

Wetlands Working Group

The Wildlife Society

Newsletter, Volume 5, Issue 2
December 2015

In This Issue....

Feature Article

*Landscape Position and
Wetland Characteristics:
Headwater Wetlands*

New WWG Logo

WWG Awards

*Student Award & Field Trip
Raffle*

*Member updates from the
TWS Annual Conference*

2017 Nationwide Permits

*Review process anticipated
for early 2016*

Waters of the US Update

Nationwide stay in effect

LWCF Update

Wetlands in the News



Nick Goodman

We've Updated our Image!

*Frank Nelson submitted the winning logo that received the
most votes by WWG members!*

Thanks to the 47 members who voted!

Logo Design Contest Winner, Frank Nelson is a wetland ecologist at the Big Rivers/ Wetlands Field Station for the Missouri Department of Conservation. For the past 11 years he has worked closely with wetland and waterfowl biologists across the state. His focus is utilizing research and technology to enhance wetland management and wetland restoration. In the past 6 years he has worked closely with Conservation Area staff on the Duck Creek Renovation Project where they have restored over 1,000 acres of diverse wetland habitats. Check out the [Duck Creek CA Update blog](#) to see what is going on! Frank enjoys mucking around in the swamp no matter what the season and sharing the importance of the outdoors with his kids.



STUDENT AWARD ANNOUNCED

Nick Goodman is the recipient of this year's student award which reimbursed a student member of the WWG for early registration costs to attend the annual TWS conference. Nick is currently a Master's of Science student at West Virginia University majoring in Wildlife and Fisheries Resources where he is researching stiff-tailed ducks in Puerto Rico. Nick earned his Bachelors of Science degree at West Virginia University where he did an undergraduate research project comparing the composition and abundance of waterbird, macroinvertebrate, and vegetation communities in a newly created wetland to an established wetland. Nick has an Associate of Science degree from Hocking College. He enjoys birding, hunting, running, and long walks on the beach.

Landscape Position & Wetland Characteristics:

Headwater Wetlands By Linda Vance, Senior Ecologist, Montana Natural Heritage Program

Recent decades have brought an increased level of disturbance to headwater areas, ranging from direct anthropogenic actions such as residential and recreational development to the unprecedented loss of forest habitat to insects and disease, brought on in large part by fire suppression policies (Jenkins et al. 2012). In the Rocky Mountains, current climate change models predict warming temperatures, decreased snowpacks, and a shift in runoff patterns over the next 50 years (Rasmussen et al. 2014). While headwater streams and stream networks have been amply studied (Freeman et al. 2007; MacDonald and Coe 2007; Andersson and Nyberg 2008; Dollar 2004), headwater wetlands have not. With the long-term persistence of headwater wetlands at risk, we undertook a study to describe and document the extent, distribution, and characteristics of wetlands in the Upper Missouri Headwaters Basin (1002) of Montana.

The study had both GIS and field components. We began by creating a model in ArcGIS 10 to help identify headwater areas. We created a cumulative elevation over area curve to identify the elevation that divided the upper half of the basin (by area) from the lower half. We also created a Topographic Condition Index (TPI) raster, assigning pixels in an elevation raster to one of four categories: valley bottoms and plateaus; gentle slopes; steep slopes; and mountain tops and ridges (Jenness 2010). We created a mask with a Digital Elevation Model, and used the mask to create two datasets: all areas of the basin above 2100 meters and all below. These datasets were designated as representing “headwater” and “non-headwater” areas for further analysis.

In the subsequent analysis, we found that mean values for each TPI category were significantly different between headwater and non-headwater areas. Lower elevation subwatersheds were characterized by a high percent (32%) of valley bottom landforms and a low percent (3%) of mountaintops and ridges, while upper elevation subwatersheds had a low (3%) percent of valley bottoms and a high percent (48%) of steep slopes. Wetland features in both upper and lower portions of the subwatersheds were dominated by Palustrine Emergent (PE) types, with either temporary (A) or seasonal (C) flooding regimes. Palustrine Emergent saturated (PEMB) wetlands, most commonly associated with fens, were more plentiful in upper areas, constituting 2% of total wetlands, while in the lower regions

they were a minor (<0.10%) type. In all cases, however, there were significant difference in average wetland size, with the mean size of upper elevation emergent wetlands being less than half the mean size of those in the lower basin. The distribution and extent of Palustrine shrub scrub (PSS) wetlands also varied according to topographic position; PSS wetland comprised only 9% of wetlands in the upper basin, but 27% in lower areas, where beaver activity was also more widespread.

