

## WILDLIFE

# Aquatic vegetation establishment promotes resource goals

by Will Moseley / [wamoseley@noble.org](mailto:wamoseley@noble.org)



**Aquatic** vegetation can be beneficial when the right species in the right abundance are present. Some benefits of aquatic vegetation are erosion control, improved water quality, cover and food for many wildlife species.

When an impoundment lacks aquatic vegetation, it could be helpful to establish or promote it. However, not all aquatic vegetation is desirable. Some species, such as Eurasian water milfoil, can become overabundant and out-compete beneficial plants. It is important to manage for plants that help accomplish the goals set for an impoundment.

To determine the species of plants to establish or promote, first determine the purpose of the plants. If the purpose of vegetation is to provide erosion control, then select a moist soil or emergent plant. If the purpose of vegetation is to provide food for waterfowl, then a submerged or floating plant might be more suitable. Two good plants to establish or promote are spike sedge and long-leaf pondweed. There are many different species of spike sedge, but all are limited to depths less than 18 inches. Most are less than 30 inches tall, and



*Spike sedge (closest to the water) provides a good buffer around impoundments.*



*Long-leaf pondweed is an excellent aquatic plant for fish and wildlife.*

the seeds and rhizomes are eaten by waterfowl. Spike sedge provides excellent erosion control and is a great buffer for runoff. Long-leaf pondweed provides good habitat for fish and invertebrates, the seeds are

eaten by waterfowl, and it typically does not grow in water deeper than 5 feet in ponds.

There are several ways to establish aquatic vegetation such as spreading seed or transplanting individual

plants, which are both commercially available or can be easily collected. If the plant is rooted, dig plugs about softball sized and plant them at the same depth where they originated. If the vegetation is not rooted, simply transplanting from one impoundment to another might be enough for establishment because many aquatic plants propagate from fragments. However, caution must be taken to avoid accidental introduction of non-desirable species. Since many plants spread by seed and fragments, it is hard to transplant without introducing a non-desirable plant if it exists in the source location. Many plants are limited by depth, so slope must also be considered when selecting species and site.

For some species to become established, fencing from cattle and turtles is commonly needed. Fencing an area or whole impoundment from cattle will prevent grazing and trampling, allowing vegetation to establish and spread. Excluding turtles requires fencing such as construction barrier fencing that is tall enough to extend above the surface of the water when full. Construct small exclosures (3 to 5 feet in diameter) close to each other so vegetation can grow together to create a "critical mass" that turtles will be unable to keep up with.

Establishing aquatic vegetation allows managers to select the species they want in an impoundment instead of waiting for nature to take its course. Selecting desirable species can help managers achieve their water quality and wildlife goals. ■

## Wheat research benefits producers

by Mark Newell / [manewell@noble.org](mailto:manewell@noble.org)



**Producing plant** cultivars is like releasing a new technology. Technology changes with the times and allows us to purchase the latest computer or smartphone. New varieties of plants (called "cultivars") are much the same – always changing.

Stocker cattle producers in the Southern Great Plains grow winter wheat for pasture grazing. However, most available wheat varieties being used in southern Oklahoma today are at least 30 years old. To provide producers with the newest cultivars, the Noble Foundation and Oklahoma State University (OSU) have created a five-year collaboration to expand grazing wheat cultivar research and development.

The ultimate goal of our collaboration is to create a new cultivar for producers to graze in the southern Oklahoma and northern Texas region. Ideally, the cultivar would be dual purpose, producing a high grain yield after grazing.

OSU has a rich legacy of producing quality wheat cultivars for grain production, especially for north and west Oklahoma. However, some of these cultivars would fit well in the southern Oklahoma and northern Texas region as a grazing cultivar, but there has not been an outlet for those lines until now. Brett Carver, Ph.D., wheat breeding and genetics professor at OSU, explained: "This collaboration is beneficial for both organizations. We have access to the latest research and technology to dig deeper into other traits within genetic backgrounds that were previously underexplored. In the long run, we are able to develop and cultivate a better relationship and make better use of our complementary missions. We are better utilizing all of our resources for a better product."

