

**NSDI Cooperative Agreements Program  
Category 6**

**The National Vegetation Classification Standard:  
Implementation and Outreach for the State of Oklahoma**

**FINAL PROJECT REPORT**

*March 31, 2009*

**Coordinate • solutions**



## **Cap Grant – Category 6 Final Report: Coordinate Solutions**

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### **Project Title:**

The National Vegetation Classification Standard: Implementation and Outreach for the State of Oklahoma

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### **Executive Summary**

The goal of this project was to provide assistance and outreach in the implementation of the National Vegetation Classification Standard, Version 2 to any individuals in or around the state of Oklahoma. Targeted audiences included, but were not limited to, individuals in local, tribal, state, and federal government agency involved in the collection and reporting of vegetation/floristic data. During the course of this project, we were able to meet all of the major objectives of this project with only minimal deviations from the original project plan.

Coordinate Solutions and the Oklahoma Biological Survey successfully completed the following objectives:

- Created and distributed education materials related to the National Vegetation Classification Standard, Version 2;
- Utilized existing, established online research tools to publish and promote the new vegetation standard training materials;
- Updated the existing Vegetation of Oklahoma (Hoagland 2000), a vegetation classification for the state of Oklahoma based on the original National Vegetation Classification;
- Held workshops/trainings in Oklahoma related to the National Vegetation Classification;
- Attended several local and regional conferences to promote the implementation of the National Vegetation Classification Standard.

## **Project Narrative**

### ***Development Approach***

Coordinate Solutions and the Oklahoma Biological Survey (hereafter “the project team”) divided project goals into five phases. The project team conducted work on several of the phases concurrently, though each phase was mutually exclusive of the others. Descriptions of each project phase are summarized below.

#### *Phase 1: Develop Educational Materials*

The project team developed a variety of training materials to help promote the National Vegetation Classification, version 2 (NVC). These included a NVC fact sheet; a NVC implementation Quick State Guide; a PowerPoint/PDF presentation to be distributed online; and several posters (for display at conferences). The fact sheet is a one page document designed to give a brief overview of the NVC, as well as the FGDC. The Quick Start Guide is a distillation of the key components of the National Vegetation Classification, Version 2, with regional examples to aid in the contribution and further development of the National Vegetation Classification for Oklahoma. The document also contains a brief introduction to the Federal Geographic Data Committee and the National Spatial Data Infrastructure. The PowerPoint presentation is similar in content to the Quick Start Guide, but presented in a bulleted and graphical format for didactic purposes.

The fact sheet and the Quick Start Guide were presented to Dr. Douglas S. Powell, National Monitoring and Evaluation Coordinator, United States Forest Service, for review. The project team received feedback on the fact sheet and made necessary revisions. However the project team did not hear back on the Quick Start Guide and all revisions, therefore, were based on internal reviews of the document.

The project team distributed the training materials through a variety of channels. Members of the project team attended several conferences (see below) at which the fact sheet and Quick Start Guide were distributed and posters were displayed. Todd Fagin, project P.I., used the materials in

both his introductory GIS (Oklahoma City Community College) and GIS Applications (University of Oklahoma) class to discuss the importance of geospatial standards, in general, while Dr. Bruce Hoagland (co-P.I.) presented the training materials to his vegetation ecology seminar (University of Oklahoma). Additionally, the project team distributed the training materials at the trainings the project team conducted (see below).

### *Phase 2: Update Vegetation of Oklahoma*

The Vegetation of Oklahoma (2000), a statewide vegetation classification based on the National Vegetation Classification, version 1 (1997), was originally developed by reviewing extant literature (164 publications) on the vegetation of Oklahoma and the updating of each vegetation classification to conform to the Standard. Version 2 of the National Vegetation Classification, though, represents a substantial revision to the original classification. The project team, therefore, revised the classification (primarily at the alliance and association level) and cross-walked these lower-division (level 7 and 8 of the hierarchy) to upper levels of the hierarchy. However, due to ongoing revisions of the upper-levels of the hierarchy, the cross walk is an ongoing process.