Using data from intensive field assessments at 57 sites, we calculated floristic quality metrics, and compared a key indicator score (the cover-weighted adjusted floristic quality indicator, or CWAQFI). The mean score for all assessed sites was 53.23. However, there was a significant difference between scores for sites falling within identified headwater areas (mean of 56.00) and those outside (mean of 43.83).

We attribute this to the general absence of human land use stressors in the upper basin, where 65% of wetlands had one or no human stressors within a 200m buffer. However, forest disturbance caused by insects or disease was noted in the buffer area at 57% of upper basin sites. In our qualitative observations, we also noted that headwater wetlands appeared to have more hydrologic connectivity to each other, and relied more heavily on groundwater and local

snow melt than on surface precipitation. Soils in headwater wetlands were seen to have a deeper organic layer than lower-elevation wetlands, probably because the more saturated conditions present in these wetlands supports a faster rate of decomposition.

Headwater wetlands provide critical functions for the maintenance of aquatic systems, including water storage, maintenance of surface/groundwater connections and biochemical processes, support for hydrodynamic balance, and habitat for diverse assemblages of wetland-dependent native species (Meyer et al. 2007). However, their small size and relative absence of woody vegetation makes them especially vulnerable to predicted climate change, especially under a warming-lower snowpack scenario. We encourage others to evaluate whether landscape position in other watersheds leads to similar differences in extent, distribution and size, and to incorporate these findings into forest and landscape planning. For more information on this project, please contact Linda Vance, livance@mt.gov. (See page 7 for Literature Cited).



Beaverhead Mountains, Beaverhead County, Montana

Member Updates from the TWS Annual Conference



Oak Hammock Marsh Field Trip by Deanna McCullum

When I tried to register for the field trip to Oak Hammock Marsh they were sold out; I was therefore thrilled to win the trip to the interpretive center through the Wetlands Working Group (WWG) at TWS. I first went to work for Ducks Unlimited Canada (DUC) in 1997 as a summer student in New Brunswick and have had continuous involvement with DUC as a volunteer, land steward or through working relationships. A visit to their head office and flagship marsh was a highlight of conference. The tour started at the Convention Center when we were met by DUC staff who accompanied us to the site providing a running commentary on the history of the marsh and surrounding areas. The tour included a demonstration on mist netting, with discussions on net locations, set up, permitting and manning the net to bird handling, identification, banding and release of the birds. The banding took place in the original cabin built and used as a main office for one the first major DUC restoration projects in the late 1930s. The visit culminated with a one hour canoe tour of the marsh and visit to the interpretive center. The center and DUC head office share a building which has been constructed with consideration to every detail to blend in and be unobtrusive on the landscape to the extent that the green living roof is actually a favored nesting site for many waterfowl! I would like to thank the WWG for the opportunity to visit the Oak Hammock Marsh and strongly encourage anyone to visit given the opportunity.



Oak Hammock Marsh Photos by Deanna McCullum

WWG Annual Meeting by Lisa Webb, Vice Chair

The annual meeting of the Wetland Working Group (WWG) was held at on October 19th, 2015. Thirteen people, including five potential new members, attended the meeting. We discussed accomplishments from the previous year, as well as ongoing WWG activities and identified objectives and opportunities for the upcoming year. Plans are in the works for increasing the WWG newsletter to three issues in 2016, with a special issue to focus on international wetland conservation. A WWG facebook page was discussed as an additional way to communicate wetland news with members and plans for the new WWG logo were put forth. The student travel award to attend the 2015 TWS conference was presented to Nick Goodman, who is currently a MS student at University of West Virginia majoring in wildlife and fisheries research. New WWG officers were announced, including Adonia Henry as Chair, Jennifer Chutz as Vice Chair and Auriel Fournier as Secretary/Treasurer. WWG member Deanna McCullum won the raffle ticket for the Oak Hammock Marsh field trip at TWS conference. Detailed minutes of the 2015 WWG meeting are available on the website.

Special Session: Wetlands of the Great Plains: Science Supporting Program and Policy Initiatives by Jane Austin

The Wetlands Working Group sponsored this special session to highlight wetland research and conservation activities in the northern Great Plains, bringing together scientists from both sides of the border. The session focused on wetland habitat rather than wetland wildlife species.