The first set of genetic materials received from OSU was planted at the end of October 2012. This planting consisted of 36 lines. These vary from lines that are primarily grain types and would not be available for release. Some are potential grazing types, and others are varieties that are currently being used by producers in the region. All of the cultivars are being evaluated under grazing conditions.

This first trial will end in late spring 2013, and a new trial year will begin with new experimental lines in the fall of 2013. However, some lines that have potential as grazing releases may be evaluated in further research, such as testing under heavier grazing conditions and experiments that explore animal daily gain.

In the end, a Noble-OSU collaboration is once again working to benefit agricultural producers in a tangible way. ■





# Small producers should manage bulls during breeding

by Clay Wright / jcwright@noble.org



**By the** beginning of April, most cow-calf producers in the Southern Great Plains are a few weeks away from the start of the breeding season and are wrap-

ping up routine preparation of bulls before turn-out. Ideally, bulls are in a body condition score of at least 6.0 to 6.5, maintaining their condition on a high-forage diet and getting plenty of exercise. They have received immunizations and parasite control, and passed a complete breeding soundness examination. All this preparation is critical, but it is not the end of the manager's responsibility. Throughout the breeding season, managers need to observe and address health issues and physical problems that may arise, and manage the hierarchy of social dominance among the bulls. This is true if your herd has two bulls or twenty bulls.

Dr. Glenn Selk, Oklahoma State University emeritus extension animal scientist, authored an outstanding publication, *Management of Beef Bulls*, covering all aspects of bull management. It can be found at [pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-1922/F-3254web.pdf](http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-1922/F-3254web.pdf). At the bottom of page five in this publication is a table that illustrates the effect of bull dominance over time.

The data emphasizes two basic facts: the dominant bull in a breeding herd sires the greatest percentage of the calves, and, up to a certain point, age is a primary factor in determining dominance.

Many producers have herds of 50 or fewer cows and only two bulls. Dominance is just as much an issue

## Reproductive performance of three or four bulls exposed to a group of cows over a five-year period

Bulls Used	Percentage of calves sired by each bull				
	Year 1	Year 2	Year 3	Year 4	Year 5
A	70.4 (10) <sup>a</sup>	76 (11)	12.2 (12)	0 <sup>b</sup>	0 <sup>b</sup>
B	16.7 (4)	18.0 (5)	63.4 (6)	72.5 (7)	25.1 (8)
C	7.4 (3)	6.0 (4)	12.2 (5)	12.5 (6)	62.5 (7)
D	5.5 (2)	0 <sup>b</sup> (3)	12.2 (4)	15.0 (5)	12.4 (6)

<sup>a</sup> Age of bull in years

<sup>b</sup> Bulls absent from the herd

Source: *Management of Beef Bulls*, Selk, Oklahoma Cooperative Extension Service Publication No. ANSI-3254

for smaller herds as for larger ones. Here is a common scenario for small producers:

The producer has 40 cows, an older bull (A) and a younger bull (B) getting ready for his first breeding season. The bulls are run together in the off-season. When the breeding season comes and cows are returning to heat in large numbers, how does the rancher manage his two bulls?

We recommend turning both bulls out together. Bull A's dominance, experience, maturity and capacity will enable him to settle the largest number of cows early. Remove bull A from the breeding pasture to rest after a month, or earlier if he drops a full body condition score. Leave bull B alone with the cows for at least two weeks, and for the rest of the breeding season if his body condition stays above a score of 5. It is critical to favor this young bull during his first breeding season. Turn bull A back out with the cows after bull B has had his

two-week learning experience. By the end of six to eight weeks, the majority of the cows should be settled. Both bulls can "clean up" for the rest of the breeding season, assuming the young bull has regained condition.

