THE SAMUEL ROBERTS NOBLE FOUNDATION

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Mobile app aids prescribed burn management

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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) 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

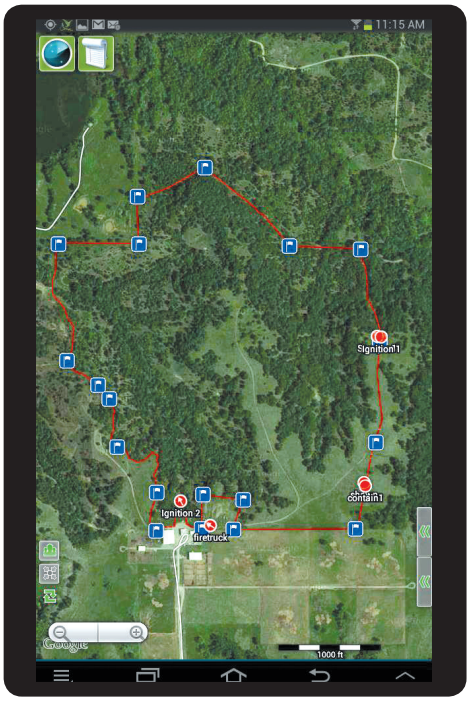

Figure 1. The ActInNature map view on an Android tablet while conducting a burn. Shown are the burn unit boundary (red line), ignition sequence markers (blue flags) and burn crew resources (e.g., ignition 1, contain 1, fire truck, etc.) as labeled red dots. The dots have an arrow indicating the direction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

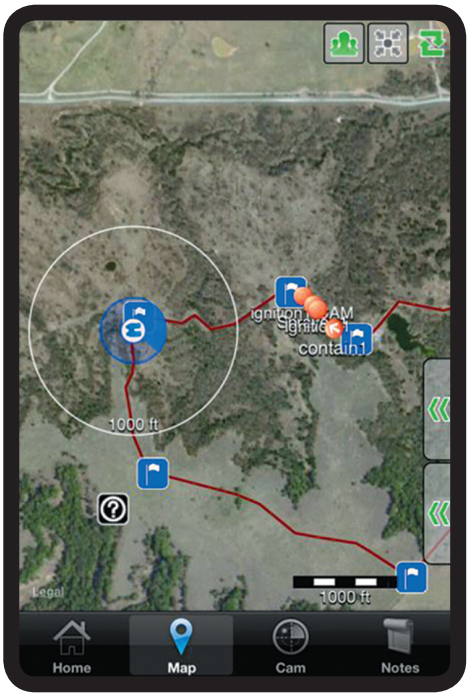

Figure 2. The ActInNature map view on an iPhone while conducting a prescribed burn. Shown on the map are the same markers as in Figure 1. The blue binocular symbol shown in this figure indicates the location of the user, the direction they are pointing and a 1,000-foot ring around them for scale.

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.

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 ActIn-Nature 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. ■