



## Hurricane Lake WMA Project a

# MARATHON

*Moist-Soil Units Provide Essential Nutrition for Wildlife*

If only clearing the water drainage in a wildlife management area were as simple as calling Roto-Rooter. It's not, of course.

Drainage corridors in the south unit of the Arkansas Game and Fish Commission's Henry Gray Hurricane Lake WMA had become so clogged, the AGFC summoned a Louisiana company to send two amphibious mulching machines and an amphibious excavator to clear the way so water could drain.

Johnny Waldrup, an AGFC biologist supervisor overseeing the project, says the drainage sloughs were clogged with dead and fallen trees, live vegetation, sediment and other debris. The WMA already was in a precarious position after losing about 1,000 acres of greentree reservoir timber in

recent years. The timber die-off, discovered in spring 2018, was attributed to water remaining on the red oaks during the growing season. The loss of the red oaks is critical in any greentree reservoir, as that particular species provides acorns for migrating waterfowl, and as they die off, undesirable species replace them.

### Mile by Mile

The drainage backup was affecting a literal marathon of distance in the south unit: The drains in the unit total about 26 miles. The first phase cleared 12 miles by Oct. 11.

In mid-August, ANU Works (Stan's Airboat Service) of Iowa, Louisiana, put three amphibious vehicles to work in the south unit. A portion of a National Fish and Wildlife





TOP: Amphibious machines are able to mulch limbs, trees and vegetation to unclog natural drainages.

ABOVE: Years of organic debris have been removed from this drainage.

LEFT: Water runs freely after mulchers do their job. Photos by Mike Wintroath.

Foundation grant to the AGFC, about \$150,000 of the total \$375,000 that went to the agency, is funding the work.

Waldrup says the AGFC in recent years has mulched the drainage systems at George H. Dunklin Bayou Meto WMA and Dave Donaldson Black River WMA to improve drainage. More infrastructure modifications are needed, such as reworking water-control structures and levees, but mulching in key areas will help these measures work more efficiently to keep water flowing.

"We identified the primary drains in the GTR and that's where we started with the mulching," Waldrup said of the work at Hurricane Lake WMA. "A lot of those drains run through the Mud Pond system. . . . They were just getting overgrown with woody vegetation and debris. Any time you

have a tree fall in there, it's just a natural barrier to the water, something to block water, slow it down, and allow other debris to accumulate on it."

Waldrup says much of the debris buildup came from natural tree mortality, tornadoes or high winds. Work had to wait for permits and the new fiscal year when grant money became available.

Mother Nature also hasn't been on the AGFC's side lately. Nearby rivers were running high after rain from late spring and early summer. In normal conditions, the south unit would be "bone-dry" in most places, Waldrup said. Instead, there was water and the need for amphibious work vehicles. Mulchers grind dead trees, limbs and other vegetation into chip-size particles, which are left to decompose.

"The mulchers need a little bit of water, but only about a foot or so, to work," Waldrup said. "Due to the water being in those drains and not falling out, the only solution was to use an amphibious rig."

Water from the White River flows into Hurricane Lake WMA's north unit and continues into the south unit and the Little Red River. Waldrup says the AGFC will employ the same greentree reservoir hydrology plan it used last year. No boards will be used to hold water in the south unit. The north unit's boards will go in Nov. 15. Water will flow freely through the south unit, fluctuating with the rivers.



## Soil Disturbance

The remainder of the AGFC's portion of a \$500,000 grant from the NFWF is helping to fund wetland improvement and water-control structure work at Steve N. Wilson Raft Creek Bottoms WMA, Red Cut Slough in Cypress Bayou WMA and Freddie Black Choctaw Island WMA.

AGFC biologists were disturbing the soil in parts of Raft Creek Bottoms WMA last summer to help native seeds flourish. These areas are growing smartweed, sedge and millet, which ducks will thrive on during winter migration.

Because the White River was backed up for much of spring and summer, some of these areas were a little bit more than "moist" – under nearly 2 feet of water, which held back a lot of growth. Until late summer, some were under 5 feet of water.

