

# Using the Internet to Build a Conservation Network

The Hawaiian Ecosystems at Risk Project

By Jason Van Driesche

THE MAUI INVASIVE SPECIES CONTROL TEAM is in high gear today. A local resident phoned in a report earlier this week of a miconia sighting upslope from his house, and it turned out to be quite a large infestation. It took the crew all day to cut down the trees, treat the stumps, and haul the fruits out in heavy-duty plastic bags. Burning the miconia fruits and the millions of seeds they contain can be left for tomorrow, but there's still work to be done before the day is over. The team leader will enter the location of the infestation, the number of trees cut, and the treatment method used into the ever-growing Maui Invasive Species Control database, an alien species tracking system designed by the Hawaiian Ecosystems at Risk project. And with each passing week, the scope of what the team is up against—and what its members have accomplished—takes clearer form in the maps they create and the records they keep.

THE LANDSCAPING CONTRACTOR for a new resort out on East Maui's leeward side has told his crew to be on the lookout for—of all things—frogs. Maui is being invaded by the Caribbean coqui, a small tree frog whose piercing calls can reach 100 decibels. The contractor learned about these pests at the last meeting of the Maui Association of Landscape Professionals where a speaker from the Hawaiian Ecosystems at Risk project

explained that the frogs are being spread from infected nurseries to new sites on nursery stock and that tourists are actively avoiding hotels with infestations of these ear-splitting frogs. No contractor wants to be seen as responsible for bringing such disaster on a major client, and as a consequence, concern about invasive species is growing among association members.

Things like this would never have happened in Hawai'i a decade or two ago. Until sometime in the 1990s, serious concern about invasive species—even in Hawai'i—was relegated to academic conferences and park offices. More recently, however, invasive species have become a household concern. The reasons for this are many, but the Hawaiian Ecosystems at Risk project (HEAR) is high on the list. The HEAR information sharing system uses a set of rather ordinary computer technologies—a website, a series of databases, and the like. What has made the project so remarkably effective is not the technologies themselves, however, but rather the personal relationships that underlie those technologies. There now exists in Hawai'i a network of people willing to make the fight against invasive species an integral part of their daily lives. This case study analyzes the amalgam of relationships

and technology that has made HEAR an effective mechanism for promoting such an aggressive, proactive, and far-thinking approach to invasive species control.

### **An Electronic Extension of a Human Network**

From the start, HEAR's purpose has been to standardize and expand the informal information-sharing network that has long existed among a small set of leading conservationists on the islands. The project was initially aimed at involving a broader range of conservation professionals in core invasive species work. However, HEAR has since expanded its scope—both electronic and person-to-person—to include information and outreach directed not only at researchers and land managers but also at lawmakers, opinion leaders, landscape professionals, and the general public, thereby involving a much broader—and much more influential—cross-section of Hawaii's decision-makers.

The idea for HEAR began with just a few individuals. Lloyd Loope (a U.S. Geological Service researcher based at Haleakala National Park) first proposed the idea at a 1994 meeting on ecosystem-wide conservation initiatives sponsored by the U.S. Department of Interior. Interior staff were initially unimpressed by the idea. Why fund a database, they argued, when the situation so clearly called for *action*? “They wanted something much more ‘hands on’ that was going to ‘make a difference,’” explained Cliff Smith, a founder of HEAR who was then with the Botany Department at the University of Hawai‘i-Manoa. “It was only after considerable discussion that they conceded to the point that something along the lines of HEAR was what would do the most good for preservation in the Islands.”

The Department of Interior agreed to fund the project for long enough to get it off the ground. A committee of leading conservationists that included Loope, Smith, and Jim Jacobi (a USGS scientist based at Hawai‘i Volcanoes National Park) oversaw the rather arduous process of coming to consensus on priorities, standards, and methodologies for data management. “There was a lot of wrangling over scientific credibility [and] consensus making that led us down blind alleys,” explained Smith. “Fortunately, there has been such an enormous amount of goodwill that we have sort of stumbled onto the right way of doing [things].” Philip Thomas came on board as HEAR coordinator a few years later, and under his guidance, the project took off.

