal variation and that discharge is more important for invasive carp than some native fishes.

*Effect of Experimental Flows on Fish Reproduction Downstream of a Reservoir*

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Many riverine systems in North America have been altered by human actions in the last 200 years. The construction of dams have disrupted fish migration, natural flow regimes, and physical characteristics of rivers to the detriment of downstream fish communities. Recently, reservoir managers have begun implementing spring experimental releases to mimic historical flow conditions to benefit downstream fish reproduction. Yet, reproductive responses to these releases are still unknown. Our objectives were to assess the spatial distribution and timing of larval fish in response to experimental releases. An experimental release from Red Rock Reservoir, Iowa into the Des Moines River occurred in May 2021. The Iowa River below Coralville Reservoir served as a reference site. We conducted ichthyoplankton

sampling from April through June on both rivers and identified larval fishes to the lowest taxonomic unit possible. In the Des Moines River, *Percidae* larval densities were highest relatively close to the experimental release. *Catostomidae* larval densities were consistent during the month of June. *Sciaenidae* densities were highest after the releases when water temperatures had warmed to over 15°C. In the Iowa River, *Percidae* also spawned early with *Catostomidae* consistently spawning through May and June whereas *Sciaenidae* densities were higher later in May. Larval fish sampling will continue in 2022 to further assess the effects of experimental flows on fish communities.

**Interior Rivers Research**

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*Response of Fish and Habitat to Stream Rehabilitation Practices in Iowa*

Stream habitat is a key factor influencing the health of stream fish populations. Iowa's river and stream fish resources have been greatly impacted by habitat degradation. Concerned with the continued degradation of river and stream habitats and fisheries, Iowa resource managers are interested in using stream rehabilitation practices to effectively improve these resources. This study began in 2010 to evaluate Iowa river and stream rehabilitation practices and develop management guidelines to improve river and stream habitat as well as fishing opportunities for Iowa anglers.

The first project being evaluated is the modification of the Vernon Springs Dam on the Turkey River at Cresco. The dam was converted into a series of rock arch rapids in late July 2010 to address safety and fish passage concerns. Pre-construction fish community and habitat sampling was done at three sites above the dam and two sites below. Over 3,900 game and non-game fish were marked below the dam to monitor fish movement over the new structure. Fish community and habitat sampling was also done at three sites on the Volga River to serve as control sites for the three upstream sites on the Turkey River. Post-construction sampling upstream of the project found 16 Black Redhorse, 11 Golden Redhorse, 3 Walleye, and 1 Northern Hog Sucker that moved upstream over the structure. Smallmouth Bass and Black Redhorse were sampled post-construction above the dam at sites on the Turkey River and N. Branch Turkey River where they were not found pre-construction.

Pre-project fish and habitat data were collected in 2012 and 2013 for a dam removal on the Shell Rock River in Rockford. The dam was removed in the winter of 2014 and four years of post-project sampling have been completed. Golden Redhorse and Northern Hog Sucker were collected for the first time at sites above the dam in 2014, and increasing numbers of these species were found upstream in 2015, 2017, 2018, 2019, and 2021. Channel Catfish numbers also increased at sites above the former dam. The project has restored riverine habitat in the former impoundment and resulted in an improved fish community (increased number of species, adult Channel Catfish abundance, and Smallmouth Bass abundance). Habitat conditions in the former impoundment are now very similar to the downstream site and the upstream control site in terms of stream width, mean depth, mean water velocity, and substrate composition. Dam removal negatively impacted downstream habitat initially, but habitat conditions largely recovered within 3-4 years post removal.

A whitewater park and habitat improvement project was completed in spring 2015 at the site of the Marion Street Dam on the Maquoketa River in Manchester. Pre-project fish and habitat sampling was done at sites upstream and downstream of the dam in 2012-2014. Over 19,600 fish of 19 species were marked downstream of the dam to monitor fish movement over the new structures. Sampling in 2015-2021 found 826 marked fish representing 12 species that had moved upstream over the structures. Continued monitoring of these projects and investigations of additional stream rehabilitation projects

will help guide future decisions and lead to improved methods, designs, and sharing of resources to improve Iowa's river and stream fisheries.

