Class Specification
for the

ENTOMOLOGIST SERIES

This series includes those positions requiring professional knowledge and competence in applying and adapting fundamentals of the biological and physical sciences underlying the field of entomology to the solution of entomological and allied problems.

Entomology is that branch of science which deals with the characteristics and life processes of insects, the interrelationships between insect species, their relationships to other living forms, their reactions to and influences on the environment in which they are found and their impact on man's health and welfare. State entomologists are assigned to programs in the department of Health and Agriculture. They are concerned with flies, snails, beetles and other pests (including rodents) of economic and/or medical significance, and with the development, test or application of methods for their propagation or control. Major approaches to problem solving include methods of manipulating the effectiveness of the natural enemy; modifying the environment; changing adverse agricultural practices; introducing predators, parasites, pathogens and other beneficial organisms; devising and adapting abatement practices; applying chemicals; and integrating biological, chemical, cultural and/or other control measures.

Individual work assignments are highly diversified and may require specialized knowledge, skills and abilities. Patterns of specialization are not standardized but may be by species or type of pest, with emphasis on their taxonomy life cycle, population, geographic distribution and similar factors; by biological approach, i.e., anatomy, physiology, cytology, genetics, etc.; by environmental approach, i.e., ecology; by type of control technique, i.e., chemical, biological, physical or cultural; by host-pest relationships, i.e., pests of agriculture, forests, ornamentals or disease vectors of animals or man; and by combinations of the foregoing. However, regardless of the approach or specialized involvement, all entomologists must possess a common core of basic knowledge which include basic general entomology, basic insect taxonomy, physiology and ecology, as well as a good knowledge of chemistry, physics, mathematics or statistics. They must also have or develop the ability to apply fundamental principles and theories with versatility, judgment and perception; to organize, analyze, interpret, evaluate and report on biological and ecological data and to assess or predict their interactions under varying combinations of conditions; and to work out original approaches, innovations and interpretations in techniques.
Work assignments of the Entomologist include varying combinations of and emphasis in: (1) basic studies of taxonomy, biology, physiology, genetics, ecology and demography, behavior, culture methods and nutrition; (2) all phases of foreign exploration for beneficial organisms, their collection and shipment; (3) extensive systematic studies of the ecology and host relationships of certain species to develop data on fecundity, longevity, host preference, host specificity, and sex ratio; (4) basic ecological studies to facilitate mass culture of beneficial insects to manipulate the natural enemy’s adaptation and increase its efficiency, and/or to modify the environment for conservation, sanitation and control; (5) surveys to detect, delimit and analyze insect or pest problems, to provide a scientific ecological basis for other control methods, to assess the establishment and distribution of colonies, to evaluate their effectiveness, to project control expectations and/or to develop state-federal cooperative support and action; (6) experiments designed to study adverse influences of pesticides, to screen adaptation of new insecticides, rodenticides and chemosterilants, to develop and adapt methods and procedures of application and evaluation; and (7) cooperative arrangements of local, national and international scope in the collection and exchange of data, material, insect specimens, etc., the furtherance of program objectives and projections, the integration of exploratory or other professional efforts, and the cultivation of effective interrelationships.

Entomological problems represent a range of complexity from the simple to the highly involved relative to: (1) the current state of knowledge of the biology of the insect or insects under study, (2) the biological and ecological variables to be considered, (3) the current state of development of effective measures to prevent or to detect, evaluate and control noxious insect outbreaks, and (4) the level of scientific knowledge and creative judgment essential to devising optimum solutions.

The levels of classes in this series are distinguished by three broad classification factors:

1. **Scope and Impact of Assignments:** This factor reflects the nature, diversity and inherent complexity of assignments, the significance and effect of decisions made and actions taken, the degree of knowledge and skills required and the mental demands, involved.

2. **Level of Responsibility:** This factor reflects the nature of control exercised over an incumbent, the nature and scope of recommendations and commitments made, and the purpose and nature of personal contacts.
3. **Knowledge and Abilities Required:** This factor includes the knowledge, abilities and other qualifications required for adequate performance of the work.

The class specification for the classes Entomologist II, III, IV & V were amended on September 27, 1982 due to incorporation of managerial levels in EMCP in accordance with Act 254, SLH 1980. The specification for Entomologist V is further amended as of the approval date indicated below.

