A Holistic Approach to Managing the Societal Impacts for a National Forest in the Wildland-Urban Interface

Taylor V. Stein, Richard Lint, and Mark Warren

Natural resource managers in the wildland-urban interface struggle with a variety of issues. In particular, land managers are becoming increasingly burdened with societal problems as a result of encroaching development and increased forest use. This article reports on a process used by the Ocala National Forest, Florida, to work through societal issues common in many US forests. Specifically, this article describes (1) the Ocala National Forest situation, (2) the workshop that drove the process, and (3) progress made after the workshop. Identified solutions required the development of long-term, collaborative strategies; however, the process showed that immediate and successful techniques can be identified and implemented when agency personnel use nontraditional decisionmaking strategies. Strengths of the process proved to be the ability to improve communication across administrative layers, engage new and existing partners in a process focused on solutions, and develop immediate solutions, which are designed to result in long-term improvements.

Keywords: wildland-urban interface, forest recreation, crime, motorized recreation, stakeholders

Received October 15, 2008; accepted August 24, 2009.

Taylor V. Stein (tstein@ufl.edu) is associate professor, University of Florida, School of Forest Resources and Conservation, PO Box 110410, Gainesville, FL 32611-0410. Richard Lint (rlint@fs.fed.us) is district ranger and Mark Warren (mwarren@fs.fed.us) is mineral engineering and lands staff officer, US Forest Service. The authors thank all participants in the workshop who helped create an innovative and, hopefully, successful strategy to work with complex issues on the Ocala National Forest. Also, they thank Bin Wan for his help with data entry and analysis.

Copyright © 2010 by the Society of American Foresters.

The encroachment of urban development into natural areas has a variety of effects on forests, which present a multitude of challenges to natural resource managers. Ecological impacts include difficulties of managing fire in close proximity to development, increasing incidents of invasive species, and rising rates of air and water pollution. However, urban development can also bring significant shifts in the type of people who visit adjacent national forests and what they do in those forests. The direct impacts from these diverse uses result in a multitude of hard-to-manage societal issues for managers of wildland-interface forests (Dwyer and Chavez 2005).

Increased crime, intense recreation pressures, and higher tendencies for visitor conflicts are some of the major issues natural resource professionals must face when managing land adjacent to urban development. Although tackling these problems through law enforcement might seem like the most straightforward solution, natural resource agencies often do not have the staffing to totally rely on law enforcement officers (Tynon and Chavez 2006) and law enforcement might not be the most appropriate solution for impacts not considered criminal (e.g., recreation crowding; Stein 2005).

The Ocala National Forest (ONF) in north central Florida is the oldest national forest east of the Mississippi River and is undergoing intense use pressure from rapidly developing urban areas on its boundaries and intense recreation throughout its 388,000 ac. Forest managers spent decades trying to resolve specific problems (e.g., squatters living in the forest, illegal motorized use, methamphetamine labs, to mention a few), but they had not made an attempt to holistically look at these issues as they related to the forest, itself, and stakeholders who live outside the forest borders.

The overall goal of this article is to de-
describe how a national forest in the wildland-urban interface conducted an introspective analysis to identify a forestwide strategy that would integrate law enforcement, public relations, visitor management, and administrative decisionmaking to address perceived crises on the forest as well as holistically improve the public's perception of the forest. As opposed to reporting a formal research project, this article is designed to show natural resource managers a positive example of how a national forest, facing potentially overwhelming problems, can move through a focused process to develop short- and long-term solutions. Specifically, this article describes (1) the situation on the ONF, showing what motivated managers to conduct the process, (2) the workshop that drove the process, focusing on how managers efficiently and effectively gathered information to identify practical solutions, and (3) progress made after the workshop.

The ONF Situation

In 2006, the spotlight shown on the ONF's dark side. Two college students camping in a popular wilderness area were randomly murdered. The event mobilized the National Forests in Florida (NFF), which administers the ONF, district personnel, and local and state law enforcement agencies. Within weeks the perpetrator was arrested and has since been convicted, but the tragic event only strengthened the perception throughout Florida that the ONF was becoming better known for its crime and disorder than for its natural and recreational resources.

North central Florida's population is rapidly expanding in both Orlando's suburbs to the south of the ONF and in the rural communities that surround, and even lie within, the ONF's boundaries (Figure 1).

The ONF is not unique. In fact, the US Forest Service projects development will be a major cause of an increased net loss of 20 million ac of all US forests between 2000 and 2050 (US Forest Service 2007), which means urban development and its associated impacts will increasingly impact all forests in the United States.