The nine presenters came from a diversity of organizations and perspectives. Henry Murkin, Wildlife Habitat Canada, set the stage with a broad overview of the wetlands of the Great Plains, with a focus on the Prairie Pothole Region, describing landscape and history of wetlands and conservation efforts across the region. Wetland scientists in the US are very familiar with our National Wetlands Inventory (NWI) but often know little about wetland databases for Canada. Mike Watmough, Environment Canada, explained similarities and differences between the US NWI program and the Canadian Prairie Habitat Monitoring Program for monitoring wetland status and trends, and the common concerns over wetland trends. Ben Rashford, University of Wyoming, described spatially explicit land-use models that incorporate crop productivity, land prices, commodity prices, and other factors and simulated future changes in agricultural land use for both the US and Canadian prairies. I think wildlifers have been slow to engage with socioeconomics in management and conservation, but Ben's work demonstrates the value of this field for improving the targeting of conservation strategies.

Wetland drainage and restoration continue to be central concerns for wetland wildlife, and there is much to be learned from research in both prairie Canada and the US.

Continued on page 4

Special Session: Wetlands of the Great Plains (continued from page 3)

Pascal Badiou, Ducks Unlimited Canada-Institute of Waterfowl and Wetland Research (DU-IWWR), described research on the Broughton Creek watershed in southwestern Manitoba, which has experienced four decades of wetland drainage. Their findings highlighted the importance of isolated wetlands in reducing the export of phosphorous, nitrogen, and sediments into the Little Saskatchewan River (and ultimately to Lake Winnipeg), and the value of wetland conservation and restoration. Mike Anteau, US Geological Survey's Northern Prairie Wildlife Research Center, described results from a series of studies examining how wetland drainage and land use in the Dakotas has altered wetland hydrological cycles, productivity, community structure, and water storage. Lauren Bortolotti, University of Alberta, described her research into whole-ecosystem function in restored and natural wetlands, examining whole-ecosystem metabolism (rates of gross primary production, net ecosystem production, respiration) to understand what biotic and abiotic factors are driving these systems.

Dave Howerter, DU-IWWR, described a series of integrated spatially explicit planning tools that have been developed to focus conservation decisions to areas where expected benefits to waterfowl would be highest. They have combined predictions of land use change with models of waterfowl habitat benefits, spatially explicit variability in land acquisition costs, and ecosystem services into a powerful tool to guide habitat securement programs. Although not obvious from his presentation, these tools are based on many years of field work collected across the PPR and huge volumes of habitat- and species-specific demographic vital rate data.

Dale Wrubleski, DU-IWWR, described efforts to restore the iconic Delta Marsh in southern Manitoba, which has long been degraded by common carp. Efforts to develop effective barriers to keep carp out of the marsh while allowing other native fish in are beginning to pay off, with renewed growth of submerged aquatic vegetation. Greg Sekulic, Canola Council of Canada, gave an intriguing presentation about how land conservation can help not only wetlands but also farmers' bottom line. Studies by the Canola Council demonstrated that leaving ~1/3 of the landscape in non-cropped habitat (e.g., buffer areas around wetlands) resulted in substantially reduced pests in canola crops, and in turn allowed farmers to reduce or avoid pesticide spraying. Finally, Rhonda McDougal, Manitoba Conservation and Water Stewardship, provided a perspective from the government side, discussing the role of science in development of conservation programs and policies and wetland regulation.

Some take-home messages: Real field data, and lots of it, are needed to build good models and wetland conservation tools. Cross-border discussions, collaborations, and communication are incredibly valuable, as we share many common interests and concerns are often working on very similar issues. And special sessions at conferences like TWS are really valuable to stimulate those conversations. So – what are your plans for next year in Raleigh?



Great Plains Prairie Wetlands in the US and Canada. Photos courtesy of USGS NPWRC.

Wetlands in the News

2015 Federal Duck Stamp Contest
Minnesota brothers win 1st, 2nd, and 3rd place.

Land and Water Conservation Fund
expired on Sept. 30th after congress failed to renew it.

EPA Awards \$1 million
to protect wetlands in New Jersey.

Wisconsin Tax Rule Change
may encourage restoration.