Although HEAR never would have come into being without this core group, the project derives significant strength from the fact that it is now much bigger than the people who run it. Because HEAR mapped itself onto the existing conservation network and then helped that network to grow, it was able to take full advantage of the well developed sense of community that exists among conservation professionals on the islands.

Philip Thomas attributes this sense of community to what he calls the “ecological rationality” of a legal jurisdiction that is also a clearly delineated ecosystem. Nearly 2,000 miles from the nearest land mass, the island chain—and therefore the state itself—is about as clearly defined as an ecosystem can be. Even at the county level, administrative lines make ecological sense; all the major islands are their own counties, and the smaller islands are grouped in counties with nearby islands. The unusual degree of harmony between nature and culture in Hawai‘i has many effects on conservation, but one of the most far-reaching is the way it pulls people together around goals that are not only

ecologically sound but also politically feasible. This cohesiveness is further underscored by the sense of crisis that pervades all efforts to save what remains of Hawaii's native ecological heritage. More than two-thirds of the land area of the islands is completely dominated by non-native species, including many areas with no significant present-day human manipulation. In this context, preventing new introductions and managing current invasions effectively is so urgent a task that it has galvanized the conservation community like no other issue can.

### **A Hub in the Hawaiian Conservation Community**

HEAR is by no means the only organization working on invasive species issues in Hawai'i. What is unique about its work is not so much what it does as what it allows and inspires other organizations and agencies to get done. HEAR focuses on facilitating connections and building a sense of common purpose among conservation professionals and between conservationists and the larger community, both online and on the ground.

Unfortunately, HEAR's website is put together on the principle of "get it up as fast as possible and move on to the next thing," and the long list of pages and links and databases and resources on the homepage is only minimally organized. The chaotic organization of the site is definitely a downside; as one regular user of the site put it, "If you don't know where you're going, you probably won't get there on HEAR." This organizational structure restricts its use largely to people who are already familiar with some portion of the invasive species problem, and who simply want to learn more on a specific issue. Those who know very little might have trouble figuring out where to go.

What's more, a significant portion of the data that the project collects and organizes is not available online. Whereas one of HEAR's central goals has long been to bring as broad an array of data sets as possible under the same organizational scheme, its strategy has been to maintain most of its databases offline and to use the website more as a hub for bringing information together than as a point of distribu-

tion. (The reason for keeping the databases offline is to control access to sensitive information such as locations of rare plant populations.) These constantly growing databases include a harmful nonindigenous species database, a species-of-concern tracking database, a cultivated plants database, an alien plant control and herbicide use log, and an alien and native forest bird-tracking database, among others. Additionally, Thomas has begun to develop systems that create bridges between already existing but previously incompatible data sets. This information is available to conservation professionals on demand, and the fact that it is all housed in one place makes information gathering more straightforward than it otherwise would be.

HEAR offers a variety of links to other websites that from a user's perspective look like a typical set of links. However, the project provides many of the sites that are linked to HEAR's homepage with much more than a bookmark. The websites of a number of Hawai'i-based invasive species organizations (including all three island-specific Invasive Species Committees or ISCs) are hosted and maintained free of charge by HEAR staff. This kind of relationship—and the regular personal contact that it requires—contributes to a sense of cohesion and common purpose among the hosted organizations that goes well beyond the "virtual community" so often touted as a benefit of Internet-based networks.

HEAR complements its online offerings with a series of on-the-ground projects that share the website's central purpose of supporting and extending the existing conservation community. For example, HEAR helps the ISCs develop information management systems to track the species, the precise location, and the method used for every control effort they carry out. This allows all the committees to present their work as a united front—a tremendous advantage when they have to go to state or federal agencies for support.

HEAR also has put a good deal of effort into reaching out to key "nontraditional" constituencies and encouraging them to get involved with invasive species issues. For example, HEAR coordinator Philip Thomas is chair of the Maui County Arborist Advisory Commit-

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tee and is on the board of the Maui Association of Landscape Professionals (MALP), a group that represents about a third of the landscaping contractors on the island. He has given a number of presentations at MALP meetings on the impacts of invasive plants used in the trade and on native or noninvasive alternatives. “Philip has opened us up to the invasive species issue,” said Elaine Malina, president of MALP. “It’s going to be an uphill battle, but people are opening their minds to different things.”

