Position Classification Flysheet for Botany Series, GS-0430

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SERIES DEFINITION

This series includes positions which involve research or other professional and scientific work in the field of botany, including plant taxonomy, morphology, ecology, and ethno-botany. This work requires full professional education and training in the plant sciences and a fundamental knowledge of the principles, methods, techniques, procedures, and relationships of the science of botany and of the application of this knowledge in the investigation, analysis and solution of botanical problems.

This series includes positions formerly classified in the Plant Taxonomy Series, GS-0433, which is abolished. The classification standard for the Plant Taxonomy Series issued in January 1948 under the series code P-487 (later recoded to GS-0433) is rescinded.

INCLUSIONS AND EXCLUSIONS

Botany or plant science should be viewed as a broad spectrum of fundamental and applied science that requires extensive preparation in the plant sciences and the related biological and physical sciences, and to an increasing degree in mathematics, statistics and the earth sciences as well. Therefore, the traditional specialties of botany, taxonomy, and morphology, and the related plant sciences, i.e., plant physiology, plant pathology, agronomy, et al., tend to overlap considerably and are often found in combinations. Further, in the Federal service, both the traditional specialties of botany and many of the basic and applied plant sciences are subject to substantial change over a period of time as the discipline evolves, recombines and advances, and programs change in scope and emphasis. As a direct result of this occupational mix, scientists working in closely related occupations may perform work that could very well be defined as a part or phase of botanical work, and, conversely, the botanist may be performing work that could be described as a part or phase of the work performed in a closely related area of the plant or, in some cases, physical sciences.

Distinctions between botanist positions and others involving closely-related disciplines depend upon the purpose of the work, the background of the incumbent, the methodology and approach involved, the career patterns, and the requirement for the application of a full range of botanical skills and knowledges. In many instances, the best single indicator to proper classification of positions involved in professional work in the plant sciences is the purpose of the work as determined by responsible management.

Excluded from this series are the following classes of positions:

1. Positions concerned primarily with the study and investigation of microscopic and sub-microscopic organisms, such as protozoans, bacteria, viruses, fungi, etc., and requiring a broad knowledge of microbiological methods, techniques, and procedures are classifiable in the Microbiology Series, GS-0403.

2. Positions concerned primarily with the study and investigation of the principles and mechanisms of transmission of characters by inheritance are classifiable in the Genetics Series, GS-0440.

3. Positions concerned primarily with the study and investigation of the cause, nature, prevalence and severity of plant diseases and the control of such diseases are classifiable in the Plant Pathology Series, GS-0434.

4. Positions concerned primarily with the study and investigation of the chemical properties of plants and plant materials are classifiable in the Chemistry Series, GS-1320.

5. Positions concerned with the life functions and processes of plant life are classifiable in the Plant Physiology Series, GS-0435.

6. Positions concerned primarily with the breeding, development, and selection of improved hybrids and varieties of crops, and the effects of crop management practices on the yield, quality and adaptation of field and pasture plants, or of orchard, vegetable and ornamental plants, are classifiable in the Agronomy Series, GS-0471, or the Horticulture Series, GS-0437, respectively.

BACKGROUND INFORMATION

Botany, which may be defined as that branch of biology dealing with plant life, is one of the fundamental sciences. Botany is one of the two basic biological' sciences which form the broader scientific field of biology, the study of life in all its various manifestations.

The range of interest in plants extends from the study of the composition and arrangement of the structure of the DNA molecule in the nucleus of a plant cell to the investigation and analysis of complex ecosystems and their effect on man, his environment, and his future. The science of botany includes the studies of the chemical and physical natures of the material and processes of plant cells, and the organization of cells into tissues and tissues into organs. Botany is also concerned with the history of plant life, with relations of plants to all phases of their environment, and with what may be loosely termed "industrial and agricultural applications."

