

VOICE OF THE MISSOURI

Mission Statement

Guided by scientific data, our mission is to conserve, enhance and advocate for the unique ecological resources of this valuable watershed.



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UMOWA Updates by Sherry Meador, UMOWA Board Chair

This year marks our tenth year of collecting water quality and macroinvertebrate data on the Upper Missouri River. We've updated our River Health Dashboard on our website and are creating additional opportunities to share information on bugs and river health. With this data, Dave Stagliano explains in this newsletter how river flows affect the overall health of the macroinvertebrate community. Check out the website and our River Health posters at local fly shops and eateries in Helena, Wolf Creek, Craig and Cascade.

This summer, UMOWA is adding revegetation to our integrated weed management program. With the help of USFS and Gardenwerks of Helena, we conducted bioassays from soils treated with herbicide to determine the best seed mix to facilitate native plant populations. We seeded eight acres this Spring on river islands and will continue monitoring the sites to measure the effects of herbicide treatments, biocontrol, and revegetation. Carol Randall explains the value of revegetation for controlling noxious weeds in this issue.

Please join us for our annual Rendezvous, Saturday, June 7th at the Craig Tap House for music, food, and a silent auction.

We also hope you'll join us for the annual Bash-n-Trash river clean up – August date to be announced.

The RO Boat raffle is in full swing – only 250 tickets sold. The lucky winner will be announced August 16th at the Caddis Fest.

Please stay up to date on our projects by checking out our website, signing up for emails, and following UMOWA on Facebook and Instagram. Also, feel free to email me, smeador@umowa.org, if you would like to become involved with UMOWA or have any questions about our projects. We appreciate your support.

Towards a State-wide River Recreation Management Plan

by Joe Kerkvliet, UMOWA Board Member

Last year on a warm July day, I was overlooking the Missouri River at the Lone Tree Fishing Access Site (FAS) upstream from Craig. From my perch, I could count 43 watercraft, including everything from a drift boat with two anglers to a flotilla of inflatables tied together with an 8-foot pink flamingo in the center.

There is no doubt that Montana's river recreation has increased in recent years, but it has also become more diverse. For example, fishing access sites (FAS) once were used primarily by anglers, but now are increasingly used by other recreationists including rafts, colorful inflatables, and paddle boarders. This explains the recent Montana Fish, Wildlife, and Parks' (MFWP) requirement that all FAS users possess a \$4-\$10 Conservation License.



Recognizing the growing and more diverse recreational uses of Montana's rivers, in 2024 MFWP convened the River Recreation Advisory Council (RRAC) to help explore the problems, objectives, and alternatives of a potential State-wide River Recreation Management Plan. Council members were chosen last summer from a pool of volunteers. Members were chosen to represent a wide variety of river users, including private and commercial, motorized and non-motorized, angling and non-angling, and to ensure geographic representation of Montana.

The problems identified by the RRAC include 1) potential impacts of river recreation on the ecological integrity of Montana's rivers; 2) environmental changes leading to increasing water temperatures and changing river flows; increasing dissatisfaction among recreationists, including parking problems, delayed launch times, non-commercial and commercial usage conflicts, vandalism, and trash; 3) inadequate data to guide recreation management decisions; and 4) lack of adequate MFWP resources to implement decisions.

The objectives recommended by RRAC include 1) protect and

enhance aquatic resources and habitats; 2) recognize diverse user groups and maximize the satisfaction of all types of river recreationists, including float anglers, wade anglers, solitude-seekers, wildlife watchers, dog owners, river tubers, motorized users, non-motorized users, picnickers, swimmers, tourists/sightseers, hunters, trappers, foragers, campers, hikers, and other user groups, both commercial and noncommercial; 3) minimize the costs of administering regulations to MFWP, commercial and non-commercial users, and local communities; 4) minimize poor behavior; 5) minimize conflicts among user groups; 6) minimize negative impacts to riparian landowners; 7) minimize negative impacts to local communities; and 8) prioritize Montanans' river recreation opportunities.

The RRAC report recognizes some of these objectives are in partial or full conflict with others but concludes that identifying the range of objectives will enable MFWP to 'explicitly evaluate the trade-offs inherent in each management option.'

The alternatives identified by RRAC to be considered include 1) education and communication including increased signage, possible certification programs for boaters, FAS users, and more engagement of MFWP personnel; 2) different management practices of FAS's including launch fees, temporary closures of FAS's when they are full; 3) full collaboration with communities and stakeholders to re-design launch sites; 4) containers for "pack it out" trash and waste; 5) PDF loaner programs; and 6) designation of separate areas for boats versus inflatables.

In moving forward toward a State-wide River Recreation Management Plan, the RRAC urges the process be holistic and transparent, maximize stakeholder involvement and be science-based. It also recommends that management begin with the least restrictive regulations before 'moving on to more restrictive regulations' and that the plan be revisited every 3-5 years to determine efficacy and changes needed.