AGFC biologists such as Jason "Buck" Jackson and Jacob Bokker gave those fields some assistance. They disturbed the soil with a tractor and heavy stubble roller that simulates disking, but it's done with water covering last year's vegetation residue and it's far more efficient than disking a field after it dries. This soil disturbance can be done in water up to 10 inches

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deep, says Jackson, the AGFC's wetlands program coordinator.

"A moist-soil habitat is a diverse community of (annual) plants that really produces a high volume of seeds, as well as invertebrates," Jackson said. "It's a true buffet, compared to the (agriculture) fields. An ag field is basically loaded with candy bars, where moist-soil habitat is a 100-foot buffet, fully loaded. A good moist-soil unit will provide the macronutrients, the proteins and amino acids in a digestible food source for the ducks. A field of rice is basically a bunch of Snickers bars lying around."

The AGFC has 208 moist-soil units that cover about 8,900 acres. The nutrients ducks get from eating smartweed, millet and other heavy-seeded annual plants (sprangletop, toothcup and panic grasses), along with invertebrates they find during fall, winter and spring, are essential for survival, pairing and migration, as well as for breeding and egg-laying next spring in the Dakotas and Canada. Jackson says research shows a diverse moist-soil unit provides the necessary proteins and other nutrients that, for instance, help a mallard drake through its secondary molting process (developing its distinctive green head) to boost its attractiveness to females.

"You know, you can survive and get a girlfriend by eating Snickers all the time, but you're not going to be in your best shape. . . . The proteins and the macronutrients are important for drakes in that way for attracting hens and for those hens preparing for nesting. There is really a lot of science to it for the importance of having a well-balanced diet."

## Around the Clock

Jackson says the preparation for the AGFC's moist-soil units, many of which offer public hunting during duck season, is a year-round effort, beginning with soil disturbance in February and a slow drawdown of water in March, leaving enough moisture when the temperature is just right for plant germination.

For native moist-soil plants, crews take soil samples and correct the soil if needed, irrigate as needed, apply pesticides if called for, manipulate the crop of native plants post-growing season in October, apply more pesticides if needed in October to control perennials, and add water to the sites.

"If the site needed to be reset with a heavy disking, we would deep disk, correct the soil, finish tilling, plant, irrigate, add nitrogen after millet development and apply pesticides for undesirables," Jackson said.

Jackson suggests it could take a three- or four-year effort. Seeds and other organics that have stayed within the system, and grown well in advance of this year's work, make a moist-soil unit so desirable – both to ducks on the migratory trip and to hunters.

Soil disturbance doesn't occur only when water tops the plants. There are situations (such as at Ed Gordon Point Remove WMA in the Arkansas River Valley) where the soil, seeds and plants have become so compacted, a tractor and ripper have to break them to promote growth. Deep tilling brings seeds to the surface, keeps organics in the system, "and I have a healthier moist-soil unit," Jackson said.

The AGFC's moist-soil units are, as Jackson describes, the "bottom of the hill, down in the lowlands. That's where this community of native, natural smartweed and millet started out. It's easier for us to propagate this than to develop cultivated fields of a single species. With the flood events like we've had the past three years, most cultivated species won't live through that. But the moist-soil community like at Bell Slough (WMA) has been underwater for three-to-four weeks and there is some good stuff living there."

Smartweed, sedges, millet and other grasses have the genetics to handle floods. Bidens (aka beggarticks) produce a significant amount of protein compared to other food sources. Then there are panic grasses, of which about 15 species like to grow, usually starting Aug. 1.

"That's the way we stock the food up," Jackson said. "For instance, at Halowell (Reservoir in George H. Dunklin Bayou Meto WMA) in past years, we have pulled off three crops there, all native. Some fertilizer and some irrigation was all it took."

When native crops fail to come through, a cover crop of Japanese millet goes in. At Bell Slough's two units, the team planted Japanese millet with the good toothcup, barnyard grass and smartweed in the east unit. The west unit got a deep disking and a cover crop. 🌱

– Jim Harris