Day laborers, transients, and homeless people used the ONF as a temporary (and sometimes long-term) residence. Drug problems were also increasing within the forest because many of the homeless people living in the forest abused alcohol and drugs. There were also methamphetamine labs producing drugs to be sold in urban areas. The drug problem was resulting in minor and, sometimes, major crimes throughout the forest.

Motorized recreation use (i.e., all terrain vehicles, 4 × 4 trucks, and off-road motorcycles) is a fast-growing sport in the United States (Cordell et al. 2005), but areas to ride are decreasing—especially in the eastern United States. Off-highway vehicle (OHV) users found unrestricted freedom in the ONF, and they were mostly correct. Like many national forests, the ONF did not have a plan to manage OHV use, and it did not have the ability to enforce many existing regulations relating to OHV riding. Homeless populations, crime, and motorized recreation use conveyed a perception that the ONF was a "lawless" environment, and, although forest recreation demand was growing (Florida Department of Environmental Protection 2000), many people avoided recreation areas because of safety concerns.

In 2006, the ONF had two law enforcement officers (LEO) enforcing forest regulations. These LEOs fought a losing battle. A one-fix solution that relied solely on law enforcement was not realistic. In 2005, approximately 800 crimes were reported in the forest, and this does not include traffic violations (e.g., speeding) and unreported violations associated with dumping and unrestricted motorized recreation use.

Although US Forest Service managers realized that crime was a problem, they understood the perception of the ONF as the "wild wild west" (WESH.com 2006) was becoming the overriding issue in many aspects of their management. Not only was this perception inviting crime, it was also deterring families from taking part in the multitude of quality recreation opportunities throughout the forest. Past research has shown that LEOs in the US Forest Service strongly support a diversity of tactics that not only address the enforcement of major crime but focus on visibility, collaboration, and public perception. According to a study by Chavez and Tynon (2006, p. 5), "Almost half of the LEOs described special policing programs that worked well. These included visible and concentrated patrols, cooperation with other law enforcement agencies, public education, public contact, and community policing and involvement. They measured their success by the positive perceptions held, or the lack of complaints made by the public, NFS employees, and their cooperators, and by a reduction in violations." This approach focuses on tangible solutions to specific problems and communicating those solutions to the public to promote a positive image. ONF managers recognized that this was a strategy they wanted to use, but identifying a pathway to help them work on tangible solutions that addressed many of ONF's specific problems and simultaneously improved the overall ONF image was seen as a major barrier. Hence, US Forest Service personnel decided to focus their attention, efforts, and creativ-
Director of Law Enforcement in the Southern Regions, Region 8
Recreation and planning staff, Arapaho-Roosevelt Region 2
Retired forest supervisor, National Forests in North Carolina
Forest archaeologist, ONF
Public Affairs Officer, NFF
Administration Specialist of Minerals, Engineering, Recreation, and Lands, NFF
District Ranger, ONF
Forestry technician, ONF
District Ranger, Mesa Ranger District, Tonto National Forest, Region 3
Minerals, Engineering, Recreation, and Lands Staff Officer, NFF
Patrol Captain, NFF
Associate Professor, School of Forest Resources and Conservation, University of Florida (moderator)

ONF, Ocala National Forest; NFF, National Forests in Florida.

ity on the societal issues plaguing the ONF through a 4-day workshop.

A Holistic Approach to a Tough Issue

To accomplish the gradual reshaping of the ONF, a unique approach was designed to develop innovative and collaborative solutions within the constraints of a complicated and bureaucratic agency. Eleven US Forest Service employees, who included ONF personnel, NFF administrative leaders from Tallahassee, Florida, and staff from the US Forest Service Region 8 and other national forests that border urban areas (Table 1), attended the workshop June 19–22, 2006 in Gainesville, Florida. A moderator from the University of Florida helped organize and lead the workshop and participated in most of the workshop activities.

The workshop was organized to address three general themes: (1) information gathering and learning from the perspective of the US Forest Service, (2) learning from and building relationships with ONF stakeholders, and (3) creating solutions. The 4-day workshop was designed to collect data and to quickly turn that new information into action-oriented items.

US Forest Service Information Gathering

The 1st day of the workshop was designed for participants to understand the purpose of the workshop, become familiar with each other, and better understand the issues facing the ONF. The NFF supervisor first highlighted the importance of the meeting and the need to work on effective solutions. The ONF’s district ranger also provided more details on the problems facing the forest and reinforced his commitment to pursue diverse solutions to solve identified problems. Finally, LEOs, who had direct experience with many of ONF’s societal problems, discussed these problems and the challenges they face on a daily basis.

