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CLASSIFICATION STANDARD

BIOLOGICAL SCIENCES

SCIENTIFIC AND PROFESSIONAL CATEGORY

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BIOLOGICAL SCIENCES

SCIENTIFIC AND PROFESSIONAL CATEGORY

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INTRODUCTION

This standard describes the plan to be used to classify positions allocated to the Biological Sciences Group. It consists of an introduction, definitions of the Scientific and Professional Category and the occupational group, a glossary of terms, factor definitions, characteristics and degree highlights, and bench-mark position descriptions.

The ultimate objective of job evaluation is the determination of the relative values of jobs in each occupational group. A classification plan of five levels, representing significant differences in the difficulty of the work, has been established for this group. Jobs assigned to a given level are regarded as being of equal difficulty.

Factors

The evaluation of positions and their assignment to a classification level will be determined by the application of five factors:

Kind of Assignments
Complexity of Work
Professional Responsibility
Management Responsibility
Impact of Recommendations and Activities

Each factor is described, and the descriptions designate the features of the work assigned to positions allocated to the group.

Factor Characteristics

The factor characteristics are shown under each factor. The characteristics indicate the features of the work that are to be considered when evaluating a position under a particular factor.

Highlights which describe and distinguish the increasing difficulty of the work from the lowest to the highest degree, are provided for the five degrees of each factor characteristics. These highlights describe the features of the work that will be found in most positions.

Bench-mark Positions

Bench-mark positions exemplify the degrees of the characteristics, the degrees of each factor and the levels of the classification plan. Each bench-mark consists of a descriptive title, a series of statements of the principal duties, and a set of specifications describing the features of the work of the position in terms of the characteristics of each of the five factors. The specifications exemplify the application of the evaluation plan to the duties and responsibilities of the bench-mark position and substantiate the degree assigned to the position for the characteristics and the factors. A classification level is assigned to each bench-mark position.

Use of the Standard

There are six steps in the application of this classification standard.

1. The position description is studied to ensure understanding of the position as a whole and of the nature of the duties and responsibilities as they relate to the characteristics of each factor. The relationship of the position being studied to positions above and below it in the organization is also studied.

1. Allocation of the position to the category and group is confirmed by reference to the definitions and the descriptions of inclusions and exclusions.
- 2.
3. A degree under each of the factor characteristics is tentatively assigned to the position being evaluated, by considering the duties and responsibilities of the position in relation to the degrees described for the factor characteristics, and attributing to the position the degree whose definition best reflects the conditions that are typical of the work of the position and most closely corresponds to its difficulty in terms of the characteristic. The degree tentatively assigned is confirmed by comparison with the bench-mark position descriptions and rating specifications for the characteristic.
- 4.
5. A degree under each factor is assigned to the position. The degree to be assigned for a factor is determined by the degree which predominates for the factor's characteristics. When one degree does not predominate, the raters are to compare the overall intensity of the requirements of the position with respect to the various characteristics of the factor with the bench-mark positions, and attribute to the position the factor degree that best equates, on the whole, to the bench-mark positions.
- 6.
7. The level of the position is determined by the degree that has been assigned to the position for at least three of the five factors. When one degree does not predominate, raters are to compare the total job with the bench-mark positions and determine the level that best corresponds, on the whole, with the duties and responsibilities of the position.
- 8.
9. The position is compared with bench-mark positions that have been assigned to the same level, as a check on the validity of the level selected.

Guide

A Guide identifying a series of distinguishing features characterizing positions found typical of each level is included in the standard.

CATEGORY DEFINITION

Occupational categories were repealed by the Public Service Reform Act (PSRA), effective April 1, 1993. Therefore, the occupational category definitions have been deleted from the classification standards.

GROUP DEFINITION

For occupational group allocation, it is recommended that you use the [Occupational Group Definition](#) and [the Occupational Sub-group Definition Maps](#), which provide the 2005 group and sub-group definition and their corresponding inclusion and exclusion statements. The maps explicitly link the relevant parts of the overall 2005 occupational sub-group definition to each classification standard.

GLOSSARY OF TERMS

For the purpose of this standard -

Biological Sciences - Refers to the sciences which deal with the origin, physical characteristics, life processes and behavior of plants and animals. It includes botany, zoology, microbiology and their related fields such as ecology, entomology, cytology and genetics. - It also includes the application of the principles of biology to chemical, physical and geological systems.

Biological Analysis - Refers to the qualitative or quantitative examination of biological matter or organisms to determine their nature, number, proportion, function or relationships.

Bioassay - Refers to the use of living organisms to identify or quantify the biological effect of some substance, factor or condition.

Biological Resources - Refers to populations of plant and animal species in a natural environment or in captivity.

Biological Resources (Management of) - Refers to the process of controlled consumption or conservation of biological populations.

Biological Systems - Refers to living organisms and their vital processes.

Conflicting Interests - Refers to different opinions or points of view that lead to a confrontation between individuals or organizations in respect of the advantageous or detrimental results of a contemplated action.

Continuing Operation - Refers to tasks or investigations, usually of an ongoing nature or occurring in a pattern or in repetitive cycles.

Contracts/Agreements (Evaluating of) - Refers to the critical examination of contract/agreement proposals or work done under contract for scientific merit or quality and the provision of a recommendation of acceptance with or without modifications or rejection.

Ecology - Refers to a branch of biology that deals with the relations between living organisms and their environment.

Eco-Systems - Refers to a unit of biological organization representing a community composed of its living organisms interacting with their environment.

Implications of External Matters - Refers to the difficulty added to the work because of the need to recognize the interests of others, including those over whom little effective influence can be exercised.

Organizational control - Refers to the control over a staff and its work that is exercised through an established organizational structure by means of which levels of responsibility and authority are clearly identified.

N.B.: Some of the terms defined in this Glossary are not used in this standard. However, the definitions of such terms can help ensure consistency where their use may be indicated.

Organizational Unit - In terms of size, refers to that which makes up or is understood to be encompassed by "normal span of supervisory control of professionals". - As illustrated by bench-mark positions, the number of staff is normally a function of the nature/complexity, conditions and requirements of the work, as well as of the type of organizational structure applied.

Outside Assistance - Refers to temporary assistance needed for the work and which must be obtained from sources ranging from outside the immediate organizational unit to organizations outside the Public Service.

Policy - Refers to a declaration of aims and intent established by legislation or ministerial authority to guide future courses of action.

Program - Refers to the general plan designed to achieve the objectives determined by a department or agency to meet the aims and intent of policy.

Project - Refers to a unit of work for which objectives have been defined and which is circumscribed by budgetary controls, time limits and the availability of resources.

Related Fields - Refers to general or specialized fields that are pertinent to or associated with the work of professionals in the biological sciences.

Significant Program Activity - Refers to that portion of a scientific based program which is visible as an entity and is comparable to work at the senior management level but with emphasis on the scientific nature of the work.

Specialized Subject Area - Refers to a "subject area" in which there is a narrowing of scope and the work to be performed necessitates an enhanced development of knowledge and experience.

Standards - Refers to:

- (i) A recognized weight, measure or material of specified composition or characteristics, or experimental procedure used as a reference for uniform measurement, comparison or calibration;
- (ii) A set of recognized criteria (mandatory or voluntary) specifying a minimum level of quality, purity, uniformity, performance, or safety for the manufacture, use or handling of a material, product, or device.

Studies - Refers to an in-depth examination or investigation of an area of interest.

Subject Areas - Refers to the facts, theories, ideas, techniques and related matters that are encompassed by a study, investigation, project or program, and include the application of one or more disciplines.

Supervisory responsibility - Refers to the responsibility for scheduling and allocating work instructing, training, controlling and assessing performance of other employees and for ensuring satisfactory completion of their work.

Survey - Refers to a general or broad examination of an area of interest.

N.B.: Some of the terms defined in this Glossary are not used in this standard. However, the definitions of such terms can help ensure consistency where their use may be indicated.

FACTORS AND FACTOR CHARACTERISTICS

FACTOR	CHARACTERISTICS	FACTOR	CHARACTERISTICS
«KIND OF ASSIGNMENT»	<ul style="list-style-type: none"> a) Objectives establishing by others for the work; b) Extent of the work; c) Variety of activities; d) Scope for planning and conducting work. 	«MANAGEMENT RESPONSIBILITY»	<p>(Responsibility for:)</p> <ul style="list-style-type: none"> a) Control of staff; b) Control of physical resources; c) Committing departmental resources; d) Obtaining outside assistance; e) Administrative control of work; f) Co-ordination of work performed for, or in conjunction with other organizational units; g) Implementing or developing administrative procedures, safety and management directives and guidelines.
«COMPLEXITY OF WORK»	<ul style="list-style-type: none"> a) Availability and problems involved in obtaining information and data; b) Validity of information and data; c) Number and variability of the variables and ambiguity of information and data; d) Relationships of the variables; e) Effect of activities of others on the work; f) Nature and purpose of contacts; g) Development of concepts and approaches, procedures, techniques and practices, their adaptation and application; h) Theoretical knowledge which must be applied. 	«IMPACT OF RECOMMENDATIONS AND ACTIVITIES»	<ul style="list-style-type: none"> a) (Impact - Governmental) On departmental work or other government program; b) (Impact - External) <ul style="list-style-type: none"> (i) On an industrial or commercial process, operation or product; (ii) On the state of natural resources or the environment; (iii) On public health and safety; (iv) On other external areas. c) On development and understanding of a body of knowledge.
«PROFESSIONAL RESPONSIBILITY»	<ul style="list-style-type: none"> a) Initiative and judgment in defining objectives, dealing with problems and establishing scientific guidelines; b) Judgment in reviewing and assessing work of others; c) Judgment in interpreting results of work; d) Judgment in giving advice. e) f) 		

FACTOR: "KIND OF ASSIGNMENT"

This factor is used to measure the difficulty of the work in terms of its objectives and extent, the variety of activities and the scope for planning and conducting work.

Notes to Raters

- i) When evaluating a position under this factor, raters are to consider the factor characteristics and their intensity ranging from degree 1 to degree 5, and attribute to the position, for each characteristic, the degree whose definition best reflects the conditions that are typical of the work of the position and most closely corresponds to the intensity of its requirements in terms of the characteristic.
- ii) For a same degree of intensity, all of the characteristics of the factor are considered equal.
- iii) The degree to be assigned to the position for the whole factor, is determined by the degree which predominates (i.e. the degree that has been assigned for at least three of the four characteristics - "A", "B", "C" and "D"). When one degree does not predominate, raters are to compare the overall intensity of the requirements of the position under the factor with that of the bench-mark positions, and determine and attribute to the position the degree which best equates to the bench-mark positions.

DEGREE 1	DEGREE 2	DEGREE 3	DEGREE 4	DEGREE 5
Characteristic A: The objectives	established by others for the conduct of the work.			
Objectives and instructions are provided for the work.	Objectives of the work are clearly defined.	Objectives of the work are defined in terms of activity or project goals.	Objectives of the work are stated in terms of operational goals.	Objectives of the work are stated in terms of goals for a significant program activity.
Characteristic B: The extent	of the work.			
Work normally consists of a part or phase of a project, study or continuing operation requiring limited investigation.	Work normally consists of a number of discrete projects, studies or investigations.	Work involves comprehensive investigations, projects or studies within a specialized subject area.	Work involves the application of a number of scientific principles and theories to complex investigations or studies, within a specialized subject area; or the direction of work in diverse subject areas.	Work is performed within a number of related specialized subject areas and comprises a significant program activity.
Characteristic C: The variety	of activities.			
Activities closely resemble one another in most aspects and consist of a limited number of straight-forward tasks performed successively.	Activities differ from one another and consist of a variety of tasks such as: using a number of related scientific techniques for surveying, observing, analyzing and evaluating products, phenomena or processes; investigating the composition, performance or effect of substances; allocating work to support staff; providing advice.	Activities differ from one another and include using a wide variety of scientific techniques for investigating the composition, performance or effect of substances or systems; or supervising the work of staff engaged in the conduct of analyses or investigations; and providing advice.	Activities differ from one another in many aspects and include several of the following: conducting complete investigations; providing functional direction; coordinating the work with other activities; providing advice; organizing, controlling and supervising the work of staff engaged in the conduct of analyses or investigations; controlling the use of facilities, materiel and human resources.	Activities involving a broad spectrum of scientific and administrative duties which differ from one another in most aspects and include: evaluating and authorizing projects or studies; making recommendations or providing advice on policy or legislation; assessing the implications of work progress on program objectives; providing guidance on the determination of approaches to complex problems; and managing a significant program activity, or coordinating activities at the national and international levels.
Characteristic D: The scope	for planning and conducting work.			
Scheduling and performing work using standardized procedures and techniques.	Planning activities, determining approaches and selecting methods to ensure that the work meets clearly defined objectives.	Planning and performing a broad diversity of work within a subject area, or planning and assigning tasks for the ongoing work of an organizational unit, or a project or study team to ensure that the objectives are met within established guidelines.	Planning, organizing and delegating work of a number of organizational units, or planning and coordinating complex projects or studies to ensure that operational goals are achieved within resources limitations; or planning, organizing and conducting complex projects or studies within a specialized area with high degree of freedom and latitude.	Planning, coordinating and implementing a significant program activity or major scientific studies.

FACTOR: "COMPLEXITY OF WORK"

This factor is used to measure the difficulty of the work in terms of the nature of the information and data used; the influences external to the work; the nature and purpose of contacts with others; the requirement for the development of concepts and approaches, procedures, techniques, and practices, their adaptation and application; and, the theoretical and practical knowledge which must be applied.

Notes to Raters

- (i) When evaluating positions under this factor, raters are to consider the factor characteristics and their intensity ranging from degree 1 to degree 5, and attribute to the position, for each characteristic, the degree; whose definition best reflects the conditions that are typical of the work of the position and most closely corresponds to the intensity of its requirements in terms of the characteristic.
- (ii) For a same degree of intensity, all of the characteristics of the factor are considered equal.
- (iii) The degree to be assigned to the position for the whole factor, is determined by the degree which predominates (i.e. the degree that has been assigned for at least five of the eight characteristics - "A", "B", "C", "D", "E", "F", "G" and "H"). When one degree does not predominate, raters are to compare the overall intensity of the requirements of the position under the factor, with that of the bench-mark positions, and determine and attribute to the position the degree which best equates to bench-mark positions.

	DEGREE 1	DEGREE 2	DEGREE 3	DEGREE 4	DEGREE 5
Characteristic A: The availability	The work requires obtaining or receiving information and data from easily accessible sources.	The work requires obtaining information and data by direct observation, collection or selection from established recognized sources.	The work requires obtaining, by investigation, information and data which are often <i>difficult</i> to obtain, interpret and select. Sources may be identified from past practices or guidelines.	The work requires obtaining, by intensive investigation, information and data which are often difficult to obtain, interpret and select. Sources are difficult to identify and to access.	The work requires coordinating the collection and selection of information and data which are usually obtained with great difficulty and require the conduct of intensive study and investigation. Sources are likely to be obscure or have to be developed.
Characteristic B: The validity of information and data known validity are obtained from recognized reliable sources or by standardized procedures.	Information and data can normally be validated by known procedures or literature references.	Information and data can normally be validated by a combination of experimentation and detailed literature referencing or further field investigations.	Information and data can be validated only by difficult or complex investigations.	Information and data may not be completely validatable.	
Characteristic C: The number and variability of the information and data are characterized by few variables, low variability, lack of ambiguity and are of known implications.	Information and data are characterized by several variables requiring interpretation, but of known implications and variability.	Information and data can be characterized by several variables requiring interpretation, poorly defined variability and some ambiguity.	Information and data can be characterized by variability, many variables, difficulty of interpretation, and the need for judgment to use the data.	Information and data are characterized by high variability, many variables, ambiguity, and require ingenuity and highly selective judgment to use.	
Characteristic D: The relationships between the variables are simple and known.	Relationships between the variables can be established and inconsistencies resolved by straight-forward investigation.	Relationships between variables are sometime conflicting and require investigation and interpretation.	Relationships between variables are complicated and require in-depth investigation to identify and resolve conflicts and interpretation problems.	Relationships between variables are often conflicting and difficult to define and measure.	
Characteristic E: The effect of the activities of others within the organizational unit.	Work is normally affected by the activities of others within the organizational unit and occasionally by the activities of others outside the organizational unit.	Work is frequently affected by the activities of scientists and officials outside the organizational unit.	Work is normally affected by the activities of scientists and officials outside the organizational unit, and requires consideration of the implication of their activities on a project or the ongoing activity.	The work of a significant program activity is affected by the activities of other organizations or agencies and requires consideration of the implications of the activities of their senior scientists or officials.	

FACTOR: COMPLEXITY OF WORK (COHTD)

	<u>DEGREE 1</u>	<u>DEGREE 2</u>	<u>DEGREE 3</u>	<u>DEGREE 4</u>	<u>DEGREE 5</u>
Characteristic F: The nature and purpose of contacts with others.	Contacts are with others within own organizational unit for obtaining and discussing information,	Contacts are with others working in the same or closely related subject areas for obtaining and exchanging information and discussing problems. <i>May</i> provide information and facts to the public and the media.	Contacts are with scientists and officials for obtaining and exchanging information, participating in cooperative projects, resolving problems, and providing advice. <i>May</i> explain on-going activities and objectives of the work and exchange information with the public and the media.	Contacts are with scientists and officials outside the organizational unit for arranging cooperative projects, negotiating terms of agreements, establishing standards, implementing regulations, and for providing advice based on recognized expertise. <i>May</i> provide scientific and technical information to the public and the media on contentious issues.	Contacts are with senior scientists and officials at the national and international levels at meetings where conflicting interest are represented, and agreement affecting a significant program activity are negotiated. <i>May</i> represent the department at public forums and with the media.
Characteristic G: The requirement for the development of concepts and approaches, procedures, techniques and practices, their adaptation and application	The work involves applying conventional practices, techniques and procedures. Minor adaptations may be required.	The work requires adapting practices, techniques, and procedures.	The work requires developing new techniques and procedures using known approaches and existing precedents.	The work requires developing new procedures and techniques using novel approaches where precedents often do not exist.	The work requires approving or recommending new procedures and developing new concepts and approaches. Work is characterized by the absence of precedents.
Characteristic H: The theoretical application of a sound knowledge of the principles and theories of a discipline and some familiarity with its practices.		The work requires the application of a sound knowledge of the principles, theories and practices of a discipline and some familiarity with the practices in related disciplines.	The work requires the application of a thorough knowledge of the principles, theories and practices of a subject area and its pertinent disciplines, and familiarity with the practices in related disciplines, subject areas or supervisory practices.	The work requires the application of a thorough knowledge of the principles, theories and practices of a specialized subject area, and a knowledge of related scientific disciplines, subject areas or of management practices.	The work requires the application of an advanced knowledge of the principles, theories and practices of a specialized subject area, and a good knowledge of related scientific disciplines, subject areas or of management practices.

FACTOR: "PROFESSIONAL RESPONSIBILITY"

This factor is used to measure the difficulty of the work in terms of the checks and controls over the work and the professional leadership received. It is also used to measure the requirement to exercise initiative and professional judgment in defining objectives and dealing with problems, and establishing scientific guidelines; and judgment in reviewing and assessing the work of others, interpreting results, findings and recommendations, and in providing advice.

Notes to Raters

- (i) When evaluating a position under this factor, raters are to consider the factor characteristics and their intensity ranging from degree 1 to degree 5, and attribute to the position, for each characteristic, the degree whose definition best reflects the conditions that are typical of the work of the position and most closely corresponds to the intensity of its requirements in terms of the characteristic.
- (ii) For a same degree of intensity, all of the characteristics of the factor are considered equal.
- (iii) The degree to be assigned to the position for the whole factor, is determined by the degree which predominates (i.e. the degree that has been assigned for at least four of the six characteristics - "A", "B", "C", "D", "E", "F"). When one degree does not predominate, raters are to compare the overall intensity of the requirements of the position under the factor, with that of the bench-mark positions, and determine and attribute to the position the degree which best equates to the bench-mark positions.

	DEGREE 1	DEGREE 2	DEGREE 3	DEGREE 4	DEGREE 5
Characteristic A: The extent to which work is checked by others.	Work is reviewed for consistency and accuracy while in progress and on completion.	Work is accepted as technically accurate. Work assignments and conclusions are reviewed for consistency and completeness.	Work approaches, recommendations and conclusions are reviewed for soundness of judgment in terms of the attainment of study or project objectives.	Key recommendations and conclusions are reviewed for effectiveness. Results are periodically reviewed in terms of the attainment of objectives.	Results are evaluated in terms of achievement of policy and program objectives.
Characteristic 8: The professional guidance received.	Professional guidance is received to assure correct use of methods and techniques.	Professional guidance is received on new aspects of the work.	Professional guidance is received on the resolution of difficult problems.	Professional guidance is received on the resolution of unusual and complex problems.	Guidance is received on policy intent and program implications. Professional guidance may be received from other scientific authorities.
Characteristic C: The requirement to exercise initiative and judgment in defining objectives and dealing with problems and establishing scientific guidelines.	Work requires indicating problems and selecting methods, techniques according to established procedure manuals, guidelines or precedents.	Work requires identifying problems and determining approaches and suitable methods for their resolution.	Work requires defining objectives of studies, identifying problems and determining approaches for the resolution of difficult problems within own subject area.	Work requires establishing the limitations and defining the objectives of projects or studies and indicating likely approaches for the resolution of unusual and difficult problems within related subject areas.	Work requires defining objectives, developing conceptual approaches to complex problems and establishing scientific guidelines for a significant program activity.
Characteristic D: The requirement to exercise judgment in reviewing and assessing the work of others.	Work of support staff is checked for correct application of procedures and consistency of results.	The work of subordinate staff is reviewed while in progress and on completion for technical accuracy. External submissions are reviewed for completeness and compliance with data requirements.	Work of subordinate staff or project team members is reviewed for completeness and compliance with standards and guidelines. Within own subject area, results and findings of other scientists are reviewed for validity or for applicability to own subject area.	Work approaches, recommendations and conclusions of subordinate staff or project team members, are reviewed for soundness of judgment. Other scientists' proposals and studies that are related to own specialized subject area, are reviewed for acceptability.	Recommendations and conclusions of staff are reviewed in term of validity and effectiveness with respect to establish policy, directives, guide lines and resource limitations. Major studies or activities of other scientists are evaluated with respect to own program's objectives.
Characteristic E: The requirement to exercise judgment in interpreting results of work.	Own observations are reviewed to ensure reliability and consistency.	Scientific observations and results are interpreted to produce meaningful information, conclusions, recommendations or reports.	Complex scientific data or results, conclusions and recommendations of subordinate staff or other scientists are interpreted to determine their meaning and implications on work activities.	Results of studies or projects are interpreted to determine the implications of conclusions and recommendations on the objectives of own work and significance to related scientific and other activities.	Results of major studies, conclusions and recommendations are interpreted to determine their broad implications on scientific or other related activities affecting a significant program activity.
Characteristic F: The requirement to exercise judgment in giving advice.	Instructions and guidance may be provided to support staff on matters closely related to the work performed.	Advice is provided to colleagues and support staff on matters closely related to own area of work.	Specific technical advice within own subject area is provided to other scientists and officials and immediate superior. Guidance on scientific matters is provided to subordinate staff or to other scientists contributing to the work.	Advice based on a recognized expertise within a specialized subject area, is given to other scientists and officials.	Authoritative advice and recommendations in a number of related specialized subject areas affecting a significant program activity, are provided to other scientists and semi officials.