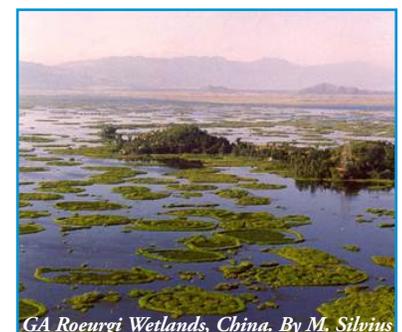
New RAMSAR Site
US designates [Chiwaukee Illinois Beach Lake Plain](#) as it's 38th Wetland of International Importance.

Wetlands in Kentucky
added to [John James Audobon State Park](#) in Henderson Co.

Kampar Peninsula Peatlands
New report [assesses impacts](#) of peatland drainage.

China's Vanishing Coastal Wetlands
need a [balance](#) of development, conservation, and politics.

New Publication
Advancing wetland policies..
[China's way out.](#)



GA Roerugi Wetlands, China. By M. Silvius

Click on the [light blue](#) hyperlinked text above for links to the original articles.

Update on Waters of the US Rule by Jen Chutz

Since the [final Clean Water Rule](#) defining the “waters of the United States” (WOTUS) was published and became effective on August 28th, 2015, a [nationwide stay](#) against enforcing the new Rule was put into effect on October 9th by the U.S. Court of Appeals for the Sixth Circuit. The Petitioners, who represent 18 states, claim that the Rule’s treatment of “tributaries”, “adjacent waters,” and waters having a “significant nexus” to navigable waters is at odds with the Supreme Court’s ruling in [Rapanos v. U.S.](#) They contend the Proposed Rule did not include any distance limitations in its use of terms like “adjacent waters” and “significant nexus”, therefore the Final Rule is not a “logical outgrowth” of the Proposed Rule and is vulnerable to attack as impermissibly “arbitrary or capricious” under the [Administrative Procedure Act](#). In response, the Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) resumed nationwide use of the agencies’ regulations as they were prior to August 27th by applying relevant case law, applicable policy, and the best science and technical data on a case-by-case basis in determining which waters are protected by the Clean Water Act (CWA).

Several dozen lawsuits are pending against the new Rule which occur at a variety of jurisdictional levels; it is currently unclear which jurisdiction is appropriate. In addition, two bills were proposed that aim to limit the CWA’s jurisdiction by redefining WOTUS. While [S. 1140](#) The Federal Water Quality Protection Act did not make it out of the Senate, [H.R. 1732](#) Regulatory Integrity Protection Act of 2015 was passed by the House and awaits committee assignment in the Senate.

Rather than establishing any regulatory requirements, the Final Rule is definitional in nature, clarifying the scope of WOTUS consistent with the CWA, Supreme Court precedent, and science. The key to the agencies’ interpretation of the CWA is the significant nexus standard, as established and refined in Supreme Court opinions: waters are “waters of the United States” if they, either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of traditional navigable waters, interstate waters, or the territorial seas. Programs established by the CWA, such as the [section 311](#), [section 402](#), and [section 404](#) permit programs, all rely on the WOTUS definition.

The EPA & USACE are ensuring that waters protected under the CWA are more precisely defined, more predictable, easier for businesses and industry to understand, and consistent with the law and the latest science, reducing the need to make jurisdictional

Continued on page 6

Initiation of Review Process for 2017 Nationwide Permits Anticipated for Early 2016 by Scott Yaich

Members of the TWS Wetlands Working Group should be alert for the release of the proposed Nationwide Permits (NWP) in early 2016, and take the opportunity to review and provide appropriate comment.

Section 404(e) of the Clean Water Act authorizes the issues of “[general permits](#)” by the U.S. Army Corps of Engineers for actions that affect jurisdictional waters but are deemed to have minimal individual or cumulative environmental impacts. NWP are simply general permits that apply across the country, unless modified or revoked by a Corps division or district commander for geographic areas within their respective jurisdiction. This system of permitting is consequential in that it’s been estimated that the Corps addresses up to 95% of authorized activities through NWP.

The current list went into effect on March 19, 2012, which means that they will expire on March 18, 2017. It is anticipated that the Corps will release a new proposed set of NWP, with the related terms and conditions for each, for a 60-day public review and comment period beginning sometime around February 2016. Based on the past renewal processes, we can anticipate that most existing permits will be reissued. However, given the importance of the terms and conditions that are used to essentially define what constitutes “minimal” environmental impacts, a careful review by the conservation and management community is appropriate.