The project team submitted the updated list of Oklahoma alliances and associations, as well as corresponding Community Element Global (CEGL) codes, to Dr. Don Faber-Langendoen, senior Ecologist with NatureServe. Dr. Faber-Langendoen has subsequently asked the project team to aid in a screening process to assign each association a level of confidence. Confidence levels are assigned based on the relative rigor of the data and analysis used to identify, describe, and define a vegetation type. Dr. Faber-Langendoen and staff are currently designing a template of screening criteria, which Dr. Faber-Langendoen has indicated will not be available until May. Once the screening template is complete, the project team will assign confidence levels to the types as part of the team's ongoing commitment to the project.

### *Phase 3: Online Material Distribution*

The primary stated goal of this project was to provide assistance and outreach in the implementation of the NVC to individuals *in and around the state of Oklahoma*. However, the project team recognizes that in order to successfully implement the NVC, it must be widely adopted. As a means to encourage broader acceptance of the Standard, the project team developed two websites, one hosted by Coordinate Solutions, the other by the Oklahoma Biological Survey, to distribute the training materials. The websites also provide additional information of value to individuals using the NVC, including links to related topics, such as the FGDC, the Vegetation Subcommittee, other FGDC-related training materials, VegBank, and the Oklahoma Vascular Plants Database.

The URLs for the two sites are:

<http://www.coordinatesolutions.com/ProjectCAP2008.aspx>

[http://biosurvey.ou.edu/nat\\_veg\\_class.html](http://biosurvey.ou.edu/nat_veg_class.html)

The project team announced the creation of websites through several forums and venues, including the OKGIS listserv, GIS Day at the Capitol, the Conservation Exchange Group, and several meetings/conferences attended by members of the project team. Additionally, prior to the creation of the website, Todd Fagin was contacted by Tara Luna of the Montana Natural Heritage Program in Helena, MT. Ms. Luna had learned of the project via the FGDC grants website. The project team shared with her both the preliminary training materials and, once they were completed, the final training materials. The project team has encouraged Ms. Luna to distribute the materials freely.

#### *Phase 4: Training Workshops*

The project team had originally planned to host two NVC training workshops. This is the only part of the project that slightly deviated from the original plan. Due to low enrollment, the project team only held one complete workshop, but compensated by extending training to five separate university/college level classes at the University of Oklahoma and the Oklahoma City Community College. The specifics of these lectures and the full training workshop are described below.

Todd Fagin is currently teaching three GIS-related classes; one at the University of Oklahoma and two at the Oklahoma City Community College. As part of the regular curriculum for these courses, he introduces students to FGDC standards, with an emphasis on metadata standards. This semester, though, he used the NVC as the basis for presenting the importance of standards, in general. Though all students will benefit from the knowledge of standards, several students in these courses are ecologists/biologists and represent the audience that the project team was targeting.

On March 11, 2009, Mr. Fagin gave a short guest presentation on the NVC to Dr. Wayne Elisens' flowering plant class (Botany 3534) at the University of Oklahoma. This is an upper-division, undergraduate class dedicated to plant collecting and identification. In addition to presenting an overview to the NVC, Mr. Fagin distributed some of the training materials created for this project and encouraged all of the students to participate in the full training workshop.

Dr. Bruce Hoagland presented information related to the NVC to his vegetation science seminar (Geography 6210) at the University of Oklahoma. The focus of this seminar is the study of methods for classifying and analyzing vegetation data and the NVC was presented several times throughout the duration of the semester. Once the training materials for this project were completed, Dr. Hoagland shared these materials to the students of this seminar. Additionally, several individuals enrolled in the seminar were participants in the full workshop.

