



SONOMA ECOLOGY CENTER  
RESEARCH & INFORMATION SERVICES

**Metadata Training and Data Coordination  
Agreement 08HQAG0030  
Final Report  
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By

Sonoma Ecology Center  
P.O. Box 1486  
Eldridge, CA 95431

[www.sonomaecologycenter.org](http://www.sonomaecologycenter.org)

Deanne DiPietro,  
Research and Information Services Program Manager  
And Pat Stiefer, Project Manager  
707-996-0712 ext. 114

[deanne@sonomaecologycenter.org](mailto:deanne@sonomaecologycenter.org)

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NSDI Grants Officer  
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NSDI Cooperative Agreements Program  
Metadata Training & Outreach Project

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## Executive Summary

At Sonoma Ecology Center (SEC), our goal was to reach two different communities with metadata training –conservation GIS professionals, and future professionals now enrolled in the regional university’s Geography curriculum. Toward this goal we planned and implemented a two-pronged approach of workshops and classroom teaching, and continued metadata program support through the San Francisco Bay Area Conservation Commons (SFBACC). We held a one-day workshop for GIS professionals in August, 2008 and we devised and taught a metadata module at Sonoma State University (SSU) in the introductory GIS class in October and November 2008. We also provided on-going metadata program support for workshop participants and other colleagues in the region.

## Project Narrative

This project further builds upon the establishment of the San Francisco Bay Area Conservation Commons, partially funded by two previous NSDI CAP grants (2004 and 2006).

SEC and our CERES partner recognize the need to regionalize geographic information management and data development. Multiple projects are creating and using similar types of information, and the sharing and integration of the information is known to be lacking. This lack of coordination hampers efforts in water conservation, water supply, ecological restoration of fisheries and wetlands, sustainable water use, water quality management, flood protection, environmental education, and land use planning. In response to this need, The San Francisco Bay Area Conservation Commons (SF Commons, originally called the North Bay Initiative for an Environmental Information Commons) had its first official meeting on May 12, 2005 wherein it established an online forum for discussion of issues, a Mission Statement, and draft set of Specifications for a Regional Environmental Digital Library Network. The SF Commons groundwork continues today (see <http://sfcommons.net/about-the-commons-1>).

This NSDI CAP project provided the necessary outreach and education to promote a regional inventory of spatial data and environmental information. To accomplish this, the CERES Environmental Information Clearinghouse is being used for the creation and posting of FGDC-compliant metadata to the state’s NSDI Node at <http://ceic.resources.ca.gov/>. Interest in the San Francisco North Bay region regarding the effective exchange of environmental information remains very high, as was reflected in the attendance at the one-day environmental data management workshop we conducted in August, 2008, for regional conservation GIS practitioners.

The Commons continues to plan additional software and techniques for this digital library network that will enable and support metadata creation and use, from the local library to the regional network. This is becoming increasingly important since CERES may move focus away from their the online metadata editor function in the Clearinghouse, and utilize metadata harvest alone to populate the catalogs.

Products and activities of the current project:

1. One workshop was held to teach members of the Conservation Commons to create libraries of FGDC-compliant metadata and share them using the technology under continuing development by both the Commons and CERES.

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2. Ongoing metadata and metadata program support is made available through the Commons' communication portal, by phone, email, and in person by project staff.
3. Focused support for SSU's Map Library and intern program.
4. Project staff wrote a metadata curriculum module for Sonoma State University's Introduction to Geography class, and taught both the lecture and lab classes during the last week of October and first week of November, 2008.

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## Metadata Training and Outreach Assistance Activities

### 1. Metadata training workshop for GIS professionals

A one-day workshop was conducted by Deanne DiPietro and Pat Stiefer at SSU's Geographic Information Center Computer Lab, on Wednesday, Aug. 20, 2008. Both trainers have conducted several metadata training workshops under previous CAP grants (2004 and 2006), and Ms. Stiefer attended the FGDC Train-the-Trainer workshop in 2007. Ms. DiPietro is the Manager of the Research & Information Services Program at Sonoma Ecology Center, and has 15 years experience in mapping and environmental data systems, remote sensing, and digital libraries. In earlier work for the California Resources Agency she was a co-developer of the CERES Program and its Environmental Information Catalog, and has taught hundreds of data owners how to catalog and share their environmental data. Ms. Stiefer is a professional librarian and GIS specialist, with a total of 25 years of experience in the organization and documentation of spatial and non-spatial information resources.