When only one or two bulls are used, it is vitally important to observe them in action throughout the breeding season. Make note of the cows' IDs and service dates, then find those cows in 18 to 23 days to make sure they don't return to heat. If bull A in the scenario above became infertile after two weeks, you would know it and could remove him from the breeding pasture. If undiscovered, he would still exert his dominance over B and cows would go unsettled or breed later in the season.

In small herds, observation during the breeding season and management of social dominance among bulls is just as important to success as fertility, health and physical soundness. ■

# Economics, timing drive pesticide application decisions

by James Locke / [jmlocke@noble.org](mailto:jmlocke@noble.org) and Jeri Donnell / [jddonnell@noble.org](mailto:jddonnell@noble.org)



**Spring is the** season when most begin thinking about controlling weeds and other pests. Producers who choose to control pests (weeds, insects or diseases) with chemicals are faced with deciding whether to hire a commercial custom applicator or to self-apply pesticides to their own property or crops



(i.e., be a private applicator). The right choice depends on each producer's individual circumstances. This article will discuss the advantages and disadvantages of each system, including an investment analysis of purchasing the sprayer.

First, determine if a reliable custom applicator is available for hire at a reasonable price. Custom applicators provide advantages of efficiency and convenience. Due to dedicated equipment and specialized personnel, they can treat more acres per day than most private applicators. A reliable custom applicator will apply the requested products, at the requested rate, to the requested pastures or fields in a timely manner. Their equipment should be calibrated and able to apply pesticides without streaking or excessive overspray. They should only spray under acceptable environmental conditions and do everything reasonable to avoid off-target spray drift. Many, if not most, custom applicators can supply the pesticides, thus eliminating the need for producers to maintain their own chemical inventories and



dispose of empty pesticide containers. Custom application is not viable if there are no custom applicators available who meet these criteria.

A common disadvantage of relying on custom applicators is incorrect pesticide application timing. The efficacy of any pesticide depends on applying it at the correct time for the target pest; often, that time frame is very short. The same pest problems can develop for many clients at the same time since custom applicators typically serve a particular geographic region and producers in that region frequently grow the same crops. Having a large number of client requests at the same time, coupled with delays due to weather or equipment problems, can result in even the best custom applicators missing the optimum application timing.

Secondly, producers should evaluate their resources and management style prior to deciding to be

a private applicator – especially if a reliable custom applicator is available. A major factor is whether or not a suitable sprayer is already owned or must be purchased. Another, and perhaps more important and often overlooked factor, is whether a producer is willing to commit to spraying in a timely manner. When investigating control failures, producers often say they did not have time to spray when application was needed. Simply put, if other activities are going to preclude spraying at the right time, it is an easy decision to hire a reliable custom applicator.

There are many advantages to being a private applicator if a producer is willing to commit the necessary time. The greatest advantage is usually improved pest management due to timely application. Private applicators can closely monitor pests and treat at the optimum pest stage and under favor-

able weather conditions. Another benefit of private application is the ability to treat only the areas of the field that have the target pest problem. This is often an option for post-emergence herbicide applications and can significantly save on pesticide costs. Private applicators can continue their financial savings by shopping around for the best pesticide prices.

If the decision to hire a custom applicator or be a private applicator is purely economic, other factors need to be considered. Economies of scale play a large role in determining if owning a sprayer is economically feasible. This means the more acres allocated to the sprayer decreases fixed costs per acre. However, remember to include all operating costs when comparing custom versus private application. These costs include fuel, oil and lube, maintenance and repairs, operating and tendering labor, and interest on operating expenses.

For example, a rancher trying to decide between custom application and private application has the following scenario:

Herbicide needs to be applied to 1,000 acres to control annual broadleaf weeds. Herbicide price is assumed equal for both custom application and private application.

Custom application can be hired for \$5.50 per acre.

A pull-behind sprayer equipped with a GPS light bar can be purchased for \$6,500 at an annual interest rate of 5 percent. The useful life of the sprayer is estimated to be seven years with a salvage value of \$500. The sprayer is estimated to operate at 5 miles per hour with a 30-foot swath and 65 percent operating efficiency.

