

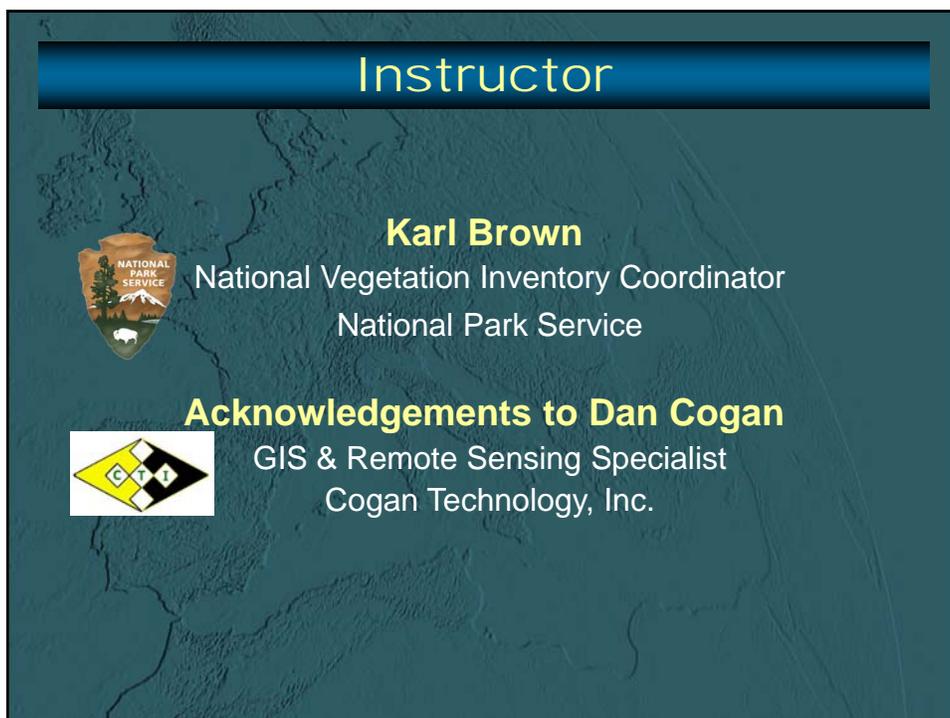


Vegetation Mapping - CSP7201  
June 2013 -- Ref May, 2010



**U.S. Fish and Wildlife Service**  
National Conservation Training Center  
Shepherdstown, West Virginia

This slide features a scenic photograph of a mountain range under a blue sky with scattered white clouds. The mountains are rugged and appear to be in a high-altitude or semi-arid environment, with some snow patches visible in the valleys. The text is overlaid on the top half of the image in a yellow, sans-serif font. The U.S. Fish and Wildlife Service logo is positioned in the bottom left corner, and the organization's name and location are listed in white text on a dark green rectangular background in the bottom right corner.



**Instructor**



**Karl Brown**  
National Vegetation Inventory Coordinator  
National Park Service



**Acknowledgements to Dan Cogan**  
GIS & Remote Sensing Specialist  
Cogan Technology, Inc.

This slide has a dark teal background with a subtle topographic map texture. At the top, the word "Instructor" is written in white on a dark blue horizontal bar. Below this, the National Park Service logo is on the left, followed by the name "Karl Brown" in bold yellow text and his title in white. Further down, the Cogan Technology logo is on the left, followed by the text "Acknowledgements to Dan Cogan" in bold yellow and his title and company name in white.

## Section Outline

- 🌍 Project Planning and Overview
  - What are Your Long and Short Term Goals
- 🌍 Plant Assemblages, Scale, and Level of Importance
  - Detailed = Plant Associations (Communities)
  - General = Land-cover, Ecological Systems, Biophysical Units...
- 🌍 Time and Budget
- 🌍 Available Data and Imagery Resources
- 🌍 Adopting Standards
- 🌍 Type of Map/Database Needed
  - Raster/Vector
- 🌍 Project Management and Work Flow
- 🌍 Field Work
- 🌍 Accuracy Assessment
- 🌍 Final Products