In early summer we publicized the workshop through regional conservation GIS groups and at the Society for Conservation GIS Conference in Monterey, CA. We had a full house of 24 participants from county, state, and federal agencies, small non-government organizations, and private industry. The workshop included lecture with hands-on exercises using ArcCatalog and CERES online software. Workshop presentation materials are posted at the San Francisco Bay Area Conservation Commons website (see <http://calconservationcommons.net/training>).

The feedback during and after the workshop was very positive, especially when we opened the floor for participants to share their metadata program successes and challenges, a session we called "Data Managers Anonymous". This community-building exercise (in which we rewarded the sharing of stories with chocolate) encouraged one participant in particular, who had long touted his opinion that metadata was something he couldn't be bothered with, to adopt a new attitude about the value of "doing the metadata". He had been disseminating crucial environmental planning spatial datasets representing the work of 20 – 30 regional scientists, without any metadata. He now intends to remedy the lack, and knows he can include resources for data/metadata management into future project planning.

At this first workshop, twenty-four representatives from 18 organizations with varying levels of metadata experience received training in several methods of producing and sharing metadata. Although eight organizations had also sent representatives to one of our 2006 metadata training workshops or programming sprints, only 3 of the attendees this year were repeats. Organizations and number of attendees include:

- Bay Area Open Space Council (Regional, 1)
- Sonoma State University (State, 2)
- California Dept. of Fish & Game (State, 1)
- Circuit Rider Productions (NGO, 1)
- Laguna de Santa Rosa (NGO, 2)
- Mendocino County GIS Department (County, 2)
- The Coastal Land Trust (NGO, 1)
- San Francisco Bay Joint Ventures/Ducks Unlimited (NGO, 1)
- Sonoma County Agricultural Preservation and Open Space District (County, 3)

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- Cypress Grove Research Center (NGO, 1)
- North Coast Regional Water Quality Control Board, TMDL Unit (State, 1)
- Point Reyes Bird Observatory Conservation Science (NGO, 2)
- California Dept. of Forestry and Fire Protection (State, 1)
- NOAA/National Marine Fisheries Service (Federal, 1)
- University of California Cooperative Extension Service, Ukiah (State/Federal, 1)
- West Coast Watershed (Private consulting firm, 1)
- Dow & Associates (Private consulting firm, 1)
- Mattole Restoration Council (NGO, 1)

The morning session focused on the basic metadata curriculum, and in the afternoon we addressed practical aspects of a successful metadata program, as well as issues in publishing and sharing metadata. Through lecture, discussion, and hands-on modules, we demonstrated how spatial data managers can create basic metadata necessary for organizing, finding, and sharing spatial datasets; how documenting the data helps others to use it; and suggested methods for organizing the data files on in-house servers. The afternoon session demonstrated how to publish FGDC-standard metadata for search and discovery in the California Environmental Information Clearinghouse at CERES, for eventual harvest by NSDI.

An evaluation form (Appendix A) provided by FGDC was distributed to participants, and seventeen forms were returned. Only two of the respondents rated their prior knowledge as near expert. Respondents agreed with all other statements on the questionnaire, with one exception. Responses to challenging nature of the content on fell in the middle of the spectrum of agreement/disagreement. Responses to questions on page 2 varied widely. Most liked the inclusion of ‘further information’ references. Some thought it was a lot of information to cover in one day and should have been a two-day workshop, while others thought it could have been compressed into just half a day. Some thought it was useful having the computer hands-on experience; others thought it was too distracting to go from discussion to computer. Some thought learning about standards was helpful, while others thought discussion of FGDC/ISO standards was too remote a topic to be interesting. There were several requests for more information about other metadata editors, especially ones that would help create metadata for non-GIS resources, and that would create a searchable local catalog.