A suitable tractor to pull the sprayer is already owned. Tractor ownership and usage costs are allocated to spraying activities at a rate of \$9 per hour, and it will require 85 hours to spray 1,000 acres.

Step 2. Calculate the net present value (NPV) of purchasing the sprayer. This article will not explain the procedure for calculating NPV. However, given these parameters, the rancher in this scenario is advised to purchase the sprayer because the net present value is positive and gives him a return on his investment greater than 5 percent. Said another way, returns on his investment are greater than the opportunity cost (i.e., interest) associated with purchasing the sprayer. To ensure a minimum rate of return of 5 percent, this rancher must spray at least 620 acres per year.

This rancher should keep in mind that 85 hours are required to complete the task of applying herbi-

cide to 1,000 acres given the speed, spray width and operating efficiency. Using the NPV calculation in our example, custom application and private application would be equally profitable if the cost of custom application was reduced to \$4.85 per acre. Yet this is unlikely given recent trends in custom application rates. Oklahoma Cooperative Extension Service reports the average cost of ground-spraying for weeds has increased from \$4.94 per acre in 2009 to 2010<sup>1</sup> to \$5.45 per acre in 2011 to 2012<sup>2</sup>. Even if the cost is not reduced, custom application may still be the better option if the rancher is not willing to make the time commitment required to complete spraying activities in a timely manner.

There are advantages and disadvantages to both custom and private application. Producers must make their own decisions about which system is the right choice for their operations. Custom pesticide application is often an easy decision for many small acreage or absentee landowners due to economies of scale or convenience. However, even for small acreage producers or absentee landowners, private application can provide advantages in flexibility of application timing, improved efficacy and reduced pesticide use. Producers should consider the advantages and disadvantages, including economic analyses, of each management system prior to making a decision. We hope this article helps you make a more informed decision about hiring a commercial custom applicator or being a private applicator. ■

## Step 1. Calculate operating costs for each system.

Custom Application	\$/acre	Units	Total Cost
Custom application	\$5.50	1,000 ac	\$5,500
Total operating cost per year	\$5.50		\$5,500
Private Application	\$/acre	Units	Total Cost
Fuel	\$1.05	0.3 gal/ac @\$3.50/gal	\$1,050.00
Oil and lube	\$0.105	10% of fuel	\$105.00
Maintenance and repairs	\$0.15	1,000 ac	\$150.00
Labor	\$1.50	1,000 ac	\$1,500.00
Tractor use	\$0.765	85 hr @\$9/hr	\$765.00
Interest	\$0.21	6% of costs	\$214.20
Total operating cost per year	\$3.78		\$3,784.20

<sup>1</sup>Oklahoma Farm and Ranch Custom Rates, 2009-2010. Oklahoma Cooperative Extension Service. CR-205. 0310 Rev.

<sup>2</sup>Oklahoma Farm and Ranch Custom Rates, 2011-2012. Oklahoma Cooperative Extension Service. CR-205. 1111 Rev.



# Mobile app aids prescribed burn management

by Corey Moffet / [camoffet@noble.org](mailto:camoffet@noble.org), Frank Motal / [fjmotal@noble.org](mailto:fjmotal@noble.org), Josh Gaskamp / [jagaskamp@noble.org](mailto:jagaskamp@noble.org) and Mike Proctor / [mdproctor@noble.org](mailto:mdproctor@noble.org)

**Prescribed fire** is a powerful tool that can be used to achieve management goals and manipulate vegetation. A February 2000 *Ag News and Views* article by Mike Porter ([www.noble.org/ag/wildlife/prescribed-burn](http://www.noble.org/ag/wildlife/prescribed-burn)) discusses how to conduct a prescribed burn. When conducting the burn, good communication between the burn crew members is critical for conducting it safely.