## Section Objectives

- 🌍 Provide an Overview of Vegetation Mapping
- 🌍 Better Understand the Components to a Successful Project
- 🌍 Provide Tips and Pit-falls to Avoid
- 🌍 Summary and Discussion Topics

## Overview

- Primary Components:
  - Project Planning and Management
  - Vegetation Classification (Ground-based)
  - Current Imagery (Scale-appropriate)
  - Mapping Methodology
  - Accuracy Assessment (Ground-based)
  - Project Deliverables / Outcome

## Project Preparation

- Determine Project Manager / Team
  - Responsible for Creating and Implementing Plan
  - Maintaining Work Flow
  - Contracting / Agreements / Staffing
  - Data Storage and Final Products
- Determine Mapping Plan
  - Vegetation Classification
  - Field Work (Classification and AA Data)
  - Mapping Procedures
  - AA Analyses
  - Final Products

**Work the Plan!**

## Mapping Plan

- Scale and Scope of Project
  - Area-wide, Portions, Edging, Pilot Area
  - 1:12,000 = Fine Scale (Plant Community)
  - 1:24,000 = Medium Scale (Ecological System)
  - > 1:48,000 = Gross Scale (Land-cover)
- Evaluate and Compile Existing Data
  - Ground Data (Current, GPS-located, Taxonomy)
  - Available Imagery (Timing, Types, Scales/Resolution, Growing-Season, Highlights Important Veg., Shadows, Clouds, Distortion, etc..)

## Mapping Plan (cont.)

- Identify Core Staffing Resources
  - Field Work (Staff, Locals, University, Contractors)
  - Mapping
  - Classification (State Heritage, NatureServe, In-house)
  - Project Manager

## Vegetation Classification

- 🌍 Taxonomy based, field sampled, analysis driven
  - Staffing options of State Heritage, NatureServe, In-house
  - Cluster analysis or ordination
  - “Cut point” strategy for lump / split
  - Dichotomous key critical
  - Local or global descriptions written

## Classification Field Work

- 🌍 Likely the major cost driver of the project
  - Classification plot “releve” design (e.g. 40x40)
  - Plot location design (GRTS, cost vs spatially weighted, opportunistic)
  - Not cost effective time to spatially weight; use the AA as the spatially weighted option
  - Confirm target types in NVCS

## Data Storage and Analyses

- 🌐 PLOTS 3.2 available as a template from NPS
  - Front end design is flexible
  - Strategize the plot photo management tool
  - QA and QC by field crews and Ecology Lead
  - Ordination output and NVCS level compromise

## Imagery and Mapping Scheme

- 🌐 Scale (4-band) and line work sources / verify
  - Fine Scale (12 inch) vs. moderate scale 1-5 meter pixel sources (e.g. NAIP)
  - Color Infrared (CIR) critical for veg typing
  - Mapping Model development with ecology
  - “Map Specials” and NVCS provisional types
  - Raster and Vector product decisions

## Accuracy Assessment

- Map confidence %; spatially balanced samples
  - Best indicator for user confidence
  - Spatially balanced with cost surface
  - Sampling opportunity better distributed than releve but not as intense or time consuming
  - Can improve map, but then “not checked.”
  - Reuse ecology team that knows map model

## Final Products and Standards

- Product Not Methodology Standards
  - Methods change weekly; cannot keep up
  - Focus on user need and management ??
  - Three packages: Ecology, Map, Database
  - Merge all three or use appendices; final report best with “Executive Summary” start
  - This product does not do all veg questions

## Project Tips

- Budget Funding to Prevent Work Stoppages
- Maintain Work Flow
  - Establish Reasonable Milestones
  - Plan to Store and Distribute Data
- Pull-in Outside Experts (with Experience) as Needed
- Build in Contingencies
- Budget Enough Time for Each Step
  - No. of Growing Seasons
  - Mapping (1000 acres/day)

## Summary

- Map date is the imagery date; pick phenology
- Accuracy Assessment must match phenology
- Classification / dichotomous key / AA most \$\$
- Imagery and Line work ~2<sup>nd</sup> most expensive
- Arc and Map Viewer options for final products
- Team up with Lidar or fire sampling if possible