Preparing for Botanist Certification in California

David L. Magney & Heath Bartosh

California Native Plant Society Board of Certification
Outline of Workshop

- Introductions
- Purpose of Consulting Botanist Certification
- Intended Target
- Certification Process
  - Review what you are expected to know
  - Code of Ethics
  - Take Exams
  - Stay Current with Profession
- Scope of Knowledge and Experience
  - Field Botanist
  - Consulting Botanist
Introductions

Board of Certification
- David Magney, chair, CNPS and DMEC
- Heath Bartosh, vice-chair, Nomad Ecology
- Ileene Anderson, Cherilyn Burton, Julie K. Nelson, Robert Preston, Connie Rutherford, and Aaron Sims

Attendees
- Name
- Affiliation
- Experience
- Why are you taking this workshop?
Intended Target

Consulting Botanists (including the field botanist)
- Those conducting field surveys, monitoring, etc.
- Those performing baseline studies and impact assessments
- Those preparing mitigation and monitoring plans
- Those botanists with many years of experience
Purpose of Botanist Certification

- Empower the professional botanist
- Provide a means to be formally recognized for your expertise and experience
- Create a formal organization of peers and colleagues
- Have a forum for the professional consulting botanist
- Improve the consulting profession
Mechanics of Certification

- What you need to know
  - Lots of stuff! Details later in the workshop

- Code of Ethics
  - Review and understand the Code
  - Agree to abide by the Code (in writing)

- Take exams
  - 3 exams for Field Botanist, plus 1 for Consulting Botanist

- Pay maintenance fees

- Stay current with the science & regulations
Code of Ethics

5 Conduct Goals

- Act consistent with highest standards of integrity and conduct
- Act as an objective authority providing technical information and professional judgments
- Promote competence in field and consulting botany
- Advance conscientious stewardship of the California flora and its supporting ecosystems
- Assist disadvantaged groups or individuals who request botanical advice

Professional Standards
Standards for Professional Conduct
(tenets and minimum standards)

- **Tenets**
  - 15 tenets

- **Minimum Standards of Performance**
  - 8 standards
Standards for Professional Conduct

Tenets

A. Keep learning and do your very best
B. Be fair and consistent to employees and colleagues
C. Avoid discrimination, favoritism, taking advantage, and bribery (in any form), and avoid working purely for personal satisfaction or gain
D. Don’t make false or undocumented claims
E. Give credit to where credit is due, don’t plagiarize
F. Don’t lie about your skills or knowledge
G. Don’t work beyond/outside your areas of expertise
H. Disclose any conflicts of interest
I. Don’t change your conclusions to please your boss or client
Standards (continued)

Tenets (continued)

J. Don’t let yourself be unduly influenced in making decisions
K. Turn bad actors in to the authorities
L. Don’t participate, even indirectly, in others violating environmental laws/regulations
M. Argue for using good science to make management decisions
N. Spread the word about your discoveries
O. Don’t sign confidentiality agreements about botanical resources
Standards (concluded)

Minimum Standards of Performance (8)

A. Follow laws and regulations
B. Use current taxonomy (not just what was current at the time of publication of *The Jepson Manual*)
C. Report results of field surveys truthfully, including how the work was performed
D. Support your statements with evidence or state they are opinions, as appropriate
E. Submit your results to resource agencies ASAP
F. Collect voucher specimens
G. Use *A Manual of California Vegetation* methods to map and classify the vegetation on your site
H. Present your data in an unbiased manner
Field Botanist Knowledge

- Common and Characteristic Plants
  - 500 common and characteristic native and naturalized plants found in wilds of California
  - Must be able to identify these 500 plants by sight
  - Exam will consist of 100 plants (part or all of the plant – fresh material), photographs of important parts of the plant may be included
Field Botanist Knowledge