The full NVC workshop was held at the University of Oklahoma in Norman, OK on March 26, 2009. Attendees included both graduate and undergraduate students from the University of Oklahoma and staff from the Oklahoma Natural Heritage Inventory and The Nature Conservancy. The workshop began with an overview of the importance of standards and a discussion of the NVC hierarchy. In order to demonstrate the mechanics of the NVC, participants traveled to a local research station, Oliver's Woods, where the project team set up a mock plot and discussed various aspects of the NVC related to collecting plot data. Upon

completion of the plot collection, participants returned to campus, where the project team introduced the participants to VegBank.

Several photographs from the workshop are included at the end of this report.

#### *Phase 5: Conference Participation*

The project team attended several conferences at which they promoted the NVC. On July 7 and 8, 2008 Todd Fagin attended the 13<sup>th</sup> Annual Inter-Tribal Environmental Council (ITEC) conference. ITEC is comprised of 41 Native American Tribes from Oklahoma, New Mexico, and Texas. The organizations mission is to foster stewardship of air, land, and water. To this end, a number of individuals from various tribal entities are involved in all manners of vegetation collection.

Approximately 230 individuals representing approximately 30 different tribes attended the conference. The project team created a project poster describing the National Vegetation Classification and the (then) forthcoming training opportunities; distributed fact sheets related to the National Spatial Data Infrastructure; and promoted both the National Vegetation Classification Standard and FGDC-endorsed standards, in general, to various individuals involved in the collection and dissemination of geospatial data.

On September 29, 2008, David Lowther and Todd Fagin attended the 11th Annual South Central Arc Users Group Conference (SCAUG). SCAUG is an organization dedicated to providing resources and tools for GIS users and professionals in Oklahoma, Texas, Louisiana, and Mississippi.

Approximately 300 geospatial professional from the south-central region attended this year's conference. Just as with the ITEC conference, the project team promoted the National Vegetation Classification standard and other NSDI standards, in general, and promoted the upcoming National Vegetation Classification trainings.

On February 10, 2009, Bruce Hoagland and Todd Fagin attended the Conservation Exchange Group (CEG) meeting at the Oklahoma Ecological Services Field Office, U.S. Fish and Wildlife Service in Tulsa, OK. This meeting was attended by members of the U.S. Fish and Wildlife Service, the Oklahoma Department of Wildlife Conservation, the Oklahoma Natural Heritage Inventory, the Sutton Avian Research Center, and the Nature Conservancy. Representatives from each organization reported on various issues related to conservation in which each organization is involved. At the time of the meeting, the training materials were not complete. However, shortly following the meeting, the project team electronically distributed materials related to the NVC to all members in attendance.

Each year for the past 14 years, the Oklahoma Geographic Information Council holds "GIS Day at the Capitol," an event designed to highlight the uses of GIS and to demonstrate how the technology is being used as a decision-making tool throughout the state of Oklahoma. The project team attended the event, utilizing this opportunity to promote the NVC and other FGDC standards.

The project team has been invited to present the results of this project at a symposium entitled “US National Vegetation Classification as a tool for sustainable environmental management and conservation.” This symposium is part of the annual Ecological Society Meeting and will be held on August 4, 2009 in Albuquerque, NM. The project team submitted an abstract entitled “The National Vegetation Classification Standard: Implementation and Outreach for the State of Oklahoma” and will discuss the outcomes of this project and the status of the NVC in Oklahoma.

### ***Project Challenges***

The project team encountered two challenges in carrying out this project. The first involved enrollment in the workshops, while the second concerned finding an adequate method to present the NVC. Per the former, despite interest expressed by numerous individuals at conferences and other forums, few individuals actually enrolled in the free workshops. Though it is not possible to know why there was this deficiency, several individuals indicated that they would have liked to attend the workshop, but had scheduling conflicts. Another possibility is that the number of individuals specifically involved in vegetation collection and reporting in and around the state of Oklahoma is relatively few.