HEAR’s role in these two organizations is part of a larger effort to develop a proactive approach to invasions that stops them before they happen. This effort was given a tremendous boost late in 2001, when HEAR hosted a visit from Australian “weed profiling” expert Rod Randall. Following his visit, HEAR decided to send Thomas to Australia to help Randall transform his nearly one million invasive species records into a properly formatted relational database and make the information available online and usable internationally (a project slated for completion sometime late in 2002).

Unlike most Internet-based information systems, HEAR goes beyond providing information to a passive audience to involving the entire conservation community in an active, multidirectional information-sharing effort. The net result is a cultural climate that puts

invasive species work at the fore in the conservation community and beyond. As Shannon McElvaney (director of the Hawai‘i Natural Heritage Program, a HEAR partner organization) put it, “HEAR is—by sheer will—the part of the effort that keeps invasives in everyone’s face.”

### **From Crisis Management to Institution-Building**

We often speak in terms of a “war” on weeds, but the depth and breadth of the invasive species crisis in Hawai‘i make it clear that war is no longer a useful metaphor. The task is now to go beyond crisis management to the creation of new institutions that acknowledge and work with the reality of an invaded world. In an age defined and shaped by knowledge and its management, developing systems for sharing invasive species information among the people who use it will be a cornerstone of successful institution-building.

But this brings us right around to the biggest question of all for conservationists: Why even bother creating such institutions, especially in a place like Hawai‘i? What’s the use of even trying to save native communities if they just fall apart the moment we turn our backs? David Duffy of the University of Hawai‘i gave as good an answer as any in a talk in the summer of

## Building Blocks of Effective Networks

There is a reason why HEAR emerged in Hawai'i. Isolation and crisis make for a powerful sense of community, and as stated earlier, the HEAR project is essentially an electronic extension of the network that already existed among the state's conservation advocates. But this doesn't mean that the same kind of effort can't succeed elsewhere. Based on the HEAR experience, creating an effective information hub might require:

**A Defined Area.** No other place will have such a neat intersection of political, cultural, and ecological lines as does Hawai'i, so compromises will have to be made. The key is to examine the lines that define existing relationships among the most important people and organizations working on conservation issues in a given region. Do the opinion leaders tend to work for state agencies, or for watershed groups? Remember that the purpose of an information-sharing network is to support and enhance the conservation community *as it exists*—not to replace it with some ideal of how it ought to be.

**A Recognition of Shared Concerns.** Success in a project of this kind is predicated on general agreement regarding the seriousness of the problem. But as the HEAR experience illustrates, a systematic information-sharing effort can only be sustained once there is a true sense of crisis that extends beyond the core conservation community regarding an environmental concern. Therefore, it may be wise to build a network of this kind on the heels of a well coordinated public awareness campaign.

**A Respected Opinion Leader.** Because this kind of project is about much more than posting information on a website, there must be a recognized community leader at the helm. While the leader must be knowledgeable enough to speak intelligently about the issues, it is more important that he/she be articulate, visible, and respected. It may be useful if the project leader is tied to a specific (and well loved) place-based institution, such as a local university, a national park, a regional nature center, or the like.

**A Completely Dedicated Organizer.** Even the best vision will thrive only if it has a nuts-and-bolts champion who dedicates himself/herself completely to pulling together the pieces and keeping them moving. In the context of a project of this kind, that means someone who is thoroughly familiar with database construction and Web authoring, has a decent sense of presentation and design, is at ease communicating with a variety of audiences, and is well-versed in the nature and scope of the conservation issues in the project area.

2001. "We make the effort," he said, "so that our grandchildren will also have the *choice* to make the effort." He then told the story of the small group of fifth-century Irish priests who copied and recopied ancient Greek and Roman manuscripts in a time of great darkness, even though their age had no use for such texts. And now because of them, we have Homer and Virgil.

In the Middle Ages, the institution of the priesthood preserved the genius of the ancients through untold hours spent copying manuscripts by hand. Today, institutions like the Hawaiian Ecosystems At Risk project preserve the genius of nature by assembling and sharing vast databases on the threats to nature's integrity. Then as now, the work goes on with no end in sight—for we never know what our great-grandchildren will want. 🐙

For more information on HEAR, visit their website at [www.hear.org](http://www.hear.org)

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