**DATE APPROVED:** 8/7/84 /s/ Clement L. Kamalu
for JAMES H. TAKUSHI
Director of Personnel Services

---

**ENTOMOLOGIST II** 5.192

**Duties Summary:**

Assists in the conduct of entomological research, development, prevention and control work; receives training in the more advanced methods, procedures and techniques to supplement academic training; and performs other related duties as assigned.

**Distinguishing Characteristics:**

1. **Scope and Impact of Assignments:** This class involves the performance of diversified laboratory and/or field work limited in complexity by standard techniques, well defined procedures and guidelines and close supervision of a higher-level entomologist.

Work assignments at this level are designed (1) to combine performance of productive entomological work with supervised on-the-job training in both judgmental and methodological aspects of the program and (2) to provide for progressive growth and advancement to problems typical of the next higher level. Decisions and recommendations are limited by the nature of assignments typical of this level and relate primarily to work organization, planning project approach, selecting relevant data, applying a variety of established standard methods and formulating conclusions and recommendations.
2. **Level of Responsibility**: Positions at this level are under close supervision. Assignments are specific as to purpose of scope of the work and scientific and methodological issues to be anticipated. Guidance is available from a higher-level entomologist. Completed work is reviewed for adherence to instructions, technical accuracy and particularly, for grasp of the fundamental scientific concepts of the field as an essential to further professional development.

Personal contacts beyond the supervisory chain are incidental to the entomological work performed and are usually confined to the exchange of information with cooperators on a specific assignment.

3. **Knowledge and Abilities Required**:

   **Knowledge of**: Basic principles and practices of general entomology, insect morphology, physiology and ecology; fundamental principles of chemistry, physics, mathematics and/or statistics.

   **Ability to**: Use and care for laboratory and field equipment and apparatus; apply standard laboratory procedures and techniques; apply standardized survey and sampling methods associated with entomology control work; prepare reports and understand and carry out instructions.

**Examples of Duties**:

Makes responsible identifications of the more important species of insects and maintains current knowledge of their life history, habits, etc., and of known preventive and control measures; participates in detection surveys to observe, record and report infestations or parasite establishment; participates in the development of new or improved control practices or in the pilot testing of new pesticides; propagates and colonizes the less difficult species of beneficial insects; performs and records detailed biological studies of the beneficial insect and of the insect host; assists in the taxonomic reference collection of insect and other pest specimens.

---

**ENTOMOLOGIST III**

**Duties Summary**:

Independently performs a limited range of professional entomological assignments; may serve as project leader; and performs other related duties as assigned.
Distinguishing Characteristics:

1. **Scope and Impact of Assignments:** This class is the first level of independent worker in professional entomological work. Work assignments encompass problems of average difficulty and complexity but do not reflect the full range of professional responsibility. Work is characterized by the analysis and evaluation of conditions, characteristics, values and relationships of entomological problems and recommendations for their solutions. At this level, the entomologist is expected to exercise a working knowledge of the biology and ecology or particular pest insects, their host relationships, the environmental elements influencing their abundance, and methods for their control. However, much of the research relating to these assignments has been completed. Problems center around the tangible and intangible values involved, the cost of suppression, the time availability for control treatment, and the need for cooperative support.

2. **Level of Responsibility:** Scope of assignment and objectives to be met are specified by the supervisor. The incumbent at this level is expected to plan projects and to select, apply and adapt standard methods and techniques in carrying out the work assignment. Potential and actual sources of controversy are typically discussed with the supervisor. Work plans may be reviewed prior to initiation.

   Conclusions and recommendations are reviewed for completeness accuracy, correlation with various related activities in entomology and accomplishment of objectives.

   Contacts with other entomologists, plant pathologists, toxicologists, or other scientists are to collect or exchange information and opinions on the scientific substance of the assignment.

3. **Knowledge and Abilities Required:**

   In addition to the knowledge and abilities required at the next lower level, a position in this class requires thorough knowledge of the life history, habits, and host relationships of more important pest insects, of the influences of pertinent biological, ecological and environmental factors, and of a wide range of standard control methods and techniques. A position in this class also requires the ability to integrate pertinent knowledge and apply initiative, imagination and sound professional
judgment to accomplishing work assignments and the ability to meet and work effectively with the general public and other scientists.

Examples of Duties:

Plans, organizes and outlines technical training program for surveillance and preventive or control purposes; provides routine advisory services to the public and others in the identification of insects or in the application of specific control measures; serves as team leader in planning and carrying out systematic surveys to detect and report on the scope and severity of infestations, to determine the need for control operations, to evaluate the effectiveness of control results, and to determine any adverse effects; conducts systematic studies on specific insects, parasites, predators, and pathogens; draws conclusions, formulates recommendations, and records findings.