FACTOR: "MANAGEMENT RESPONSIBILITY"

This factor is used to measure the difficulty of the work in terms of the responsibility for committing, controlling and managing resources; obtaining outside assistance; controlling and coordinating work; and, for implementing or developing procedures, directives and guidelines.

Notes to Raters

(i) When evaluating positions under this factor, raters are to consider the factor's characteristics and their intensity ranging from degree 1 to degree 5, and attribute to the position, for each characteristic, the degree whose definition best reflects the conditions that are typical of the work of the position and most closely corresponds to the intensity of its requirements in terms of the characteristic.

(ii) For a same degree of intensity, all of the characteristics of the factor are considered equal.

(iii) The degree to be assigned to the position for the whole factor, is determined by the degree which predominates (i.e. the degree that has been assigned for at least four of the seven characteristics - "A" "B" "C" "D", "E", "F", "G"). When one degree does not predominate, raters are to compare the overall intensity of the requirements of the position under the factor, with that of the bench-mark positions, and determine and attribute to the position the degree which best equates to the bench-mark positions.

DEGREE 1	DEGREE 2	DEGREE 3	DEGREE 4	DEGREE 5
Characteristic A: Responsibility				
for the control of staff.				
The work occasionally requires assigning work to non-subordinate support staff.	The work normally requires supervision of support staff.	The work requires the supervision of a unit normally including professional staff.	The work requires the operational management of professional staff including specialists or subordinate supervisors.	The work requires the management and human resources planning through subordinate supervisors of a large staff of professionals.
Characteristic B: Responsibility				
for the control of physical resources.				
Planning day-to-day use of equipment and supplies for own work,	Ensuring proper use of allocated equipment, supplies and facilities.	Controlling the use and the maintenance of allocated equipment, supplies and facilities,	Allocating the use of equipment, supplies and facilities.	Planning, directing and controlling the physical resources allocated for a significant program activity.
Characteristic C: Responsibility				
for committing departmental resources.				
Limited to the spending of own time and the use of materials and equipment for own work.	Identifying the - requirement for equipment, material and services for assigned work.	Recommending the acquisition of specific equipment, material and services to meet work requirements.	Assessing requirements and developing and recommending plans for the acquisition and use of resources, and the expenditure of funds to meet work priorities and objectives.	Exercising delegated authority under the Financial Administration Act for the acquisition of resources and expenditure of funds; or, providing authoritative advice for major expenditures or commitments of departmental resources.
Characteristic D: Responsibility				
for obtaining outside assistance.				
Informing supervisor concerning the need for assistance.	Recommending on the need for assistance.	Substantiating the need for, defining specific requirements, and identifying suitable sources of assistance; and, arranging for readily available assistance.	Selecting and negotiating for suitable sources of assistance relating the probable costs and benefits; or, providing advice based on a recognized expertise within a specialized subject area, on requirements and selection of outside assistance.	Approving or recommending the expenditure of funds for outside assistance; or, providing authoritative advice on requirements and outside assistance for major commitments.
Characteristic E: Responsibility				
for the administrative control of work.				
Complying with procedures, directives and guidelines established for the work.	Ensuring that quality, quantity, safety and other standards for own responsibility are maintained.	Implementing quality assurance, performance measurement and safety procedures to meet unit's objectives.	Controlling and coordinating project schedules and establishing and implementing performance and safety standards and controls to meet priorities and objectives.	Preparing budgets and work plans, planning and implementing safety, quality and cost controls, and recommending objectives and priorities for a significant program activity.
Characteristic F: Responsibility				
for the co-ordination of work performed for, or in conjunction with other organizational units.				
Limited requirement for coordination of activities with those of others,	Occasionally coordinating related activities with those of others,	Coordinating related activities with those of others.	Coordinating differing activities with those of one or more organizational units.	Coordinating activities with several other organizational units with differing interests or conflicting priorities.
Characteristic G: Responsibility				
for implementing or developing administrative procedures,				
Following straightforward office or field administrative procedures.	Implementing office or field administrative procedures.	Interpreting and implementing guidelines and directives.	Recommending and developing internal administrative, safety and management directives and guidelines.	Approving internal administrative, safety and management directives and guidelines, and ensuring correct and consistent application of department and central agency policy, directives and guidelines.

FACTOR: "IMPACT OF RECOMMENDATIONS AND ACTIVITIES"

This factor is used to measure the nature and the extent of the impact directly attributable to the recommendations and activities of the position, given its particular purpose or mission, on governmental work or programs; on industrial or commercial operations, natural resources or the environment, public health and safety, and other external areas directly affected by the position; and, on the development and understanding of a body of knowledge in a subject area.

Notes to Raters

- i) When evaluating a position under this factor, raters are to consider the factor characteristics and the extent of the impact ranging from degree 1 to degree 5, and attribute to the position, for each applicable characteristic, the degree whose definition best reflects or corresponds to the extent of the most likely impact of the position.
- ii) For a same degree of impact, all of the characteristics of the factor are considered equal.
- iii) The degree to be assigned to the position for the whole factor is determined by the degree which predominates (i.e. the degree that has been assigned for at least two of the three characteristics - "A"; the one "B" characteristics: i, ii, iii, or iv identified as the most pertinent to the purpose or mission of the position; and, "C"). When one degree does not predominate, raters are to compare the overall extent of the impact of the position under the factor with that of the bench-mark positions, and determine and attribute to the position the degree which best equate to the bench-mark positions.

(Impact - Governmental)
DEGREE 1

DEGREE 2

DEGREE 3

DEGREE 4

DEGREE 5

Characteristic A:

The impact of recommendations and activities on departmental policies.	and activities on departmental	work or other government programs	in terms of changes to on-going	activities, programs or
Information and results of the work have limited effects on a continuing operation, project or study in own area of work.	Information and results of the work affect a continuing operation, projects or studies in own or closely related areas of work.	Recommendations, advice and results of the work affect a continuing operation, the formulation of guidelines, regulations, specifications or standards, and the development or conduct of projects or studies in own and related areas of work.	Recommendations, advice or consultations contribute to the development of policies and affect the development, conduct or modification of a significant program activity; or decisions affect the implementation of projects, studies, guidelines and directives.	Authoritative recommendations, advice or consultations affect the development of departmental policies and programs; decisions and activities affect the program(s) or activities of other government organizations; or decisions and recommendations affect the development, initiation, conduct or continuation of a significant program activity.

(Impact - External)

Characteristics B:

(i) The impact of recommendations and activities on regulatory effect.	and activities on	an industrial or commercial process,	operation or product in terms	of the contributory or
Information and results of the work have limited effects on an industrial or commercial product, process or operation.	Information and results of the work have economic or technological effects on an industrial or commercial product, process or operation.	Recommendations, advice and results of the work have economic or technological effects on related industrial or commercial products, processes or operations.	Recommendations, advice, consultations or decisions have economic or technological effects on an industry or a broad range of products, processes or operations.	Authoritative recommendations, advice, consultations or decisions have a substantial effect on the development, initiation, modification or continuation of industrial or commercial enterprises.
(ii) The impact of recommendations and activities in	and activities in	terms of the contribution to or	control of the state of natural resources or the	
Information and results of the work have limited effects on the state of a natural resource or the environment.	Information and results of the work contribute to improvements for developing, protecting, conserving or using natural resources or the environment.	Recommendations, advice and results of the work affect the state of natural resources and environmental management practices.	Recommendations, advice or consultations contribute to the development of environmental and natural resource policies; or decisions and recommendations affect the state of the environment or the conservation and use of natural resources within established policies.	Authoritative recommendations, advice or consultations have a substantial effect on the development of policies relating to natural resources or the environment; or decisions and recommendations substantially affect natural resources or the environment.
(iii) The impact of recommendations and activities in terms	and activities in terms	of the contribution to public	health and the reduction or	the control of health and
Information and results of the work have limited effects on public health or safety.	Information and results of the work contribute to determining the efficacy and safety of the processing or use of foods, drugs or medical and radiation emitting devices or to the regulatory control of potentially hazardous products or substances.	Recommendations, advice and results of the work affect the approval and use of foods, drugs, or medical and radiation emitting or other devices with respect to efficacy and safety, or the regulatory control of potentially hazardous products or substances.	Recommendations, advice or consultations contribute to the development of policies; or decisions and recommendations affect the approval and use of foods, drugs or medical and radiation emitting or other devices or other potentially hazardous products or substances with respect to efficacy or safety.	Authoritative recommendations, advice or consultations have a substantial effect on the development of public health and safety policies; or decisions and recommendations substantially affect the control of potential hazards to public health or safety

FACTOR: IMPACT OF RECOMMENDATIONS AND ACTIVITIES (CONT'D)

DEGREE 1

DEGREE 2

DEGREE 3

DEGREE 4

DEGREE 5

Characteristics 8: (Cont'd)

(iv)The impact of recommendations areas directly affected

and activities in terms of the contributory or regulatory by the position, given its particular purpose or mission.

effect on other specifically

identified external

Information and results of the work have limited effects on the specifically identified area directly affected by the position.

Information and results of the work have contributory effects on the specifically identified area directly affected by the position.

Recommendations, advice and results of the work have direct effects on the specifically identified area directly affected by the position.

Recommendations, advice or consultations contribute to the development of policies; or decisions and recommendations have wide ranging effects on the specifically identified area directly affected by the position,

Authoritative recommendations, advice or consultations have a substantial effect on the development of policies; or decisions and recommendations have substantial effects on the specifically identified area directly affected by the position.

Characteristic C:

The impact of recommendations

and activities in terms of the

contribution to the development

and understanding of a body

of knowledge.

Information and results of the work contribute to knowledge in own area of work.

Information and results of the work contribute to improvements in methods and procedures in own area of work.

Development of new methods and procedures and the investigation, analysis and interpretation of scientific information provide knowledge and improved understanding in own subject area.

Development of new concepts and approaches; or, decisions or recommendations contribute to knowledge and improved understanding in a specialized subject area.

Decisions and recommendations affect the initiation, continuation or orientation of studies or projects for the development of concepts, methods, approaches and procedures to acquire new knowledge in one or more specialized subject areas.

POSITION LEVELS: TYPICAL DISTINGUISHING FEATURES
"A GUIDE FOR OVERALL CONSISTENCY"

- Intent: This Guide broadly aims at providing a consistent approach to a global perception or an orientation for a determination of the approximate classification level of a position, using a series of discernible main features characterizing positions identified as typical of each level.
- Provision:
- i) Notwithstanding the above, the Guide is not intended nor shall be used as a substitute for the formal position classification process and the detailed analysis and rating of each position, as required in accordance with the provisions of the rating plan of the Classification Standard.
 - ii) The series of distinguishing features shown for the levels, characterizes, as a whole, universes of positions considered typical of each level. - The series of features for a level shall not be construed as all inclusive nor as relevant in its entirety, to all positions at that level.
- Advantages: The use of the Guide can be of assistance in narrowing, at the outset, the range of possible levels indicated for a position and thus, contributes to a less erratic approach to the discussions for its subsequent detailed analysis and rating. Further, the distinguishing features shown for the various levels in the Guide, and which have been found typical of positions at those levels, provide a broad reference framework which can be of value and, contributes in achieving greater overall consistency in the classification of the positions at the various levels for the Group.

LEVEL 1	LEVEL 3	LEVEL 4
<p>(Positions at Recruiting/Familiarizing Developing Level as well as Positions conducting Work of Relatively Low Complexity)</p> <ul style="list-style-type: none"> - Repetitive, Standardized work of relatively low Complexity - Work subjected to Detailed Review - Limited scope for Independent Actions - Carry out Scientific procedures under supervision - Indicate required Support Work to non-subordinate support staff 	<p>(Positions with Significant Specialization, Diversity/Complexity or with Significant Supervisory Responsibility)</p> <ul style="list-style-type: none"> - Expertise in a specialized Subject Area - First Level of Scientific Advisory Responsibility - Liaison Work Responsibility - Diversity/Complexity - Provide Scientific Project Leadership - Development of New Methods - Validations of: Procedures Techniques 	<p>(Positions requiring a High Level of Scientific Expertise or Position comprising the First Level of Science Based Management Responsibility)</p> <ul style="list-style-type: none"> - High Level of Expertise in a specialized subject area - Second Level of Scientific Advisory Responsibility - Recognized Authority in a Subject - Scientific Co-ordination Responsibility - First level of Management Responsibility - Project Objective Responsibility - Second Level Supervision
<p style="text-align: center;">LEVEL 2</p> <p>(Positions Conducting Basic Professional Work of Moderate Complexity/Diversity)</p> <ul style="list-style-type: none"> - Moderate Complexity/Diversity - Scope for Independent Actions - May Instruct Junior Scientists and Supervise Support Staff - Work Reviewed at Critical Stages/Phases 	<p style="text-align: center;">: Methods Facilities</p> <ul style="list-style-type: none"> - First Supervisory Level: <ul style="list-style-type: none"> - Activities of a Unit - Lead a Group - Lead a Project Team 	<p style="text-align: center;">LEVEL 5</p> <p>(Positions at the Highest Level of Scientific Management within the Group or Positions requiring the Highest level of Scientific Expertise within the Group)</p> <ul style="list-style-type: none"> - Highest Level of Expertise in a Specialized Subject Area - A Senior Departmental Scientific Advisor - High Level Co-ordination/Liaison - Broad scope for Independent Actions within Policy and Resources Framework - Significant input in Policy Development - Management of a Science Based Significant Program Activity, a Significant Work Group or Large Complex Project

LIST OF BENCH-MARK POSITIONS

#	TITLE	LEVEL
1	Biologist - Development Grade (HWC)	1
2	Fruit Tree Biologist (Apples and Pears) (AGR)	1
3	Food Microbiologist (HWC)	2
4	Marine Biologist (F&O)	2
5	Park Ecologist (EC)	2
6	Anadromous Fish Biologist (F&O)	2
7	Wildlife Biologist - Migratory Birds (EC)	3
8	Plant Pathology Biologist (AGR)	3
9	Insecticide Evaluation Biologist (AGR)	3
10	Pesticide Evaluation Biologist (EC)	3
11	Salmon Assessment Biologist (F&O)	3
12	Lake Enrichment Biologist (F&O)	3
13	Specialist, Food Microbiology (HWC)	3
14	Specialist, Drug Microbiology (HWC)	3
15	Head, Marine Microbiology Laboratory (EC)	3
16	Water Development Impacts Ecologist (EC)	4
17	Chief, Migratory Birds Conservation (EC)	4
18	Head, Food Microbiology Laboratory Unit (HWC)	4
19	Head, Fish and Marine Mammal Management Division (F&O)	4
20	Senior Policy/Program Advisor, Marine Fisheries (F&O)	5
21	Head, Food Chemicals Section (HWC)	5

RATING SUMMARY - BENCHMARK POSITIONS

B. M. NO.	TITLE	FACTOR: 1			FACTOR: 2				FACTOR: 3					FACTOR: 4				FACTOR: 5															
		V LVL	KIND OF ASSIGNMENT CHARACTERISTIC/DECREE			COMPLEXITY OF WORK CHARACTERISTIC/DECREE				PROFESSIONAL RESPONSIBILITY CHARACTERISTIC/DECREE					MNGM'NT RESPONSIBILITY CHARACTERISTIC/DECREE				IMPACT OF RECOMM. 6 ACTIVITIES														
		A B C D			A B C D E F G H				A B C D E F G H I					A B C D				A (I) (HI) (iii) (iv) + B C FACT															
1	Biologist - Development Grads (HWC)	1		1	1	1	2	2	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	-	2	-	2	1	1		
2	Fruit Tree Biologist (AGR)	1	2	1	1	1	1	2	2		1	1	2	2	1	2	2	2	1	2	2	2	1	2	2	2	1	1	1	1	2	1	
3	Food Microbiologist (WC)	2	2	2	2	2	2	2	2	2	2	2	2	1	2	3	2	1	1	1	1	1	1	1	2	2	-	Z	-	2	2		
4	Marine Biologist (F&O)	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2		1	2	2	1	2	2	1	Z	2	-	-	2	2		
5	Park Ecologist (EC)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		1	1	2	2	2	1	2	2	2	-	-	2	2		
6	Anadromous Fish Biologist (EC)	2	2	2	2	3	2	2	2	2	2	2	2	2	2	3	2		2	3	2	2	2	2	2	2	Z	-	-	2	2		
7	Wildlife Biologist - Migratory Birds (EC)	3	3	3	2	3	3	3	3	3	3	3	3	3	2	3	3		2	2	3	2	3	2	3	2	3	-	-	3	3		
8	Plant Pathology Biologist (AGR)	3	3	3	2	3	3	3	2	3	3	3	3	3	3	3	3		2	2	2	2	2	2	2	2	3	3	2	-	-	3	3
9	Insecticide Evaluation Biologist (AGR)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		1	1	2	1	3	1	1	3	3	2	3	-	7	3	1
10	Pesticide Evaluation Biologist (EC)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		3	1	1	1	2	1	3	1	3	3	3	2	-	3	3
11	Salmon Assessment Biologist (F&O)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		2	2	2	2	3	1	2	3	3	3	-	-	3	3	
12	Lake Enrichment Biologist (F&O)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		2	2	3	3	2	2	2	2	3	Z	3	-	-	3	3
13	Specialist Food Microbiology (HWC)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		1	2	3	1	3	3	2	1	3	3	-	3	-	3	3
t*	Specialist, Drug Microbiology (HOC)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	3		1	2	3	1	3	3	2	2	3	3	7	-	3	3	
15	Head, Marine Microbiology Laboratory (EC)	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3		3	3	3	3	3	3	3	3	3	3	3	-	3	3	
16	Water Development Impacts Ecologist (EC)	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1	2	3	4	3	4	2	3	3	3	3	3	-	-	3
17	Chief, Migratory Birds Conservation (EC)	4	4	4	4	4	4	3	3	4	3	4	4	4	4	4	4		4	4	5	4	4	4	4	4	4	4	4	3	•	2	-
18	Head, Food Microbiology Lab. Unit (H100)	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
19	Head, Fish and Marine M-I Management Division (F60)	4	4	4	4	4	4	5	4	5	4	4	4	4	4	4	4		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
20	Senior Policy/Program Advisor, Marine Fisheries (FAG)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		1	2	4	4	1	4	3	3	5	5	5	-	-	5	5
21	Head, Food Chemicals Section (HIWG)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		•	2	4	4	2	2	4	2	5	4		S	5	5	5

(1) A = Objectives estbly by others
 b = Extent of work
 c = Variety of activities
 d = Scope for plan'g and conduct'ng wrk

(2) A = info./data - Avibility/problems
 B = info./data - validity
 C = info./data - n/variability/Ambg'ty of variables
 D = info./data - Relnshps of variables
 E = Effects of actvty of others on work
 F = Contacts - Nature/Purpose
 G = Reqrm't for: Devlp'm't adp't'n, applct'n, apprchs, prodrs and techniques
 H = Knowledge

(3) A - Extent wrk check'd by others
 B - Prof's'n'l guidance
 C - Init./Judg'm't in recv'd
 D - Def'ng objectives
 E - Dealing w problems
 F - Estblsh'ng guidelines
 G - Judgm't in assess'ng work of others
 H - Judgm't in intrprt'ng results
 I - Judgm't in providing advice

(4) A - Resp.: Control of Staff
 B - Resp.: Control of physical resources
 C - Resp.: Comm't'ng resources
 D - Resp.: Obt'ng outside ..since
 E - Resp.: Admin. contrl of wrk
 F - Resp.: Co-ord'n wrk perf. for/with othr orgniz'm'l units
 G - Resp.: Implem't'ng or Devlp'ng guidelines

(5) IMPACT (Governmental)
 A = on Dept'l wrk/Other Gov. progrms
 (External)
 i) - on Ind'l/Commerc'l prod. oPer.
 ii) - on Natrl. res./Envrnt
 iii) - on Public health/safety
 iv) - on Other external areas
 C = Impact on body of knowledge

Key in order of appearance of letters under the factors.

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 1

Level: 1

Descriptive Title: Biologist - Development Grade

Reporting to the Head, Microbiology Unit and under the guidance of a senior microbiologist:

Conducts microbiological analyses of progressively increasing diversity and complexity of samples of foods, drugs, cosmetics and medical devices to provide information for assessing the compliance of these products with the provisions and regulations of the Food and Drugs Act, and to acquire the specific knowledge and skills necessary to function as an Official Analyst.

Plans and organizes daily work, selects appropriate methods and conducts analyses using a variety of microbiological and instrumental techniques. Prepares the appropriate reagents, culture media and equipment following established laboratory safety practices. Performs the required number of analyses and validation procedures in accordance with established quality assurance procedures. Interprets results and prepares reports for review by the senior microbiologist or Unit Head.

Carries out a continuing study of methods of analysis, relevant regulations and standards under the Food and Drugs Act and regulated industry practices in preparation for assuming full responsibility as an Official Analyst.

SpecificationsDegreeKind of Assignments

1

- A. Degree 1 - Objectives are defined by the Unit Head and the work is conducted under the close guidance of a senior microbiologist.
- B. Degree 1 - The generation of analytical data using progressively more complex methodology is part of a continuing operation requiring limited investigation.
- C. Degree 1 - While samples of foods, drugs, cosmetics and medical devices represent a substantial variety of substrates for analysis, batching of similar types of samples for training purposes, simplifies the work to a limited number of straightforward tasks to be performed successively.
- D. Degree 1 - Tasks are planned on a daily basis taking into account the activities of others in the unit who share working space, equipment and materials.

Complexity of Work

2

- A. Degree 2 - Information in term of the methods and procedures is readily available, but data is generated by direct observation using standardized procedures.
- B. Degree 2 - Information and data can be validated by repeat analyses, and standard confirmation procedures.
- C. Degree 2 - The microbiological analyses of foods, drugs, cosmetics and medical devices for a variety of micro-organisms is characterized by several variables such as growth characteristics, morphology and biochemical reactions requiring interpretation but of known implications.
- D. Degree 2 - Relationships between analytical results and the identity and number of micro-organisms can be established and inconsistencies resolved by straightforward investigation.

Degree

- E. Degree 1 - Activities of others within the laboratory may affect the availability of common facilities or shared equipment.
- F. Degree 1 - Contacts are normally with others in the laboratory to obtain information.
- G. Degree 1 - The work involves applying standard methods of analysis. Minor adaptations may be made to suit specific sample requirements.
- H. Degree 1 - The work requires the application of a sound knowledge of the principles and theories of microbiology and some familiarity with analytical practices.

Professional Responsibility

1

- A. Degree 1 - The work is checked in progress by a senior microbiologist and results are reviewed by a senior microbiologist or the Unit Head.
- B. Degree 1 - Guidance on the selection and correct application of methods and procedures is received from a senior microbiologist.
- C. Degree 1 - Identified problems and potential solutions are discussed with a senior microbiologist before proceeding.
- D. Degree 1 - As applicable, the work of support staff may be checked for correct application of procedures.
- E. Degree 1 - Final results are reviewed for reliability and consistency and reported to a senior microbiologist or Unit Head.
- F. Degree 1 - As applicable, instructions and guidance may be provided to support staff engaged in similar activities.

Management Responsibility

1

- A. Degree 1 - As applicable, technical instructions or requests for technical assistance are given to support staff.
- B. Degree 1 - Plans use of equipment and supplies for assigned work.
- C. Degree 1 - Limited to the spending of own time and the use of equipment and supplies for assigned work.
- D. Degree 1 - Outside assistance, when required, is requested from the Unit Head.
- E. Degree 1 - Complies with administrative procedures, directives and guidelines established for the work.
- F. Degree 1 - Limited requirement to coordinate work with others.
- C. Degree 1 - Follows administrative and safety procedures established for the work.