A common bit of information that needs to be communicated among crew members is where resources, such as a containment or ignition crew, are located. To facilitate this need, crew members are typically issued a map showing the burn unit and several labeled locations along the burn boundary prior to the burn. Radio communications reference these labeled locations. As an example communication, ignition crew 2 might report to ignition crew 1 that they have reached point G and they might hold at that position, waiting for ignition crew 1 to report that they have reached point E. Another example might involve an escaped spot fire. The location of the spot fire needs to be communicated to the burn boss. In turn, the burn boss will communicate which resources will respond and where the fire has escaped relative to the nearest labeled point.

A desire to improve on this system led us to ask, "Is there an app for that?" A search for an app specifically designed for aiding in conducting prescribed burns or managing wildfire responses was not successful. However, we were aware of apps that allow you to view, with your friend's permission, their location, or rather the location of their smartphone. We



looked for such an app that might have some useful features. One app we found that looked promising, ActInNature, is designed as a hunting app. It is available for iPhone, Android phone or Android tablet, and it has several features we were seeking. The app supports basic (i.e., free) and advanced user (for a small annual subscription) types, the main difference being that advanced users can edit "areas" and share "tags." We used "areas" to define the burn unit and "tags" to mark points of interest, such as ignition sequence points or mop-up locations. The app also polls weather data and provides current wind speed, direction, temperature and relative humidity. Advanced users also get three-hour and six-hour temperature and relative humidity forecasts.

Our experience with this app for

conducting prescribed burns was generally good. We used the app with one advanced user and the rest as basic users. We set up a group, which allowed us to define areas and tags that only the group could see. This also required users to enter a password chosen by the advanced user. All users could see other group users regardless of the distance between them. Without groups, only users within a 5-mile radius are displayed. This feature is nice because a group member, anywhere in the world, can view progress being made on the burn.

The advanced user digitized the burn unit on the ActInNature website, used their mobile device to add tags at the ignition sequence locations and then shared the tags with the group. The ability of each crew member to see his position on

the map was helpful. The ignition crew could quickly confirm where they were, relative to other crew members and the burn boundary. It was easy to adjust the pace for ignition sequences where it is desirable that one ignition crew be igniting at a more downwind position relative to the other crew. It is also reassuring to see where the containment crews are positioned and their progress on patrol. During mop-up, it was useful for the advanced user to add and share tags or spots that needed attention from the crew.

On the downside, the app

requires a good network connection (i.e., 3G or better), which is still not available in many rural areas. Wearing gloves makes it difficult to interact with the mobile device. In addition, the app does not play well with other software. For example, there is no ability to import maps created with other GIS software, and tracks created by GPS fixes of where a user has been can't be exported. The name of each tag is not displayed – only the symbol – so the user had to select the tag to get the name of a point. Finally, the app accesses GPS often, which

means it uses a lot of power. This is not a problem if the device is in a vehicle or is plugged into an external power supply. For users that are on foot, it may be helpful to get an external battery pack to extend the battery life. Perhaps someday there will be an app specifically designed to conduct prescribed burns; in the meantime, the ActInNature app brings some abilities that we would not otherwise have, which makes it an app we will likely use on future burns. Perhaps you will find this app useful for conducting prescribed fire on your burns as well. ■

