New Tool Could Help Evaluate Where Water is Needed for Better Bird Habitat

Tool combines data that has been collected over the last nine years

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by Lauren Brown

Since 2016, a lot of data has been collected in the Haney Basin specifically related to water quantity and quality in and around Malheur Lake. These data are a result of work done by the Harney Basin Wetlands Collaborative, a collaborative of High Desert Partnership, as well as other groups.

However, as Casie Smith, an ecologist with the U.S. Geological Survey, pointed out, not much had been done to put that information all together. “There was a lot of data that had been collected, but I had not seen any attempt to synthesize everything: basically, bring together all the existing data sources and see if that could inform us on water management practices that are going on in the refuge and how that’s affecting bird habitat,” Smith said.

Family of Greater Sandhill Cranes wading through wetlands in the Harney Basin. Photo by Brandon McMullen.

As a culmination of several Oregon Watershed Enhancement Board (OWEB) Focused Investment Partnership projects, Smith developed a tool using a spreadsheet to determine how water availability and water management activities create various types of bird habitat on the Malheur National Wildlife Refuge. The hope is that water managers will be able to use this in and around Malheur Lake to assess and improve resident and migratory bird habitat. She noted that while a lot of research has been done on water in and around Malheur Lake, it was collected at different times or using different spatial scales. The goal with this spreadsheet-based tool was to bring together existing data sources to synthesize what is known about the Malheur National Wildlife Refuge and the Malheur Lake basin at this time.

A user-friendly tool

Smith chose to use Microsoft Excel to create the tool because many people are already comfortable and familiar with the spreadsheet program. “The whole point was to make this user friendly,” she said.

She wanted this tool, which will be primarily used by water managers, to also be transparent to the public. The tool combines multiple water-quantity and water-quality models. “The term ‘modeling’ builds up a wall between scientists and the public, but we have other options,” she said. “We can create models of systems, and they can be understood by the public as well. That was my approach using Excel. A user can click on any cell in there, and it’ll show the formula that’s being used, and the report will state where that formula came from.”

Identifying bird habitats

The tool can help water managers figure out where the water on the refuge is going during the irrigation months and what type of habitats it is creating. “For example, those habitat types could be wet meadows. They could also be deeper water

areas in the middle of the lake for diving water birds," Smith said. The tool can help quantify bird habitat for different guilds, or groups of species in a community that exploit that same set of resources in a similar manner. These guilds require different water depths for foraging and survival.

As mentioned in the report that goes along with the spreadsheet-based tool, Smith states that the Malheur National Wildlife Refuge covers about 187,000 acres of riverine, irrigated wet meadow, sagebrush and grass uplands, and terminal lake habitats.

The U.S. Fish and Wildlife Service uses many approaches to manage the refuge for migratory and resident bird species. To create seasonally flooded wet meadows, water is diverted through earthen canals to flood-irrigate beginning in March and continuing through July or August each year. In the report for example, Smith notes that some birds such as bobolinks depend on wet meadows, and other birds such as sandhill cranes, waterfowl, and shorebirds use wet meadow habitats to forage and breed. Malheur Lake provides crucial habitat for waterbirds and waterfowl along the Pacific Flyway.

Gaps in data

Because this is the first attempt to synthesize the vast amount of data that has been collected in the last nine years, Smith sees this tool as a work in progress. "This is the first cut at understanding all the different linkages in the system," Smith said. For example, she noted that the tool illustrates how little water from the Silvies River makes it into Malheur Lake. "That may emphasize the importance of management of the Blitzen River, which supplies most or all of the water that reaches Malheur Lake," she said.

She hopes water managers can see how this tool, with some additional data inputs, could be optimized and used to inform real-time decisions. "The idea was to make this on a monthly scale so that decisions could be made partway through the irrigation season, depending on how the water year is shaping up," she said.

While the tool highlights the available datasets, it also brings attention to some of the gaps and limitations regarding that data. The collaborative may be able to find ways to fill in these gaps and continue to strengthen the tool. "In the future, we might be able to update this with new information and new datasets to provide a more comprehensive watershed synthesis," she said.

Many potential uses

While Smith created the tool mainly for water managers to use, she has gotten feedback from people in the Harney Basin Wetlands Collaborative that there may be other opportunities to expand the tool to include more of the Silvies River Basin and potentially incorporate more of the Harney Basin. She hopes that once partners learn about the tool, they will see the utility of it through their own expertise and could connect it to tracking invasive species or vegetation mapping. "I hope it can be expanded and used to strengthen our understanding of how water relates to habitat in the basin," Smith said.

This article is provided by High Desert Partnership; a Harney County nonprofit convening and supporting six collaboratives including the Harney Basin Wetlands Collaborative.

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