ENTOMOLOGIST IV

Duties Summary:

Independently performs the analysis, evaluation and solution of complex entomological problems with statewide implications; may supervise lower level entomologists as assigned; and performs other related duties as assigned.

Distinguishing Characteristics:

1. Scope and Impact of Assignments: This class represents the fully operating professional level. Assignments consist of diverse complex technical problems. Typical assignments usually require consideration of and selection from several alternative approaches or solutions to problems and require the adaptation and expansion at guides and criteria.

Assignment patterns at this level may diverge widely - consisting of:

(1) full range of detection, evaluation, prevention or suppression activities for a variety of established insect and other pests, including the professional appraisal of a problem and the recommendation, development and adaptation of appropriate measures; or

(2) specialized involvement with emphasis on detection and evaluation surveys or on prevention and suppression problems, including the integration and adaptation of scientific methods and systems.
The entomologist at this level contributes significantly to program planning, development and operation through conduct of systematic detection surveys and other specialized studies, evaluation of infestation significance, modification and adaptation of techniques, publication of survey data, recommendation of appropriate preventive or suppressive measures, exploratory search and collection of predators, etc.

At this level, entomological problems are complex due to the wide range of biological and environmental variables to be considered, particularly with the influences of rapidly changing socio-economic and environmental factors. However, there are extensive scientific data published to assess the interaction of these variables.

2. **Level of Responsibility:** Work assignments specify scope and, objectives, but do not usually specify methods and techniques. Supervision and review consist of providing advice on new policies and procedures and when requested, on complex problems where there is no precedence and literature is limited.

Completed work is reviewed on a spot-check basis for effectiveness of approach and accomplishment of broad program objectives.

Public contacts are significant requiring depth of knowledge as well as communication skill. Contacts are made with a wide range of scientists, organized groups, agricultural and health representatives, other government agents, and general public. These are usually for the purposes of consultation, collaboration, cooperation, education and understanding of preventive and suppressive measures.

3. **Knowledge and Abilities Required:**

In addition to the knowledge and abilities required at the next lower level, a position in this class requires, knowledge of current research efforts and insect control practices in specific areas of concern, working knowledge of principles of related fields such as forestry, plant pathology, toxicology, taxonomy, etc., and a working knowledge of a variety of standard statistical methods used in resolving scientific problems. A position in this class also requires the ability to recognize a wide range of factors and symptoms of entomological concern; judge and select from alternative solutions and modify, innovate and adapt control methods and techniques; analyze, evaluate and draw sound conclusions, prepare and submit
findings for publication, and develop recommendations for action; establish and maintain effective working relationships.

Examples of Duties:

Formulates, coordinates and implements work plans for the detection, prevention, evaluation and suppression of insect and/or other pest infestations; serves as project leader or as a specialist in systematic surveys, development and collection of biological, ecological and other scientific data for exploratory or other purposes, and other scientific investigations; conducts informational sessions and publishes survey determinations and observations; develops, modifies, and recommends prevention and suppression measures; oversees and provides technical guidance in the application of appropriate chemical, cultural, biological or regulatory controls; maintains substantial contacts and interaction with a wide range of facilities, agents, etc.

ENTOMOLOGIST V

Duties Summary:

Plans, coordinates and supervises substantial entomology activities; serves as subject matter specialist and advisor in a highly specialized function; and performs other related duties as assigned.

Distinguishing Characteristics:

1. **Scope and Impact of Assignments:** This level reflects three types of involvement, all of which are characterized by substantial scientific complexity and diversity, significant economic or health implications, and large gaps in scientific data for evaluating the biological and ecological variables and for selecting, modifying or developing of optimum detection, prevention, evaluation or suppression measures.

   **Type A.** Specialized research or related involvement to study, develop and expand data on the life history, habits, parasites, predators, host relationships, distribution and behavioral patterns of pest insects; to extend knowledge and provide scientific data for better assessment of biological and environmental factors and their interaction; and to provide a scientific basis for selection or modification and evaluation of techniques.
Type B. Supervision of a major section involving significant coordination and integration of field and laboratory activities. Primary function of the section is to propagate and colonize beneficial insects and other organisms, to evaluate their effectiveness, and to optimize suppression measures. Involvement however, encompasses a wide range of subordinate observations or experiments, diversity of techniques required, host plant or plants of critical economic importance, multiple projects under way and projected, consultation and advisory services, and administrative details of training, budgeting, staffing, etc.