Impact of Recommendations and Activities

1

- A. Degree 1 - Analytical results are used in the administration of the Food and Drugs Act and Regulations, but are reviewed and checked by a Senior Microbiologist or Unit Head prior to use.
- B. Degree 2 -
 - (i) Degree 2 - Identification of violations of the Food and Drugs Act and Regulations may result in the regulatory control of commercial food, drugs cosmetics or medical device products.
 - (ii) No significant impact.
 - (iii) Degree 2 - Results of the work contribute to the regulatory control of foods, drugs, cosmetics or medical device containing volatile levels of micro-organisms.
 - (iv) No other significant impacts.
- C. Degree 1 - Analytical results contribute to the knowledge of the identity and levels of micro-organisms in foods, drugs, cosmetics and medical devices.

LINEAR ORGANIZATION CHART

Chief, Food and Drug Laboratory Division -

Head - Food Chemistry Unit

- Head - Drugs Analysis Unit

- Head - Microbiology Unit

- Biologist

* - Biologist, Development Grade BI-1

- Technician

- Lab. Support (GLT-MAN)

* Bench-mark Position

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 2

Level: 1

Descriptive Title: Fruit Tree Biologist (Apples and Pears)

Reporting to a Research Scientist - Fruit Trees, Horticulture and Soil Science Section:

Conducts, evaluates and coordinates pre- and post-selection trials of pear and apple breeding materials to assess their potential as cultivars or root stocks. Selects seedlings and clonal material based on their observed or reported resistance to pests and diseases, fresh market, storage and processing qualities or suitability as root stocks. Compiles and analyses data to select the most promising materials to evaluate further, using field trials and orchard management practices.

With guidance from and in consultation with the research scientist, plans, develops and implements field experiments and develops integrated crop management systems to evaluate and develop new cultivars or varieties of pear and apples in order to assess their potential for improved qualities, yield, precocity, resistance to pests and diseases. In collaboration with experimental farm personnel, prepares allocated fields, plants material as planned and oversees care and protection of field plots. Records and tabulates the pertinent characteristics of specimens, analyses information and evaluates results to identify the lines and rootstocks that have potential as new varieties. Provides the research scientist with a summary of results and identifies those which may be suitable as new varieties. Provides information on new or proposed crop management techniques to promote fruit yields and/or minimize the use of pesticides.

Consults other members of the fruit tree program to exchange information, keeps abreast of new technology in integrated crop management systems, writes technical reports, co-authors publications with the research scientist and provides information and technology transfer to fruit tree growers of the region as applicable.

DegreeSpecificationsKind of Assignment

1

- A. Degree 2 - Objectives to which the experimental work of the position contributes are broad but the objectives of the work are clearly defined by the Research Scientist in terms of identifying improved stocks of apples and pears.
- B. Degree 1 - The work consist in laboratory and field experiments to identify seedlings and rootstocks with potentially improved fruit characteristics when crossed or combined.
- C. Degree 1 - Activities are generally related to horticulture and focused on apple and pear tree genetics and crop management. The selection of suitable rootstock and seedling requires the examination of large numbers of specimens using a limited number of scientific techniques.
- D. Degree 1 - The field experiments and laboratory tasks are planned with the supervising scientist and the work is conducted using generally standardized procedures and techniques.

Complexity of Work

2

- A. Degree 2 - Information and data on rootstocks and seedlings sources is obtained by direct observation and also from recognized orchard seed growers in North America.

Degree

- B. Degree 1 - External sources of data and information are considered reliable and the data or information when conflicting can normally be validated by known procedures.
- C. Degree 2 - Information and data on seedlings, rootstocks and clonal materials include several characteristics which require interpretation and which when combined are expected to result in improved stocks.
- D. Degree 2 - Relationship between variables and inconsistencies can only be resolved by field trial investigations.
- E. Degree 1 - The scheduling of the work can be affected by others using same equipment or facilities within the same organization.
- F. Degree 1 - Contacts to obtain or discuss information with specialists or scientists are principally within the same organization. Contacts with growers are to obtain or exchange information.
- G. Degree 2 - Because of the experimental nature of genetic hybridization the work requires adapting and modifying standard techniques to develop new varieties of apples and pears as well as contributing to the development and implementation of new crop management procedures to reduce the need for pesticides and promote productivity, and to the development of field experiments to evaluate cultivars and rootstocks of pear and apple.
- H. Degree 2 - The work requires a sound knowledge of plant biology with emphasis on horticulture, genetics and crop management practices for fruit tree orchards.

Professional Responsibility

2

- A. Degree 1 - Work is periodically reviewed while in progress and on completion by the supervising scientist.
- B. Degree 2 - Guidance is available from the supervising scientist on new trials or other new aspects of the work.
- C. Degree 1 - Particular conditions or problems are indicated to the supervising scientist. Methods and techniques are selected for the work.
- D. Degree 2 - The field or laboratory work of subordinate support staff is checked while in progress and on completion.
- E. Degree 2 - Own observations and work results are interpreted to produce meaningful conclusions and recommendations for improving yield and quality of pears and apples and for new varieties.
- F. Degree 1 - Instructions and guidance are provided to support staff and information on observation results are given to colleagues and to regional growers as applicable.

Management Responsibility

1

- A. Degree 2 - The work requires the supervision of one full-time support staff and of seasonal or casuals.
- B. Degree 2 - Ensures proper use of allocated equipment and supplies for the work activities.
- C. Degree 1 - Limited to the spending of time and the use of materials and supplies for the work.
- D. Degree 1 - Informs supervisor concerning need for assistance.
- E. Degree 2 - Ensures that work for own responsibility complies with standards pertaining to quality, quantity and safety.
- F. Degree 1 - Requirement to coordinate activities limited to shared use of farm implements and facilities. Interacts with other members of the fruit program for planning new experiments.
- G. Degree 1 - Follows straightforward administrative procedures and safety practices.

DegreeImpact of Recommendations and Activities

1

- A. Degree 1 - Conclusions and findings contribute to on-going research project. Work is carried out in close liaison with the supervising scientist and changes or impact on departmental activities attributable to the work of the position, would be indirect or limited.
- B. Degree 2 -
- i) Degree 2 - Findings and recommendations concerning new varieties of fruit trees with desirable characteristics are used by the scientist and can have future economic impact on the pear and apple fruit industry;
 - ii) No significant impact.
 - iii) No significant impact.
 - iv) No other significant impacts.
- C. Degree 1 - Results of the work contribute to knowledge in the area of pear and apple fruit tree genetics.

LINEAR ORGANIZATION CHART

Chief, Horticulture and Soil Science Section

- Research Scientist - Fruit Trees
- Fruit Tree Biologist (Peaches)
- * - Fruit Tree Biologist (Apples and Pears) BI-1
 - Support Staff (CL-MAN) (1)
 - Seasonal
- * Bench-mark position.

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 3

Level: 2

Descriptive Title: Food Microbiologist

Reporting to the Head, Food Microbiology Unit:

Conducts the microbiological analyses of a wide variety of food products, to assist in the enforcement and establishment of regulations and provisions of the Food and Drugs Act. Provides scientifically valid qualitative and quantitative information employing a variety of scientific techniques for the isolation, identification, enumeration and confirmation of microbial organisms and their toxins of sanitary and health hazard significance.

Provides interpretation of results and technical advice to officials of the department and industry, conducts analysis as an Official Analyst, and provides testimony as an expert witness in court.

Adapts methods to suit the unique requirements of samples and assists in the development, evaluation and validation of new methods, procedures and instrumental techniques.

Ensures the correct application of safety and quality assurance standards. Participates in the training of junior microbiologists and technical staff.

SpecificationsDegreeKind of Assignments

2

- A. Degree 2 - Objectives are defined by the Unit Head. Samples are assigned but methods are selected and adapted from available procedures.
- B. Degree 2 - The work involves the complete analysis and interpretation of results to determine the nature and level of microbiological contamination of food products.
- C. Degree 2 - The work involves the analysis of a wide variety of foods for microbial organisms and their toxins of sanitary and health hazard significance.
- D. Degree 2 - Own work is planned and methods are selected to meet the objectives of the work.

Complexity of Work

2

- A. Degree 2 - Information in term of the methods and procedures is readily available, but data is generated by direct observation using standardized procedures.
- B. Degree 2 - Information and data can be validated by repeat analyses, standard confirmation procedures or literature referencing.
- C. Degree 2 - The microbiological analyses of foods for a variety of micro-organisms is characterized by several variables such as growth characteristics, morphology and biochemical reactions requiring interpretation but of known implications.
- D. Degree 2 - Relationships between analytical results and the identity and number of micro-organisms can be established and inconsistencies resolved by straightforward investigation.
- E. Degree 2 - The activities of inspection staff affect the type and priority of samples to be analyzed.
- F. Degree 3 - Contacts are with inspectors and regulated industry officials to explain results and with crown attorneys of the Department of Justice to provide information for the preparation of prosecutions.

Degree

- G. Degree 2 - The work requires modifying, adapting and evaluating new methods and procedures for the microbiological analysis of foods.
- H. Degree 2 - The work requires the application of a sound knowledge of the principles, theories and practices of food microbiology and of the procedures and techniques for the isolation and enumeration of micro-organisms as well as some familiarity with related food industry practices.

Professional Responsibility

2

- A. Degree 2 - The work requires the completion of assignments, the interpretation of results, and the preparation of final results which are reviewed by the Unit Head.
- B. Degree 2 - Professional guidance is received from the Unit Head on new analytical projects.
- C. Degree 2 - The work requires identifying analytical problems and selecting and adapting methods for their resolution.
- D. Degree 1 - As applicable, the work of technical staff is checked for correct application of methods and procedures.
- E. Degree 2 - Analytical results are interpreted and evaluated against specified tolerances to determine compliance with the Food and Drugs Act and Regulations and to indicate violations of the legislation.
- F. Degree 3 - Technical advice and explanation of results is provided to inspectors, departmental officials, and to crown attorneys with respect to prosecutions.

Management Responsibility

1

- A. Degree 1 - As applicable, technical instructions or requests for assistance are given to support staff.
- B. Degree 1 - Plans the use of equipment and supplies for own work.
- C. Degree 1 - Limited to spending of own time and to the use of equipment and supplies for assigned work.
- D. Degree 1 - Outside assistance, when required, is requested from the Unit Head.
- E. Degree 1 - Complies with administrative procedures, directives, guidelines and quality assurance standards established for the work.
- F. Degree 1 - Limited requirement to coordinate work with others, except in order to best utilize shared equipment and facilities.
- G. Degree 1 - Follows administrative and safety procedures established for the work.

Impact of Recommendations and Activities

2

- A. Degree 2 - Information and results of the work affect the intensity and direction of inspection activities.
- B. Degree 2 -
 - (i) Degree 2 - Identification of violations of the Food and Drugs Act and Regulations may result in the regulatory control of commercial food products.
 - (ii) No significant impact.
 - (iii) Degree 2 - Results of the work contribute to the regulatory control of foods containing volatile levels of microbiological contaminants.
 - (iv) No other significant impacts.
- C. Degree 2 - Information and results contribute to knowledge of the levels of microbiological contaminants in the food supply, and to improvements in the methods and procedures for the microbiological analyses of foods.

LINEAR ORGANIZATION CHART

Chief, Food Laboratory Division

- Head - Drugs, Cosmetics and Medical Devices Microbiology Unit
- Head - Mycotoxins and Food Additives Unit
- Head - Food Chemistry Unit
- Head - Organic Residues Unit
- Head - Food Microbiology Unit
 - Specialist, Food Microbiology
- * - Food Microbiologists (2) BI-2
 - Microbiologist, Development Grade (1) BI-1
 - Technicians (4)
 - Lab. Support (2)

- * Bench-mark position

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 4

Level: 2

Descriptive Title: Marine Biologist

Reporting to the Senior Marine Biologist - Aquatic Program

Plans, organizes and conducts marine ecological studies to determine and assess the impact on marine ecology of industrial process installations and their waste effluents situated on or near the marine or estuarine coast of the Pacific region.

Establishes marine biological baselines, determines and applies the appropriate sampling techniques and analytical procedures, analyses results and data to identify and assess the impact on the marine ecology for the delineated sector and records generated data, information and results for further use.

Participates with colleagues in the biological impact assessment process of specific industrial sites and contributes to the development of compliance schedules, regulations, guidelines or standards required to ensure the protection of the marine environment and the preservation of fish stocks. Acts as an expert witness in court as a result of investigations of sites suspected to be in violation of Section 33 of the Fisheries Act.

Prepares reports on results of studies and investigations, departmental briefs and scientific articles for publication on study findings.

Degree/
Points

SpecificationsKind of Assignments

2

- A. Degree 2 - Annual objectives and available resources are clearly defined by the supervising Senior Marine Biologist.
- B. Degree 2 - The work normally consists of a limited number for field surveys or studies in river estuaries or at sea.
- C. Degree 2 - The work involves collecting information from various geographical locations, on different marine plants and marine animal species, water and marine sediments in order to assess prevailing or changes in conditions.
- D. Degree 2 - Own activities are planned, sampling approaches and methods are selected to ensure that objectives are met.

Complexity of Work

2

- A. Degree 2 - Marine ecological data and information are collected by direct observation, sampling, and from analysis in the laboratory, using established procedures.
- B. Degree 2 - Acceptable marine ecological information and data can normally be validated by resampling, comparison with similar sites, and literature references.
- C. Degree 2 - Marine ecological data is characterized by variables requiring interpretation but of known implications and variability.
- D. Degree 2 - Discrepancies in observations can normally be resolved by straightforward investigations or repeating limited surveys.

- E. Degree 2 - The work is normally affected only by others within the same organization but occasionally, facilities or vessels must be shared with others at sea and requires consideration of their activities in scheduling the tasks.
- F. Degree 1 - Contacts are normally within own organizational unit and occasionally with other scientists working in same study area for exchanging and discussing information.
- G. Degree 2 - The work requires adapting or modifying procedures and sampling techniques to investigate and determine effects of identified industrial pollutants on marine ecological conditions for area under study.
- H. Degree 2 - The work requires the applications of a sound knowledge of the principles, theories and practices of marine ecology and some familiarity with oceanography and chemistry practices.

Professional Responsibility

2

- A. Degree 2 - Work is accepted as technically accurate. Assessments reports, recommendations and conclusions are reviewed for consistency and completeness.
- B. Degree 2 - Guidance is provided by the supervising Senior Marine Biologist on new aspects of the work.
- C. Degree 2 - The work requires identifying study and assessment problems, determining particular approaches, sampling techniques and suitable methods to deal with usual problems.
- D. Degree 1 - The work of non-subordinate support staff assisting on cruises is checked while in progress and on completion for correctness.
- E. Degree 2 - Own observations and study results are interpreted to produce meaningful assessments, information, conclusions, recommendations or reports.
- F. Degree 2 - Advice is provided to colleagues on matters relating to own area of work (marine ecology).

Management Responsibility

2

- A. Degree 1 - The work occasionally requires assigning work to non-subordinate support staff while on cruises.
- B. Degree 2 - The work requires ensuring proper use of allocated equipment, supplies and facilities.
- C. Degree 2 - Identifies requirements for equipment, material and services to supervisor.
- D. Degree 1 - Informs supervisor concerning need for outside assistance.
- E. Degree 2 - Ensures that quality, quantity, safety and other work standards for own responsibility are maintained and that services provided meet requirements.
- F. Degree 2 - Occasionally must coordinate work with activities of others when sharing vessels at sea.
- G. Degree 1 - Must follow standard administrative procedures.

Degree/
PointsImpact of Recommendations and Activities

2

- A. Degree 2 - Information and results of the work can affect the conduct of other ongoing departmental investigations or studies on marine pollution.
- B. Degree 2 -
- (i) Degree 2 - Results of the work contribute to the regulation of industrial waste discharged in effluents necessitating changes in process technology and clean-up with corresponding economic effects on the industrial process or operation.
 - (ii) Degree 2 - Results of the work contribute to improving and preserving the state of the marine ecology of the Pacific region.
 - (iii) No significant impact.
 - (iv) No other significant impacts.
- C. Degree 2 - Information and results of the work contribute to knowledge of the marine ecology of the region and to improvements in methods and technique used to identify and measure the impact of industrial processes on marine ecology.

LINEAR ORGANIZATION CHART

- Manager - Marine Programs
 - Head, Microbiology Laboratory
 - Senior, Marine Biologist - Surveillance
 - Senior, Marine Biologist - Aquatic programs
 - * - Marine Biologist (BI-2)
 - Supervisor, Field activities
- * Bench-mark Position.

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 5

Level: 2

Descriptive Title: Park Ecologist

Reporting to the Chief Park Warden and receiving scientific functional direction from the Chief, Natural Resource Conservation at regional headquarters:

Plans, organizes and conducts ecological surveys and studies within Terra Nova National Park to establish inventories of plants and animal species relevant to park management purposes. Collects and integrates data and information for establishing and maintaining a computer based inventory of park ecological data.

Establishes requirements for scientific ecological studies, develops approaches and deals with standard problems. Monitors natural resources and relates the changes to the park ecology due to park development activities and pollution phenomena such as acid rain and the use of pesticides. Develops and recommends plans for implementation and monitoring of measures to achieve park vegetation management objectives and makes recommendations on methods and practices of park ecological management and resources preservation.

Participates in the development of park directives, guidelines and operational procedures and makes recommendations to prevent, mitigate and reduce detrimental ecological effects resulting from park operations and visitor activities. Contributes to the development of the park brochures and publications. Participates in the planning and implementation of staff training. Contributes to the preparation of specifications for contract work related to ecological management of park resources. Provides advice, guidance and information on matters pertaining to the park ecology and ecological management.

DegreeSpecificationsKind of Assignment

2

- A. Degree 2 - Ecological study and other work objectives are discussed, clarified and agreed to with the Chief Park Warden and concurred by the Chief, Natural Resource Conservation.
- B. Degree 2 - Several ecological surveys, studies or projects are undertaken each year within available resources and park management priorities.
- C. Degree 2 - The activities include a number of related scientific techniques such as surveying, observing and identifying a wide variety of plant and animal species, analyzing their interrelationship and measuring the detrimental effects of park operations and human activities, on global park ecology.
- D. Degree 2 - The work requires planning ecological studies or surveys within time and resource constraints, determining approaches and selecting methods to ensure that the work meets clearly defined park ecological management objectives.

Complexity of Work

2

- A. Degree 2 - Ecological information and data is collected by direct observation in the park using established procedures and reference to publications.

Degree

- B. Degree 2 - Information and data can normally be validated by known procedures, resampling and reference to literature on ecology.
- C. Degree 2 - Ecological data is characterized by variables requiring interpretation. Implications of variables are usually known.
- D. Degree 2 - Discrepancies in ecological observations can usually be resolved by straightforward investigations or repeating limited surveys.
- E. Degree 2 - Normally the work is affected by activities of other park employees or contractors and occasionally by the visiting public.
- F. Degree 2 - Contacts consist mainly with other park employees to obtain information and discuss problems related to park ecological management and, occasionally, with other scientists in the field of ecology to discuss findings and problems; and with the public to provide information on Parks Canada Policy and elements affecting park ecology.
- G. Degree 2 - The work requires adapting conventional ecological management procedures to suit conditions particular to park management activities. Techniques for measuring ecological changes in the park are modified as applicable.
- H. Degree 2 - The work requires a sound knowledge of ecology and some familiarity with park management practices and translocation of pollutants such as acid rain and pesticides and their effects on wildlife and vegetation.

Professional Responsibility

2

- A. Degree 3 - Since this position is the only biologist assigned to the Park, the work is usually accepted as technically accurate and reviewed only periodically for consistency of recommendations and effectiveness of results in terms of set objectives.
- B. Degree 2 - Professional guidance is available from the Chief, Natural Resource Conservation at regional headquarters, on new aspects of the work or particular problems.
- C. Degree 2 - The work requires identifying specific studies needed, recommending vegetation management techniques, monitoring and operational procedures to preserve or enhance park ecology; and, to deal with normal ecological problems encountered in a park environment.
- D. Degree 3 - Recommendations of consultants in relation to specific park ecological projects are reviewed for applicability to park ecological management.
- E. Degree 2 - Own scientific observations and results are interpreted to produce meaningful conclusions and effective recommendations concerning methods and practices of park ecological management and resources preservation.
- F. Degree 2 - Advice is provided to the Chief Park Warden and park staff on the impact of park operations and development on plant vegetation and on other matters related to park ecology management. Makes recommendations concerning preparation of park interpretative brochures and other publications on plants and wildlife of interest in the park to inform the visiting public.

Management Responsibility

2

- A. Degree 1 - Occasionally, some survey or investigation tasks are assigned to non-subordinate park staff.
- B. Degree 1 - The work requires planning own use of supplies and of park equipment made available for the work.
- C. Degree 2 - Identifies requirements for the services related to ecological management of park resources.

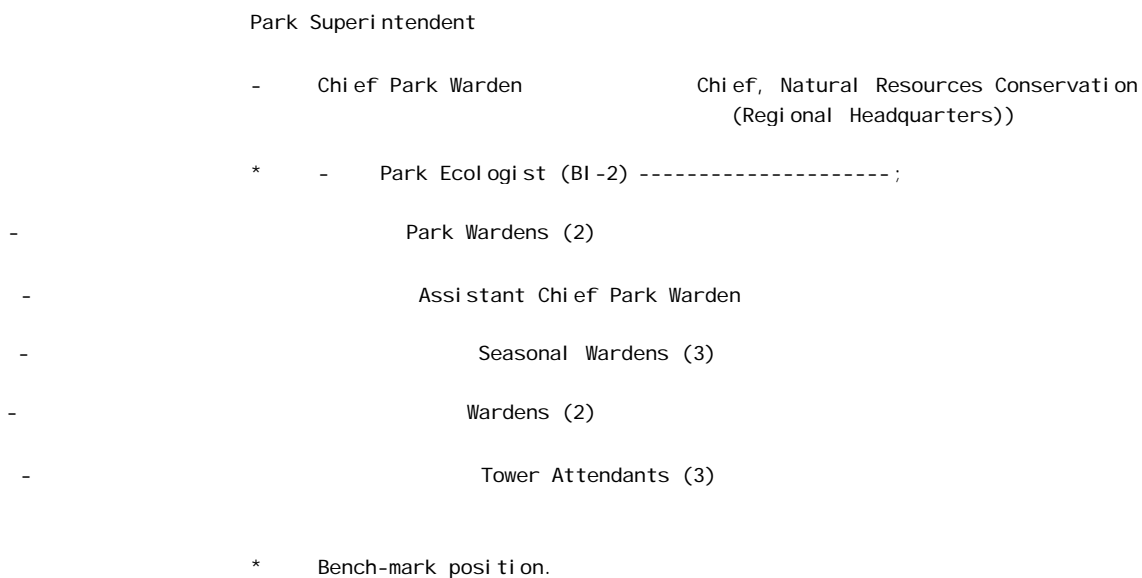
Degree

- D. Degree 2 - Recommends the need for outside assistance to implement urgent corrective measures to prevent ecological damage in the park or for carrying out on-going monitoring and natural resources surveys.
- E. Degree 2 - Ensures that work, fire prevention and safety standards for own responsibility are maintained.
- F. Degree 2 - Occasionally required to coordinate study or investigation work with activities of park or outside contractor employees.
- G. Degree 1 - Follows park administrative procedures and safety practices.