MFWP is now reviewing the RRAC report and plans to make a formal proposal for implementing the recommendations. (Find the report at <https://fwp.mt.gov/binaries/content/assets/fwpp/aboutfwpp/councils--committees/river-recreation-advisory-council/rrac-final-product.pdf>).

Whatever the final State-wide River Recreation Management Plan looks like, it will surely be of interest to UMOWA members. UMOWA board members plan to monitor the progress of MFWP in writing a Plan and urge you to provide your inputs and questions. ■

Tracking the Macroinvertebrate (Bug) Data

by David Stagliano, Aquatic Ecologist, Montana Biological Survey

It doesn't take a scientist to know that there have been a lot of changes going on in the Missouri River over the last decade or more. Record high flows in 2018 and a smaller flushing flow in June 2023 can have dramatic effects on the "insects" that you see hatching or not hatching from the river sections each year. The summer drought of 2021 marked one of the first times the Wolf Creek to Craig section was placed under "hoot owl" restrictions. Flushing flows can clean silt out of gravel habitats preferred by mayflies and caddisflies and affect larval populations that produce adults the following year. This past year, as we have since 2015 (except in 2020), UMOWA collected macroinvertebrate samples at seven sites from Wolf Creek to Cascade, since 2021, we have focused on sampling in Fall. Prior to this, we collected samples in Spring, Summer and Fall. This data on the invertebrate populations, as well as water quality (WQ) collected by UMOWA can now be represented visually. UMOWA's River Health dashboard <https://umowa.shinyapps.io/dashboard/> now has that data presented in a user-friendly fashion with different years and insect metrics presented in graphs of the users' interests. You can choose from Aquatic Insects, Water Quality, Discharge and Temperature or Trout.

Once you click on the Aquatic Insect Tab, you can easily toggle across years or sites or different insect metrics with the click of a mouse, no more digging through reports for this information. Do you want to know what year or site has had the best tan caddisfly hatches in the past decade check this out, or for future projections-- based on the Fall 2024 samples, it looks like during summer of 2025, there should be some abundant tan caddisflies hatching downstream of the Dearborn River (see graph below).



In the graphs below, you can also see how larger river flows out of Holter Dam affect the overall health of the macroinvertebrate community (2018 vs. 2024). HBI scores measure the tolerance of the bug community to sediment; the more bugs that tolerate silt the higher the score, but the worse the health of the river site. During the high flows of 2018, none of the monitoring sites scored in the poor range (Left Figure below), but in 2024, without flushing spring flows, 2 sites near Wolf Creek and Craig scored in the poor range (Right Figure below).

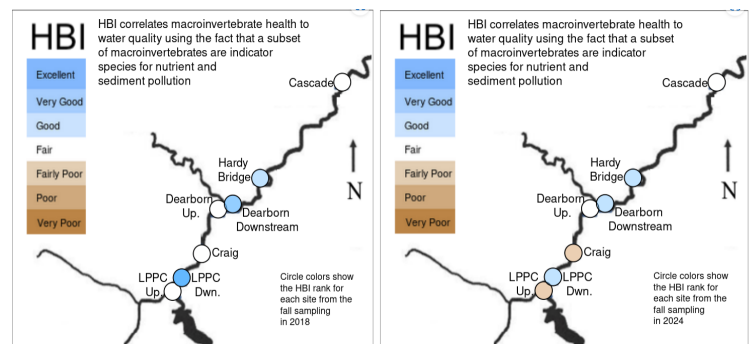
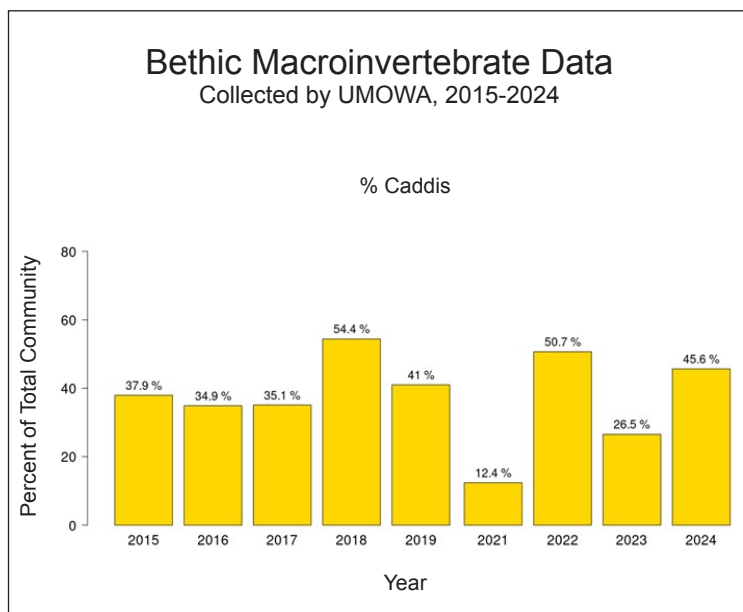


Figure 1. HBI score qualitative health rankings for 2018 (left) and 2024 (right).