Responses varied to the handouts of the PowerPoint slides, which were designed for note-taking during the workshop. Most found them useful, but others wanted more information to take away; hopefully the many URLs to resources in the handouts themselves will serve that need. All presentations and a guide to further resources were posted on the SFBACC website after the training, under [August 2008 Data Management Workshop](#).

## 2. Ongoing metadata program support

We have encouraged the workshop participants to stay in touch with us regarding their metadata questions and program issues, and have maintained contact through mass emailing about follow-up topics. We have had significant follow-ups with three organizations by email or personal meetings. In addition to a scheduled meeting with Dr. Mateo Clark at SSU, after the workshop we provided follow-up assistance to attendees from California Department of Forestry and Fire Protection, The Laguna Foundation, and North Coast Regional Water Quality Control Board.

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We remain in close contact with CERES regarding their re-engineering, and are relaying their new developments or problems solved to workshop participants. In addition, we offer workshop participants and other colleagues free web-enabled data archive space on the SFBACC website (see <http://calconservationcommons.net/data-archive>), enabling smaller organizations to post the data behind the metadata for download via the FGDC standard field, "Online Linkage".

### **3. Support for SSU's Map Library and Intern Program**

In September SEC completed a series of consultations with Sonoma State University Geography department about cataloging their Map Library and publishing the metadata for ultimate harvest by NSDI. The Map Library collection is intended for use by students and the public. The collection includes both paper and digital maps, with plans to scan all paper maps. This is primarily a reference collection, it does not yet include original research geospatial data. Experience gained in cataloging the reference collection will be applied to future expansion into research data sets. We recommended that some of the digital GIS layers in the Map Library would be better downloaded at publisher sites, rather than providing the resources through the Map Library. A metadata record referencing the original publication site would remove the necessity to research and replace some outdated spatial data in the Map Library.

During our work with Dr. Clark we learned that the driving purpose in cataloging maps and digital data was not to efficiently process as many as possible, but rather to involve the geography student interns, to make them feel part of the Geography Department "community" through their contribution to the Map Library. Successful cataloging of 25 maps per semester, with one or more new intern staff joining each semester, is considered sufficient throughput for the Map Library

Although we remain available for further consultation, the Spring 2008 interns have already produced a prototype catalog and documented procedures that can be carried out by the incoming interns in Fall 2008 and following semesters.

### **4. Metadata curriculum module for Sonoma State University**

SEC staff created classroom materials for the Geospatial Metadata module of the course, "Geography 387: Introduction to Geographic Information Systems", and presented them in lecture and laboratory sections of the course during October and November, 2008. Together the two parts of the curriculum are the equivalent of a half-day metadata workshop. SEC staff gave a total of three presentations and wrote GIS lab exercise content, which was converted into an SSU web page by Dr. Clark. All materials are posted at the SFBACC website under [October-November 2008 SSU Classroom Materials](#).

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## Status of Metadata Service

Metadata is served by the owners at their individual metadata catalogs on CERES California Environmental Information Clearinghouse (see <http://ceres.ca.gov>). After establishing an individual metadata catalog, an organization can upload individual FGDC-xml files, use an interactive metadata editor form, or post the FGDC-xml files to a web-accessible file for harvest by CERES, which is in turn harvested by NSDI. Additional spatial and nonspatial metadata records may have been posted directly to CERES by organizations after the metadata workshop, but no count of postings has been made at this time.

At the time of our workshops, CERES was in the midst of significant re-engineering of the California Clearinghouse services. We found some glitches in the software and there is a need for an additional half-day workshop on metadata publishing using these tools, once the changes have been completed. Feedback from the workshop participants, both during the workshop and in the following weeks, has been used by the CERES programmers to refine some of the metadata displays. CERES staff have expressed that we have been helpful as test users, and indeed are providing important training and outreach for their program.

