PIVOT: VISUALLY CONNECTING COMMUNITIES WITH LOCAL ISSUES, MANAGEMENT STRATEGIES, AND THE DATA TO MONITOR PROGRESS

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INTRODUCTION

The Performance Indicators Visualization and Outreach Tool (PIVOT) is a framework for incorporating community-based outreach and performance reporting into watershed planning and management processes. The general concept for PIVOT is to integrate Web-based graphics, maps, management and monitoring data, and text into a simple format appropriate for a broad range of community members. It is designed to help track performance in meeting planning and management goals and to increase community understanding and support for management and restoration projects.

The NOAA Coastal Services Center developed a pilot PIVOT for Tillamook County, Oregon, in cooperation with the Tillamook County Performance Partnership. The Performance Partnership is the implementing body for a community-based, watershed-level Comprehensive Conservation and Management Plan developed through the Tillamook Bay National Estuary Project. PIVOT is helping the partnership demonstrate its progress to the community. By focusing on performance in broad management areas, PIVOT helps bring a complex sustainable management plan to life using interactive graphics and visual representations. This year, the NOAA Coastal Services Center is working with the National Estuary Program (NEP) headquarters to develop a NEP headquarters PIVOT module and is beginning the development of a more broadly applicable PIVOT tutorial.

PIVOT COMPONENTS

PIVOT is Web-based. With the Internet available to almost everyone, there is ever-increasing demand for up-to-date information via the World Wide Web. With a Web-friendly framework that balances graphics, maps, and text, the tool encourages dissemination of visual and textual information at a level appropriate for a broad range of users. The framework is designed to complement existing Web sites, allowing watershed management programs to illustrate progress in implementing management actions and monitoring results. The goal of PIVOT is not merely to create a Web-enabled version of a complex and detailed management plan, but to capture the essence of the plan while focusing on implementation and performance outcomes.

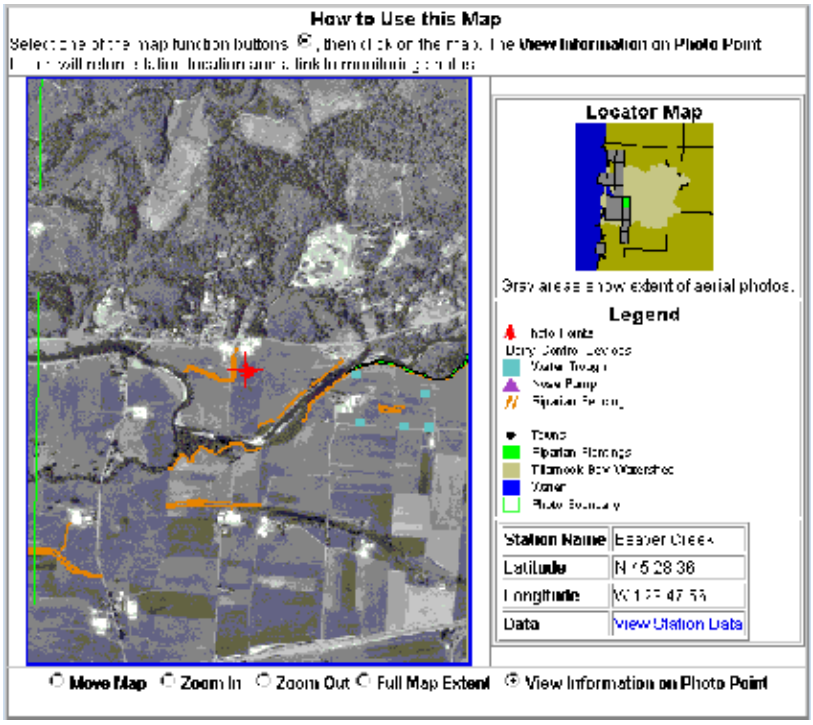

Figure 1. Sample map from PIVOT's interactive mapping section. This map allows Tillamook County users to explore the spatial extent of riparian fences installed as part of a management action to control livestock access to streams. Users may access time-sequence photos taken at photo point monitoring stations, which document improvement in streamside conditions at fenced sites.

