



# Enhancing the Scientific, Education, and Conservation Impact of FrogWatch USA

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## Introduction and Methods

FrogWatch USA™ is a nationwide, long-term, acoustical survey of breeding frogs and toads (anurans). Participating individuals and families learn about anurans and wetlands in their communities and gather data used to help conserve frogs and supporting habitats.

FrogWatch USA was created in 1998 by the United States Geological Survey (USGS) as a contributory Public Participation in Scientific Research (PPSR) project (Bonney et al. 2009). Volunteers follow a standardized protocol and submit data through an online database or directly to a national office.

In 2009, the Association of Zoos and Aquariums (AZA) assumed management of FrogWatch USA as part of its long-term commitment to amphibian conservation (Grow and Allard 2008). AZA is a nonprofit accrediting organization that envisions a world where, as the result of the work of accredited zoos and aquariums, all people respect, value, and conserve wildlife and wild places (AZA 2010).

## Program Review

The move to AZA commenced with a program review and a series of data analyses (Rees 2011; AZA 2011) intended to serve as a baseline for measuring program growth. Analyses spanning 12 years (1998-2010) of data revealed:

- >10, 500 registered volunteers from 50 states
- >3,500 registered wetland sites with observations (Figure 1)
- >40,000 observations
- ~500 volunteers annually, with the greatest numbers of volunteers in the northeastern United States.

The move to AZA also occasioned the development of a new strategic plan that identified organizational, scientific, and educational goals (McEver et al. 2007; Prysby and Super 2007) for FrogWatch USA.

### Select Goals from AZA's FrogWatch USA Strategic Plan

- Grow participation through chapters hosted through accredited zoos and aquariums and like-minded organizations;
- Improve data quality and increase utility by the professional community; and
- Expand engagement and collaborative opportunities for participants.

## Strategic Partnerships

AZA enlisted partners to support implementation of its strategic plan. NP Training Works developed online training modules, while AZA-accredited zoos and aquariums began hosting local FrogWatch USA chapters. In 2010, AZA became a sub-awardee under a 2010 National Science Foundation Informal Science Education (NSF ISE) grant to the National Geographic Society (NGS).

The grant supports the development of *FieldScope*, a powerful, adaptable, and inexpensive tool providing online database, data entry, and data display and analysis infrastructure for PPSR projects. AZA serves as one of two national testbed partners on this grant. These partnerships also provide opportunities to address challenges identified in other large-scale data collection projects that seek to balance both scientific and public interests (Rees 2011; Bonney et al. 2009; Shirk et al. 2012).

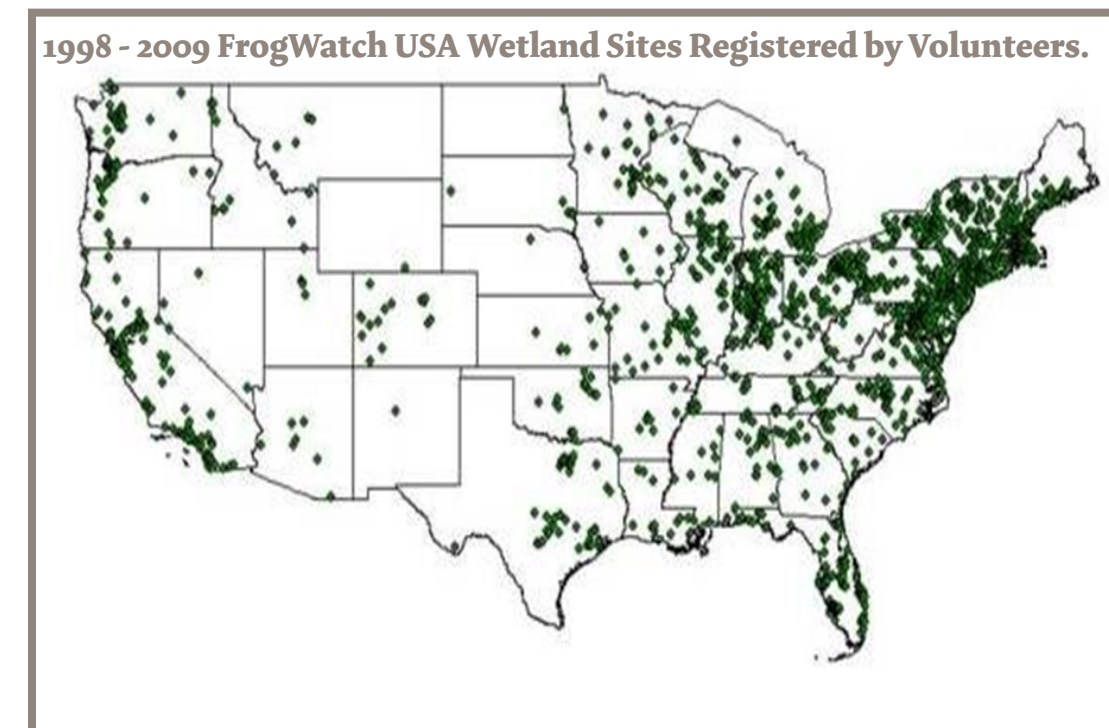


Figure 1. FrogWatch USA wetland sites (1998 - 2009) (Rees 2011).