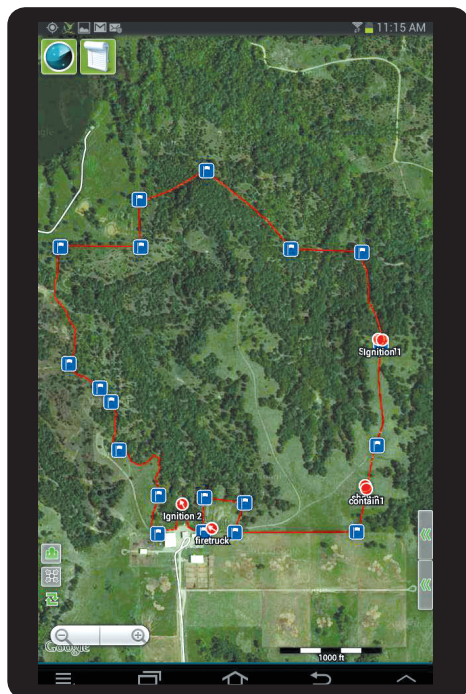


Figure 1. The ActInNature map view on an Android tablet while conducting a burn. Shown are the burn unit boundary (red line), ignition sequence markers (blue flags) and burn crew resources (e.g., ignition 1, contain 1, fire truck, etc.) as labeled red dots. The dots have an arrow indicating the direction they are moving if the resource is in motion (e.g., ignition 2 and the fire truck).

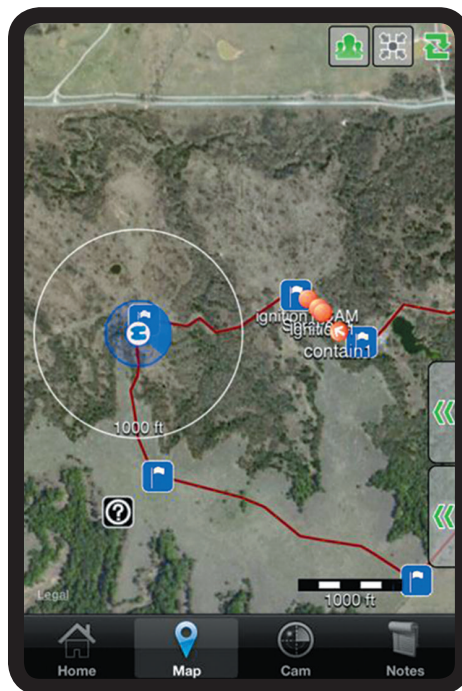


Figure 2. The ActInNature map view on an iPhone while conducting a prescribed burn. Shown on the map are the same markers as in Figure 1. The blue binocular symbol shown in this figure indicates the location of the user, the direction they are pointing and a 1,000-foot ring around them for scale.

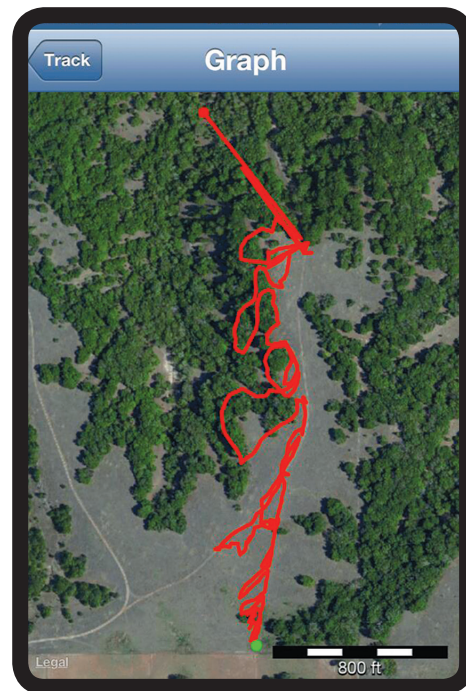


Figure 3. The ActInNature track graph view on an iPhone after the burn was completed showing the path of a member of the ignition crew.



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## EVENTS

### Spring Grazing Workshop

Time: 9 a.m.-3 p.m.

Date: April 23, 2013

Location: Jan Lee residence, 624 East 2070 Road, Boswell, Okla.

Registration Fee: \$20, includes lunch

### Pecan Grafting Workshop

Time: 9:30 a.m.-11:30 a.m.

Date: May 7, 2013

Location: Noble Foundation Pavilion

No Registration Fee

### Pond Management Workshop

Time: 1 p.m.-7:30 p.m.

Date: May 14, 2013

Location: Noble Foundation Pavilion

Registration Fee: \$20, includes dinner

For more information or to register, please visit [www.noble.org/agevents/](http://www.noble.org/agevents/) or call Jackie Kelley at 580.224.6360. Preregistration is requested.

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