PIVOT is map-centric. The incorporation of geographic information system (GIS) data into static or interactive maps within the PIVOT framework is central to the tool's concept. Putting information on a map visually conveys the proximity, distribution, and relationships of mapped components to one another. PIVOT's spatial components visually and logically link watershed issues with the management actions designed to address them and with the monitoring data that will ultimately determine success. This geographic base can also demonstrate data gaps and aid in planning for data acquisition. The process of creating a PIVOT framework compels careful consideration of existing or needed data that will best capture and convey the local resource management story. The interactive mapping section of the PIVOT prototype for Tillamook County guides the public through the use of a simplified Internet mapping application using GIS data to demonstrate specific management issues.

PIVOT provides an accessible format, or framework, for communicating the pre-established goals and indicators of comprehensive management programs. Once management plans move from planning to implementation, the questions shift. How effective will management actions be in restoring healthy conditions to the watershed or community? How will the community know? Structured around three basic questions, the PIVOT framework provides a one-stop resource that gets to the heart of a community's questions about plans designed to protect and sustain local resources. What's the problem? What's being done about it? How can we map our progress? Using interactive graphics and maps of management data, the tool focuses on education and visualization of a plan's performance.

Outreach and performance reporting is an essential and increasingly mandated component of resource management programs. The Government Performance and Results Act of 1993 (GPRA) requires federal programs to report on the outcomes of their efforts, and outcome-based planning and management are common outside of the federal sector as well. Performance indicators are agreed-upon measures for drawing conclusions about the effectiveness of actions. They are pieces of information that help programs or communities understand where they are, which way they are moving, and how far they are from where they want to be (Hart 2000). Performance indicators may be administrative, social/community, or environmental, helping to track progress in programs, shifts in community behaviors or thinking, or changes in the environment. All can be effective yardsticks for measuring the success of a watershed management program.

Performance indicators can help programs ascertain the following:

- administrative progress— if prescribed management actions are being carried out as planned;
- community awareness—if community choices or behaviors are changing in response to increased knowledge of watershed issues;
- preliminary environmental response—whether desired positive changes in the watershed are beginning to be accomplished, or initially serve to illustrate what data will be used to measure long-term trends;
- adaptive strategies—where changes or additions to prescribed actions may need to be considered.

Clearly, environmental indicators require long-term monitoring programs to reveal trends that will not be initially apparent. Even without conclusive environmental trend data, a spatial representation of preliminary results can be a powerful educational tool for showing the physical relationship of factors contributing to problems, management actions designed to address those problems, and the monitoring and tracking data that will help measure performance through time.

With the PIVOT prototype in Tillamook County, users can see individual projects in the context of local, comprehensive management issues and interpret project effectiveness for themselves. This pilot incorporates interactive spatial components that allow users to

view selected monitored indicators of success. In combination, the maps, graphics, and text help users track and measure the effectiveness of local management activities.

FURTHER DEVELOPMENT

This year, the NOAA Coastal Services Center is working with the National Estuary Program (NEP) headquarters to develop a national level PIVOT module. This module will help report on the collective progress of NEP sites towards achieving the national program's Government Performance and Results Act (GPRA) habitat goals. At the national level, PIVOT offers an effective means of showcasing progress toward national habitat GPRA goals, allowing a cumulative, or national, perspective of local progress toward national goals. At the local NEP level, in addition to providing strong community outreach, PIVOT could offer ease of implementation and a consistent framework for providing local community education as well as reporting to NEP headquarters.

The PIVOT framework is applicable to a broad range of management initiatives. Over and above mandates, performance reporting is an effective tool for garnering or maintaining public buy-in to management actions. According to the NOAA Coastal Services Center's 1999 customer survey, 85 percent of surveyed coastal resource managers believe their programs would benefit from greater public support. In response, the Center also is working to develop a more broadly applicable PIVOT tutorial. The tutorial will be designed to provide tools to enable individual NEPs, and other users, to build their own PIVOT frameworks for more effectively communicating local priority issues and management accountability and performance.

CONCLUSION

The transition from developing to implementing a comprehensive management plan requires a different approach for communicating information to the public. PIVOT provides a visual framework valuable for reporting outcomes to local audiences and maintaining that support over the long term. Its geographic focus allows users to make visual, spatial connections between local issues, the actions designed to address them, and the monitoring data indicative of the actions' effectiveness.

Public outreach and visualization of data can play an important role in maintaining and garnering support for management plans. By using monitoring data spatially referenced to management plans in a visually appealing way, managers can demonstrate to community members areas of success, or where adjustments may need to be made in plan actions. In this way, PIVOT encourages the continued participatory nature of the comprehensive watershed planning, allowing monitoring data to generate support for adaptive management responses.

REFERENCES

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