Minimum Qualifications and Experience Recommended for the
Certified Field Botanist and/or a Certified Consulting Botanist Examinations -
A Study Guide

1 August 2016

The following is a list of recommended topic areas for study intended to represent the level of knowledge and experience individuals should possess to successfully achieve certification at the Field and/or Consulting Botanist level(s). These recommended study topics are provided by the California Consulting Botanist Certification Board of Certification (BOC). These certifications are structured to identify those professionals that have a thorough knowledge of: the California flora, how to conduct floristic surveys, mapping and classifying botanical resources, conducting field studies, and preparing detailed analyses of those resources, and how a project or action may affect them. These skills take many years to develop; therefore, these certifications are NOT intended for the entry level or junior level field or consulting botanist. The BOC strongly encourages the applicant to critically vet their own level of knowledge and experience before considering taking the examinations. A passing score is 75% for each exam (Field and Consulting Botanist exams).

The examination for certification is separated into two tests; one for the Field Botanist Certification and another for Consulting Botanist Certification. Each of these examinations will cover multiple topics. The intent of the Field Botanist examination is for applicants to prove their competence in identifying native and naturalized plants found in California and knowledge of appropriate methods and protocols for conducting field surveys to satisfy documentation and assessment requirements. The intent of the Consulting Botanist examination is to demonstrate competency inclusive of a Field Botanist certification level as well as describe baseline conditions of a study/project area, critically analyze project-related impacts to the botanical resources, develop feasible mitigation measures to avoid or compensate for the identified impacts, and demonstrate a clear understanding of all related environmental regulations. Below is a summary of the topics included in each of the certification exams and references the test was developed from. This summary is intended to serve as a study guide as no example tests will be made available to applicants.

Field Botanist

1. Plant Identification
   A. Applicants must be able to identify by sight at least 500 common/dominant plant species, native to or naturalized to California, that are relevant to the region they work in. A subset of 100 taxa will be used to test your knowledge of the most commonly encountered plants of California through fresh plant material and/or photographs (that show key characteristics). No tools or references, other than your hand lens, will be provided or allowed to assist you with identifying these plants. You must know them by sight. You must know the scientific names. Use of common names as your answer will be marked as incorrect.
   
   B. You must demonstrate that you can use dichotomous identification keys, such as included in the *Jepson Manual*, to accurately identify a plant specimen. Fresh plant material of between 10 and 20 native plants will be provided to test your abilities to key out a specimen and obtain the plant’s correct identification. Tools necessary to observe the material will be provided if needed. A 10X hand lens will be all that will be needed for most of the plants. It is your responsibility to bring a hand lens. Keys will be provided. Microscopes will be provided, if deemed necessary to fully identify the specimen.
   
   C. As part of the written exam, you will be tested on technical terminology that is used to describe plants. The terminology you are expected to know is available in most botanical term glossaries, such as in the *Jepson Manual*. There will be at least 20 multiple choice or true/false questions in the exam covering this subject area.
2. Field Survey Methods and Protocols
   A. You will be expected to know how to perform a floristic field survey. Be intimately familiar with the field survey protocols published by CNPS, the California Department of Fish and Wildlife, and the U.S. Fish and Wildlife Service. There will be at least 20 multiple choice or true/false questions on the exam covering this topic.
   B. Know how to classify and map natural vegetation (plant communities) according to the National Vegetation Classification System as adapted for use in California (Manual of California Vegetation).
   C. You will be expected to know how to perform statistically valid field sampling, using different methods for different purposes.
   D. You will be expected to know how and when to complete field survey forms for submittal to the California Natural Diversity Database. You will be expected to know the definitions of a special-status species.
   E. You will be expected to know how to access information and locations of reference populations of special-status species that may occur on a project site.
   F. You will need to know what various tools and resources are available to help identify survey targets that grow in or near your study site.
   G. You will need to know how much time is expected to effectively survey a project site based on established protocols.

3. Site Characterization Methods
   A. The habitat and condition of a project site must be known before any sort of assessment can be performed. The field botanist needs to be able to fully describe and map the existing conditions of a project site. This includes documenting observations of all the vascular plants that occur onsite, as well as where any special-status species occur onsite and may be affected by a proposed project. Voucher specimens should be collected to provide physical evidence of your observations. The methods you use to do this should be documented.
   B. You will need to demonstrate you know how to both map and classify natural vegetation (plant communities) at a project site using the appropriate state-endorsed classification system.