The Corps currently administers [50 NWP](#). [The list](#) includes a number of permits that cover actions very often used by wildlife and habitat managers and researchers, including titles such as:

- #4 – Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities
- #5 – Scientific Measurement Devices
- #13 – Bank Stabilization
- #27 – Aquatic Habitat Restoration, Establishment, and Enhancement Activities
- #30 – Moist Soil Management for Wildlife
- #36 – Boat Ramps
- #40 – Agricultural Activities

Many other activities involved in habitat management and restoration projects (e.g., “minor discharges” and “minor dredging”) are also covered by NWP on the list.

The review and renewal process affords an opportunity

Continued on page 7



WWG members should be alert for the release of the proposed NWP anticipated during early 2016

Land and Water Conservation Fund Update

by Auriel Fournier, Treasurer/Secretary

At the end of September the [Land and Water Conservation Fund](#) (LWCF) expired, ending a fifty-one year run of providing funding for the continued purchase of local, state, and federal properties for conservation purposes. Created in 1965 the fund is not generated from tax dollars, but from revenue from oil and gas drilling in federal waters. The [FY16 Federal Omnibus Appropriations Bill](#) released on December 16th includes a one year appropriation of \$450 million for the LWCF grant program, with 50% directed to state and local conservation and recreation projects.

The LWCF is the only source of money for buying inholdings (parcels of non-federal land within national parks and other federal properties) and is also used to preserve, create and maintain national parks, historic sites and memorials (like the [Flight 93 National Memorial](#) in Pennsylvania, where 90% of the funds to build it came from the LWCF).



Flight 93 National Memorial. Photo courtesy of NPS.

If this fund expires, it reduces resources for local and state conservation areas and puts many federal properties at risk of development, especially those with inholdings that could be developed by both private individuals with the building of large homes, or by oil and gas development. Development of these inholdings could have large impacts on the federal land around it, breaking up migratory corridors and impacting the water quality and wildlife habitat.

The fund has been considered universally popular in the past, and the expiration of this fund has been of concern to a variety of conservation and recreation organizations, including hunting and angling groups. Previously, the House Natural Resources Committee Chair, Rob Bishop, blocked attempts to save the program during September unless changes were made.

Many conservation, recreation and other outdoors enthusiast groups continue to advocate for the renewal of the LWCF with its old conditions, to safeguard natural areas, water resources and our cultural heritage, and to provide recreation opportunities to all Americans.



Florida Everglades. Photo courtesy of DOI.

Waters of the US (continued from page 5)

determinations on a case-specific basis. Protections for traditional navigable waters, interstate waters, territorial seas, and impoundments of jurisdictional waters are jurisdictional by rule in all cases - meaning no additional analysis is required to impart CWA protections on them - which has not changed since the old rule. New to this ruling are the determinations that “tributaries” and “adjacent” waters are, as defined, jurisdictional by rule because the science confirms that they have a significant nexus to traditional navigable waters, interstate waters, or territorial seas:

- “Tributaries” is being defined for the first time as water features with a bed, bank, and ordinary high water mark (OHWM) – physical features of flowing water necessary to warrant protection - and that contribute flow directly or indirectly to a traditional navigable water, an interstate water, or the territorial seas. The great majority of tributaries as defined by the rule are headwater streams.
- “Adjacent” means bordering, contiguous, or neighboring, including waters separated from other “waters of the United States” by constructed dikes or barriers, natural river berms, beach dunes and the like. Further, waters that connect segments of, or are at the head of, a stream or river are “adjacent” to that stream or river. The rule sets boundaries on “neighboring” to cover nearby waters that are physical and measurable for the first time.

As far as isolated or “other” waters, the old rule only included those which could affect interstate or foreign commerce by their use, degradation or destruction. Previously, almost any water could be put through a lengthy case-specific analysis, even if it would not be subject to the CWA. The new Rule significantly limits the use of case-specific analysis by creating clarity and certainty on protected waters and limiting the



Vernal Pool, Sacramento NWR. Photo by USGS.