2. Levels of Responsibility: At this level, the entomologist functions as a fully competent professional in the special area of assignment. Recommendations made are typically accepted as being scientifically sound. Completed work is reviewed for adequacy and conformance with all overall agency programs, policies and procedures and for feasibility in relation to fiscal or other resources.

Public contacts are extensive with a wide range of representatives from the public and private sectors for varied purposes, including the negotiation of controversial issues to attain program objectives and public acceptance.

3. Knowledge and Abilities Required:

In addition to the knowledge and abilities required at the next lower level, a position in this class requires knowledge of the principles and practices of supervision. A position in this class also requires particular skill in the adaptation of current methods, techniques and procedures to assigned functions and a comprehensive grasp of the relationships of entomological problems and practices to those of related disciplines.

Examples of Duties:

Plans, develops and coordinates long-range programs including the prescription of standards, methods and objectives; plans and conducts basic and applied research studies to develop and/or improve on scientific approaches to pest control problems; plans and conducts educational and informational sessions in and out of government on the specialty involved, the roles and relationships of counterparts in government and
industry, and the approaches and implications involved; reviews the internal units supervised and provides for their growth and effectiveness; serves as expert consultant in a specialty such as taxonomy, foreign exploration, and insectary propagation.

ENTOMOLOGIST VI 5.196

Duties Summary:

Plans, directs and coordinates statewide program activities in the introduction, culture and establishment of beneficial insects and other organisms; or supervises the research, development and regulatory activities of the Hawaii Entomology and Plant Quarantine Station; and performs other related duties as assigned.

Distinguishing Characteristics:

1. Scope and Impact of Assignments: This class represents two types of involvement, both of which require substantial authority in the special area of competence and scientific and administrative substance to cope with the critical and often controversial problems involved:

   Type A. Serves as expert consultant in the overall program of biological, cultural, mechanical and chemical control with special emphasis on foreign exploration, introduction and evaluation of biological control agents; or

   Type B. Serves as supervisor of a station, the size, diversity and complexity of the Hawaii Entomology and Plant Quarantine Station and as principal specialist in the culture and establishment of beneficial organisms and in the coordination and conduct of plant quarantine and regulatory activities.

The problems presented at this level are of the magnitude and complexity requiring mature and authoritative scientific judgment to recommend or take timely and appropriate action. Solutions to epidemics, chronic infestations, newly introduced species of explosive potential or other similar problems typically require careful and penetrating analysis of a variety of control methods or techniques, particularly during their incipient or experimental stages.
2. **Level of Responsibility**: At this level, the entomologist is viewed as a professionally mature technical authority in his particular area of assignment. Recommendations are recognized as representing optimum technical solutions, are reviewed primarily in relation to broad policy and administrative controls (e.g., budgets, other resources) and are relied upon to form the basis for determining or modifying programs and actions.

At this level, the entomologist represents and commits the department in conference with other departments, local authorities, private agencies, and public groups in efforts to obtain and reconcile all pertinent points of view regarding proposed plans, standards and programs and to assure concerted action by all parties involved to explain and obtain support for policies and programs.

3. **Knowledge and Abilities Required**:

(1) Comprehensive grasp of the principles of entomology, (2) an intensive knowledge of the "current state of the art" as it relates to the biology, ecology, behavior and control of the particular species of insect or other pests involved, and (3) a thorough understanding of the principles of associated scientific fields such as botany, zoology, chemistry, forestry, etc., are essential. Also, the ability to exercise practical judgment.

An unusually high degree of originality, creativity, versatility, and professional competence is required to interpret and convert overall objectives and policies into specific plans, programs and activities designed to resolve entomological problems. Must be capable of developing, and directing such a program, guiding and managing personnel and evaluating work accomplishments and program emphasis.

**Examples of Duties**:

Plans, organizes, coordinates and interprets research and non-research activities in the exploration, introduction and evaluation of biological and other control agents and, in the situation of Type B, the Hawaii regulatory and quarantine efforts; provides technical leadership and guidance in the updating and strengthening of program competence and outlook; develops and fosters mutually advantageous working relationships with researchers, other scientists, academic community, private organizations and local government representatives; negotiates cooperative working arrangements to expand resources and enhance timely attainment of objectives; and provides substantive technical and administrative assistance to the Entomologist-in-Charge.