You can find this type of data and more information on UMOWA's River Dashboard River Data—Upper Missouri Watershed Alliance. ■

Understanding Water Quality Standards for Nutrient Levels

by Sherry Meador, UMOWA Board Chair

Water quality standards have been actively debated in the 2025 legislative session. Water quality criteria can be either numeric or narrative. Numeric nutrient criteria set explicit measurable limits for nutrient concentrations in water bodies to protect its designated uses. Narrative criteria are expressed in concise statements, generally in a “free from” format—“free from toxicity” or “free from scum/oil or nuisance algae blooms”. Narrative standards are considered more subjective given their flexibility and reactive determinations, while numeric standards are considered more definitive and therefore easier to monitor and enforce though they can be hard to determine.

The Clean Water Act of 1972 (CWA) requires states to establish water quality standards to control and prevent water pollution. State standards are reviewed by the Environmental



Protection Agency (EPA) every three years to determine if they meet the purpose of the CWA. The standards define the uses for a waterbody, describe specific water quality criteria to achieve those uses, and include antidegradation policies to protect existing water quality. If a state fails to set appropriate standards, the EPA will establish those standards for the state. In 2000, EPA encouraged numeric standards for nutrients such as nitrogen and phosphorus because too much of these nutrients caused harmful algal blooms, fish kills, and impaired drinking water.

In 2014, Montana was the first state to move from narrative to numeric nutrient standards for all its surface waters. Standards were established first in rivers and lakes with less complicated variances. Numeric standards for other large rivers were more difficult to establish because of multiple uses, current point sources of pollution, and natural variances. The Upper Missouri River has been particularly difficult because it is impacted by multiple dams, types of recreation, a designated fishery, and management for endangered species downriver. Some entities claim numeric nutrient standards are impossible to meet and therefore impractical to manage. As a result, the State reverted to narrative criteria in 2021. In 2023, the EPA determined Montana’s narrative nutrient standards as enacted no longer met the purpose of the CWA and should be returned to numeric nutrient standards. The State continues to grapple with establishment of nutrient standards that can be effectively managed.

UMOWA has collected numeric levels of phosphorus and nitrogen in the Upper Missouri River for nine years and will continue to do so. We believe that long-term data on nutrient levels and biological responses (i.e. macroinvertebrate levels and aquatic plants) will help us to be proactive in ensuring the river is thriving for future generations of Montanans. ■

Revegetation in Weed Management

by Carol Randall, Retired US Forest Service Invasive Plant Program Manager

Weeds negatively impact plant communities by disrupting vegetation dynamics and reducing the ecosystem's capacity to recover after disturbance. Successful weed management restores vegetation dynamics/ ecosystem function by removing weeds and fostering a desired plant community that meets land-use objectives and is less susceptible to weed invasion. Revegetation is a cultural weed management tactic that introduces desirable plants to occupy roles, or niches, in the plant community otherwise occupied by weeds. Revegetation is a powerful tool in integrated weed management strategies.

Successful weed management requires a long-term (multi-year) approach that includes:

- Continuous monitoring, evaluation, and reporting weed populations- emphasizing early detection and rapid response to ensure weeds do not establish in new areas.
- Identification of new weeds and how to eradicate/ control them.
- Determining if weed treatment is necessary.
- Type (tactics)/scope/timing of treatment(s)
- Cultural treatments (e.g. revegetation, minimizing disturbance, soil care) focus on keeping plant communities healthy and the ecosystem functioning and able to resist weed invasion.



- Mechanical (e.g. removing weeds with hands or tools, mowing) and herbicide (e.g. Rejuvra, Milestone, 2,4-D) treatments focus on killing/ suppressing weeds, may disturb site and open niches for weed invasion.
- Biological treatments (e.g. use natural enemies to suppress weeds) focus on killing/ suppressing weeds, generally result in little site disturbance.
- Develop treatment strategies that emphasize the recovery of ecosystem function, consider all available treatment types (tactics), map the scope of treatments, and define the timing / sequencing of treatments. The treatment strategy may employ treatment (tactics) individually or in combination. The treatment strategy should optimize attaining management objectives by the most economical means.
- Conduct post treatment evaluations to determine if treatments met management objectives and adapt management activities when desired results are not achieved.

In the plant community, weed removal opens the weed's niche to reinvasion. Revegetation works in concert with weed control by introducing desirable plant species to fill the niche vacated by the weed. Revegetation of disturbed sites also helps reduce soil loss and erosion, maintains water quality, and discourages invasive species in the newly exposed areas.

In conclusion, revegetation is a vital component in long-term weed management strategies. Revegetation may be used preventatively or to mitigate the impacts of other weed management activities to facilitate the recovery of ecosystem function. ■



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