The second challenge is more of a didactic nature, that is finding an effective way to convey the intricacies of a particular standard. In anticipation of the workshops, the project team created a number of training documents, including a training presentation. However, upon further review of the presentation, the project team concluded that it wasn’t the most efficient method to promote the NVC. Indeed, the presentation, while an adequate distillation of the National Vegetation Classification Standard, version 2, is unlikely to inspire interest in the NVC beyond those already familiar with it. This forced the project team to reevaluate the training methodologies they wished to employ. In the end, the project team decided to hold a hands-on workshop, giving participants an opportunity to setup a plot and collect vegetation data in a manner consistent with the NVC. Based on feedback from the participants, this was an effective strategy.

### ***Commitment to Effort***

The project team is committed to the sustained promotion of the NVC. In May, Dr. Bruce Hoagland and Todd Fagin will begin the process of assigning confidence levels to the associations and alliances identified in the updated vegetation of Oklahoma. This will be undertaken with the input and oversight of Dr. Don Faber-Langendoen of NatureServe. In August, both Todd Fagin and Dr. Bruce Hoagland will attend the ESA conference in Albuquerque, NM to share their experiences of this project. Moreover, the project team will continue to make the training materials available at both the Coordinate Solutions and Oklahoma Biological Survey websites.

As professional educators in the geospatial and vegetation sciences, respectively, both Todd Fagin and Dr. Bruce Hoagland will continue to promote the NVC, as well as other geospatial standards in the classroom and other appropriate forums. Additionally, Dr. Hoagland is actively involved in biological surveys throughout the state, the data from which will continue to aid further refinements to the vegetation of Oklahoma and the NVC, as a whole. The Oklahoma

Biological Survey and Coordinate Solutions continue to maintain the Oklahoma Vascular Plants Database (OVPD), a spatial database repository of Oklahoma vegetation data. Subsequent to undertaking this project, Mr. Fagin also began work as a database manager for the Oklahoma Natural Heritage Inventory's Biotics database. The confluence of data from the OVPD, Biotics, and ongoing data collection will continue to contribute to the NVC after this project period. Lastly, Mr. Fagin recently became a certified VegBank user. Currently, there are no plot records for the state of Oklahoma. The project team hopes to begin contributing both historical and current plot data to VegBank in the near future.

## **Feedback**

Towards the beginning of this project, the NSDI CAP Grant team held several conference calls to discuss the progress on the grant. The project team found these calls quite useful. They served as a means to discuss any issues related to the project and provided valuable feedback to the project team. However, there were no such calls during the second half of the project. Due to the beneficial nature of these calls, the project team recommends that such conference calls continue throughout the duration of a project.

The project team also had several communications with Brigitta Urban-Mathieu, NSDI CAP Coordinator. Ms. Urban-Mathieu was always prompt in returning emails to the project team and was extremely helpful in resolving any issues. Ms. Urban-Mathieu also called the members of the project team on her own volition on several occasions to follow-up on various issues. This, too, was very helpful and much appreciated.

The state of Oklahoma has benefited immensely from NSDI Cooperative Agreement Program (CAP). Various organizations in Oklahoma received CAP grants in 2003, 2004, 2006, and 2008. The nature of these grants has varied, from improving clearinghouse nodes and developing statewide strategic geospatial plans to training and implementation of metadata and other standards. The project team sincerely believes that the geospatial community in Oklahoma has significantly benefited from this program.

The project team does not otherwise have any critiques of the program or any suggestions to improve the program.

## **Literature Cited**

Hoagland, B.W. 2000. The Vegetation of Oklahoma: A classification for Landscape Mapping and Conservation Planning. *Southwestern Naturalist* 45: 385-420.



Dr. Bruce Hoagland leads workshop participants into the field to setup a sample plot.



Workshop participants, from left to right, Jona Tucker (The Nature Conservancy), Rick Thomas (OU MA student), and Melissa Hinton (OU Ph.D. student and OCU adjunct faculty).



Leah Nash of the Center for Spatial Analysis visits Coordinate Solutions NVC-themed booth at GIS Day at the Capitol.



Many school children were among those present at GIS Day at the Capitol.



Dan Hough of the Oklahoma Biological Survey at the SCAUG conference.