*Evaluation of Interior River Fingerling Walleye Stocking Strategies*

Walleye fingerling stocking has greatly increased Iowa's interior river Walleye populations over the last 20 years. This has resulted in an increasingly popular fishery that has brought Walleye fishing opportunities close to home for many Iowa anglers. The success of this program has also increased demand for two inch long, Mississippi River strain Walleye fingerlings. Limited hatchery capacity has made it difficult to consistently produce enough fingerlings of the size and genetic strain requested for the program. Providing information needed to more efficiently utilize our limited hatchery production capacity and exploring the potential of alternative fish culture systems in meeting the demands of the river Walleye program is the focus of this study.

Available pond culture space has been a limiting factor for producing Mississippi River strain fingerling Walleye to stock in interior rivers. Recent research at the Rathbun Fish Culture Research Facility has shown promising results raising Walleye fingerlings using an alternative method, intensive fry culture. Intensively reared Walleye fry are stocked into flow-through tanks and trained on formulated feed from day 1 post-hatch, instead of stocking them into ponds where they feed on zooplankton (extensively reared). Evaluating the relative contribution of intensively reared fingerlings to interior river Walleye fisheries will determine whether this production method could help further improve river Walleye fisheries.

Study sites were selected on four Iowa rivers to evaluate the relative contribution of intensively reared Walleye fingerlings to interior river Walleye populations. Extensively reared fingerlings were marked, hauled, and stocked in approximately equal numbers alongside of intensively reared fingerlings to serve as a control. Walleye fingerlings produced by this culture method are known to survive and contribute to river Walleye fisheries if river conditions are favorable. Intensively reared Walleye fingerlings were marked with a circle freeze brand and extensively reared fish were marked with a bar brand. Between 44,000 and 57,500 marked intensively and extensively cultured Walleye fingerlings were stocked annually in the Wapsipinicon, Maquoketa, and Cedar rivers during June 2015-2017, and in the Shell Rock River in June 2016. Study sites were sampled in late-September and October each year to determine survival and growth of walleye fingerlings. Sampling results indicate that intensively reared fingerlings contributed to interior river Walleye populations at a significantly lower rate than expected based on stocking ratios of intensively and extensively reared fingerlings during these years. Intensively reared fingerlings have accounted for 20% or less of branded young-of-year fish sampled during fall at most sites during most years. Production difficulties did not allow comparisons of fingerlings stocked in 2018 and 2019.

Intensively and extensively reared fingerlings were branded for stocking in the Wapsipinicon, Maquoketa, Cedar, and Shell Rock rivers during June 2020. While branding, heavy rains caused our study rivers to become high and muddy and past research indicated that these conditions result in poor survival of stocked fingerlings. One perceived advantage of intensively reared fingerlings is that, unlike extensively reared fingerlings, they can be held and stocked when conditions improve. To test this, extensively reared fingerlings were stocked after branding, and stocking of intensively reared fish was delayed for five days. By this time, river levels had dropped and water clarity had improved. Intensively reared fingerlings were also much larger at stocking (300 fish/pound) than extensive reared fish (800 fish/pound). More age 0 extensively reared than intensive reared fish were sampled at all sites during fall 2020, but these differences were not significant. This indicates that although intensively reared fish were stocked at a larger size into better conditions, their survival was at best similar to extensive fish

stocked at a smaller size into worse conditions. Over all sites and years, catch-per-unit-effort (CPUE) of age 0 extensively reared fish averaged 3.7 and ranged from 0.2 to 10.5 fish/hour. CPUE of intensively reared fish averaged only 1.1 and ranged from 0 to 3.5 fish/hour. Collective results indicate that intensively reared walleye fingerlings do not survive as well as expected relative to extensively reared fingerlings in Iowa's rivers. A completion report for this study will be prepared this year.