The presentations were designed to elicit discussion from all participants. This allowed for quick group cohesion. Participants were able to directly communicate with US Forest Service personnel who work at different layers (i.e., district, forest, and region) of the agency and understand why specific decisions are made at each layer. Participants from outside Florida brought unique perspectives from their forests and identified areas of commonality with ONF. They also pointed out issues and barriers unique to the ONF.

Stakeholder Interview Process

After thorough discussions among US Forest Service staff on the existing situation in the Ocala and how identified issues related to surrounding stakeholders, participants shifted their attention to understanding how to work with stakeholders. An expert in environmental education and communications from the University of Florida spoke to participants about the best way to conduct stakeholder interviews. She then used a qualitative process to help workshop participants identify the most important questions they wanted to ask stakeholders and how to systematically collect stakeholders’ responses (Table 2).

NFF and ONF personnel identified 12 stakeholders based on their role in working with known problems on the forest (e.g., working with substance abuse, enforcing crime, and communicating with OHV riders). Representatives from organizations such as social service agencies, county sheriff departments, volunteer groups, and concessionaires, as well as, individuals who are active volunteers or serve as community leaders, participated in the interviews. In most cases, a single person was asked to serve as the representative from a stakeholder group, but, occasionally, more than one person participated in the interview. Questions focused on stakeholders’ existing relationship with the ONF, perceived concerns, and desired solutions. Four teams of three workshop participants visited three stakeholders each for approximately 60–90 minutes at the stakeholders’ residence or business.

A person on each team was assigned to take notes. On completion of the interviews, all notes were typed by a US Forest Service staff person. On the 3rd day, workshop participants organized responses into categories, so they could identify the most often mentioned problems and solutions and develop relevant management actions (Tables 3 and 4).
Table 3. Issues identified by Ocala National Forest stakeholders.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Frequency of responses</th>
<th>Percent of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety and crimes</td>
<td>19</td>
<td>31.1%</td>
</tr>
<tr>
<td>Resource management and visitor use</td>
<td>13</td>
<td>14.4%</td>
</tr>
<tr>
<td>Motorized vehicle</td>
<td>11</td>
<td>12.2%</td>
</tr>
<tr>
<td>Homeless and squatters</td>
<td>10</td>
<td>11.1%</td>
</tr>
<tr>
<td>Dumping and garbage</td>
<td>7</td>
<td>7.8%</td>
</tr>
<tr>
<td>Wildlife</td>
<td>4</td>
<td>4.4%</td>
</tr>
<tr>
<td>Crowding</td>
<td>4</td>
<td>4.4%</td>
</tr>
<tr>
<td>Communication/education</td>
<td>2</td>
<td>2.2%</td>
</tr>
<tr>
<td>Other</td>
<td>11</td>
<td>12.2%</td>
</tr>
<tr>
<td>Total</td>
<td>90*</td>
<td>100%</td>
</tr>
</tbody>
</table>

*The total number of responses is greater than the number of respondents because respondents often made several specific comments that were placed under one category.

Issues and Problems

The ONF stakeholder interviews provided a wealth of information. Their perspectives provided US Forest Service personnel with a new understanding on how local residents think about the ONF. Almost one third of the comments described safety and crime on the forest (31% of responses; Table 3). Comments on general resource and visitor use were the second most often mentioned (14%). Three specific issues facing the forest (i.e., motorized recreation, homeless/squatters, and dumping/garbage) received relatively large numbers of comments (about 8-16%). Many participants addressed specific issues that were difficult to categorize under specific headings, so these were placed in the "other" category (12%).

These results not only enforced the US Forest Service's perception of ONF's problems, but they also helped managers to understand the context and seriousness in which stakeholders think about the forest. For example, workshop participants were surprised at the detail in which the social service agencies understood the ONF (e.g., social service personnel talked about using specific forest roads when attempting to help squatters). The interviews also reframed the discussion of many issues from "enforcement" to "safety." Finally, stakeholders raised specific issues (e.g., dumping) that were not heavily discussed before the interviews.

The interviews identified four specific issues, which focused the discussion in the second part of the workshop:

- Reduce illegal activities such as squatting, methamphetamine labs, and violent crimes.
- Improve safety of visitors, employees, and other forest staff.
- Reduce motorized vehicle damage.
- Reduce dumping.