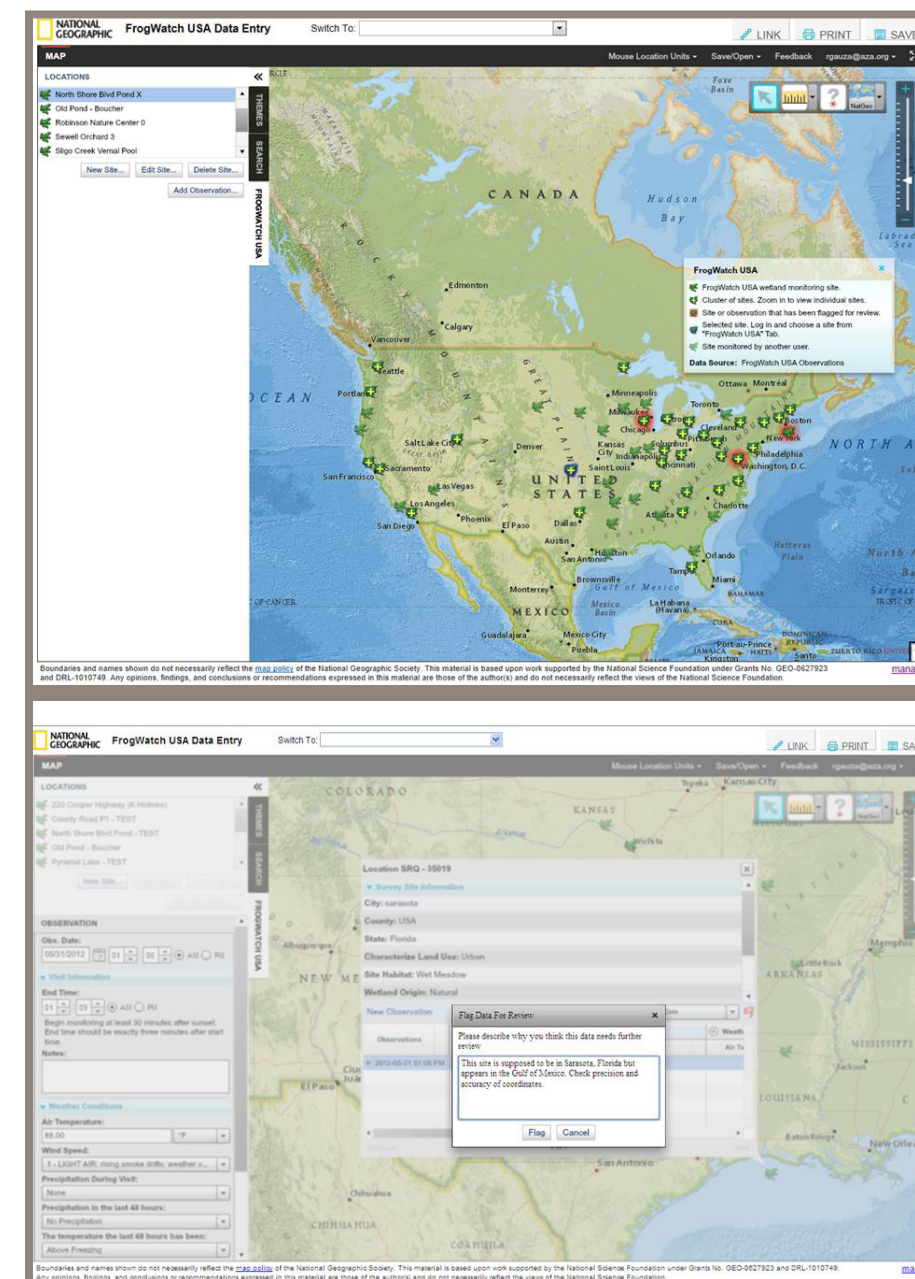


Figure 4. Screen images of the 2012 FrogWatch USA FieldScope online data entry, analysis, and review tool.

## Acknowledgements & Literature Cited

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## Results and Conclusions

Program enhancements to FrogWatch USA were planned to improve the experience of participants, grow the utility of generated data to researchers and land managers, and align with lead organization goals. Recognizing that the most successful PPSR programs provide structured and standardized data collection and quality control mechanisms while offering multiple, dynamic interactions with participants (Rees 2011), AZA began implementing program changes in 2009 with achievements and ongoing efforts summarized below.