Impact of Recommendations and Activities

2

- A. Degree 2 - Information and results of the work affect park management activities and may limit access to certain areas.
- B. Degree 2 -
 - i) Degree 2 - Recommendations or findings of the work concerning potential problems with rare and endangered species or wildlife diseases and the closing of a park or portion of a park can have local economic effect on the tourist industry.
 - ii) Degree 2 - Information and results are aimed at conserving the environment of the Terra Nova Park and affect the state of its flora and fauna resources.
 - iii) No significant impact.
 - iv) No other significant impacts.
- C. Degree 2 - The work contributes to improvements in methods and practices of park ecological management and preservation of the environment.

LINEAR ORGANIZATION CHART

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 6

Level: 2

Descriptive Title: Anadromous Fish Biologist

Reporting to the Section Head, Salmon and Char Section:

Plans, organizes and conducts studies to investigate the fresh water and marine life history, distribution, ecology and population dynamics of Arctic Char and Atlantic Salmon stocks in the Newfoundland and Labrador river systems. Conducts field population studies to estimate population sizes of adults and juveniles of various stages in rivers, and participates in research vessel cruises in the Labrador Sea to collect data and investigate the marine life history phase, migration routes and distribution of Arctic Char stocks in these areas. Supervises the field sampling of fish to determine age, growth rates, food and feeding habits. Collects hydrologic, hydrographic and meteorological data which affect the environmental quality of the habitat, the supply of food and the effect of these on population dynamics.

Analyses information and data, interprets results and forecasts abundance of Canadian stocks of Arctic char and Atlantic salmon in the region and estimates the likely impacts of their commercial and recreational exploitation in different areas. Participates on standing committees concerned with fish stock management issues, providing scientific input on the status of Arctic char and Atlantic salmon in the Newfoundland - Labrador region, and proposes regulation changes required to sustain these renewable resources. Records and prepares reports and articles on findings.

Supervises the work of full-time technical assistants, and of seasonal employees when conducting field studies in the summer months.

DegreeSpecificationsKind of Assignment

2

- A. Degree 2 - Objectives of the work are clearly defined with the Section Head in terms of geographic areas or river systems to be surveyed, guidelines and resource available.
- B. Degree 2 - The work requires carrying out a number of detailed research projects or studies involving field survey work in rivers and at sea within resource limitations each year, allocating work and providing advice.
- C. Degree 2 - Activities involve collecting, analyzing and interpreting information from various geographic locations, on different species of fish, to extrapolate their population sizes using modeling and other techniques; conducting required field studies and investigations; allocating work and providing advice.
- D. Degree 3 - The field activities of study teams are planned, organized and directed to achieve objectives within established resource and time limitations. Logistic and support services arrangements are made and tasks are assigned to members of the study team and support staff.

Complexity of Work

2

- A. Degree 2 - Information and data on fish population is obtained by sampling and direct observation during field and vessel surveys utilizing established sampling techniques, analysis and statistical calculations.

Degree

- B. Degree 2 - Acceptable population estimates are usually validated by known procedures and comparison with results from other areas, previous work and further field studies.
- C. Degree 2 - The information and data is obtained from various regions, involves several fish species and requires interpretation but implications are straightforward.
- D. Degree 2 - Inconsistencies in results can usually be resolved by re-sampling or straightforward investigations. Relationship between variables are normally well known, hence modeling is a valid tool in estimating fish populations.
- E. Degree 2 - The work at sea requires planning and sharing of ship and facilities and requires consideration of activities of others outside the organizational unit.
- F. Degree 2 - Contacts are with other scientists and officials within and outside the organization unit to exchange information, discuss regulations and with representatives of commercial and sports fishing industry to obtain fish species harvest information.
- G. Degree 2 - The work requires adapting and modifying data collecting techniques and investigation procedures to accommodate differences in survey situations.
- H. Degree 2 - The work requires a sound knowledge of fresh water and marine biology and some familiarity with hydrography, hydrology and statistics.

Professional Responsibility

2

- A. Degree 3 - The conclusions and recommendations provided at the end of each fish population studies are reviewed for soundness and completeness, and work effectiveness is assessed by the Section Head in terms of agreed goals and objectives.
- B. Degree 2 - Guidance is available on new aspects of the work or when problems are encountered.
- C. Degree 2 - The work requires identifying and resolving problems usually encountered in field survey situations.
- D. Degree 2 - The work of subordinate staff is reviewed for technical accuracy or completion.
- E. Degree 2 - The work requires the interpretation of information, data and calculations based on modeling and biometrics to produce meaningful conclusions on salmon and arctic char fish populations.
- F. Degree 3 - Advice is provided to colleagues and other standing committee members in regard to Arctic char and Atlantic salmon population status in the Newfoundland - Labrador area.

Management Responsibility

2

- A. Degree 2 - The work requires the supervision of technicians and seasonal.
- B. Degree 3 - The field and sea vessel survey operations requires controlling the use and maintenance of assigned equipment, supplies and facilities.
- C. Degree 2 - The work normally requires identifying specific needs for new or additional equipment, material, services and supplies well in advance of planned survey work.
- D. Degree 2 - The need for outside assistance is normally identified and recommended at the time when objectives are agreed upon with the Section Head.
- E. Degree 2 - Ensures that work quality, quantity and safety standards are maintained.
- F. Degree 2 - Occasionally required to coordinate work schedule to accommodate shared facilities and equipment or vessel.

Degree

- G. Degree 2 - Must follow and implement administrative procedures established for the work.

Impact of Recommendations and Activities

2

- A. Degree 2 - Information and results of the work can affect the orientation of studies on other species and the formulation of regulations with respect to Arctic char or Atlantic salmon in the region and the effectiveness of the resource management strategies.
- B. Degree 2 -
- i) Degree 2 - Results of the work can impact on the harvest or practices of the commercial and sports fishing industry in the area with a corresponding economic effect.
 - ii) Degree 2 - Results of the work contribute to the conservation through sustainable harvest of Arctic char and Atlantic salmon as a renewable resource.
 - iii) No significant impact.
 - iv) No other significant impacts.
- C. Degree 2 - Results of the work contribute to the knowledge of the life history, distribution, ecology and population dynamics of Arctic char and Atlantic salmon and to improvements in methods and procedures in marine resource management and practices.

LINEAR ORGANIZATION CHART

Section Head, Salmon and Char Management Section

- Research Scientist - Atlantic Salmon Population Dynamics
- Technicians (3)
- Biologist - Salmon Stock Identification
- Technicians (2)
- Research Scientist - Atlantic Salmon
- Technician (1)
- * - Anadromous Fish Biologist B1-2
- Technicians (2)
- Seasonals (2 p.y.)
- * Bench-mark position

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 7

Level: 3

Descriptive Title: Wildlife Biologist - Migratory Birds Reporting to the Head, Population Management Unit:

Plans, organizes and conducts field studies to assess the annual status of key migratory waterfowl breeding populations in a designated territory, usually a whole province, in order to contribute scientifically valid information for the setting of regional, national and north american waterfowl hunting regulations and ensure the sustainable use and conservation of this natural resource. Conducts special studies on endangered species of migratory bird populations, their habitats, food supply, migration routes and winter quarters in the U.S. or Mexico, in order to recommend and promote measures to protect and improve the status of the species. Participates as a member on provincial, national and international waterfowl management committees. Collaborates on wildlife conservation projects with other public or private migratory bird management agencies, such as Ducks Unlimited.

Designs and implements migratory birds banding studies to determine mortality rate, temporal and spatial distribution of certain species and flyways patterns and evaluates changes such as those due to agriculture (loss of habitats), hunting and/or other recreational activities. Collects and interprets hunter success data in terms of species mortality rates and using computer modelling, extrapolates harvest estimates for specific areas, territories or province. Supervises one wildlife technician and up to six casual and seasonal support staff.

Specifications

Degree

Kind of Assignments

3

- A. Degree 3 - Objectives of the work are broadly defined in terms of determining annual population estimates of key waterfowl species for a province or large territory for sustainability of the resource and protection of the species.
- B. Degree 3 - The work involves comprehensive population studies over wide geographic areas involving many different species of waterfowl.
- C. Degree 2 - Activities are mainly related to population dynamics and biometrics of waterfowl but also include investigations of unusual events such as local increased bird mortality incidents.
- D. Degree 3 - Activities of subordinates staff are planned and supervised to ensure that objectives are met within time and resource constraints.

Complexity of Work

3

- A. Degree 3 - Information on population dynamics of the species and data on migratory birds are often difficult to obtain and interpret. Surveys are modeled on past practices and guidelines but many field trips often under rigorous conditions are required to document changes and data gaps which affect predictability.
- B. Degree 3 - Information and data can only be validated by a combination of techniques and comparison with results from other areas of the flyways.
- C. Degree 3 - Information and data on migratory birds are characterized by many variables due to different feeding and migratory habits of different species, with poorly defined variability and ambiguities.

Degree

- D. Degree 3 - Relationships between variables affecting migratory birds such as habitat, mortality, climate, physiological factors, are difficult to establish, can be conflicting and require continuous investigations and interpretation.
- E. Degree 2 - The work is normally affected by other scientists within the organizational unit and occasionally by collaborators in other provinces, the USA and Mexico.
- F. Degree 3 - Contacts are frequent with scientists and officials of other governments and organizations to exchange information, resolve problems and establish cooperative projects.
- G. Degree 2 - The work normally requires adapting techniques and procedures to field conditions.
- H. Degree 3 - The work requires the application of a thorough knowledge of ornithology (migratory waterfowl) and of a knowledge of pertinent disciplines (ecology, pathology, and of population dynamics) and, familiarity with statistics and wildlife management practices.

Professional Responsibility

3

- A. Degree 3 - As the waterfowl-wildlife expert for the province or territory, recommendations and conclusions are reviewed by the Head for soundness of judgment and attainment of work objectives.
- B. Degree 3 - Professional guidance is received only for the resolution of difficult problems such as determining the cause of substantive waterfowl population fluctuations or significant mortality rates in birds of a specific area.
- C. Degree 3 - The field work requires sufficient autonomy to define objectives, identify problems and determine approaches for implementing studies and resolving problems.
- D. Degree 3 - Results and reports of other scientists and colleagues in the same subject area are reviewed for validity and applicability to Canadian Wildlife Service programs.
- E. Degree 2 - The work requires interpretation of own work and data from related studies to produce meaningful information, conclusions and recommendations for designated territory.
- F. Degree 3 - Advice on migratory bird management practices and techniques and on population dynamics is provided to colleagues in other designated territories or provinces and to other scientists in the USA and Mexico.

Management Responsibility

2

- A. Degree 2 - The work requires the supervision of one technician and up to six seasonal support staff.
- B. Degree 2 - Ensures the proper use of facilities and supplies and the proper utilization and maintenance of the equipment allocated for field work.
- C. Degree 2 - The work requires determining the equipment, material and services required and planning and scheduling the use of shared equipment, material and services.
- D. Degree 3 - The work requires substantiating the need for outside contract work and arranging for readily available assistance.
- E. Degree 2 - Ensures that own and support staff's work meet safety and departmental work standards.
- F. Degree 3 - The work often requires coordinating activities with those of provincial and U.S. Wildlife colleagues.
- G. Degree 2 - Follows and implements office and field administrative procedures applicable to the work.

DegreeImpact of Recommendations and Activities

3

- A. Degree 3 - Recommendations and advice contribute to the formulation of guidelines and hunting regulations and the direction of projects or studies in the subject area of work.
- B. Degree 3 -
- i) Degree 2 - Recommendations on regulations impact on the hunting industry in the designated area.
 - ii) Degree 3 - The mission of the work is to provide results and advice which will help preserve a natural resource, namely migratory birds.
 - iii) No significant impact.
 - iv) No other significant impacts.
- C. Degree 3 - Findings and results of comprehensive investigations required contribute primarily to improved knowledge in waterfowl population dynamics and management techniques.

LINEAR ORGANIZATION CHART

- Regional Director
 - Chief, Migratory Bird Research and Management Division
 - Head, Habitat Conservation
 - Head Conservation and Enforcement
 - Manager, Northern Operations
 - Head - Population Management Unit
 - Wildlife Biologist BI-3
 - Wildlife Biologist BI-2
 - Wildlife Biologists BI-3
 - Wildlife Biologist BI-3
 - Wildlife Technician (EG-ESS-7)
 - * - Wildlife Biologist - Migratory Bird BI-3
 - Wildlife Technician (EG-ESS-7)
 - Seasonal Support Staff (up to 6)
- * Bench-mark Position.

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 8

Level: 3

Descriptive Title: Plant Pathology Biologist

Reporting to the Head, Pathology Section of the Vineland Research Station:

Conducts studies and investigations on the pathogenicity, etiology, epiphytology and biological control of fungal pathogens causing diseases of fruit crops, with emphasis on grapes.

Determines the occurrence and relative importance of spores, mycelium as well as the identity of pathogenic and saprophytic fungi occurring under Ontario conditions, using a compound light microscope and standard tests for pathogenicity. Determines the effect of inoculum concentration, temperature and humidity upon lesion development and degree of sporulation, utilizing potted plants or harvested fruits under controlled environments. Collects data on inoculum levels and host infections by periodically sampling air, rain-water, soil and plant tissues, as a basis for developing predictive models based on accumulated seasonal and historic weather data.

Conducts studies to determine the fungicidal, prophylactic, therapeutic and antispore activity of fungicides under laboratory and field conditions. Directs field experiment to compare the efficacy of unregistered fungicides with standard registered fungicides at recommended spray interval, to assist in the evaluation process of pesticides. Determines, in cooperation with a residue chemist, the rate of degradation of the fungicide on fruit crops and the coincident decline of biological activity for recommended pre-harvest intervals and allowable residue levels. Determines the phytotoxicity of various rates of fungicide and mixtures of fungicides on different fruit and cultivars.

Provides information and advice to growers, officials and scientists in other federal and provincial agencies on fungal diseases occurring and the recommended fungicide use strategies.

Prepares papers on fungus disease and fungicide use and efficacy study findings for publication in scientific and trade journals.

DegreeSpecificationsKind of Assignments

3

- A. Degree 3 - The areas and objectives of studies and investigations for preventing or dealing with fruit crop diseases are established following identification and in discussions with the Section Head.
- B. Degree 3 - The work involves comprehensive studies on fungal diseases of tree fruits and investigations on the use and efficacy of fungicides to prevent or control damage to fruit crops with emphasis on grapes.
- C. Degree 2 - The work involves identifying and monitoring the prevalence of fungal diseases in the area, measuring their resistance to fungicide, assisting in evaluating the efficacy of new fungicides and providing advice to departmental officers and growers.
- D. Degree 3 - The work requires planning studies and investigations, developing or modifying experimental approaches, developing predictive models and effective control procedures, directing field experiments, assigning tasks and ensuring that objectives are met within established guidelines.

DegreeComplexity of Work

3

- A. Degree 3 - Information and data on fungal diseases of grapes and fruit trees and on the use and efficacy of fungicides for their control is obtained by detailed field and laboratory investigations and by interpretation. Sources which include plant, fruit, air, soil and incidence of diseases are temperature and moisture dependent.
- B. Degree 2 - Information and data can normally be validated by repeated experimentations and using known procedures, previous investigation data, and references to scientific literature.
- C. Degree 3 - Information and data are characterized by many types of fungal diseases and varying degrees of resistance to fungicides, compounded by temperature and moisture variations, activities and phytotoxicity of various rate of fungicides and of mixtures, and many types and varieties of host fruit trees and grapes.
- D. Degree 3 - Relationships among the variables are not straightforward and require investigations and interpretation to understand.
- E. Degree 3 - The direction of studies is frequently affected by requests for collaboration from scientists in industry or Pesticide Registration officers to evaluate new or proposed fungicides under field conditions and by request from growers for advice or guidance.
- F. Degree 3 - Contacts are with research scientists from other stations, the province of Ontario, representatives of fruit marketing board, winery officials and fruit growers to discuss the efficacy of fungicides, the assessment and use of new ones and problems related to fungal disease and control or to initiate cooperative projects.
- G. Degree 3 - The work requires developing experimental approaches, monitoring procedures, devising diagnostic tests, modifying techniques and procedures to deal with fruit crop disease problems and to meet objectives.
- H. Degree 3 - The work requires the application of a thorough knowledge of mycology and plant pathology as well as some statistics for handling field and laboratory data, and familiarity with techniques of evaluation of fungicides in the field.

Professional Responsibility

3

- A. Degree 3 - Work approaches, conclusions and recommendations on fungal disease and on phytotoxicity and efficacy of fungicides are reviewed for soundness of judgment and in terms of contributing to objectives of the pathology section.
- B. Degree 3 - Receives minimal guidance in own area of specialization. Guidance can be obtained for the resolution of difficult problems.
- C. Degree 3 - The work requires identifying major fungal disease problems of fruit crops and fruit trees in Ontario, with emphasis on grapes, identifying potential areas and objectives of investigations, determining strategy and approaches to deal with the disease before widespread crops damages results.
- D. Degree 3 - The work of other scientists working on fungi and fungicides is reviewed for applicability to own work. The work of subordinate staff is reviewed while in progress in the field for accuracy and on completion for compliance with standards and guidelines.
- E. Degree 3 - Own and subordinate staff's observations and results of field investigations are interpreted to produce meaningful results and recommendations on the best fungicide to use against occurring fungi of the season. The work and findings of other scientists are interpreted to determine their meaning and implications on the severity of fungal outbreaks in other areas and particular fungicide resistance.

Degree

- F. Degree 3 - Advice and recommendations are provided to colleagues and immediate superior, and advice and guidance on grape diseases, fungicide use strategies and on the efficacy of fungicides under field conditions, is provided to horticultural specialists, fruit growers, winery representatives, chemical companies and officials in federal and provincial pesticides authorities.

Management Responsibility

2

- A. Degree 2 - The work requires the supervision of a full-time technician and of casuals as assistants.
- B. Degree 2 - Ensures that field and laboratory equipment, supplies and facilities allocated for the work are used properly.
- C. Degree 2 - Identifies the need for field and laboratory equipment, material and services for conducting investigations and study work.
- D. Degree 2 - Recommends on the need for assistance to supervisor.
- E. Degree 2 - Ensures that safety and work guidelines, quality and other standards are maintained.
- F. Degree 2 - Occasionally coordinates work with residue chemist and others sharing equipment or facilities.
- G. Degree 2 - Implements and follows normal administrative procedures.

Impact of Recommendations and Activities

3

- A. Degree 3 - Recommendations, advice, efficacy assessments of fungicides and results of the work affect the intensity and direction of research activity in one or more research stations in Ontario, and contribute to the formulation of guidelines and regulations on the use of fungicides.
- B. Degree 3
- (i) Degree 3 - Results of the work form the basis of recommendations to the fruit and grape industry in Ontario and consequently have economic or technological effects in reducing damage to crops due to fungal disease.
 - (ii) Degree 2 - Information, results and recommendations contribute to the approval and use of fungicide with respect to efficacy to protect and enhance fruit crops.
 - (iii) No significant direct impact.
 - (iv) No other significant impacts.
- C. Degree 3 - The investigations and interpretations of scientific information provide knowledge and an improved understanding of fungal diseases and their control using fungicides and other biological control procedures.

LINEAR ORGANIZATION CHART

Head, Plant Pathology Section, Vineland Research Station

- Research Scientists (5)

- Technicians (6)

* - Plant Pathology Biologist (BI-3)

- Technician

- Casual Summer Assistants (4) (Sciences student; CLT)

* Bench-mark Positions.

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 9

Level: 3

Descriptive Title: Insecticide Evaluation Biologist

Reporting to the Associate Director - Insecticide Evaluation - Product Management Division:

Reviews complete pre-market evaluation submissions for new products or new uses of registered products from the pesticide industry, for completeness and acceptance against standards criteria and evaluation protocols required under the Pest Control Act and Regulations. Ensures that proposed conditions of manufacture, storage, display, distribution and utilization conform with legal requirements for safety, merit, value, purity, potency and efficacy. Reviews and assesses all data for validity and acceptability with respect to agricultural legislation and distributes relevant portions of the submissions to specialists in Health and Welfare, Environment and Fisheries and Oceans for their evaluation and assessment against their respective Acts and Regulations.

Reviews and consolidates evaluation or assessment reports received from specialists in agriculture and the above departments and establishes a consensus in consultation with them in order to prepare a global assessment on the degree of risk to human and non-target species of animals, birds and insects as well as any potential risk to land or aquatic environments. If additional data is required to complete any or all of the above risk assessment, informs industry of the additional requirements and the rationale as well as the test protocols required to complete the evaluation. Reports findings to the supervisor and recommends acceptance or rejection of the application for registration of the product based on the global assessment results.

Participates in the planning of departmental research projects to extend the use of registered pesticides for use on minor crops for which no supporting data exists. Recommends appropriate field studies to monitor the safety of residue levels of pesticides resulting from approved use levels and application frequencies.

Provides advice to officers of other federal or provincial agencies as well as industry on the requirements and implications of existing, new or amended legislation affecting the use of Pesticides in Canada.

SpecificationsDegreeKind of Assignments

3

- A. Degree 3 - Objectives of the work are defined in terms of assignments involving the evaluation of a number of pre-market evaluation submissions concurrently. Project goals are expressed in terms of timely and well founded recommendations for the approval or rejection of applications for registration of pesticides.
- B. Degree 3 - The extent of the work involves an exhaustive examination, analysis and critical evaluation of data within the specialized subject area of scientific evaluation of insecticides for the safe, effective and legal use of pest control products in Canada.
- C. Degree 3 - Assessment or evaluation activities require the use of a wide variety of scientific techniques for the investigation of the composition, performance or effects of a wide range of pesticides on agricultural and ecological systems, and the provision of sound advice.

Degree

- D. Degree 3 - Pre-market submission evaluation requires planning and organizing work to resolve a broad diversity of problems or conflicting interests in priorities and attitudes, in coordinating the views of industry and four departments to ensure that sound decisions are made within established precedents, standards and guidelines prescribed under the Control Products Acts and Regulations.

Complexity of Work

3

- A. Degree 3 - While a great deal of information is supplied in pre-market submissions, critical information is often missing or incomplete or biased. More information must often be requested at great cost to industry or occasionally industry is simply reluctant to disclose trade secrets or propriety information.
- B. Degree 3 - The information and data supplied by industry can normally be validated by a combination of experimentation and detailed literature referencing.
- C. Degree 4 - The information and data contained in the submissions can be characterized by variability, many variables, difficulty of interpretation and the need for judgment to use the data in assessing safety and efficacy.
- D. Degree 3 - Relationships between variables such as safety, merit, value and efficacy can be conflicting and require careful investigation and interpretation.
- E. Degree 4 - Work is normally affected by the activities of specialists in other departments or agencies and require full consideration of the implication of their activities and conclusions on the global assessment process.
- F. Degree 3 - Contacts are with scientists and officials of industry and other departments or agencies and legal counsel to obtain and exchange information, resolve problems and provide advice. May explain legal aspects of the work and exchange information with the public and the media.
- G. Degree 3 - The work requires adapting or developing new protocols and procedures using known approaches and existing precedents to deal with the evaluation of new products or new use patterns or spray calendars for pesticides.
- H. Degree 3 - The work requires the application of a thorough knowledge of the principles, theories and practices of biology with emphasis on toxicology, and pathology and familiarity with the practices of chemical residue analysis.