Traditionally, the science of botany has been divided into the main specialties -- plant taxonomy and plant morphology -- which are themselves subdivided and recombined still further. Plant taxonomy is concerned with the classification of the members of the plant kingdom. Its object is to identify them by name and description and to arrange them, according to their natural relationships, into species, genera, families and orders. Since many of these relationships can be determined only through a knowledge of evolutionary history, the science of plant phylogeny, which endeavors to trace the genealogy of the plant kingdom, is important to plant taxonomy. Fundamental structural resemblance is an expression of relationship, and relationship denotes descent from common ancestry. However, it is in the determination of the degree of relationship that the highest level of judgment must be exercised.

Plant morphology is concerned with the form and structure of plants. Its object is to describe the structure of the plant body and to trace underlying similarities in form between various plant groups. Under morphology are included anatomy which deals with internal structures, cytology which deals with the structure of the cell, embryology which deals with the development of the individual, and morphogenesis which deals with the factors determining form and structure.

Aside from these major specialties of botany, there are other fields of botany which also deserve mention. Plant ecology is concerned with the relationship between plants and environment, and structural and functional modifications resulting from changes in environment. Ecology necessarily involves both morphology and physiology, as well as several other sciences. Plant geography is concerned with the geographical distribution of plants and the factors by which this is determined. Plant geography is related to plant taxonomy and ecology, and to geology and geography. Paleobotany is concerned with the taxonomy, phylogeny, morphology and geology of fossil plants.

INTERDISCIPLINARY POSITIONS

The traditional specialties within the field of botany tend to overlap and are often found in combination. In some cases, work which may be termed "botanical" in the generic sense, may also fall within the scope of another discipline. Some botanist positions are involved in the performance of research which requires the methodology of another discipline, e.g., the ecologist performing environmental studies uses the techniques and instrumentation of the physical sciences. Other botanists, such as those performing studies in taxonomy, may specialize in an individual plant or plant group normally associated with one of the applied sciences (e.g., horticulture, agronomy, et al.).

Some positions (e.g., paleobotanist, plant geographer) may involve combinations of full knowledges in two or more disciplines or could be staffed by qualified scientists from more than one discipline. For example, depending on the purpose of the work and the methodology involved, a position requiring the performance of paleobotanical duties could be filled by a suitably competent geologist or botanist. Positions involving work which may be the concern of more than one specifically defined discipline or area of endeavor may be classified by use of the interdisciplinary classification technique found in the Introduction to the Position Classification Standards.

SPECIALIZATIONS AND TITLES

Although the science of botany has many subject-matter and functional specializations (which may occur in combination with other scientific disciplines), no specializations are designated in this series. Because of the diversity of positions included in this series, a variety of specializations could be established which would appear valid from a purely descriptive point of view. However, the establishment of many such specializations for the Federal service would unduly fragmentize the occupation and needlessly complicate the processes of personnel management. Selection of candidates for specific positions requiring highly specialized

knowledges and skills can be accomplished by careful consideration of both the specific requirements of the position and the qualifications of the candidates.

The basic title for all positions in this series is "Botanist." Positions which include significant supervisory responsibilities and require supervisory qualifications will be identified by adding the prefix "Supervisory" to the basic title.

DETERMINING OF GRADE LEVELS OF POSITIONS

Practically all, if not all, positions in this series are engaged in the performance of basic or applied research in the field of botany and should be evaluated by reference to the material contained in the Research Grade Evaluation Guide. The few remaining positions are usually supervisory in nature, require the assumption of substantial administrative or program responsibilities or involve the review and evaluation of research material or similar data. In most instances, these remaining positions require research competence also, because they involve the direction or coordination of the performance of research. Since there are so few nonsupervisory nonresearch positions, the establishment of grade-level criteria for their evaluation was not considered practicable.

Among the published standards that may be used as cross references in the evaluation of nonsupervisory nonresearch positions in this series are those developed for the Agronomy Series, GS-0471; the Chemistry Series, GS-1320; and the Museum Curator Series, GS-1015. Part II of the General Schedule Supervisory Guide should be used to evaluate positions which include important supervisory responsibilities.