*Assessment of cold-water fisheries resources in northeast Iowa*

Wild trout have played an increasingly important role in trout management in Iowa over the last 20 years. Recent increases in self-sustaining trout populations have expanded and diversified opportunities for Iowa anglers to pursue trout. One of the major factors in this increase is the use of fingerling stocks derived from wild and local parents to establish wild trout populations in other streams. Fisheries managers have had great success in establishing self-sustaining populations of non-native Brown Trout by stocking fingerlings of French Creek origin. This has diminished the need for hatchery production and stocking of this popular species, and provided new recreational fishing opportunities for Iowa trout anglers. Self-sustaining populations of Brown Trout have expanded so rapidly in Iowa that their full extent is currently unknown. Wild populations of native Brook Trout have also been successfully restored to several northeast Iowa streams by stocking fingerling Brook Trout of South Pine Creek origin.

Fisheries managers are working to protect existing wild populations of Brook Trout, and expand efforts to restore self-sustaining populations of this native species in other streams with suitable conditions. There are many small headwater streams and spring branches in northeast Iowa that have not been sampled recently, if ever, and have the potential to support wild Brook Trout populations that are in need of protection. There may also be streams that have the conditions necessary for successful wild Brook Trout restoration that are currently unknown to fisheries managers. The South Pine Creek Brook Trout population provides a limited resource for propagation of fish for stocking, so it is important that restorations stocking are done on streams where there is the greatest probability that Brook Trout populations will be successfully established. The recent expansion of wild Brown Trout populations in northeast Iowa has also raised concerns for fisheries managers, due to potential negative impacts of the species on Brook Trout restoration efforts. Therefore, it is important to know the distribution of wild Brown Trout populations for both the management of Brown Trout populations and the planning of wild Brook Trout restoration work.

The goal of this project is to assess the status and distribution of Brook Trout and Brown Trout in northeast Iowa, and identify cold water streams where wild Brook Trout restoration has a high probability of success. Our general approach is to identify likely cold water streams using winter satellite images taken during very cold periods to find stream reaches that do not freeze over, and therefore are likely to have good cold water spring flow. We then select sites from these likely cold water reaches where we can sample fish and habitat conditions. To date, we have sampled 20 sites in four sub-watersheds of the Upper Iowa River. Brown Trout were sampled at 16 of these sites. Brook Trout were sampled at one site, and a Brook Trout X Brown Trout hybrid was sampled at one site where Brown Trout were also collected. The four sites where no Trout were collected had the lowest stream flows (<0.2 cubic feet/sec) of our sample sites. Several sites identified from winter satellite imagery were either completely dry, or had very limited spring flow which was not sufficient to support fish during late summer. Conditions at 15 of these sites were documented with georeferenced photographs of dry

reaches, beginning and end points of reaches with water, barriers to fish movement, and spring sources. This information will be used to help further refine site selection using remote imagery.

**Mississippi River Report**
Collated by: Scott Gritters

**Bellevue Management (Scott Gritters):** Conducted the Mussel Blitz this year the week of August 16th. Here is the summary: In 2021, we sampled three River systems (Cedar, Shell Rock and Winnebago), for those that are involved with Blitz events dating back to 2005, these are the most bio-diverse systems we have seen in Iowa. In this survey, over 4,100 mussels of 20 species were collected including some of the rarest critters we have in Iowa. The 2021 catch rate was around 0.6 mussels per minute or ~35 mussels per search hour. The lowest catch rate was on the Otranto Dam removal section and the highest catch rate was at Greene on the Shell Rock System. In 2021, we averaged 7.2 species at the 27 sites surveyed, with the highest species count (14) coming out of the one Winnebago site sampled. The team collected 16 species out of the Shell Rock and 18 species out of the Cedar River. These are outstanding species numbers considering we have whole river systems such as the Maquoketa River where we can only find five species living.