Professional Responsibility

3

- A. Degree 3 - Evaluation work, approaches, recommendations and conclusions are periodically reviewed for soundness of judgment and attainment of assignment objectives.
- B. Degree 3 - Professional guidance is only received for assistance in resolving difficult protocol related problems, and resolving differences in data requirements with industry or advisors.
- C. Degree 3 - The work requires evaluating submitted studies and experiments and dealing with problems such as incomplete or missing data and biased information and conclusions. Work requires developing appropriate protocols.
- D. Degree 3 - Within own subject area, the results and findings of other scientists are reviewed for appropriateness in assessing the global merit of pre-market submissions for the registration of new pesticides.
- E. Degree 3 - Toxicological data and assessments or conclusions of scientists from four departments are interpreted and collated into a global assessment of the work under review.
- F. Degree 3 - Specific technical advice and guidance within own subject area is provided to other scientists and officials in industry and other departments/agencies.

DegreeManagement Responsibility

1

- A. Degree 1 - The work may occasionally require assigning work to non-subordinate staff.
- B. Degree 1 - Responsibility for the control of physical resources is limited to the day-to-day use of office equipment and supplies for own work.
- C. Degree 1 - Responsibility for committing departmental resources is generally limited to the spending of own time and use of office equipment for own work.
- D. Degree 2 - Responsibility for obtaining outside assistance other than formal agreements with other federal agencies is done through recommendation on the need for assistance to the supervisor.
- E. Degree 1 - Responsibility for the administrative control of work is limited to complying with administrative procedures and guidelines established for the work.
- F. Degree 3 - There is a very definite requirement for the administrative coordination of own activities with those of other scientists from the other departments or agencies involved.
- G. Degree 1 - Responsible for following straightforward office administrative procedures.

Impact of Recommendations and Activities

3

- A. Degree 3 - Recommendations and advice impact on the operation of the Pesticide Directorate and corresponding units in other federal departments involved in the evaluation of pesticides, the formulation of guidelines, regulations, specifications or precedents and standards related to pesticides use in Canada.
- B. Degree 3
 - (i) Degree 3 - Recommendations, advice and results of the work can have economic or technological effects on the production, sale, distribution and use of pesticides in Canada.
 - (ii) Degree 2 - Recommendation, advice and results of the work have a contributing effect on the state of natural resources and management practices.
 - (iii) Degree 3 - Recommendations, advice and results of the work affect the approval and use of pesticides with respect to efficacy and safety and the regulatory control of potentially hazardous products or substances.
 - (iv) No other significant impacts.
- C. Degree 3 - Information and results of the work contribute to improvements in protocols and procedures associated with the evaluation of pesticide products. The evaluation of the scientific material submitted and the results of the work contribute directly to greater knowledge and improved understanding of the pesticides, their use, effectiveness and associated risks.

LINEAR ORGANIZATION CHART

- Director General - Pesticides Directorate
- Director, Product Compliance Division
 - Director, Information Secretariat
 - Director, Issues, Planning and Priority
 - Director, Product Management Division
 - Associate Director, Antimicrobial Section
 - Associate Director, Herbicide Section
 - Associate Director, Fungicide Section
 - Associate Director - Insecticide Evaluation
 - * - Insecticide Evaluation Biologists (3) BI-3
- * Bench-mark position

Bench-mark Position Number: 10

BENCH-MARK POSITION DESCRIPTION

Level: 3

Descriptive Title: Pesticide Evaluation Biologist

Reporting to a Senior Evaluation Officer of the Pesticide Division:

Conducts a thorough assessment of all pertinent information contained in assigned portions of pre-market submissions for pesticides to determine their acceptability for new or continuing registration under the Pest Control Products Act, administered by Agriculture Canada and more specifically from the view point of environmental legislation.

Ensures that the proposed conditions of manufacture, storage, distribution, transportation and utilization of the pesticide conform with legal requirements for the safety and preservation of the environment. Reviews and assesses all data for validity and acceptability with respect to environmental legislation and requests additional information if required to complete the assessment through consultation with officers of Agriculture Canada and the pesticide industry. Maintains confidentiality of proprietary industrial information where required.

Discusses proposed recommendations with the supervisor and prepares an official departmental recommendation and rationale for acceptance or rejection of the submission request.

Conducts assessments of applications for special research permits to carry out limited field experiments with unregistered pesticides proposed as candidate replacement of alternatives to existing pesticides. Consults with regional officers from areas where experiments are proposed and ensures that every precautions are incorporated into the experiments to prevent or minimize potential environmental damage. Provides the department of agriculture with an integrated assessment of the project and recommendations for improving the project from an environmental stand-point.

Provides advice and information to officers of other government departments/agencies and industry on the persistence and mobility of pesticide residues in the environment and their potential for bioaccumulation or their potential effect on non-target organisms; and on the requirements and implications of existing, new or proposed environmental legislation affecting the use of pesticides in Canada.

DegreeSpecificationsKinds of Assignments

3

- A. Degree 3 - Objectives of the work are defined in terms of numbers of assignments involving the concurrent evaluation of several submissions. Project goals are expressed in terms of quality and timeliness of recommendations to Agriculture Canada.
- B. Degree 3 - The work consists of projects or studies involving the comprehensive evaluation or assessment of large quantities of data on the toxicity, distribution, mobility, degradation and effects of pesticides in the environment.
- C. Degree 3 - Pesticide assessment or evaluation for detrimental effects on the environment, requires the use of a wide variety of scientific techniques to investigate the potential exposure of non-target biological organisms in a broad range of ecological systems and climatic conditions and for the provision of sound advice.

Degree

- D. Degree 3 - Detailed evaluation of pertinent portions of pesticide submissions for environmental impact requires planning and conducting a broad diversity of work to ensure that all facets of the potential exposures of living organisms and accumulation or degradation of pesticides under evaluation have been fully considered within established guidelines of the environmental legislation.

Complexity of Work

3

- A. Degree 3 - Although a lot of data and information required in assessing the environmental acceptability of a pesticide is supplied in the application for registration submission, some critical information is often missing or incomplete or biased. Additional information must often be obtained from industry or from literature but is often difficult to obtain and interpret.
- B. Degree 3 - The information and data supplied by industry can normally be validated by a combination of experimentation and detailed literature referencing.
- C. Degree 4 - The information and data contained in submissions can be characterized by variability, many variables, difficulty of interpretation and some ambiguity, and require interpretation and judgment to use the data to determine the environmental acceptability of a pesticide.
- D. Degree 3 - Relationships between variables such as, toxicity, persistence, mode of application, mobility and bioaccumulation can be conflicting and require careful consideration and interpretation or further investigation.
- E. Degree 3 - The work is frequently affected by requests from other specialists of other departments for special permits to use unregistered pesticides for testing purposes. The toxicity evaluation by Health and Welfare scientists must be taken into consideration for environmental assessment and consistency.
- F. Degree 3 - Contacts are with scientists and officials of industry and other departments to obtain and exchange information, resolve differences or problems and provide advice. May explain some legal aspects of the work and exchange information with the public and the media.
- G. Degree 3 - The work requires adapting or developing innovative procedures or new protocols to improve the evaluation process using known approaches and existing precedents especially when dealing with new or diverse geographic areas and climatic conditions.
- H. Degree 3 - The work requires the application of a thorough knowledge of the principles, theories and practices of biology with emphasis on toxicology, environmental ecology, and familiarity with the practices of pesticide residue analysis and degradation process.

Professional Responsibility

3

- A. Degree 3 - The evaluation work, approaches, recommendations and conclusions are periodically reviewed for soundness of judgment and attainment of assignment objectives.
- B. Degree 3 - Professional guidance is only received for assistance in resolving difficult protocol related problems with industry.
- C. Degree 3 - The work requires defining the objectives to be attained for each submission evaluation to ensure that all environmental aspects have been considered and potential problems identified and resolved.
- D. Degree 3 - The results and findings of other scientists are reviewed for appropriateness in assessing the impact of pesticide on the environment.

Degree

- E. Degree 3 - Environmental toxicology data from industry and assessments or conclusions of other departmental scientists are interpreted and rationalized to determine the most accurate environmental impact of the pesticides under review.
- F. Degree 3 - Specific technical or legal related advice or guidance within the subject area of evaluation of pesticides and their environmental impact is provided to other scientists or officials in industry, in own and other departments/agencies.

Management Responsibility

1

- A. Degree 1 - The work may occasionally require assigning work to non-subordinate staff.
- B. Degree 1 - Responsibility for the control of physical resources is limited to the day-to-day use of office equipment and supplies for own work.
- C. Degree 1 - Responsibility for committing departmental resources is generally limited to the spending of own time and use of office equipment for own work.
- D. Degree 2 - Responsibility for obtaining outside assistance other than formal agreements with other federal agencies is done through recommendation on the need for assistance to the supervisor.
- E. Degree 1 - Responsibility for the administrative control of work is limited to complying with administrative procedures and guidelines established for the work.
- F. Degree 3 - There is a very definite requirement for the administrative coordination of own activities with those of other scientists from the other departments/agencies involved.
- G. Degree 1 - Responsible for following straightforward office administrative procedures.

Impact of Recommendations and Activities

3

- A. Degree 3 - Recommendations, advice and evaluation results affect the formulation of guidelines, regulations, protocols and standards for pesticides and the conduct of experiments with pesticides in Canadian environments.
- B. Degree 3 -
 - i) Degree 3 - Recommendations, advice and results of the work can have an economic or technological effect on the production, sale, distribution and use of pesticides in Canada.
 - ii) Degree 3 - Recommendations, advice and results of the work are aimed at the preservation of the environment and safe environmental management practices with pesticides.
 - iii) Degree 2 - Recommendations, advice and results of the work on the environmental impact have a contributory effect on the approval and use of pesticides with respect to safety.
 - iv) No other significant impacts.
- C. Degree 3 - The evaluation of the scientific data and information submitted and results of the work contribute directly to a greater knowledge and improved understanding of pesticides and their associated risks on the environment.

LINEAR ORGANIZATION CHART

Chief, Pesticide Division

- Senior Evaluation Officer

- Senior Evaluation Officer

* - Pesticide Evaluation Biologists (2) BI-3

* Bench-mark position

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 11

Level: 3

Descriptive Title: Salmon Assessment Biologist

Reporting to the Head, Stock Assessment and Enhancement Section:

Plans, organizes and conducts field studies, investigations, and analysis of Atlantic salmon and habitat on Cape Breton Island to provide a scientific basis for assessment and derivation of salmon stock management alternatives. Conducts field studies and investigations on selected watersheds for Atlantic salmon to determine production potential and collects population data on salmon population for stock assessments. Conducts biological studies, collects and analyses samples and data for determining sex ratios, gonad development, age, differential growth rates, bio-chemical, genetic and disease studies; and, to evaluate the variability in freshwater survival due to species competition and epizootic diseases.

Initiates and conducts projects or investigation studies and determines approaches and implements techniques for the rehabilitation/enhancement of the salmon stock of a river system. Identifies and proposes investigations to determine marine mechanisms affecting mortality/survival of Atlantic salmon.

Specifies sport and commercial statistical data to be collected by fisheries officers. Analyzes data and tag return for changes in trends and assessments of river and spawning escapements and loss of salmon stock to fishing mortality. Develops mathematical models to estimate and predict salmon production of a river system.

Develops and presents recommendations to Divisional Management, River Management Committee and private and commercial groups, for regulatory control changes in harvest level and provides advice to ensure sustainable harvest level.

Contributes, as a core member of the Scientific Advisory Sub-Committee or other working groups, to the planning of scientific studies and preparation of papers pertaining to the status of Atlantic salmon stock and improved methods for predicting salmon stock levels.

Administers allocated operating budget funds; supervises technical support staff; and, prepares reports and publishes new findings concerning salmon stock in Cape Breton Island.

DegreeSpecificationsKind of Assignments

3

- A. Degree 3 - Objectives of assignments are defined in terms of improving the Atlantic Salmon stock in the region and ensuring sustained harvest at desirable levels. Annual goals are agreed to in terms of available resources.
- B. Degree 3 - The work involves comprehensive investigations to determine, develop and enhance the salmon production of selected watersheds and to establish sustainable harvesting levels.
- C. Degree 3 - The work requires collecting and analyzing information from different locations; conducting field investigations on salmon stock strengths, habitat suitability, watershed potential production; assessing actual and potential populations and harvest level; using modeling techniques; developing techniques to enhance or rehabilitate sub-standard production levels on selected rivers; and, supervising staff.

- D. Degree 3 - The activities of a study or project team are planned and directed and, projects are initiated and conducted to achieve objectives within established resource and time constraints.

Complexity of Work

3

- A. Degree 3 - Information on biological and environmental data and factors affecting salmon population, inventory, production and strength assessment at various stages, escapement, survival and mortality, watersheds habitat quality for production potential, requires obtaining by investigation, data which is often difficult to obtain, interpret and select.
- B. Degree 3 - Information and data to determine salmon river potentials can normally be validated by a combination of field investigations and previous studies or findings and correlations, experimentations and detailed literature referencing.
- C. Degree 3 - Information and data on population dynamics are characterized by several variables requiring interpretation and often present some ambiguity.
- D. Degree 3 - Relationships between variables are sometimes conflicting and require investigation and interpretation, such as to explain a decline in population when fishing is restricted.
- E. Degree 2 - Work is normally affected by others within the unit and occasionally by the activities of others outside the unit, such as provincial officials and wardens on collaborative projects to rehabilitate or enhance salmon production.
- F. Degree 3 - Contacts are with provincial scientists and officials outside the organization unit to resolve problems, exchange information, provide guidance or for participating in cooperative projects and sub-committee work.
- G. Degree 3 - The work requires exploring and developing new techniques for assessing abundance of salmon stock, streamlining the acquisition of stream habitat inventories, developing new devices and techniques to measure the salmon production potential of watersheds and productions enhancing procedures suitable for river's particular conditions, and for measuring and recording watershed data.
- H. Degree 3 - The work requires the application of a thorough knowledge of the principle, theories and practices of biology and ecology with emphasis on the North Atlantic Salmon in all stages of its life-cycle, and familiarity with hydrography and hydrology practices for physical measurement of watersheds and with biometric practices and the use of computers for modeling purposes.

Professional Responsibility

3

- A. Degree 3 - The approaches and recommendations of completed investigations are reviewed by the supervisor for soundness and in terms of attainment of objectives.
- B. Degree 3 - Professional guidance is normally received only for the resolution of difficult problems such as those affecting salmon stock and sustainable harvesting level.
- C. Degree 3 - The work requires identifying problems with certain rivers, defining objectives and determining approaches to resolve salmon decline by applying innovative solutions and recommending changes in scientific based controls.
- D. Degree 3 - The work of subordinate staff is reviewed for completeness and compliance with standards and guidelines. Related work by other scientists is reviewed for synthesis of concepts and applicability.
- E. Degree 3 - Scientific data or work results and recommendations of own staff are reviewed for significance. Investigation findings of other scientists are reviewed and interpreted for applicability or implication on rehabilitation and enhancement of salmon production, potential of certain watersheds of the region, sustainable level of harvest and salmon fishery regulations.

Degree

- F. Degree 3 - Advice is provided to colleagues and superior on own work. Scientific guidance is provided to support staff, contributors and officials on regulation changes or projects to enhance salmon production of certain rivers or, to ensure sustainable harvesting level.

Management Responsibility

2

- A. Degree 2 - The work requires the supervision of a technical support staff comprising technician, sciences students, programmer and field laborers.
- B. Degree 2 - Ensures proper use of equipment, supplies and facilities allocated for the work.
- C. Degree 2 - Determines the requirements for supplies, equipment and facilities for study/investigation projects.
- D. Degree 2 - Identifies and recommends to the supervisor on the need for outside assistance on specific field studies.
- E. Degree 2 - Ensures that safety, quality and other work and performance standards are maintained.
- F. Degree 3 - Coordinates study activities with those of others scientist working in conjunction on cooperative projects or ad-hoc committees, and with area fisheries and provincial officers.
- G. Degree 2 - Must implement field and other administrative procedures established for the work.

Impact of Recommendations and Activities

3

- A. Degree 3 - Recommendations, advice and results of the work can affect the intensity and orientation of salmon stock and fisheries research activities of the department; the assessments and analysis of the work results are used in the formulation of harvest regulations, the initiation of salmon enhancement activities and the derivation of salmon stock management alternatives for certain rivers of the region.
- B. Degree 3 -
 (i) Degree 3 - Recommendations, advice and results of the work involve salmon stock enhancement and harvest level and have economic impact on the sport and commercial salmon fishing activities.
 (ii) Degree 3 - Recommendations, advice and results of the work affect the state of the salmon stock and effectiveness of the salmon river management practices.
 (iii) No significant impact.
 (iv) No other significant impacts.
- C. Degree 3 - The investigation, inventorying and the assessments of salmon stock and habitats, and improved procedures to enhance the reproduction of salmon in selected rivers, provide new knowledge and a better understanding of salmon population dynamics.

LINEAR ORGANIZATION CHART

- Chief, Freshwater and Anadromous Fish Division
 - Head, Stocks Assessment and Enhancement Section
 - * - Salmon Assessment Biologist, BI-3
 - Technician
 - Terms/Seasonals (3)
(Programmer, University Sciences Students and Field Laborer)

- * Bench-mark Position

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 12

Level: 3

Descriptive Title: Lake Enrichment Biologist

Reporting to the Head, Enrichment Research Section:

Plans, organizes and conducts limnological investigations in the laboratory and field to determine the trophy status of approximately 15 sockeye salmon nursery lakes in British Columbia and Yukon, to increase salmon production through the application of appropriate levels of nutrient fertilizers.

Designs and conducts field and laboratory studies to determine the nutrient requirement of the phytoplankton species present in each lake through the collection of a wide range of synoptic data and nutrient competition experiments.

Determines the work and prescribes technical specifications and skill requirements for laboratory and field survey contract work. Reviews and certifies that contract work performed meets quality control, safety, other work standards and contract specifications and recommends payment.

Determines each lake's suitability for fertilization by analyzing and interpreting the information and data obtained, identifies and recommends lakes where fertilization would be most effective in terms of salmon production, calculates the appropriate fertilizer composition, loading rate and frequency for each suitable lake, and obtains appropriate permits from the Provincial authorities.

Monitors fertilized lakes, through the analysis of data on levels of growth and survival of juvenile sockeye salmon.

Advises colleagues and superior on new aspects of the work.

Writes reports and scientific papers and presents findings to scientific community.

Supervises subordinate technical support staff including several seasonal employees.

DegreeSpecificationsKind of Assignments

3

- A. Degree 3 - The enhancement of sockeye salmon in the Pacific region is the main thrust of the work. Objectives are defined in broad term by the Head of the Section to support general objectives of the Research Branch. Annual goals are agreed to with the supervisor in terms of how many lakes will be studied in the year within allocated resources.
- B. Degree 3 - The work involves comprehensive investigations in the specialized area of lake ecology and natural nutrient levels to support the sockeye salmon's food sources.
- C. Degree 3 - Activities include planning, organizing and controlling studies of a variety of unfertilized lakes and determining through the interpretation of collected data if a lake is a good candidate for the addition of fertilizers and assessing the effects of additions on salmon production rates.

- D. Degree 3 - The work requires preparing proposals for future work and approval, planning and assigning work to own staff and controlling contract work to ensure that objectives are met within established guidelines and resource allocations.

Complexity of work

- A. Degree 3 - The work requires obtaining by investigation, biological, chemical and physical data which are difficult to collect in that most lakes are in remote areas, samples are perishable and easily contaminated and laboratory analysis of phytoplankton **is** difficult and variable.
- B. Degree 3 - Information and data can only be validated by the application of rigorous quality control and innovative experimentation, correlation with other studies, or detailed literature referencing.
- C. Degree 3 - Information and data on each lake involve variables such as hydrologic flux, thermoclines, daily insolation, water chemistry, phytoplankton community structure and biomass which must be thoroughly understood before enhancement of salmon is possible.
- D. Degree 3 - The relationships of the biological, chemical and physical variables are complex, sometimes conflicting and require detailed analysis or further experimentation and interpretation.
- E. Degree 2 - The work is normally affected by the activities of contract staff whose activities must be closely monitored and coordinated and occasionally by the activities of others such as hatchery managers and provincial biologists.
- F. Degree 3 - Contacts are with scientists within and outside the organization to reach agreement on the fertilizer application strategy, obtain provincial authorization, and meet citizens groups concerned with the operation.
- G. Degree 3 - The varied nature of each lake under study requires the development of innovative solutions to resolve specific problems and involves developing new, or modifying and adapting standard practices, techniques and procedures.
- H. Degree 3 - The work requires the application of a thorough knowledge of limnology and familiarity with marine ecology, salmon biology, fisheries management and biometrics.

Professional Responsibility

3

- A. Degree 3 - Work approaches and recommendations of completed studies are reviewed by the superior for soundness of judgment and in terms of attainment of objectives.
- B. Degree 3 - Minimal direction is provided. Guidance is available for the resolution of difficult problems from discussion with Section Head or with other professional in similar fields.
- C. Degree 3 - The work requires setting specific objectives of studies for own and contract work; establishing quality control standards for field and laboratory activities; determining approaches to resolve difficult problems within the subject area of limnology.
- D. Degree 3 - The work of subordinate and contract project team members is reviewed for completeness and compliance to contract specifications, and other work standards. The work of other scientists is reviewed for applicability to own subject area.
- E. Degree 3 - Complex biological, chemical and physical data, results and conclusions, of subordinate and contract staff are interpreted to determine their meaning and implication on work activities.
- F. Degree 3 - Advice **is** provided to colleagues and immediate superior within own subject area. Explanations of findings are given and guidance on scientific matters related to salmon production in lakes **is** provided to other scientists working in related areas.

DegreeManagement Responsibility

2

- A. Degree 2 - The work requires the supervision of permanent and seasonal support staff.
- B. Degree 2 - Ensures proper use of allocated equipment, supplies and facilities.
- C. Degree 3 - Recommends the acquisition of equipment, material or services to meet work requirements and recommends payment for contract work performed.
- D. Degree 3 - Substantiates the need for outside assistance on contract, identifying requirements and source of assistance and arranging for the selection of suitable qualified resource persons for the work assignments to be carried out.
- E. Degree 3 - The work requires implementing quality assurance, performance measurement and safety procedures to contract and own staff, to meet the unit's objectives.
- F. Degree 2 - The work requires occasional coordination of activities with those of other units, when sharing equipment or facilities.
- G. Degree 2 - Implements office and field administration procedures.

Impact of Recommendations and Activities

3

- A. Degree 3 - Recommendations, advice and results of the work impact on the direction and intensity of research projects on lake enrichment programs and departmental policies for sockeye salmon enhancement.
- B. Degree 3 -
 - (i) Degree 2 - Results of the work have some economic impacts on the fishing and sports fishing industries.
 - (ii) Degree 3 - Results of the work, recommendations and advice affect the state of a natural resource, the sockeye salmon, and the environmental management practices for freshwater lakes in British Columbia and the Yukon.
 - (iii) No significant impact.
 - (iv) No other external impacts.
- C. Degree 3 - The investigation, analysis and interpretation of limnological information of sockeye salmon hatchery lakes provide knowledge and improved understanding of this subject area.

LINEAR ORGANIZATION CHART

Head, Enrichment Research Section -

Research Scientist, ultra-plankton

- Research Scientist, Lake enrichment

- Biologists (3)

- Technicians (2)

* - Lake Enrichment Biologist - BI-3

- Technician

* - Seasonal
Bench-mark position

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 13

Level: 3

Descriptive Title: Specialist, Food Microbiology

Reporting to the Head, Food Microbiology Unit:

Conducts studies and leads project teams to develop, validate and apply new or improved methods for the isolation, identification, enumeration and confirmation of microbial organisms and their toxins of sanitary and health hazard significance in a wide range of food products, and in particular low acid foods in hermetically sealed containers, to ensure the availability of reliable methods for laboratory operations and for inclusion in the Branch Analytical Procedures Manual.