There is a need for assistance in providing continuing education and support services to the organizations that we trained and engaged in these first two metadata workshops. The organizations are now facing the task of delving into their information resources, some for the first time, with the goal of organizing it and cataloging it so it may 1) be found and used again in-house, and 2) shared with other organizations. The general message to us from them is “we need help!” The task is big, especially for organizations that have existed for many years and have accumulated a lot of information resources. And in most cases, the work of cataloging has to be done in between all the day-to-day work. Consequently, it goes slowly, and the people trained need help remembering the techniques we taught them and getting the process underway in their own settings. Our sense is strongly that this cannot be the end of the story, or our investment will only be partially returned with successful catalogs that are kept up to date. We should keep offering workshops to increase our audience’s skill and confidence, continue answering questions that come up, and to have the opportunity to update them on new software and techniques released by the SF Commons project.

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## Next Steps

Our work on the SF Commons continues, although funding is scarce at the moment. We envision online and desktop utilities that enable and encourage the creation of in-house libraries that serve the primary needs of the organizations and also automatically feed a regional data catalog. These libraries will include spatial data as well as other resources and descriptions of projects, and we have been working on tools that help with cataloging all of these resource types.

We see the spatial metadata toolset as one of a suite of information management utilities that will make it possible to manage all of these resource types in a comprehensive knowledge base, and we think that the full set of tools made easy and freely available is necessary to motivate organizations to participate in a conservation commons. Therefore we are anxious to develop these tools and offer services such as data hosting in an environment that supports viewing, map-making, and download as well as ongoing technical support for those wishing to share their data and participate in a data community. A true, living data community is going to thrive on communication, training, and support, and we are eager to provide these. We think two workshops per year is a minimum, combined with an ongoing support team for technical help. So we continue to seek funding for these efforts and would appreciate any further assistance that the FGDC can provide.

Please see <http://sfcommons.net> for more information about our vision for a San Francisco Bay Area Conservation Commons.

## Feedback on Cooperative Agreements Program (to be completed for the final report)

We are thrilled with the support we've gotten over the years from the FGDC CAP Program! It has enabled us to launch important community-building work and to legitimize the work through its association with the FGDC. We have built a reputation in the region for being "the" people to come to on this topic and this has opened doors for finding other funding and support.

The CAP is strong in its support of projects with personal and individual contacts. We have gotten to know our project managers at FGDC and feel like they are really interested in our work.

The categories do not always fit our needs but that is to be understood with the apparent attempt to fund larger efforts like the National Map. We look forward to applying for future grants under the CAP where those funds can be directed to community outreach and training. We would also welcome a category for development of technical tools that enable organizations to set up collaborative catalog and data hosting facilities such as envisioned for our Conservation Commons.

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## APPENDIX A: Workshop Evaluation Form

Please respond to each of the following questions, they are intended to allow us to improve specifics of the workshop. Take your time in order to provide us with the most accurate assessment of your experience.

Date: August 20, 2008

Instructor(s): Deanne DiPietro, Patricia Stiefer, Sonoma Ecology Center

Title of workshop: Environmental Data Management

Circle 1 – 5 with your evaluation.

	Strongly Disagree <span style="float: right;">Strongly agree</span>				
The overall experience of the outreach materials is positive.	1	2	3	4	5
My knowledge of the subject matter prior to the experience was at expert level.	1	2	3	4	5
The amount of information was appropriate for the time allowed.	1	2	3	4	5
The materials provided me useful information.	1	2	3	4	5
The pace, style, and use of presentation media was effective.	1	2	3	4	5
The workshop content was challenging.	1	2	3	4	5
Participation was encouraged.	1	2	3	4	5
The instructors responded to questions effectively.	1	2	3	4	5
The presenter(s) was knowledgeable about the subject.	1	2	3	4	5
Accomplishment of learning objectives.	1	2	3	4	5
The workbook/ handout materials were useful and effective.	1	2	3	4	5

What were the major strengths of the workshop? What was the most useful?

What aspects of the workshop could be improved and how?

Can the workbook, if provided or other handout be improved and how?