4. Laws and Regulations Pertaining to Field Work
   A. You will be expected to be familiar with laws and regulations pertaining to special-status plants and noxious weeds. You must also know when and how you may collect/voucher them, or not. You are expected to know the rules for collecting.
   B. You will be expected to know when and how to obtain permits to collect voucher specimens.

5. Reporting and Record Keeping
   A. You will be expected to know how to record and report your field surveys. Since a Field Botanist is not expected to be the person preparing the report documenting the existing conditions, your notes and data from your field surveys are vital and necessary.

6. Ethics and Minimum Professional Standards
   A. You are expected to know all aspects and tenets of the Botanist Code of Ethics, specifically, the five ethical practice goals.
      1. Act consistent with the highest standards of integrity and conduct.
      2. Act as an objective authority providing technical information and professional judgments.
      3. Promote competence in field and consulting botany.
      4. Advance conscientious stewardship of the California flora and its supporting ecosystems.
      5. Assist disadvantaged groups or individuals who request botanical advice.
   B. You will need to know what the 21 standards of professional conduct are identified in the Code of Ethics.
Consulting Botanist

1. Federal, State, and Local Laws and Regulations
   A. You are expected to have a basic understanding of federal, state, and local laws and regulations as they pertain to botanical conservation, resource assessments, impact analysis, and permitting. This includes botany related components of the National Environmental Policy Act, the federal Endangered Species Act, the Clean Water Act Section 404, the California Environmental Quality Act, the California Native Plant Protection Act, the California Endangered Species Act, the California Fish and Game Code, the General Plan Law, tree ordinances, the Oak Woodlands Conservation Act, California Coastal Act, etc. You will need to know how these laws and regulations relate to impact assessments and permitting requirements to the field of botany.
   B. You will need to know what mitigation measures for impacts to special-status plants will be required associated with one or more of the laws/regulations mentioned above for a proposed development project.

2. Reporting and Assessment of Impacts and Findings
   A. You will need to know how to determine both direct and indirect impacts a project may have on the botanical resources onsite and adjacent to the project site.
   B. You will need to demonstrate how to determine or establish significance thresholds.
   C. You will need to explain how a significant impact can be feasibly mitigated to less-than-significant levels.
   D. You will need to know the basic process that must be followed to comply with CEQA and NEPA.
   E. You will need to know how to document or support your findings.
   F. Since assessments need to be objective, you will need to be able to identify various methods that are available to assess habitat functions, and how those functions may be enhanced, impaired, or altered based on various project and/or mitigation scenarios.

3. Development and Implementation of Mitigation Measures
   A. You will need to know how to develop a mitigation measure.
   B. You will need to know how a mitigation measure can/should be implemented.
   C. You should be able to determine when mitigating a significant impact is not feasible.
   D. You should know how to identify success criteria and thresholds for mitigation measures.
   E. You should know how long monitoring implementation of a mitigation measure will need to be conducted.
   F. Since development of mitigation measures requires a strong understanding of site conditions, you will need to have a good grasp of ecology, soils, geology, and hydrology.

4. Botanical Resources Stewardship
   A. You should know statistics as they apply to botanical resources.
   B. You should know how to manage a rare plant population under differing scenarios/stressors.
   C. You should have a good understanding of restoration ecology.

References and Links to Online Resources


California Department of Fish and Wildlife’s Natural Diversity Database [http://www.dfg.ca.gov/biogeodata/cnddb/](http://www.dfg.ca.gov/biogeodata/cnddb/)

California Laws Protecting Native Plants - [https://www.wildlife.ca.gov/Conservation/Plants/Laws](https://www.wildlife.ca.gov/Conservation/Plants/Laws)


CEQA Guidelines [http://resources.ca.gov/ceqa/guidelines/](http://resources.ca.gov/ceqa/guidelines/)

CNDBD [http://www.dfg.ca.gov/biogeodata/cnddb/](http://www.dfg.ca.gov/biogeodata/cnddb/)


CNPS Rare Plant Inventory online - [http://www.rareplants.cnps.org/](http://www.rareplants.cnps.org/)

Consortium of California Herbaria - [http://ucjeps.berkeley.edu/consortium/](http://ucjeps.berkeley.edu/consortium/)


Hydrogeomorphic Assessment Method (wetland functions)


Jepson eFlora - [http://ucjeps.berkeley.edu/eflora/](http://ucjeps.berkeley.edu/eflora/)

Jepson Interchange - [http://ucjeps.berkeley.edu/interchange/](http://ucjeps.berkeley.edu/interchange/)


NEPA general information - [http://www2.epa.gov/nepa](http://www2.epa.gov/nepa)


Various CNPS Policies - online http://www.cnps.org/cnps/conservation/policies.php