Investigates the application of automated analysis and information handling techniques and the applicability of new scientific processes, techniques and approaches for assessing consumer food poisoning complaints, heat penetration process evaluations and container integrity evaluations. Devises modifications to equipment for the evaluation of cans and other hermetically sealed containers and develops screening and automated handling procedures to accommodate large numbers of samples during the course of a health hazard investigation.

Provides specialized knowledge and advice as a member of the Directorate National Science Committee, in the development of options for the National Compliance Program in the-Food Microbiology Project area. Identifies new areas of concern based on a specialist knowledge of field conditions, current science and technology and practices in the food industry. Evaluates and recommends whether existing projects should be cancelled or revised or new projects developed to resolve newly identified problems. Defines objectives of new or revised projects and recommends ways to achieve them.

Provides authoritative advice to officials of the department and industry in the area of food microbiology and in particular the analysis and evaluation of low acid foods in hermetically sealed containers for the presence of pathogenic micro-organisms and their toxins.

Acts as a member of joint inspection teams to investigate food industry problems. Trains departmental and industry scientists in the application of methods. Provides expert testimony in court concerning the reliability and significance of analytical methods and provides advice to crown attorneys on the interpretation of analytical data. Develops and implements procedures and schedules for method and instrument quality assurance for microbiological analysis and develops and recommends safety guidelines and procedures for microbiology laboratory operations. Evaluates analytical equipment, makes recommendations for purchase and prepares detailed specifications and evaluation criteria.

Analyses unusual or difficult samples as an Official Analyst for the purpose of the enforcement of the regulations and provisions of the Food and Drugs Act and conducts, and leads project teams in, special investigations to resolve problems associated with the microbiological contamination of foods.

Degree

Specifications

Kinds of Assignments

3

- A. Degree 3 - Objectives are defined by the Unit Head in terms of method development project goals and National Science Committee assignments.

Degree

- B. Degree 3 - The work involves comprehensive studies and investigations into the microbiological analysis of foods with emphasis on low acid foods in hermetically sealed containers for the purpose of method development and national project planning.
- C. Degree 3 - - The work involves the development and validation of analytical methods for the microbiological analysis of foods, participation in national program planning, the provision of expert advice, and the conduct of analysis.
- D. Degree 3 - Plans and conducts a broad diversity of analytical, method development, investigational and problem solving work in the area of food microbiology.

Complexity of work

3

- A. Degree 3 - Information in terms of new methods is developed and information for use in program planning is obtained through investigation, selection and interpretation.
- B. Degree 3 - Information, data and new methods can be validated by repeating experiments, using alternative procedures or through literature referencing.
- C. Degree 3 - Information on food industry practices and potential microbiological hazards in food products, and analytical data on actual levels of micro-organisms and container integrity evaluations contain several variables requiring interpretation and are sometimes ambiguous.
- D. Degree 3 - The relationships among variables such as container integrity, levels of pathogenic and non-pathogenic contamination and human health hazard are sometimes conflicting and require investigation and interpretation to ensure valid results. Relationships between industry practices and level of microbiological contaminants in foods require analysis and interpretation for project planning.
- E. Degree 3 - The activities of inspection staff and compliance officers affect the direction of method development and priority of investigational work.
- F. Degree 3 - Contacts are with scientists and officials to participate in cooperative method development and project planning activities, with industry to resolve problems and provide advice and training, and with Crown attorneys to provide advice on the interpretation of analytical findings.
- G. Degree 3 - The work requires developing new methods and procedures for the microbiological analysis of foods.
- H. Degree 3 - The work requires the application of a thorough knowledge of the principles and theories of food microbiology and of the procedures and techniques used for the isolation, identification, enumeration and confirmation of micro-organisms and for the evaluation of food container integrity, as well as a good knowledge of the technologies and practices used in the food manufacturing industry.

Professional Responsibility

3

- A. Degree 3 - Approaches to conducting method development studies and recommendations concerning National Science Committee project planning are reviewed by the Unit Head for soundness of judgment in terms of meeting objectives.
- B. Degree 3 - Professional guidance is received from the Unit Head on the resolution of difficult analytical or method development problems.
- C. Degree 3 - The work requires identifying analytical problems and new areas of concern, defining project objectives and determining approaches for the resolution of difficult problems, identifying compliance problems and recommending options for their resolution in the Food Microbiology Project area.

Degree

- D. Degree 3 - The work of project team members involved in method development studies or special investigations is reviewed for completeness and compliance with project guidelines and quality assurance objectives.
- E. Degree 3 - Work on the National Science Committee requires the interpretation and evaluation of scientific data on the levels of microbiological contaminants in foods as well as methods of analysis and food industry practices.
- F. Degree 4 - Provides advice to departmental officials and food industry representatives based on a recognized expertise in food microbiology and in particular, in the analysis and evaluation of low acid food in hermetically sealed containers, and related food industry practices.

Management Responsibility

2

- A. Degree 1 - As applicable, assigns work to project staff.
- B. Degree 2 - Ensures proper use of instruments, supplies and facilities for the microbiological analysis of foods.
- C. Degree 3 - Evaluates requirements, prepares detailed specifications and evaluation criteria for, and recommends acquisition of laboratory equipment.
- D. Degree 1 - Outside assistance when required is requested from the Unit Head.
- E. Degree 3 - Implements quality assurance procedures for the microbiological analysis of foods.
- F. Degree 3 - Coordinates work with National Science Committee members and regional inspection and laboratory staff.
- G. Degree 2 - Develops and recommends safety guidelines and procedures for microbiological work in the laboratory.

Impact of Recommendations and Activities

3

- A. Degree 3 - Recommendations and advice contribute to the development of national compliance projects, and results of the work contribute to the availability of reliable methods for use in on-going laboratory operations.
- B. Degree 3 -
 - (i) Degree 3 - The identification of violations of the Food and Drugs Act and Regulations may result in the regulatory control of commercial food products. Recommendations and advice on the design and implementation of national compliance projects may lead to economic or technological effects on the food industry.
 - (ii) No significant impact.
 - (iii) Degree 3 - Recommendations, advice and results of the work affect the regulatory control of foods containing volatile levels of microbiological contaminants.
 - (iv) No other significant impacts.
- C. Degree 3 - The evaluation of information and results of the work provide information on, and contribute to greater knowledge of the levels of microbiological contaminants in the food supply. New methods and procedures for the microbiological analysis of foods are developed.

LINEAR ORGANIZATION CHART

Chief, Food Laboratory

- Head - Food Chemistry Unit
- Head - Food Chemistry Unit
- Head - Mycotoxins and Food Additives Unit
- Head - Drug Microbiology Unit
- Head - Food Microbiology Unit
- * - Specialist, Food Microbiology BI-3
 - Microbiologists (2)
 - Technicians (4)
 - Lab. Support (2)

* Bench-mark Position

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 14

Level: 3

Descriptive Title: Specialist, Drug Microbiology

Reporting to the Head, Drug Microbiology Unit:

Conducts studies and leads project teams to develop, validate and apply new or improved methods to assess the potency of antibiotics and vitamins or for the isolation, identification, enumeration and confirmation of microbial organisms and their toxins of sanitary and health hazard significance in a wide range of domestic and imported drugs and medical devices, to ensure the availability of reliable methods for laboratory operations and for inclusion in the Branch analytical Procedures Manual. Investigates the application of automated analysis and information handling techniques and the applicability of new scientific processes and techniques.

Provides specialized knowledge and advice as a member of the Directorate National Science Committee, in the development of options for the National Compliance Program in the Drug Microbiology Project area. Identifies new areas of concern based on a specialist knowledge of field conditions, current science and technology and practices in the drug industry. Evaluates and recommends whether existing projects should be cancelled or revised or new projects developed to resolve newly identified problems. Defines objectives of new or revised projects and recommends ways to achieve them.

Provides authoritative advice to officials of the department and industry in the area of Drug Microbiology. Acts as a member of joint inspection teams to investigate drug industry problems. Trains departmental and industry scientists in the application of methods. Provides expert testimony in court concerning the reliability and significance of analytical methods and provides advice to crown attorneys on the interpretation of analytical data. Develops and implements procedures and schedules for method and instrument quality assurance for drug microbiology analysis and develops and recommends safety guidelines and procedures for microbiology laboratory operations. Evaluates analytical equipment, makes recommendations for purchase and prepares detailed specifications and evaluation criteria.

Analyses unusual or difficult samples as an Official Analyst for the purpose of the enforcement of the regulations and provisions of the Food and Drugs Act and conducts, and leads project teams in, special investigations to resolve problems associated with vitamin and antibiotic potency and the microbiological contamination of drugs.

SpecificationsDegreeKinds of Assignments

3

- A. Degree 3 - Objectives are defined by the Unit Head in terms of method development project goals and National Science Committee assignments.
- B. Degree 3 - The work involves comprehensive studies and investigations into the microbiological analysis of drugs, and the assessment of antibiotic and vitamin potency for the purpose of method development and national project planning.
- C. Degree 3 - The work involves the development and validation of analytical methods for the microbiological analysis of drugs, and the assessment of antibiotic and vitamin potency for the purpose of method development and national project planning.
- D. Degree 3 - Plans and conducts a broad diversity of analytical, method development, investigational, and problem solving work in the area of drug microbiology.

Complexity of Work

3

- A. Degree 3 - Information in terms of new methods is developed and information for use in program planning is obtained through investigation, selection and interpretation.
- B. Degree 3 - Information, data and new methods can be validated by repeating experiments, using alternative procedures or through literature referencing.
- C. Degree 3 - Information on drug industry practices and potential microbiological hazards in drug products, and analytical data on antibiotic and vitamin potency and actual levels of micro-organisms contain several variables requiring interpretation and are sometimes ambiguous.
- D. Degree 3 - The relationships among levels of pathogenic and non-pathogenic contamination and human health hazard are sometimes conflicting and require investigation and interpretation to ensure valid results. Relationships between industry practices and level of microbiological contamination in drugs and antibiotic and vitamin potency require analysis and interpretation for project planning.
- E. Degree 3 - The activities of inspection staff and compliance officers affect the direction of method development and priority of investigational work.
- F. Degree 3 - Contacts are with scientists and officials to participate in cooperative method development and project planning activities, with industry to resolve problems and provide advice and training and with crown attorneys to provide advice on the interpretation of analytical findings.
- G. Degree 3 - The work requires developing new methods and procedures for the microbiological analysis of drug and the assessment of antibiotic and vitamin potency.
- H. Degree 3 - The work requires the application of a thorough knowledge of the principles and theories of drug microbiology and of the procedures and techniques used for the isolation, identification, enumeration and confirmation of micro-organisms and for the assessment of antibiotic and vitamin potency, as well as a good knowledge of the technologies and practices used in the drug manufacturing industry.

Professional Responsibility

3

- A. Degree 3 - Approaches to conducting method development studies and recommendations concerning National Science Committee project planning are reviewed by the Unit Head for soundness of judgment in terms of meeting objectives.
- B. Degree 3 - Professional guidance is received from the Unit Head on the resolution of difficult analytical or method development problems.
- C. Degree 3 - The work requires identifying analytical problems and new areas of concern, defining project objectives and determining approaches for the resolution of difficult problems, identifying compliance problems and recommending options for their resolution in the drug Microbiology Project area.
- D. Degree 3 - The work of project team members involved in method development studies or special investigations is reviewed for completeness and compliance with project guidelines and quality assurance objectives.
- E. Degree 3 - Work on the National Science Committee requires the interpretation and evaluation of scientific data on the levels of microbiological contaminants in drugs as well as methods of analysis and drug industry practices.
- F. Degree 4 - Provides to departmental officials and drug industry representatives, advice based on a recognized expertise in drug microbiology and the assessment of antibiotic and vitamin potency and related drug industry practices.

DegreeManagement Responsibility

2

- A. Degree 1 - As applicable, assigns work to project staff.
- B. Degree 2 - Ensures proper use of instruments, supplies and facilities for the microbiological analysis of drugs.
- C. Degree 3 - Evaluates requirements, prepares detailed specifications and evaluation criteria for and recommends the acquisition of laboratory equipment.
- D. Degree 1 - Outside assistance when required is requested from the Unit Head.
- E. Degree 3 - Implements quality assurance procedures for the microbiological analysis of drugs.
- F. Degree 3 - - Coordinates work with National Science Committee members and regional inspection and laboratory staff.
- G. Degree 2 - Develops and recommends safety guidelines and procedures for microbiological work in the laboratory.

Impact of Recommendations and Activities

3

- A. Degree 3 - Recommendations and advice contribute to the development of national compliance projects, and results of the work contribute to the availability of reliable methods for use in ongoing laboratory operations.
- B. Degree 3 -
 - (i) Degree 3 - The identification of violations of the Food and Drugs Act and Regulations may result in the regulatory control of commercial drug products. Recommendations and advice on the design and implementation of national compliance projects may lead to economic or technological effects on the pharmaceutical industry.
 - (ii) No significant impact.
 - (iii) Degree 3 - Recommendations, advice and results of the work affect the regulatory control of drugs containing volatile levels of microbiological contaminants or non-compliant antibiotic or vitamin potency.
 - (iv) No other significant impacts.
- C. Degree 3 - The evaluation of information and results of the work provide information on the levels of microbiological contaminants in the drug supply. New methods and procedures for the microbiological analysis of drugs and the assessment of antibiotic and vitamin potency are developed.

LINEAR ORGANIZATION CHART

Chief, Food Laboratory

- Head - Food Chemistry Unit A
- Head - Food Chemistry Unit B
- Head - Food Chemistry Unit C
- Head - Drug Microbiology Unit
- * - Specialist, Drug Microbiology BI-3
 - Microbiologist
 - Microbiologist - Development Grade
 - Technicians (7)
 - Lab. Support (2)
- * Bench-mark Position

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 15

Level: 3

Descriptive Title: Head, Marine Microbiology Laboratory

Reporting to the Manager, Marine Programs, Environmental Protection Branch:

Plans, organizes and directs the microbiological sampling investigations and analytical studies of a mobile laboratory unit to determine the bacteriological levels of contamination in water, sediment and shell fish samples taken in the shell fish growing areas found in the vicinity of industrial or municipal sewage treatment plants, on the coast of British Columbia. Interprets results with respect to established health standards and the Fisheries Act and recommends appropriate actions such as: closure or reopening of designated shell fish growing areas; changes to regulations or guidelines; corrective or clean-up activities; prosecution of offenders.

Plans, organizes and directs the microbiological analytical services of the regional laboratory which conducts microbiological analyses of marine samples taken in support of the pollution abatement and control activities of other units of the department and other federal and provincial agencies.

Conducts microbiological methodology development studies related to all aspects of marine environmental microbiology; collaborates with other laboratories in the evaluation of new microbiological methods and participates in collaborative studies of marine environmental assessment with other agencies.

Prepares reports, departmental briefs and publishes scientific papers on new aspects of the work and new methodology.

Supervise two full-time support staff including a professional and up to five casual summer assistants.

DegreeSpecificationsKind of Assignments

3

- A. Degree 3 - Objectives of assignments are defined in terms of monitoring the bacterial levels associated with shell fish growing areas of British Columbia, to determine the safety of the area to the public harvesting shell fish for consumption.
- B. Degree 3 - The work involves comprehensive investigations in selected geographic areas to determine if any bacterial problem exist as well as provide microbiological support services to other units involved in pollution abatement.
- C. Degree 3 - The work includes supervising the work of staff engaged in the conduct of sampling, analyzing and investigating problem areas of bacterial pollution, and providing advice.
- D. Degree 3 - The work consists in planning and assigning tasks for the ongoing work of the microbiology laboratory, to ensure that monitoring objectives are met within established resource guidelines.

Complexity of the Work

3

- A. Degree 3 - Information and representative data are often difficult to obtain, interpret and select because of changes in currents, tides and inclement weather conditions affecting sampling. Samples are easily contaminated and techniques are selected to suit varying field conditions.

Degree

- B. Degree 2 - Information and data on bacterial identification and quantitation can normally be validated by known procedures, resampling and literature references.
- C. Degree 3 - The microbiological analysis of marine samples for a full range of micro-organisms is characterized by several variables requiring interpretation, poorly defined variability and some ambiguity due to the presence of non-pathogenic and naturally occurring organisms.
- D. Degree 3 - Relationships among variables are sometime conflicting between different sites and may require further investigations and particular interpretation.
- E. Degree 3 - Work plan and scheduling are frequently affected by the pollution abatement activities of scientists and officials outside the organizational unit, requesting priority or urgent service.
- F. Degree 3 - Contacts are with scientists and officials outside the unit to exchange information, collaborate on projects and provide advice.
- G. Degree 3 - The work requires developing new microbiological techniques and procedures to expand the scope of analytical services.
- H. Degree 3 - The work requires the application of a thorough knowledge of the principles, theories and practice of microbiology and familiarity with marine biology with emphasis on shell fish and some familiarity with hydrology, oceanography and limnology and familiarity with supervisory practices.

Professional Responsibility

3

- A. Degree 3 - Approaches, recommendations and conclusions are reviewed periodically for soundness of judgment and in terms of attainment of work and service objectives.
- B. Degree 3 - Professional guidance is received from other scientists working in microbiology. Guidance is received from the supervisor for the resolution of difficult problems.
- C. Degree 3 - The work requires defining specific objectives for each study site, identifying problems and determining the appropriate approach in each case.
- D. Degree 3 - The work of subordinate staff is reviewed for completeness and compliance to work standards and safety guidelines. The results of the work of other scientists on pollution abatement is reviewed for applicability to own subject area.
- E. Degree 3 - The results, conclusions and recommendations of subordinate staff are interpreted to determine their meaning and implications on the safety of shell fish growing areas of the region.
- F. Degree 3 - Advice is provided to colleagues and to the superior on the implications of findings in various sites. Guidance on microbiological sampling and analytical matters is provided to subordinate staff or to other scientists working on pollution abatement.

Management Responsibility

3

- A. Degree 3 - The work requires the supervision of a laboratory staff including a professional, a technician and a seasonal staff.
- B. Degree 3 - The work requires controlling the use and maintenance of allocated laboratory equipment, supplies and facilities.
- C. Degree 3 - Prepare specifications and recommends the acquisition of specific laboratory equipment, materials and services to satisfy requirements and to provide effective microbiological analytical services.
- D. Degree 3 - Identifies and substantiates the need for outside assistance, recommends suitable sources of assistance and arrange for usual assistance.

Degree

- E. Degree 3 - Implements quality assurance, performance and safety standards and procedures to meet unit's services objectives.
- F. Degree 3 - Usually required to coordinate related activities with those of other scientists involved in pollution abatement.
- G. Degree 3 - Interprets and implements guidelines, directives and procedures applicable to the work, the laboratory and the field activities.

Impact of Recommendations and Activities

3

- A. Degree 3 - Recommendations, advice and results of the work affect the direction and intensity of pollution abatement activities of the department, and contributes to the formulation of guidelines, regulations and standards regarding the safety of shell fish harvesting.
- B. Degree 3 -
 - (i) Degree 2 - Results of the work can have some economic effects on regulated industries located on the coastal regions of B.C.
 - (ii) Degree 3 - Results of the work are aimed at the protection of the environment and shell fish as a natural resource.
 - (iii) Degree 3 - Recommendations, advice and results of the work are aimed at protecting the public harvesting shell fish on the coast of B.C.
 - (iv) No other significant impacts.
- C. Degree 3 - Development of new microbiological methods of analysis and the investigation of bacterial pollution on the marine coast of B.C. provides knowledge and understanding of microbiological phenomena in environmental pollution control.

LINEAR ORGANIZATION CHART

Manager, Marine Programs

- Senior Marine Biologist - Surveillance -

Biologist

- Technician

- Senior Marine Biologist - Aquatic programs

- Marine Biologist (See BM#6)

- Technician - Field activities

* - Head, Marine Microbiology Laboratory BI-3

- Microbiologist (1) BI-2

- Technician (1) EG-ESS-07

- Seasonal (5)

* Bench-mark Position

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 16

Level : 4

Descriptive Title: Water Development Impacts Ecologist

Reporting to the Chief, Engineering and Development Division:

Elaborates and discusses with Division Chief proposals concerning programs and objectives, required studies, priorities, resources requirements and required participation.

Participates in the development and conduct of multidisciplinary national and international programs under the Canada Waters Act and the Boundary Waters Treaty, to evaluate and mitigate against any possible damage to the environment from proposed major water or hydro development programs or projects. Initiates, coordinates and supervises cooperative studies within a broad spectrum of specialization to resolve or mitigate anticipated ecological problems and fill knowledge gaps or deficiencies. Reviews progress reports and provides guidance to participants of simultaneous water-related studies of varied disciplines, analyzing and interpreting results in terms of ecological significance; provides conclusions and recommendations, synthesizing findings into a comprehensive program report; and, develops and makes recommendations concerning water management plans.

Provides specialist advice to senior officers of the organization and other federal-provincial and interdisciplinary boards, committees and task forces on a wide range of ecological matters relating to water resource development and comprehensive river basin planning and water use licensing. Participates on Boards, Committees and Task Forces on interjurisdictional environmental matters.

Provides liaison between Inland Waters Directorate and other Directorates, departmental services and outside agencies responsible for studies of the effects of water resource development projects on the environment. Chairs task forces or committees, developing guidelines or codes of practices relating to water use and environmental evaluations. Prepares recommendations on fisheries and wildlife management requirements in relation to water levels, flows and quality. Monitors projects and programs for conformity with commitments or agreements and interests of the organization and with projected estimates and expenditures.

DegreeSpecificationsKinds of Assignments

4

- A. Degree 4 - Objectives of the work are stated in terms of broad operational goals based on long-term work planning, and pertains to required multi-disciplinary assessment of ecological implications of water use or water development projects or programs.
- B. Degree 4 - Work is performed within a specialized subject area of environmental assessment involving the application of a number of scientific disciplines within the disciplines of biology, chemistry and engineering. Work requires providing interdisciplinary link between water resource engineering and ecological resource management, through the comprehensive assessment of the implications of water development projects on ecological systems and resources and the assessment practices and institutional processes.

Degree

- C. Degree 4 - Activities differ from one another in many aspects and include the assessment of the implications of water development programs and projects on the surrounding environment; planning and coordinating projects and studies of an ecological nature within an interdisciplinary, interjurisdictional framework; developing terms of reference for, and organizing and monitoring the work of consultants or other agencies conducting environmental assessments or related studies; providing specialist advice or information on problems and ecosystems and functional direction to regional contacts on environmental assessment problems.
- D. Degree 4 - The work requires planning and coordination of multi-disciplinary studies and teams conducting the assessment of water development impacts and ecosystem dynamics to ensure that Directorate's interests are addressed and environmental commitments are achieved as part of the departmental objectives. A high degree of freedom and latitude exists in the planning, organizing and coordinating of such studies.

Complexity of Work

4

- A. Degree 4 - The work requires setting study priorities in cooperation with participating agencies and in collaboration with specialists from a wide range of disciplines and obtaining by intensive investigations, multi-disciplinary information and data which are often difficult to obtain or predict, interpret and select. For example assessing the ecological effects of flooding and reservoir inundation.
- B. Degree 4 - The information is often conflicting and difficult to interpret or validate because of the types of information received and the conflicting nature of the information sources outside the department. Complex investigations are required to validate new information and validating is frequently impeded by gaps in knowledge.
- C. Degree 4 - Information and data pertaining to the wide spectrum of ecological concerns involve many variables which are difficult to interpret. Sound judgment is required to use the data.
- D. Degree 4 - Relationships between aquatic communities and factors affecting these, are complicated and require in-depth investigations to identify and resolve conflicts and interpretation problems.
- E. Degree 4 - The work is normally affected by the activities of engineers and consultants outside the organization and requires consideration of the implication of their activities on the project or study. The work also requires consideration of the activities of other services within the department and other agencies conducting related studies.
- F. Degree 4 - Contacts are with scientists and officials outside the organization to arrange cooperative projects, negotiate terms of contract work, obtain required collaboration on matters affecting studies and for providing advice based on a recognized expertise in the field of aquatic ecology.
- G. Degree 4 - New concepts and approaches are developed to establish criteria for the evaluation of the environmental implications of water development projects. Each situation presents mostly unique and different factors and problems.
- H. Degree 4 - The work requires a thorough knowledge of basic ecological principles and processes and of resource management complemented by a knowledge and understanding of the engineering, physical and chemical factors that affect ecosystems.