Other activities included permitting approximately 70 Fishing tournament applications, we had a settlement reached on last year's large fish and mussel kill in Bee Branch Detention basin in Dubuque. Busy year with all the Sovereign Lands permits probably due to a long stretch of low water. Activities continuing on the I74 Bridge as the project moves toward removal of the old Bridge spans. Interstate 80 permit activities are intensifying as we move closer to a future replacement of that bridge. Clinton RR span replacement appears on hold for now. Lots of permit activities around power lines that will be running down the rail lines and crossing the river potentially in Sabula, Iowa. Finally replaced a few boat ramps in the district, most notably the popular Bellevue City Boat ramp. Presently building a universally accessible loading platform at the City of Bellevue Ramp. Fall surveys will continue to frozen conditions as plan on Electrofishing surveys of Sunfish 12, Tippy's and Stone Lakes in Pool 12. Middle Sabula Lake in Pool 13 and Beaver Island HREP in Pool 14.

**Bellevue LTRMP Travis Keuter and Dave Bierman:** Finished up all allocations of fisheries monitoring at Bellevue LTRM station despite the challenges of year-long low water conditions. Helped Bellevue Research with HREP sampling at Steamboat Island.

Completed day EF segment of the Pool 12 Overwintering HREP evaluation in October. Helped Bellevue Research with NEF in Pool 11&13 tailwater zone for walleye/sauger this week. Will be doing the netting segment of the Pool 12 Overwintering HREP evaluation next week.

The LRTM crew in Bellevue completed its 2021 fish sampling on Tuesday. We had a good year with minimal troubles. We collected about 40,000 fish this year. We haven't dug into the data yet but it seemed like the yellow perch, white bass, and freshwater drum had a good reproductive year. Minnows were plentiful this year. Couple interesting species collected were a Western Sand darter and Pallid shiners.

**Guttenberg Fish Management (Karen Osterkamp and Kevin Hanson):** Conway is finishing up with seeding to take place. McGregor is wrapping up for the season (site visit Tuesday). Harpers Slough HREP repairs complete with seeding scheduled. Reno Bottoms is also on the planning docket. Lower Pool 10

out for public comment; planning continues. Guttenberg mgmt station completed outpool day electrofishing September 15 and moved into fall overwintering surveys on Pool 9.

Coordinated two days with WI DNR. Pool 9 surveys taking a look at post project habitat utilization for Conway HREP. Lansing Village Creek boat ramp dredging is currently happening and contractors will be working 7 days a week until done. Heytman's Landing will be next year. Dubuque CCB completed the dredging out of Findley's Landing in Lower Pool 11 as well. Assisting with research walleye/sauger night electrofishing this week. More OW surveys for Pools 10 and 11 planned in the following weeks weather permitting. Kevin will start mudpuppy sampling again this fall and maybe next spring.

**Bellevue Research (Ryan Hupfeld and Gene Jones):** Completed walleye wingdam sampling in Pool 11 and 13. Completed Fall EF for Walleye in Pools 11, 13, and 16. Completed HREP sampling in Green Island, Steamboat Island, and Albany Island. Completed larval drift sampling for Shovelnose Sturgeon evaluating flow pulses on reproduction and caught 4 larval sturgeon (waiting for genetic ID to confirm). All captured on the descending limb of an experimental flow pulse out of Red Rock Dam. Planning Midwest FW conference to be held in Des Moines on February 13-16 2022. Captured and tagged over 1000 Shovelnose Sturgeon on the Cedar River again. Processing Shovelnose Sturgeon from the Cedar River for bomb radiocarbon analysis. Completed trammel netting in Pool 13 and 18 for Shovelnose Sturgeon. Finally completed the Yellow Perch tracking study on Pool 9 and wrote up a completion report.