### Goal 1: Growth in Participation through Local Chapters

A "train the trainer" approach is used, with at least one coordinator per chapter receiving training at an in-person workshop or via an online module. This knowledgeable community of coordinators in turn supports local volunteers through recruiting and training efforts, by ensuring consistent protocol implementation, and in developing multiple interactions and building relationships with volunteers (Figure 2). Trained volunteers are also granted the opportunity to demonstrate knowledge and skills through a certification assessment process. In the two years since the chapter model was launched, we have seen (Figure 3):

- An increase in trained volunteers, geographic coverage, and program familiarity
- Pride and program ownership by chapter hosts

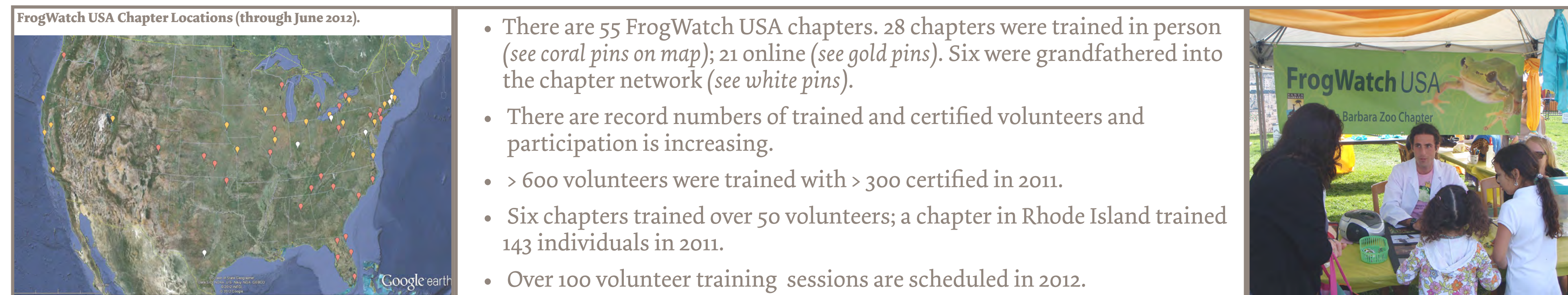


Figure 3. 2011-2012 FrogWatch USA chapter statistics (current to June 2012).

### Goal 2: Improved Data Quality and Increased Utility by the Professional Community

Proactive data management steps are in place (Table 1) and an intensive review of historic data is ongoing. The *FieldScope* tool includes increasing types of pre-screening data filters as well as opportunities for users to review and flag site and observation data (Figure 4).

Chapters and the AZA national office field requests for data by universities, natural history museums, natural resource managers, and state wildlife departments and atlas programs. Upcoming expansion of the *FieldScope* tool will increase the accessibility of data, thereby increasing presence and usability by the professional community.

### Goal 3: Expanded Engagement and Collaborative Opportunities for Participants

The establishment of local chapters has inherently increased the quantity and quality of volunteer interactions. In addition to training opportunities, chapters provide site selection and frog call identification support, offer field trips and social events, and integrate the program with classroom lessons (Figure 5).

All participants, regardless of chapter affiliation have access to online protocols, newsletters, reports, and other resources ([www.aza.org/frogwatch](http://www.aza.org/frogwatch)). On Leap Day 2012, AZA launched a social media presence for FrogWatch USA by establishing Facebook ([www.facebook.com/FrogWatchUSA](http://www.facebook.com/FrogWatchUSA)) and Flickr ([www.flickr.com/photos/frogwatchusa](http://www.flickr.com/photos/frogwatchusa)) identities.

## Conclusions

AZA has expanded the utility of FrogWatch USA through the following program enhancements:

- Establishing a network of chapters to better serve volunteers, resulting in increased recruitment, training, retention, and satisfaction;
- Implementing intensive data review and proactive data screening measures;
- Partnering to develop an interactive online data entry, mapping, and visualization tool.

AZA envisions FrogWatch USA as a collaborative project that:

- Facilitates science learning,
- Generates useful data, and
- Inspires conservation engagement among a community of public and professional participants.

The evolution of FrogWatch USA from a contributory project to a collaborative project provides the momentum for FrogWatch USA to meet AZA organizational goals. Specifically, these changes facilitate multi-institutional conservation education, outreach, and collaborations that activate the public to connect with and take personal action to conserve wildlife and wild habitats.



Figure 2. A trained chapter coordinator at the Chattanooga Zoo trains and empowers volunteers to collect FrogWatch USA data and engage in amphibian conservation.

Table 1. Assessment of PPSR data management program components found in FrogWatch USA. X represents a historic and ongoing component, Δ represents a change added since 2009, and \* is optional. Adapted from Rees 2011.

Collection	
Site selection resources	X
Standard protocol (available online)	X
Standard datasheet	X
Entry	
Established data	X
Interactive database	Δ
Quality Control	
Data history/review	X
Volunteer training	Δ*
Coordinator training	Δ
Site registration check	Δ
Initial submissions by new volunteers reviewed	Δ
Limited entry parameters	Δ
Analysis and Application	
Response to volunteer inquiries	X
Response to professional requests	X
Seasonal newsletters	X
Interactive database and historic data accessibility	Δ
Partnerships with academic institutions	Δ



Figure 5. Volunteers with the FrogWatch USA chapter at Utah's Hogle Zoo received site selection suggestions (top) and practiced newly acquired skills at a group listening event (bottom).