DegreeProfessional Responsibility

4

- A. Degree 4 - Results of conclusions and recommendations of the ecological studies are periodically reviewed for effectiveness and interpreted to determine their departmental, national or international implications.
- B. Degree 4 - Professional guidance is not available within the organization. Guidance to resolve unusual and complex problems may be obtained from scientific agencies and institutions.
- C. Degree 4 - The work requires dealing with difficult situations and problems arising out of the direction and coordination of multi-disciplinary national and international projects and studies. The work has scope for defining terms of reference and establishing program objectives. Authoritative advice is provided and approaches recommended for the resolution of complex impact assessment issues involving numerous disciplines, some in inter-related fields of specialization including plant and animal biology, water chemistry, engineering and economics.
- D. Degree 4 - As senior ecologist in the Branch, reviews, evaluates and assesses the related work of regional personnel assigned to committees and task forces for the implementation of policies and programs. Reviews water related proposals for scientific merit and for recommending actions. Reviews and evaluates study reports for deficiencies and scientific feasibility and practicality. Reviews program and project proposals submitted by study coordinators or contractors for comprehensiveness, clarity and adherence to terms of reference.
- E. Degree 4 - Interprets results of multi-disciplinary studies to determine applicability and implications on problem solutions or to recommend mitigative measures for water use or development projects.
- F. Degree 4 - Authoritative advice on the resolution of the various aspects of water-oriented ecological problems associated with water development or the gathering of baseline ecological information, is provided to senior management in the department, federal and provincial agencies and boards, and to joint national or international committees. Advice is based on environmental assessment problems, methods and policy, alternative multiple water uses, the biotic community and ecological relationships and problems affecting the Directorate programs.

Management Responsibility

3

- A. Degree 1 - The work occasionally requires assigning work to non-subordinate staff.
- B. Degree 2 - The work requires ensuring proper use of equipment and supplies allocated for conducting field studies.
- C. Degree 3 - Assesses requirements for department resources to be committed for multi-disciplinary studies; identifies the requirements and recommends the acquisition or use and payment of specific services needed for conducting the studies.
- D. Degree 4 - Determines the need and negotiates for outside assistance, prescribes terms of reference, selects consultants or other sources of assistance, relating probable cost and benefits to budgetary limitations.
- E. Degree 3 - Sets terms of reference of studies; monitors and reviews study progress and work by consultants for conformance to requirements and projected estimates, control of expenditures and fulfillment of objectives.
- F. Degree 4 - Coordinates a wide range of related component studies involving a broad spectrum of disciplines conducted simultaneously with others in federal, provincial and State agencies and in the private sector.
- G. Degree 2 - Implements established administrative procedures for the cost, control of fund expenditures, the recommendation of payments and reporting.

Impact of Recommendations and Activities

4

- A. Degree 4 - Recommendations and advice or consultations concerning ecological inputs and impact assessments contribute to the development of more comprehensive Directorate policies and affect the orientation, priorities and implementation of projects, studies, guidelines and directives.
- B. Degree 4 -
- (i) Degree 3 - Recommendations, advice and input assessments often result in changes in the operational and development engineering of water development projects with corresponding economic and technological effects.
 - (ii) Degree 4 - Recommendations, advice and results of the work contribute to the conservation, rehabilitation and enhancement of aquatic ecological resources or mitigation of potential damages to the environment from water use or development programs or projects.
 - (iii) No significant impact.
 - (iv) No other significant impacts.
- C. Degree 4 - Development of new concepts or approaches, criteria and techniques to assess environmental impacts contributes to a more comprehensive knowledge and an improved understanding of ecosystems, damages and effective remedial actions.

LINEAR ORGANIZATION CHART

- Director, Water Planning and Management Branch
 - Chief, Water Management Systems Division
 - Chief, Engineering and Development Division
 - * - Water Development Impacts Ecologist (BI-4)
 - Water Management Projects Evaluation Engineer
 - Sr. Hydrologic Engineer
 - Hydrologic Technologist
 - Head, Engineering Section
 - Sr. Design Engineers
 - Design Engineers
- * Bench-mark Position

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 17

Level: 4

Descriptive Title: Chief, Migratory Birds Conservation

Reporting to the Regional Director, Canadian Wildlife Service:

Plans, develops, directs and controls the research and wildlife management projects relating to departmental program goals on migratory bird population and habitats within the Pacific and Yukon region. Recommends regional goals, objectives and policies of the migratory bird conservation plan. Controls and monitors projects from their inception through to delivery of the final reports, participating in the preparation of main estimates, allocation of resources and monitoring progress against performance indicators.

Coordinates the regional waterfowl and other migratory bird surveys with other agencies, provinces and other departments in Canada and the U.S. Participates in national and international committees and task forces for the review of joint programs and the negotiation of international, federal/provincial or territorial agreements to meet objectives of the North American Waterfowl Management Plan.

Directs the development, implementation and coordination of regional population monitoring program.

Directs and manages the activities of a staff of professionals, enforcement officers and technicians and a seasonal support staff. Prepares budgets, allocates resources, controls operational costs, selects staff, allocates work and implements performance and safety standards to meet priorities and objectives.

Provides advice to senior officials on the protection and management of migratory birds population and contributes to decisions on legislation, regulations, policies and programs of the Canadian Wildlife Service. Serves as scientific authority on contracts and co-authors scientific papers in recognized journals.

DegreeSpecificationsKinds of Assignments

4

- A. Degree 4 - Objectives are broadly stated in terms of support to programs on the conservation of migratory birds and the North American Waterfowl Management Plan.
- B. Degree 4 - The work involves application of a number of scientific principles and theories for directing studies and research, developing guidelines and action plans, monitoring and conserving migratory birds and their habitats.
- C. Degree 4 - The work involves organizing and directing wildlife management and research projects, coordinating survey work with other organizations, participating in the review of joint programs and in the negotiations of agreements, monitoring projects, supervising the work of staff engaged in studies and investigations, providing advice and controlling the use of resources.
- D. Degree 4 - The work involves planning, organizing and implementing migratory bird management projects negotiated under agreement with Territorial, Provincial and other government organizations, and private sector organizations such as Ducks Unlimited. Considerable scope is permitted in planning the direction of inter-jurisdiction programs within the objectives of the Wildlife Conservation Program, and in ensuring that operational goals are achieved within the limitations of available resources, policy, directives and guidelines.

Complexity of Work

4

- A. Degree 3 - Information and data on the population status and changes in the distribution and concentration of the various species, on the rates of mortality and harvesting, on feeding, nesting, habitats, productivity and other aspects of population dynamics, as well as information and data on the effect of changes in climatic and environmental conditions, are often difficult to obtain, select and interpret but sources usually can be identified from past practices and experiences.
- B. Degree 3 - Information and data can be validated by a combination of experimentation and comparison with similar conditions in literature references or other flyways and related monitoring surveys.
- C. Degree 4 - Information and data on the populations of various species of migratory birds of the region, on population dynamics phenomena, habitats, feeding, nesting, on climatic and environmental conditions and mortality, harvest and productivity, are characterized by variability and comprises many variables. Difficult interpretations are required and judgment must be exercised in the use of the data to provide reliable basis for action plans and effective resource and habitat management.
- D. Degree 3 - Relationships between the variables affecting migratory bird population, concentration, productivity, feeding and mortality can be conflicting and require investigation, comparison and interpretation.
- E. Degree 4 - Work is normally affected by the activities of research scientists, officials, private agencies and interest groups outside the organizational unit, such as Ducks Unlimited, Habitat 2000, sportsmen and subsistence hunters, naturalists and land owners.
- F. Degree 4 - Contacts are with scientists and officials on cooperative projects, with committees to negotiate agreements, establish standards, regulations and guidelines and studies negotiated through agreements, and to provide advice based on a recognized expertise to public and private sector agencies such as B.C. Ministry of Environment and B.C. Nature Trust.
- G. Degree 3 - The work requires developing new migratory bird management techniques and procedures using known approaches and precedents.
- H. Degree 4 - The work requires the application of a thorough knowledge of the principles, theories and practices of ornithology and a knowledge of ecology, botany, biometrics and of wildlife management strategies. In addition, the work requires knowledge in managing staff and other resources allocated.

Professional Responsibility

4

- A. Degree 4 - Utilization of resources, report conclusions and key recommendations are reviewed for effectiveness. Work results are reviewed annually in terms of attainment of the Canadian Wildlife Service objectives pertaining to migratory birds conservation.
- B. Degree 4 - Guidance is received from superior mostly in areas of international concerns and agreements where unusual or complex problems can occur.
- C. Degree 4 - The work requires establishing resource limitations and objectives for projects or studies and providing approaches for the resolution of difficult problems by own staff.
- D. Degree 4 - The work and conclusions of subordinate staff is reviewed for soundness of judgment. The work of other scientists involved in same subject areas or under contract is reviewed for acceptability.

Degree

- E. Degree 4 - Results of studies or projects are interpreted to determine the implications on migratory birds conservation and on those regional aspects affecting the North American Waterfowl Management Plan.
- F. Degree 4 - Advice based on recognized expertise is provided to other scientists and officials on the protection and management of the migratory birds population in the Pacific and Yukon region, contributing to decisions, policies and programs of the Canadian Wildlife Service.

Management Responsibility

4

- A. Degree 4 - The work requires the operational management of six professionals (Biologists and research scientists); technicians, regulation and enforcement officers; and seasonal/casual support staff.
- B. Degree 4 - Allocates the use of equipment, such as boats, motors, vehicles and field supplies according to work priorities and project requirements.
- C. Degree 5 - The work requires exercising delegated authority for the acquisition of resources and expenditure of funds to meet work priorities and objectives.
- D. Degree 4 - The work requires choosing and negotiating for appropriate outside assistance, such as consultants, university specialists and students.
- E. Degree 4 - Controls and coordinates long term operational planning, work plans, projects schedules and performance within the departmental planning processes, to meet priorities and established objectives.
- F. Degree 4 - The work requires coordinating differing activities such as enforcement, population studies, development of resources management studies, with those of provincial, territorial, international wildlife agencies and private organizations.
- G. Degree 4 - Recommends and develops internal administrative, safety and management directives and guidelines.

Impact of Recommendations and Activities

4

- A. Degree 4 - Recommendations, advice or consultations contribute to the development of policies of the Migratory Bird Conservation Program and affect the implementation of projects or studies guidelines and directives.
- B. Degree 4 -
 - (i) Degree 3 - Recommendations, advice and results of the work have economic effects on the commercial operations associated with the exploitation of the migratory birds resource as a tourist attraction or game sport.
 - (ii) Degree 4 - The main thrust of the work is to contribute to the development of policies, decisions and recommendations to preserve wildlife for sustainable use as a natural resource.
 - (iii) Degree 2 - Recommendations based on study and survey findings such as indication of an outbreak of botulism in waterfowl or ingestion of lead and other contaminant such as pesticides by migratory birds and referral to the Department of Health and Welfare, can have implications on human health and contribute to change to harvesting regulations.
 - (iv) No other significant impacts.

Degree 4 - Decisions and recommendations contribute to the development of knowledge and improved understanding of issues and concerns of wildlife management and more particularly, those concerning migratory bird population dynamics and status of flyways and habitats in the Pacific and Yukon region.

LINEAR ORGANIZATION CHART

Regional Director General, Conservation and Protection

Regional Director, Canadian Wildlife Service

- Chief, Admin. Services
- Chief Wildlife Conservation
- * - Chief, Migratory Birds Conservation BI-4
 - Research Biometrician
 - Research Technician
 - Research Scientist
 - Migratory Bird Biologist BI-3
 - Seabird Technician (EG-ESS-6)
 - Survey Biologists (3) BI-2
 - Head Regulation and Enforcement (PM-4)
 - Enforcement Coordinator (PM-3)
 - Seasonal Support Staff

* Bench-mark position

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 18

Level: 4

Descriptive Title: Head, Food Microbiology Laboratory Unit

Reporting to the Chief, Food Laboratory Division:

Plans the activities of the Food Microbiology Laboratory Unit, specializing in the analysis, assessment and evaluation of a wide range of domestic and imported food products, including low acid foods in hermetically sealed containers, for microbial organisms and their toxins of sanitary and health hazard significance to ensure the achievement of program commitments and objectives. Coordinates the implementation of a number of analytical projects including continuing projects to monitor product quality and safety and to provide analytical data on which to base standards and regulations; investigational projects to provide data and scientific evaluations which form the basis for regulatory action; and development projects to provide new and improved methods and procedures. Negotiates analytical commitments with national project officers and with regional inspection staff. Assesses resource and equipment requirements and develops and recommends to the Chief, a detailed operational plan for the laboratory unit.

Manages, directs, controls and evaluates the work of the laboratory unit to ensure effective use of resources, achievement of the operational plan, the development and maintenance of quality assurance standards, and the rapid response to health hazard crisis situations. Defines objectives for the laboratory unit and allocates work, equipment and facilities. Monitors and evaluates program achievement in relation to time commitments and quality and quantity standards and makes required adjustments to the operational plan or resource allocations. Directs the development and implementation of a laboratory equipment maintenance plan. Assesses analytical data, reconciles discrepancies and resolves abnormal difficulties by proposing alternative approaches to resolve problems encountered by the staff.

Manages and directs method development projects in the food microbiology project areas to ensure the availability of reliable methods for laboratory operations and for inclusion in the Branch analytical Procedures Manual for use by all Branch Laboratories, the regulated industry in their quality control and product monitoring programs, and as international reference documents. Develops proposals for complete investigations, detailing the purpose, approach and required resources, and participates in National Science Committee meetings to review and prioritize project proposals. Assigns method development projects to the Food Microbiology Specialist or other staff, defines objectives of the study and provides guidance on experimental design and the resolution of unusual or difficult problems.

Provides advice on analytical methods, sampling plans and the provisions and regulations of the Food and Drugs Act to departmental and provincial officials, food manufacturers and importers, private laboratories and to the Department of Justice representing the Branch in court prosecutions under the Food and Drugs Act. Participates in joint inspections and investigations of food manufacturing plants and acts as a technical advisor to the Food Inspection Division in formal hearings with industry representatives and their legal counsel.

Provides recommendations and advice on the development of new compliance or data gathering projects. Identifies deficiencies in operational and administrative procedures, recommends changes and ensures their implementation. Directs the preparation of detailed specifications, the evaluation of equipment and suppliers' proposals and makes recommendations on the purchase of major equipment.

Develops and implements an Occupational Health and Safety program for the laboratory unit.

Specifications

Degree

Kind of Assignments

4

- A. Degree 4 - Objectives of the work are stated by the Division Chief in terms of developing and implementing an operational plan for the provision of analytical services, professional advice and method development in the area of Food Microbiology.
- B. Degree 4 - The work involves the planning and direction of an operational unit involved in the analysis, assessment and evaluation of food products for a wide range of microbial organisms and their toxins of sanitary and health hazard significance, method development and national project planning.
- C. Degree 4 - Activities include planning, organizing, controlling and supervising the work of staff engaged in food microbiology analyses, investigations and method development; planning and controlling the use of facilities, equipment and resources; providing advice; and coordinating the work with inspection staff in own and other regions.
- D. Degree 4 - The work requires planning, organizing and assigning work for analyses, investigations and studies to ensure that operational goals are achieved within resource limitations.

Complexity of Work

4

- A. Degree 4 - The work requires obtaining information on the identity and levels of a wide variety of micro-organisms and toxins of sanitary and health hazard significance in a broad range of domestic and imported foods prepared from both old and new technologies and involving exotic or mutated pathogens requiring careful selection and interpretation of the data.
- B. Degree 4 - Information and data required for compliance, particularly relating to new or unusual microbiological entities or illness with uncertain epidemiological evidence can normally be validated only by difficult or complex investigation.
- C. Degree 4 - The wide variety of foods and possible micro-organisms including food pathogens, micro-organisms indicative of unsanitary manufacturing conditions and micro-organisms associated with non-sterility of retorted foods, results in many variables with high variability, are difficult to interpret and require judgment to use.
Degree 4 - The relationships among the many micro-organisms, toxins, food industry practices and potential health hazards are complicated and require in-depth investigation to identify and resolve conflicts and interpretation problems.
- E. Degree 4 - The work is normally affected by the activities of inspection staff and requires adjustment to the laboratory unit's priorities to meet changing requirements and to respond to health hazard crisis situations.
- F. Degree 4 - Contacts are with departmental officials to negotiate and plan the analytical program, with scientists to plan and conduct joint investigations and method development projects, and with scientists and officials of industry, other federal and provincial agencies and the Department of Justice to provide advice based on a recognized expertise in the microbiological analysis of foods.
- G. Degree 4 - The work involves managing and directing method development studies for the microbiological analysis of foods, developing detailed proposals, defining objectives and providing guidance on experimental design; and on the resolution of unusual or difficult problems.

Degree

- H. Degree 4 - The work requires the application of a thorough knowledge of the principles and theories of food microbiology and of the procedures and instrumental techniques used for the microbiological analysis of foods, as well as a good knowledge of related food industry practices, statistical sampling procedures, relevant legislation, and management practices.

Professional Responsibility

4

- A. Degree 4 - The work requires the management of a food microbiology laboratory unit which is periodically reviewed for attainment of overall objectives and achievement of the operational plan.
- B. Degree 4 - Scientific guidance of a general nature is available from the Division Chief. The work requires the resolution of difficult or unusual problems in the area of the microbiological analysis of foods, and specific guidance may be obtained from other specialists in the Branch.
- C. Degree 4 - The work requires defining the objectives of analytical investigations and method development studies, and proposing alternative approaches to resolve unusual or difficult problems in the microbiological analysis of foods.
- D. Degree 4 - The approaches to conducting method development studies, and recommendations concerning National Science Committee project planning of the analytical specialist are reviewed for soundness of judgment. Method development proposals and recommendations of the Science Committee in the area of food microbiology are reviewed for acceptability.
- E. Degree 3 - Food microbiology data and results, conclusion and recommendations of own staff are interpreted to determine compliance of food samples with the provisions and regulations of the Food and Drugs Act and to provide meaningful information for use in developing standards and regulations.
- F. Degree 4 - Advice based on a recognized expertise in food microbiology, sampling and analysis of foods and of relevant legislation is provided to scientists and officials of the department, other federal and provincial agencies and to the food industry.

Management Responsibility

4

- A. Degree 4 - The work requires the operational management of professional staff including one food microbiology specialist, and three microbiologists as well as four technicians.
- B. Degree 4 - Allocates the use of equipment, supplies and facilities for the food microbiology laboratory unit.
- C. Degree 4 - Assesses the resource and equipment requirements for the work and develops and recommends a detailed operational plan.
- D. Degree 4 - Selects and negotiates for outside analytical services relating costs to benefits and makes recommendations to the Division Chief.
- E. Degree 4 - Controls and coordinates project schedules, establishes quality assurance, quantity, timeliness and safety standards and directs assignments to meet priorities and objectives.
- F. Degree 4 - Coordinates the provision of analytical services, special investigations, National Science Committee work and the provision of advice with the work of national compliance officers and inspection and Laboratory staff in own and other regions.
- G. Degree 4 - Develops and implements Occupational Health and Safety directives and guidelines for the Laboratory unit. Identifies deficiencies in operational and administrative procedures, recommends changes, and ensures their implementation.

Impact of Recommendations and Activities

4

- A. Degree 4 - Recommendations, advice and decisions have a direct impact on the quality of food microbiology analysis, methods development and the outcome of investigations as well as on the development of standards and regulations and the effectiveness of regulatory programs.
- B. Degree 4 -
- (i) Degree 3 - The identification of violations of the Food and Drugs Act may result in the regulatory control of commercial food products, and recommendations and advice on the design and implementation of national compliance projects may lead to economic or technological effects on the food industry.
 - (ii) No significant impact.
 - (iii) Degree 4 - Recommendations, advice or consultations contribute to the development of standards and regulations for microbiological contaminants in food, and decisions and recommendations affect the regulatory control of foods containing violative levels of microbiological contaminants.
 - (iv) No other significant impacts.
- C. Degree 4 - Development of approaches, and the management and direction of method development projects, as well as the interpretation and evaluation of analytical data contribute knowledge and improved understanding of the levels of microbiological contaminants in the Canadian food supply and of the methods for their analysis.

LINEAR ORGANIZATION CHART

- Chief, Food Laboratory
- Head - Food Chemistry Unit
 - Head - Food Chemistry Unit
 - Head - Mycotoxins and Food Additives Unit
 - Head - Drug Microbiology Unit
 - * - Head - Food Microbiology Laboratory Unit BI-4
 - Specialist, Food Microbiology BI-3
 - Microbiologists (2) BI-2
 - Microbiologist, Development Grade (1) BI-1 -
 - Technicians (4)
 - Lab. Support (2)
- * Bench-mark Position

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 19

Level: 4

Descriptive Title: Head, Fish and Marine Mammal Management Division
Reporting to the Manager, Arctic Resource Assessment Section:

Establishes annual program goals, requirements and priorities with the Section Manager and, as applicable, through discussions with other division heads and territorial, provincial and federal officials, and prepares financial and operational plans for approval.

Develops, discusses with the Section Manager and implement a schedule of long- and short-term studies to generate scientific information on selected water bodies and on the dynamics of selected species of fish and marine mammal populations. Plans and directs the operational program of biological studies and co-ordinates scientific studies conducted by staff and with other Branches of the Department and of the Government of the Northwest Territories (N.W.T.) to provide a scientific basis for the management and development of the fish and marine mammal resources, and the overall management of the exploitation by subsistence, commercial and sport fisheries in the Western Region with emphasis in the N.W.T. and in accordance with the Fisheries Act and the Regulations pertaining to the N.T.W. fisheries and the protection of the Beluga, Walrus, Narwhal and the Seals in the region.

Plans, directs and administers the program of Fish and Marine Mammal Management for the N.T.W. Identifies, designs and directs or co-directs cooperative projects or biological studies and investigations concerning resource management and development carried out with other Branches, territorial or provincial agencies and industrial organizations. Prepares and submits to various agencies and organizations, proposals soliciting additional resources for the conduct of planned studies or surveys. Organizes and directs co-operative program projects involving participation of, and funding by the Government of the N.W.T. and the General Development Agreement, and coordinates program with activities of the industry.

Contributes, as a member representing area of expertise in the department, to the work of various committees and task forces to assess priority areas, discuss study results and problems, or to advise on regional position regarding technical matters, regulations, programs and policies, and to develop proposals with other regions or agencies.

Allocates assignments and resources to staff, reviews study plans and approaches, provides scientific direction and technical guidance, monitors and control progress of studies and the expenditure of funds, evaluates results and development proposals for approval and makes recommendations for the formulation of policies and new strategies, or regulatory changes to address specific problems.