- Identify plants using dichotomous keys
  - 5-10 plants will be provided for identification using keys in *The Jepson Manual*
- Terminology – descriptive terms in Latin
  - Those terms that are used to describe every part of plants, such as leaf shape, types of hairs, leaf arrangement, flower characteristics, etc. Examples include: canescent, axillary, capitate, woolly, crenate, spike, glabrous, glaucous, glandular, truncate
  - Use a glossary of terms, such as in *The Jepson Manual*, to learn them
- Tools – 10X hand lens
Field Botanist Knowledge

Basic Survey Tools

- Paper/notebook and Pen/pencil (most important)
- Other stuff
  - Camera
  - GPS unit
  - Maps
  - Binoculars
  - Pin flags/survey flagging
  - 100-meter tape measure

Important Information Sources

- CNDDB, Calflora, CNPS Inventory
**Survey Protocols/Methods** (CNPS, CDFW, USFWS)

- **Floristic surveys**
  - Survey for and identify ALL taxa on a project site (including nonvascular plants)
  - Survey during as many seasons as needed to identify ALL taxa on a project site
  - Voucher the flora of the study area

- **Special-status species surveys**
  - Identify best times to survey to detect ALL special-status species with potential to occur onsite
  - Voucher each special-status species
  - Complete CNDDDB Field Survey Form for each special-status species observed
Data to Collect

- Location, location, location
  - Latitude and Longitude coordinates
  - County/City
  - Placename
  - Mountain/Valley, etc.
- Elevation
- Associated species, dominant species
- Soil/substrate
Botany Science

- **Systematics**
  - How is the species related to other species?
  - Relationships of plants to other plants
  - Family characteristics (e.g. metrics)
  - Key characteristics

- **Biogeography**
  - Floristic provinces, regions, subregions, etc.

- **Measurement systems**
  - Metric versus English (Imperial)
Sampling Methods

What is the focus?

- Woodlands
- Herblands
- Scrub
- Wetlands
- Direct counting vs extrapolation (estimating)
- Rare plants, individual plant counts,
- Cover estimates (absolute vs relative)
Rarity Status of Plants

- CNPS Rare Plant Ranks
- NatureServe (establishes global rarity rankings)

Federal
- Endangered Species Act
- Forest Sensitive
- BLM Sensitive

California
- NPPA (Native Plant Protection Act)
- CESA (California Endangered Species Act)
- Coastal Act
Consulting Botanist Knowledge

- Environmental Assessment Laws
  - CEQA
  - NEPA

- Permitting Laws/Regulations
  - Clean Water Act (404, 401)
  - Coastal Act
  - General Plan Law (land use goals and policies)
  - Fish & Game Code (e.g. 1600 et seq.)
  - CESA and ESA (BOs, ITPs)
Consulting Botanist Knowledge

- Floristics
- Site characterization
- Map and describe botanical resources
- Assess project’s impacts on botanical resources
- Determine significant impacts
- Types of impacts
- Develop feasible mitigation measures
- Understand all aspects of habitat restoration
Consulting Botanist Knowledge

- Understand mechanics of implementing mitigation measures
- Functional assessment methods
  - Wetland functional assessment models
    - HGM (Hydrogeomorphic Assessment Method)
    - CRAM (California Rapid Assessment Method)
  - Upland habitats (nothing developed yet)
- Systematics
- Plant ecology
  - Wetlands, woodlands, scrub, herblands
Consulting Botanist Knowledge

- Soils/Geology (as related plant distribution)
- Non-vascular plants
- Statistical analysis
- Logic
  - Apply principles of logic in making all arguments
- Taxonomic Nomenclature
  - Botanical Code rules
  - Naming conventions/rules
  - Type specimens/locality
- Cite statements with evidence/research
Consulting Botanist Knowledge

- Mitigation
  - Ratios
  - Monitoring
  - Term (length of time)
- CNPS Policies (related to survey, assessment methods, and mitigation)
- Command of written English
- Funding for mitigation
  - Endowments
  - Operating funds
Additional Information

California Native Plant Society
David Magney
dmagney@cnps.org
916/447-CNPS ext. 205
www.cnps.org

Heath Bartosh
hbartosh@nomadecology.com
925/228-3027