Solutions

To begin to identify solutions, participants again turned to the stakeholder interviews (Table 4). Management and planning and law enforcement were mentioned the most often (just over 50% of responses). Stakeholders recognized that the US Forest Service could not solve the ONF problems alone, so they also suggested collaboration (13.6%), education (7.4%), and communication (7.4%). These statements provided workshop participants a three-dimensional framework to describe a holistic management strategy: (1) law enforcement, (2) resource management, and (3) communication and education.

This strategy took the approach that law enforcement needed to have a larger presence in the forest and focus on the illegal activity that affected the overall perception of the forest (e.g., dumping and illegal OHV riding). However, resource managers and communication specialists would work with law enforcement and enact their own initiatives (e.g., actively engage the media to report progress made in the forest, develop and promote an OHV trail system, and modify length-of-stay regulations). Overall, this strategy attacked the problem from a twofold process: directly address the disorder perceived on the forest through increased law enforcement and management, while also working with local stakeholders and the media.

Progress Made after the Workshop

After the meeting NFF administrators and managers began implementing many of the action items and identified new approaches to solve many of the identified problems.

Law Enforcement and Visitor Regulations

After the workshop, the ONF received three new LEO positions. Also, law enforcement personnel began integrating traditionally separate enforcement efforts (forest LEOs with county police) into an overall strategy to better manage forest visitor use. Administrators increased fines for resource damage and other illegal activities on the ONF. Administrators changed length-of-stay regulations. Previously, campers were required to vacate their campsite after 14 days and only needed to move 1 mile before they could set up camp again. New regulations required campers to vacate the national forest for 16 days before returning. These regulation changes were at the district level and directly addressed common illegal activities occurring throughout the forest (e.g., vandalism and squatting). They also indirectly addressed illegal activities occurring on the forest such as establishing methamphetamine labs. LEOs now had clearer justification for removing people from the forest.

Becoming better acquainted with social service organizations in ONF's two gateway communities was a direct result of the 4-day workshop. ONF personnel are more likely to refer individuals in need of social services to agencies, when, in the past, they waited for people to break laws or regulations before interacting with them. ONF personnel better understand that simply removing squatters from the forest only shifts the problem to other jurisdictions. Without opportunities to improve their lives, these individuals simply return to the ONF.

OHVs

At the time of the workshop, ONF managers were completing a forestwide trail system. Not only have managers collaborated with local user groups and recruited volunteers to aid in the management and enforcement of OHV recreation on the forest, they are providing maps, signs, trail markers, and even billboards to communicate the new trail system to users. Improved communication and collaboration combined with increased enforcement and higher fines for illegal riding will potentially reduce the threat of unmanaged recreation on the forest.
Dumping

Dumping was repeatedly mentioned during the stakeholder meetings and US Forest Service staff participating in the workshop. It is a common problem on both public and private natural areas that are adjacent to residential development and are easily accessible; however, solutions to control dumping are difficult to identify. All participants recognized the problem is best attacked on a variety of fronts involving heavy participation from local residents. In June 2007, working with ONF personnel, local residents organized the first major forest cleanup. Over 400 people took part in the event and collected about 340,000 lb of garbage. Local residents have conducted similar cleanups since 2007 and more are planned.

Communications

Two members of the news media spoke to participants during the workshop and said they were willing to report positive stories about public lands, but they needed land managers to help identify stories. This came as a surprise to most meeting participants, who thought the media would only report negative stories. Currently, NFF public relations personnel, Ocala managers, and LEOs are developing strong working relationships with the local media.

After the infamous double murder, news stories focused on Ocala's dark underbelly. Newspaper headlines read, “Into the dark woods” (Arndorfer 2006) and “Students still iffy on safety of Ocala National Forest” (Riffel 2006). However, after relationships with media developed and were cultivated, reports such as “Badlands of Ocala National Forest getting cleaned up” (WESH.com 2006) were not only reported by a major television station, but the reporter regularly communicates with ONF managers looking for stories about forest improvements. To assist in this communication, the ONF received its own public relations staff person in July 2007.

Conclusions and Lessons Learned

The process used on the ONF needed to be context specific to solve problems specific to the forest. However, three general themes proved helpful for any public natural area working through complex societal issues: First, a mechanism that helps personnel communicate across administration layers breaks down barriers and opens up possibilities to identify realistic situations. Specifically, allowing US Forest Service regional administrators to directly communicate with onsite LEOs and managers allowed for each agency layer to better understand the constraints the other layer faces. They could then work together to move past these constraints. All public land-management agencies have multiple layers of administration and management, and it is often difficult to communicate across these layers.

