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Collaborating organizations: NatureServe

Project Purpose

1. To provide data managers with the necessary tools, standards, templates, training and course materials to implement metadata creation within their operating units.
2. To provide the content standard for a centralized TNC metadata repository to be published on a registered metadata web portal.
3. To develop organizational best practices and standard operating procedures for metdata creation.

Project Narrative

Creation and review of TNC metadata content standard
The FGDC Content Standard for Digital Geospatial Metadata (FGDC-STD-001-1998) was reviewed for content relative to TNC datasets. This resulted in a TNC metadata content standard, based upon, and consistent with, the minimum required FGDC metadata content. This document was reviewed by a team of data managers and metadata specialists within TNC. The final TNC Geospatial Metadata Standard has been published to the ConserveOnline website (www.conserveonline.org), and TNC staff will be asked to implement the new standard in order to publish metadata to a central repository (see below).

Train TNC staff in metadata creation and distribute training materials.
Fourteen students participated in a training workshop in February, 2005. This workshop included one day of interactive training and ½ day of guided metadata development. Students traveled from across the U.S., Central America and South America. The training was conducted in collaboration with NatureServe whose staff assisted in curriculum development and instruction. The curriculum was customized to specific TNC metadata content needs, knowledge level of participants, and standard TNC metadata tools. Course materials, including instructional manual, templates, tools, TNC keyword thesaurus and other resources have been made available for download at the ConserveOnline website (www.conserveonline.org). A post training evaluation and six-month survey were used to evaluate the effectiveness of the training (see comments below).

Establish Metadata best practices or SOPs within TNC field offices.
A team of data managers and metadata specialists have reviewed and accepted a document outlining best practices and standard operating procedures for metadata

development within TNC. This document will be submitted for inclusion in the official TNC policies and procedures manual.

Publish metadata on central server.
(see below – "Describe Metadata Service")

Project Results:

Measurable project results included:
1. Metadata content standards: We completed the development, peer review and distribution of TNC Metadata Standard, TNC keyword thesaurus, templates and tools.
2. Training: Fourteen students from across the organization were trained in metadata development.
3. Long-term organizational improvement: Training participants were surveyed six months after the workshop evaluate the long-term effectiveness of the training. Their comments included:
   - The process I went through helped me to put the TNC lands shapefile with metadata on the MO state geospatial data clearinghouse. An interesting comment came from the university director after the metadata had been reviewed - it was the first time spatial data had not been sent back to the author for incorrect or incomplete metadata!
   - I can now draw direct links to [various GIS layers] through the metadata thereby greatly enhancing the geospatial framework of the chapter.
   - I have managed to pass on the "love" of metadata to the other people using GIS in our chapter. We are not perfect, but at this point they are at least filling in the essential fields (abstract, projection, entity and attribute definitions, currency, etc.). One thing that has helped me is to develop metadata templates for the other users with the fields, such as contact info, that are consistent across all datasets.
   - I believe that the metadata training was invaluable. It has increased my awareness of the type of information that needs to go into the metadata so that data may be entered as the geodatabase or shapefile is developed rather than have it be an onerous task left until the end. Having a template makes the task much simpler. Being aware of metadata also keeps the end user in focus so that the dataset is maximally useful.
   - As I participate in developing an organization-wide strategy for data analysis and management this understanding [of the importance of metadata standards] has been very useful for me. The workshop was useful in influencing science management.
   - The training helped to demystify the structure of existing metadata which enables me to more effectively use that data. By making metadata creation more transparent and understandable, it also lifted the dread of having to create it oneself. Now I incorporate metadata creation as a step in data processing whenever possible and we are planning to make it mandatory for all data creation by interns for field data in the coming field seasons. We have

had several data exchanges with partners recently and for the first time, I am able to say with confidence that all the data has been sent out with FGDC-compliant metadata.