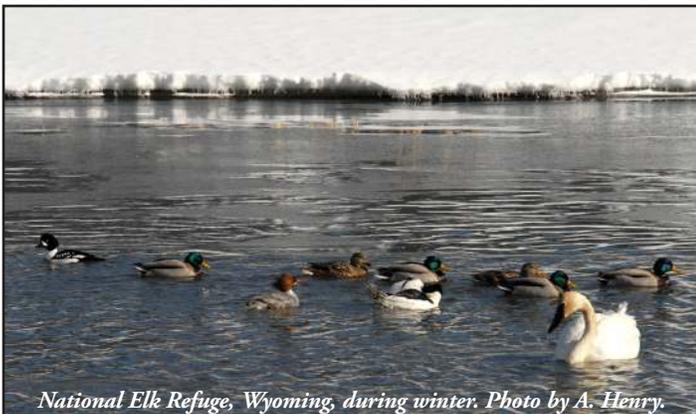
number of similarly situated water features. The new Rule would protect the following waters IF they are determined to have a significant nexus to traditional navigable waters, interstate waters, or the territorial seas, either alone or in combination with similarly situated waters in the region:

- The Prairie potholes, Carolina and Delmarva bays, pocosins, western vernal pools in California, and Texas coastal prairie wetlands.
- Waters within the 100-year floodplain of a traditional navigable water, interstate water, or the territorial seas, as well as waters within 4,000 feet of jurisdictional waters.

Nationwide Permits (continued from page 5)

to develop new permits, and/or amended terms and conditions that can streamline and improve the process of gaining authorization for many activities typically used by habitat managers. As part of the “regulated community,” habitat managers often find themselves frustrated by permitting requirements and processes for projects that will clearly provide net environmental benefits through habitat restoration or enhancement of wetland functions. But, the “purity of intent” behind actions that affect the nation’s wetlands and other waters cannot be easily assessed by regulators. Thus, this review and comment period offers an opportunity for stakeholders to work with the Corps and provide input into the NHPs to seek processes that both safeguard the nation’s wetlands, while streamlining projects that will clearly provide a net benefit to our wetlands, for example.

Many state agencies, organizations, and coalitions will have an interest in these and be providing comment (perhaps including TWS), so given the interest and expertise of the members of the WWG, we should all be prepared to contribute to these review and comment efforts to benefit conservation of the nation’s wetland habitats.



National Elk Refuge, Wyoming, during winter. Photo by A. Henry.

Literature Cited for Headwater Wetlands Feature Article:

- Andersson, J. O., and Nyberg, L. 2008. Spatial variation of wetlands and flux of dissolved organic carbon in boreal headwater streams. *Hydrological Processes* 22:1965–1975.
- Dollar, E. S. J. 2004. Fluvial Geomorphology. *Progress in Physical Geography* 28:405–450.
- Freeman, M. C., Pringle, C.M., and Jackson, C.R. 2007. Hydrologic connectivity and the contribution of stream headwaters to ecological integrity at regional scales. *Journal of the American Water Resources Association* 43:5–14.
- Jenness, J., B. Brost, and P. Beier. 2010. Land Facet Corridor Designer: Extension for ArcGIS. Accessible at: http://www.jennessent.com/arcgis/land_facets.htm.
- MacDonald, L. H., and D. Coe. 2007. Influence of headwater streams on downstream reaches in forested areas. *Forest Science* 53: 148-168.
- Meyer, J. L., Strayer, D.L., Wallace, J.B., Eggert, S.L., Helfman, G.S., and Leonard, N.E. 2007. The contribution of headwater streams to biodiversity in river networks. *Journal of the American Water Resources Association* 43:86–103.
- Rasmussen, R., Ikeda, K., Liu, C., Gochis, D., Clark, M., Dai, A., Gutmann, E., Dudhia, J., Chen, F., Barlage, M., Yates, D., and Zhang, G. 2014. Climate Change Impacts on the Water Balance of the Colorado Headwaters: High-Resolution Regional Climate Model Simulations. *Journal of Hydrometeorology* 15:1091–1116.

How to Join WWG

When you renew your TWS membership, be sure to sign up for the Wetlands Working Group!

If you’re already a member of TWS, you can add membership in the Wetlands Working Group at any time by logging into your account at <http://wildlife.org/>.

Membership dues are only \$5 annually, which helps support activities at meetings and outreach events.

Questions?

**Interested in sharing
your wetland experiences
and contributing to the
Newsletter?**

Contact Us!

Adonia Henry, Chair

adoniarhenry@gmail.com

Jennifer Chutz, Vice Chair

dciwestbiological@gmail.com

Auriel Fournier, Treasurer/Secretary

aurielfournier@gmail.com

Lisa Webb, Past Chair

webbli@missouri.edu