Second, reaching out to new and existing stakeholders helps managers think outside their comfort zone to identify new and innovative ways to solve difficult problems. Research consistently shows natural resource management can be more effective and efficient through improved collaboration with stakeholders (Wondolleck and Yaffee 2000). Although this process was not designed to fully engage all stakeholders in decisionmaking and management, it did open up innovative ideas and begin to develop new, working relationships with unique partners.

Third, working with a sense of urgency forces decisionmakers to think about immediate and practical solutions, which could be implemented soon after the workshop. It is often easy for managers to focus their efforts on traditional elements of their job (e.g., forest operations, wildlife habitat, and ecosystem restoration) and delay the more uncomfortable problems related to human use. For example, many managers would rather focus their energies on conducting a prescribed burn rather than identifying how to control recreation crowding at a lakeside beach. When these societal issues are highlighted and managers are forced to identify immediate solutions, these problems can be addressed and rectified in a timely manner.

The process does suffer from two major shortcomings. First, this is not truly a collaborative process. Although stakeholders play an important role in the process, agency decisionmakers used the stakeholder interviews as a method to get relevant information quickly and then make decisions from within the agency. However, the process sets the stage for future collaborative planning and management by strengthening existing partnerships (e.g., improving communication between US Forest Service LEOs and the county police) and creating new partnerships (e.g., proactive planning with local social service agencies). Second, the workshop will only result in effective decisions and management actions if all players buy into the process. Upper-level administrators must be open to unique and sometimes uncomfortable solutions (e.g., working with the media to highlight problems on the forest). They must also understand that many solutions will require increased funding. On-the-ground staff must also buy into the process. As discussed earlier, many natural resource managers are not trained to work with societal issues, but they are the people who are charged to enact the solutions. Additional training in working with forest visitors as well as strong leadership from their supervisors might be needed to ensure identified management strategies are conducted well.

Americans strongly value their national forests, but they want to feel safe and secure in those forests (Shields et al. 2002). The ONF has a long way to go to repair its bruised image. However, an extremely tragic event was taken seriously and served as an incentive to think outside the box. Within a year of the workshop, the ONF created rules and regulations that targeted identified problems (e.g., long-term squatters living in the forest), increased enforcement of new

Table 4. Solutions identified by Ocala National Forest stakeholders.

<table>
<thead>
<tr>
<th>Solution</th>
<th>Frequency of responses</th>
<th>Percent of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management and planning</td>
<td>21</td>
<td>25.9%</td>
</tr>
<tr>
<td>Law and enforcement</td>
<td>20</td>
<td>24.7%</td>
</tr>
<tr>
<td>Cooperation and coordinating</td>
<td>11</td>
<td>13.6%</td>
</tr>
<tr>
<td>Education</td>
<td>6</td>
<td>7.4%</td>
</tr>
<tr>
<td>Communication</td>
<td>6</td>
<td>7.4%</td>
</tr>
<tr>
<td>Work with homeless</td>
<td>5</td>
<td>6.2%</td>
</tr>
<tr>
<td>Fundraising</td>
<td>5</td>
<td>6.2%</td>
</tr>
<tr>
<td>Other specific suggestions</td>
<td>7</td>
<td>8.6%</td>
</tr>
<tr>
<td>Total</td>
<td>81*</td>
<td>100%</td>
</tr>
</tbody>
</table>

*The total number of responses is greater than the number of respondents because respondents often made several specific comments that were placed under one category.
and existing rules, and began building new and innovative partnerships with stakeholders. Since the workshop, the ONF has experienced positive changes. For example, the number of squatters residing in the ONF has been reduced by 75%, numerous arrests were made and specific individuals were banned from the forest, county crime reports dropped, and resource damage caused by motorized recreation vehicles has also significantly decreased.

At the beginning of the 2006 workshop, the NFF supervisor charged workshop participants and ONF managers with restoring the forest to a place that is welcome and safe for all visitors. The ONF continues to struggle with many societal issues, but forest personnel are proud of their accomplishments. As many forests throughout the United States struggle with increased social pressure, the ONF has shown that through innovative and deliberate management, positive change can occur.

Literature Cited

ARNDORFER, B. 2006. Into the dark woods. Gainesville Sun January 15, sec. 1A, 4A–6A.