Provides advice to superiors on the management and protection of the freshwater, anadromous, and marine fish and mammal resources in the Western Region; studies other agencies' fisheries management and development programs, reviews proposals from commercial and other organization concerned with fisheries, and analyses new scientific and technical advances for applicability.

Identifies areas requiring studies and investigations; determines and recommends projects requiring outside specialized assistance and specifies requirements, advises on service proposals and evaluates scientific content of reports by consultants for completeness, relevance and technical merit.

Directs the preparation of reports on the status of particular fish and marine mammal stocks, on population dynamics, strength forecasts and implication for the exploitation. Formulates models and projections for policies and strategies. Develops and proposes action plans to provide the region with the capability to respond to potential problems or resource-use allocation issues in the N.W.T.

Prepares for approval amendments pertaining to harvest control and management; drafts the annual Variation Notice under N.W.T. Fishery Regulations, the negotiated annual marine mammal subsistence harvest quotas, and the scientific permits for live capture of marine mammals for approval -supervising and reporting on capture; and, determines conditions for scientific permits involving fish and marine mammal investigations by other agencies or organizations. Reports on status of department regional recommendations and on monitoring of related administrative actions by other agencies affecting exploitation of the aquatic resources of the region.

Carries out supervisory and managerial duties, ensures that administrative policy, directives and guidelines are followed and participates to the staffing, classification, staff relations and development processes, assesses staff performance and makes recommendations.

Degree

Specifications

Kind of Assignments

4

- A. Degree 4 - Annual objectives are established with the Section Manager and are broadly stated in terms of operational program goals and strategies for the North and of Directorate directives and policy statements.
- B. Degree 4 - The work is performed within the area of fish and marine mammal resource management and development and involves biological as well as chemical, physical and economic and social considerations.
- C. Degree 4 - The work requires developing, planning, coordinating, directing, and controlling internal and co-operative studies, controlling and supervising work of staff, controlling use of resources, providing advice, evaluating, approving or rejecting proposals and making recommendations for policy formulation to the Section Manager.
- D. Degree 4 - The work requires planning, organizing, coordinating or assigning complex studies or projects to ensure that operational goals are achieved within resource limitations.

Complexity of Work

4

- A. Degree 4 - There is a scarcity of pertinent information and data in the literature. Locations, in the north, to a large extent, have not been studied ecologically and the environment is fragile and species' life-cycles are complex with slow growth rates and low reproduction potential. Intensive investigation is required to obtain information under short summers and difficult climate conditions over vast areas of land and water or ice environment.
- B. Degree 5 - Much of the information and data is unique and cannot be verified by other sources and requires difficult and complex experiments due to severe climatic conditions.
- C. Degree 4 - The information and data is characterized by variability and must be carefully evaluated and interpreted before inclusion in reports.
- D. Degree 5 - The relationships between variables are often conflicting, difficult to quantify and often unknown (e.g., hunting patterns for walrus related to weather, ice conditions and migration patterns, etc.). Because of resource use conflicts, available information must be analyzed in the context of likelihood of changes in land-use pattern, industrial development, accessibility, and economic and social values.

Degree

- E. Degree 4 - Work is affected by the activities of the resource users and developers and other scientists from provincial, universities and industries. Consideration of implications and coordination of the activities is required.
- F. Degree 4 - Contacts are with scientists and officials outside the organizational unit for arranging cooperative projects, implementing regulations, negotiating harvest quotas and for providing advice. Provides scientific and technical information to public inquiry committees.
- G. Degree 4 - Conventional practices must often be modified or abandoned and novel approaches experimented and developed to achieve the desired or expected resources management and development results in the north.
- H. Degree 4 - The work requires the application of a thorough knowledge of the principles and theories of biological sciences and fish and marine mammal biology, ecology and resource management, and an appreciation of chemistry and physics, including oceanography and climatology.

Professional Responsibility

4

- A. Degree 4 - Normally, recommendations and conclusions are accepted as to their effectiveness. The work of the division is reviewed through committees at regional level to ensure that objectives are met within policy guidelines. Reports and reviews containing resource management strategies are referred to scientists for constructive criticism.
- B. Degree 4 - Professional guidance for the resolution of unusual and complex problems can be obtained from other scientific authorities in the Department.
- C. Degree 4 - The work requires setting resources limitations and objectives of individual studies or projects and providing likely approaches for the resolution of difficult problems encountered by own staff.
- D. Degree 4 - The work of subordinate staff, recommendations and conclusions are reviewed for soundness of judgment and effectiveness. Other scientists' proposals and studies related to the work are reviewed for applicability and acceptability.
- E. Degree 4 - Results of studies and projects of own staff and consultants are reviewed for soundness and acceptability, and interpreted to determine the implications of conclusions and recommendations on objectives of the Division and significance in terms of conservation of fish and marine mammal species.
- F. Degree 4 - Authoritative advice is provided to scientists and senior management of the Department and to officials of the N.W.T. Government and industries on the management and development of exploitation, on the conservation and protection of freshwater and anadromous fish and marine mammal resources in the N.W.T. and the Arctic waters, on the interpretation of policies and directives, and on solutions of problems.

Management Responsibility

4

- A. Degree 4 - The work requires the operational management of a staff comprised of biologists, technicians and seasonal employees.
- B. Degree 4 - Establishes priorities and allocates equipment, supplies and facilities to subordinates and controls the use.
- C. Degree 4 - Forecasts short- and long-term resource requirements and recommends plans for the acquisition, use and up-keep of equipment, facilities and supplies and for the expenditure of funds to meet work priorities and objectives.

- D. Degree 4 - Negotiates and selects suitable sources of outside assistance. Acts as scientific authority concerning consultants on DSS contracts. Several projects are funded externally.
- E. Degree 4 - Controls and coordinates projects, establishes and implements performance and safety standards and controls to meet priorities and objectives. Exercises co-administrative functions for pertinent activities with other organizations (e.g. N.W.T. Government's Test Fishery Program; D.F.O. (Industrial Development Branch)).
- F. Degree 4 - The work requires coordinating differing activities with those of other collaborating outside organizations e.g. RIE, World Wildlife Fund, Petro Canada.
- G. Degree 4 - The work requires recommending and developing internal administrative and safety directives based on knowledge of field conditions in the north.

Impact of Recommendations and Activities

4

- A. Degree 4 - Recommendations, advice or consultations contribute to the development of policies and decisions directly affects the development and implementation of the Fish and Marine Mammal programs, policy and related projects, studies, guidelines and directives for the Northwest Territories.
- B. Degree 4 -
 - (i) Degree 4 - Recommendations, advice or decision have economic impact on the fisheries and mining or energy sectors of industry.
 - (ii) Degree 4 - Activities contribute directly to the development of the policies and affect the use and conservation of fish and marine mammal resources over a wide geographic area.
 - (iii) No significant impact.
 - (iv) Degree 3 - Negotiated subsistence harvest quotas have economic and social impacts on particular communities.
- C. Degree 4 - Development of new concepts and approaches and results of the work contribute to the technology and scientific knowledge of fisheries and marine mammal resources development and management in Northern Canada, and to an increased awareness and understanding by industries and other organizations of the dangers of ecological imbalance and over exploitation of the marine and freshwater biotic communities.

LINEAR ORGANIZATION CHART

- Director General - Western Region

Manager - Artic Resource Assessment Section

- * - Head, Fish and Marine Mammal Management Division BI-4
 - Fishery Management Biologists BI-3 (2)
 - Technicians EG-ESS-6 (5)
 - Fishery Management Biologist BI-2
 - Marine Mammal Management Biologists BI-3 (2)
 - Technicians EG-ESS-6 (4) *
- Bench-mark Position

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 20

Level: 5

Descriptive Title: Senior Policy/Program Advisor, Marine Fisheries

Reporting to the Associate Director, Resource Assessment:

Develops, analyzes and recommends to senior management, national policy strategies and procedures for the management of Canada's marine renewable resources, evaluating research information and data gathered by federal government research scientists, provincial governments, universities and international fishery research and management bodies, delineating resource management problems, nature, magnitude and control strategies in consultation with experts in several disciplines, assessing efficacy of current strategies and applying modern managerial concepts and techniques of program development and management.

Identifies resource assessment and resource management problems, and research program needs in consultation with regional research managers and scientists and determines the person-year and financial resource requirements for proposals and recommendations.

Advises senior management, international scientific bodies and senior officials of provincial governments and fishing industry on resource management measures required for the optimum utilization of the fishery resources and on trends and projected abundance and availability of marine fish stocks on a national basis, including the impact of management interventions and alterations in fishing strategies upon yields from the marine fish resources, keeping abreast of national and international scientific development in population and ecosystem dynamics and marine renewable resource management concepts.

Plans, develops, advises on implementation and coordinates national resource assessment programs and research activities related to marine fisheries to provide a rational basis for the management of marine renewable resources and co-ordinate regional inputs into national programs.

Evaluates the outputs from research programs at research establishments across the country in relation to the quantitative assessment of marine fish resources, analyzing, assessing and interpreting programs results in relation to objectives and national research needs and resources devoted.

Develops national resource forecasts of marine resources availability and abundance, analyzing, assessing and interpreting results of resource assessment investigations and participating to study committees and task forces.

Assists in the development and coordination of cooperative marine fisheries assessment programs with other nations, developing in consultation with regional research managers Canadian requirements for scientific resource assessment input by other nations under Canadian fisheries management within 200 miles, consulting with their scientists on the levels of resources and commitments to be required as a condition for fishing within the Canadian fishing zones, and coordinating foreign and Canadian resource assessment activities.

DegreeSpecificationsKinds of Assignments

5

- A. Degree 5 - Objectives of the work are stated by the Associate Director, Resource Assessment in terms of broad national policy for the management of Canada's marine fisheries.

- B. Degree 5 - The work involves developing concepts, strategies and policies for the management of Canada's marine fisheries involving a wide spectrum of scientific activities, and comprises a significant program activity.
- C. Degree 5 - Activities involves the scientific evaluations of national research programs on marine fisheries assessment, making recommendations and providing advice on resource management, strategies and policy or legislation, providing guidance on the approaches to complex problems, evaluating outputs from research programs, and coordinating scientific resource assessment activities at the national and international levels.
- D. Degree 5 - The work involves program conceptualization, development, planning and coordination of the several concurrent regional and international marine fisheries scientific assessment and research studies and contributes to the formulation of national policies on the management of marine fisheries.

Complexity of Work

5

- A. Degree 5 - Must develop and coordinate cooperative research programs with other agencies and other nations for the scientific information and data required to provide a rational basis for the management of fisheries and to construct comprehensive, multi-species and interdisciplinary models simulating major fisheries complexes and forecasting marine fish abundance.
- B. Degree 5 - Much of the information and data is extrapolated and hypothetical and not completely validatable.
- C. Degree 5 - Information and data obtained nationally from many research establishments in different regions and from other nations is highly variable and often ambiguous, and requires ingenuity and highly selective judgment to use.
- D. Degree 5 - For any given resource situation, a large number of variables must be considered and relationships among the variables are often conflicting and difficult to define and measure in the field of marine fish population dynamics, assessment and future trends predicting.
- E. Degree 5 - The work of fisheries research of marine fish assessments in other provincial, international and commercial agencies affects the body of information and requires consideration of the implications of their activities and findings.
- F. Degree 5 - Contacts are with senior scientists and officials at the national and international levels to negotiate research program activities. May represent the department with the media on the subject of marine fish management policies.
- G. Degree 5 - The work requires approving and recommending new procedures and research proposals investigating new concepts and approaches, where few precedents exist.
- H. Degree 5 - The work requires the application of an advanced knowledge of the principles, theories and practices of marine fish biology and a good knowledge of related disciplines such as population dynamics, modelling, marine ecology and marine fish management practices, and modern commercial fishing technology.

Professional Responsibility

5

- A. Degree 5 - Results of the work are evaluated in terms of achievement of policy and program objectives and the maintenance of a sustainable level of marine fish stock for commercial fisheries exploitation.
- B. Degree 5 - Guidance is only received in terms Fisheries and Marine Services policy intent and overall national fisheries management objectives. Professional guidance may be received from other scientific authorities in other countries.

Degree

- C. Degree 5 - The work requires defining research objectives for major projects on marine fisheries resource assessment, defining conceptual approaches to complex resource assessment and resource management problems and establishing scientific guidelines.
- D. Degree 5 - Recommendations and conclusions of departmental and other scientists in the resource assessment field are reviewed in terms of validity and effectiveness as well as implications to program direction, objectives and national fisheries management strategies both in the short-, and long-term.
- E. Degree 5 - Results of studies, conclusions and recommendations of scientists are interpreted to determine their broad national implications on fisheries resource management and on the marine fish population status of various species in different locations.
- F. Degree 5 - Authoritative advice and recommendations on the status of marine fish stocks and on marine fish management practices are provided to senior management and officials including the Assistant Deputy Minister.

Management Responsibility

3

- A. Degree 1 - Assigns work to non-subordinate staff as applicable.
- B. Degree 2 - Ensures proper use of allocated equipment, supplies and facilities.
- C. Degree 4 - Assesses the requirement for assessment research commitments, develops and recommends plans and develops proposals providing a rationale for resources needed and expenditure of funds to meet identified research programs priorities and objectives in support of the national marine fisheries resources assessment programs.
- D. Degree 4 - Provide advice based on recognized expertise on the requirements and selection of outside scientific assistance.
- E. Degree 1 - Complies with administrative procedures, directives and guidelines established for the work.
- F. Degree 4 - Coordinates resource assessment programs activities involving a number of participating research establishments and scientists, and coordinating inputs into national programs to meet priorities and objectives of the marine renewable resources management.
- G. Degree 3 - Interprets program management policy, directives and guidelines and implements managerial concepts and technique for the development and management of programs.

Impact of Recommendations and Activities

5

- A. Degree 5 - Results of the work, authoritative recommendations and advice affect the development of marine renewable resource management policies and strategies, the formulation of marine fish resource assessment programs and the resource management practices and regulations, and the development, initiation, continuation and conduct of the research programs activities.
- B. Degree 5 -
 - (i) Degree 5 - Authoritative advice, recommendations and results of the work have far reaching short-, and long term effects upon the fishing industry, on the determination and allocation of quotas affecting the deployment of the existing fleet and expansion plans, and on the development of Canadian fisheries as a viable industry.
 - (ii) Degree 5 - Authoritative recommendations, advice and consultations have a substantial effect on the development of policies and decisions affecting the management of marine fish population, its conservation and optimum utilization as a renewable natural resource.

- (iii) No significant impact.
- (iv) No other significant impacts.

C. Degree 5 - The identification of research needs and strategies, the development of national resource assessment programs and the research studies for the development of concepts contribute to greater knowledge in the areas of marine fish biology, ecology and population dynamics for resource assessment and management.

LINEAR ORGANIZATION CHART

Director, Fisheries Research Branch

- Associate Director - Research Planning and Analysis
- Associate Director - Resource Assessment
 - Senior Policy/Program Advisor, Northern and Inland Fisheries
 - Senior Policy/Program Advisor, Marine Mammals
 - Senior Policy/Program Advisor, Fisheries Ecology
 - Senior Policy/Program Advisor, Anadromous Fisheries
- * - Senior Policy/Program Advisor, Marine Fisheries (BI-5)
 - Scientific Advisor, Resource Evaluation

* Bench-mark Position

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 21

Level: 5

Descriptive Title: Head, Food Chemicals Section

Reporting to the Chief, Toxicological Evaluation Division:

Acts as the Branch toxicological authority and expert advisor on the safety and acceptability of chemicals which may be intentionally or incidentally added to the Canadian food supply.

Plans, directs and controls the activities of the Section's staff to achieve the directorate's program objectives, allocating work according to individuals' expertise and experience and appraising all documents and reports prepared by the Section. Coordinates the work of the Section with that of other Sections, Divisions, Bureaus and Directorates. Recommends the hiring of consultants when appropriate expertise is not available or second opinion is required to resolve contentious issues, and participates in the staffing of the Section.

Conducts and supervises the review, evaluation and toxicological assessment of all pertinent information contained in pre-market submissions from the food industry requesting approval to use chemical additives or new products containing potential contaminants proposed for the manipulation, transformation, storage and packaging of foods. (The safety assessment is from the viewpoint of protecting human health as mandated by the Food and Drug Act and Regulations.) Correlates scientific data collected from many other available sources including major studies conducted in other countries, and develops an overall assessment of the chemical's toxicity to animals with reference to such factors as: carcinogenicity, teratogenicity, reproductive toxicity, chronic toxicity, immunotoxicity, developmental toxicity, mutagenicity and comparative metabolism. Extrapolates the results of laboratory animal studies to humans (data collected in epidemiology studies, occupational exposure studies and human trials may be available) for the assessment of the toxicity/safety of the chemical which may be intentionally or incidentally added to food, identifying an acceptable daily intake (ADI) which represents the amount that can be consumed daily by humans throughout their lives without an appreciable risk to their health.

Provides authoritative advice, recommendations and consultations on concerns relating to human health effects and potential health hazards from chemicals present in food, to senior departmental officials, other government departments, national, provincial and international agencies, industry, the media and the public.

Participates in the planning of research projects, studies and experiments to be carried out in-house or by industry in order to provide additional scientific data required to fully assess a chemical's safety in food.

Recommends improvements in Branch policies and food legislation to ensure consistency and fairness in the implementation of the Food and Drug Act and Regulations to all segments of the food industry.

DegreeSpecificationsKind of Assignments

5

- A. Degree 5 - Objectives of the work are stated in terms of goals for the department's national program of safe chemicals in foods in the Canadian marketplace.
- B. Degree 5 - The work involves the provision of authoritative advice on the toxicology of a broad range of chemicals added to food, to improve various desirable characteristics or through contact with food during processing and packaging and the formulation of their safety in terms of (ADI) acceptable daily intake.

- C. Degree 5 - The variety of activities involves a broad spectrum of scientific (toxicology **is** a multi-disciplinary science) and administrative duties which include evaluating major animal toxicity studies, making recommendations, providing authoritative advice on policy and legislation, providing guidance to internal and external agencies on the determination of approaches to complex problems and participating in the planning of internal and external research projects.
- D. Degree 5 - The work requires planning, coordinating and implementing a national food chemical safety assessment program and the formulation of national Food guidelines (ADI) and departmental policies in support of the Food and Drug Act and Regulations.

Complexity of Work

5

- A. Degree 5 - The work requires coordinating the collection and selection of toxicological information and data on intentionally or incidentally added chemicals which are usually obtained with great difficulty and expense to industry through the conduct of prolonged complex animal studies carried out by multidisciplinary teams and the subsequent evaluation or supervision of evaluation of results, preparation of reports and recommendations as to the chemical's toxicity. Human data is sometimes available on the effects of exposure to the chemical.
- B. Degree 5 - Information and data on animal toxicity studies required for pre-market clearance are generated over several years of experimentation. Integrity of data may not be completely validatable, and studies are very costly and time consuming to repeat. The validity of the extrapolation of results to humans can frequently not be validated.
- C. Degree 5 - Information and data on a wide variety of chemicals in foods and their toxicological properties obtained involve many intra- and inter-species variables and interactions and their use **in** safety assessment requires ingenuity and highly selective judgment.
- D. Degree 5 - Many of the toxicological parameters measured and assessed are interrelated and their significance to human health often results in conflicting viewpoints.
- E. Degree 5 - The work of the Toxicological Evaluation Division is directly affected by the activities and deliberations of senior scientists and officials from the food industry pressing for acceptance of their food products on the Canadian market and requires full consideration of their supporting data. The work may also be affected by the actions of other agencies, both national and international.
- F. Degree 5 - Contacts are with scientists and senior officials of the department to plan and coordinate evaluation studies for providing authoritative advice, and with senior scientists and officials of other federal, provincial and international food regulatory agencies, for exchanging information and advice on the acceptability of certain chemicals in food.
- G. Degree 4 - The work requires developing and implementing improved approaches and procedures for the identification of hazards and safety assessment of chemicals which are present in foods. For example, staying abreast with the latest findings on the process of carcinogenesis requires continuous study.
- H. Degree 5 - The work requires the application of an advanced knowledge of the principles, theories and practices of toxicology (a relatively new and developing multidisciplinary science) and a good knowledge of the chemistry of products utilized by the food processing industry. A basic knowledge of epidemiology is required.

Degree

Professional Responsibility

5

- A. Degree 5 - Results of the work are evaluated in terms of the effectiveness of the advice provided in support of food safety policies, including the pre-market safety assessment of food additives, and departmental program objectives.
- B. Degree 5 - Guidance is received from the Chief on policy intent and program implications. Professional guidance may be received on toxicological problems from other scientific authorities in the Branch or colleagues involved in similar work in other countries.
- C. Degree 5 - For each new chemical introduced into the food industry, the work requires defining the objectives of the evaluation process, developing conceptual approaches to ensure all aspects of the required animal studies are adequately assessed and that the evaluation takes into account all potential human health problems and requires establishing scientific guidelines in terms of national ADI.
- D. Degree 5 - Toxicity study evaluation reports and, recommendations and conclusions of own staff are reviewed for validity, effectiveness and consistency with current toxicological and risk assessment principles along with established Department policies and guidelines. Major studies or activities of other scientists from the Branch or from the food industry are evaluated for applicability to own program objectives.
- E. Degree 5 - Results of major laboratory animal and epidemiology studies presented in the submission for pre-market clearance of food chemicals and all other pertinent information are interpreted to determine and identify any toxicological hazards which may impact on the Branch's Food chemical safety programs.
- F. Degree 5 - Authoritative advice and recommendations are provided to senior officials of the department on all aspects relating to the safety of chemicals in food and the enforcement of regulations to protect the health of Canadian consumers.

Management Responsibility

4

- A. Degree 4 - The work requires the operational management of a varying number of toxicologists with various specialties carrying out safety evaluation of chemicals which may be found in foods.
- B. Degree 2 - Ensures the proper use of allocated equipment, supplies and facilities.
- C. Degree 4 - Assesses requirements, develops and recommends plans for research studies required to meet work priorities and evaluation objectives.
- D. Degree 4 - Assesses the requirement for outside assistance and recommends the hiring of appropriate consultants when expertise is not available within the Branch to resolve contentious issues.
- E. Degree 4 - Controls and coordinates the work of toxicologists with responsibility for pre-market safety assessments of food chemicals and recommending standards for these chemicals to meet priorities and Branch's objectives.
- F. Degree 4 - Coordinates activities of the Section with those of toxicology research groups from the Branch or from the food industry.
- G. Degree 2 - Implements office administrative procedures.

Impact of Recommendations and Activities

5

- A. Degree 5 - Authoritative recommendations, advice or consultations affect the development of departmental compliance policies and national food safety guidelines. Recommendations affect programs in other departments which have a Food component.

B. Degree 5 -

- (i) Degree 4 - Recommendations, activities and advice (i.e. approving or not approving the introduction of a new chemical, extending an old chemical use pattern) have economic or technological effects on the food industry, affecting a broad range of products, processes or operations.
- (ii) No significant impact.
- (iii) Degree 5 - Authoritative recommendations, advice or consultations have a substantial effect on the development of the Department's public health or safety policies and national food safety guidelines.
- (iv) No other significant impacts.

C. Degree 5 - Decisions and recommendations affect the initiation, continuation or orientation of toxicological studies or research projects to acquire new knowledge on the toxicity of chemicals in food.

LINEAR ORGANIZATION CHART

- Director, Bureau of Chemical Safety

Chief, Toxicological Evaluation Division - Head, Agricultural

Chemicals Section

- Head, Food Contaminants Section

* - Head, Food Chemicals Section BI-5

- Toxicologists BI-4 and 3

(3 to 5 PY's available as required)

* Bench-mark position