Successes:
Our greatest success was raising awareness within our organization which includes over 300 geo-spatial data managers and users. Also, the development of a metadata standard and training were successful. Training participants noted the impressive collection of information, web resources, tools, templates and other documents that they were able to access and take back to their offices. Also noted was the significant benefit of participating in an interactive group training environment where discussion, "Q & A", and hands-on practice were most effective. We are confident that as we develop our conservation metadata portal over the next six months, we will be able to add well-formatted metadata content from TNC data managers with a solid understanding of the TNC and FGDC standards.

Challenges:
The following challenges became apparent through training evaluation and other discussions during the course of this project:

1. Data managers remain unclear on what types of data require metadata (e.g. non-spatial datasets, maps, GIS project files)
2. While we are making progress toward standard metadata, we remain challenged to standardize our actual data.
3. Most of our spatial data are managed by GIS staff across the organization, however we are not well coordinated with other staff who have a part time role to manage spatial data as part of generally non-spatial information management (e.g. CLS).
4. The FGDC mandatory fields are more difficult to populate outside of the U.S. since information may be in a different format or harder to acquire.
5. As a global organization, we require translation of standards and related documents into languages other than English.
6. Examples of good and bad metadata, as well as case studies in the value of metadata to the organization would be extremely useful.

Describe metadata service

The Nature Conservancy is currently leading an effort with the National Geographic Society and the major conservation organizations to build an information portal for conservation data (see http://conserveonline.org/workspaces/cons.geo.portal for more information). ESRI is developing the portal based on the infrastructure used for the US government Geospatial One Stop (GOS2). The portal will include standard metadata harvesting and catalog services (e.g. Z39.50), map viewer, search tools, geospatial data marketplace and data distribution. A steering committee and technical design team are in the process of developing this portal, which we intend to have operational by April 2006. Although the portal will represent U.S. and international data, it has not yet been

determined where it will be hosted or how independent it will be of the federal GOS website.

Next Steps:

1. As noted above, we are in the process of building a conservation information portal which will include a metadata clearinghouse for TNC's datasets. Metadata should be available through this site by the spring of 2006, with a beta version going live by December 2005. Funding for this project is still being pursued and future funding opportunities through the CAP program would be of interest.
2. During the course of this project we developed a standard operating procedure for metadata development at The Nature Conservancy. This document will be submitted for inclusion in the official TNC policies and procedures manual.
3. Support for international languages will be a priority for the next phase of metadata standards, keyword thesaurus, documentation and training.
4. We are currently in the process of developing a desktop metadata search tool that runs as an ESRI ArcCatalog tool. This, along with examples of complete metadata, will be provided to data users to demonstrate the utility and importance of good, standardized metadata.
5. Course materials developed for our metadata training workshop have been made available to TNC data managers through www.conserveonline.org. During the next year we will continue to leverage these materials through interactive, online training sessions.

Feedback on Cooperative Agreements Program:

1. What are the program strengths and weaknesses? *The CAP program made it easy for us to dive into development of metadata content standards and training in collaboration with a partner organization (NatureServe). The program should continue to encourage this type of collaboration and support between organizations. The kick-off meeting was successful for launching our activities, but could easily be shortened to a single day (or add more useful content). The many resources on the FGDC website are extremely useful, but could be presented in a more logically organized way (i.e. fewer clicks to find them).*
2. Where does the program make a difference? *Although we only participated in the lowest category of funding, the program was a good catalyst for basic training and continuing activities.*
3. Was the assistance you received sufficient or effective? *The funding we were granted ($9000 plus match) was barely sufficient for our limited goals. The funding provided for limited staff time to develop basic standards and training materials, and covered training expenses. In the future, we would not likely apply for this amount. The assistance from our collaborating partner and the wealth of materials available through FGDC helped fill the gap.*
4. What would you recommend doing differently? *Modify the agenda of the kick-off meeting to include more substantive content or compress to a single day.*

5. Are there factors that are missing or need to consider that were missed? *For The Nature Conservancy, as a global organization, there is a critical gap in applying metadata in non-English languages.*
6. Are there program management concerns that need to be addressed? Time frame? *No. The time frame was sufficient.*
7. If you were to do this again, what would you do differently? *We would be careful to be realistic about the amount that can be accomplished on a small amount of funding, and scope our project accordingly.*