

COMPETENCY PROFILE:

CONSERVATION SCIENTIST

ROLE OVERVIEW

Conservation scientists manage, improve, and protect the quality of public land, forests, parks, agricultural land, and other land resources to maximize their use while minimizing environmental impacts. Conservation scientists apply their knowledge of specialized fields of science to maintain natural resources. They may provide advice or directly implement conservation practices and techniques. They create plans that consider both present and future uses and conservation needs.

Conservation scientists may conduct soil surveys and develop plans to eliminate erosion or protect rangelands. They may also instruct farmers, agricultural production managers, or ranchers on the best ways to use crop rotation, contour plowing, or terracing to conserve soil and water, the number and kind of livestock and forage plants best suited to a particular range, and range and farm improvements, such as fencing and reservoirs for stock watering.

Conservation scientists may also focus on marine or aquatic ecosystems. They may conduct habitat assessments, fish health studies, aquatic effects assessments, water quality testing, and more to support risk assessments and remediation in aquatic habitats.

ALSO KNOWN AS:

- Conservation Biologists
- Conservationist
- Conservation Programs Specialist
- Park Naturalist
- Wildlife Biologist

NATIONAL OCCUPATIONAL CLASSIFICATION:

- 21110 – Biologists and Related Scientists

EDUCATION AND EXPERIENCE

- A bachelor's degree in environmental science, ecology, forestry management, or wildlife biology is typically the minimum educational requirement. This degree provides a foundational understanding of the scientific principles behind conservation, with coursework in biology, chemistry, environmental policy, and resource management that equips students to understand ecosystem dynamics, conservation ethics, and the impacts of human activities.
- Obtaining a master's degree or Ph.D. in a related field is vital for individuals aiming to specialize or pursue research within conservation science. These advanced degrees delve deeply into conservation issues, ecosystem protection methods, and resource management innovations.
- While optional for certain positions, professional certification can highlight an individual's expertise and commitment to conservation science. The criteria for certification vary by region but generally involve validating one's knowledge and experience in conservation biology or environmental science through provincial, territorial, or professional organizations, enhancing credibility in competitive or leadership roles.
- Gaining practical experience is crucial for applying theoretical knowledge to real-world conservation efforts. Internships, volunteer work, or positions in conservation projects, environmental assessments, or wildlife management provide hands-on experience in critical areas such as data collection, species identification, and ecological monitoring.
- The field of conservation science is ever-evolving, with new research, technological innovations, and changes in environmental policy. Engaging in continuous learning through workshops, conferences, and additional coursework is essential for professionals to stay current with the latest developments in conservation science and practices.

TECHNICAL



Scientific Research

Applies scientific methods and techniques using empirical and/or measurable observations in their research to improve, correct, or increase knowledge in a field of study to solve specific problems.

- Collects environmental data on specific areas to gain a more holistic understanding of an area's environment to support program delivery.
- Conducts research and provides consultation on the processes and determinants of environmental occurrences to manipulate and predict their changes.
- Plans and executes scientific studies to gain information on a specific topic.
- Research with the social science, engineering, and economic communities to develop appropriate mitigation strategies for adverse environmental risks.

Project Management

Manages and executes comprehensive plans to create, monitor, and evaluate operational budgets and costs to account for all project activities and spending to sustain operations.

- Monitors the operating costs of specific projects to ensure that activities stay within budget. Defines the scope, strategy, and objectives for the technical aspects of projects and programs to establish parameters and deliverables.
- Develop a work breakdown structure to provide the project team and relevant stakeholders with a detailed overview of the deliverables.
- Monitors progress of operational plans to adjust and evaluate the success of strategic objectives and lessons learned and recognize contributions.
- Confers with other technical staff to disseminate field survey results to implement project activities.
- Contributes to a multidisciplinary team to plan, implement, and execute survey work to facilitate further project activities.
- Reports regularly on project progress to ensure the project meets its objectives.

Field Surveys

Conducts field surveys to collect information on the study area's ecosystem, landscape, or organisms to determine the viability of projects for the area and the impacts of human activity on the ecosystems.

- Specifies a survey's aim, extent, and goals to gather required data while reducing its environmental footprint.
- Applies appropriate techniques to conduct field surveys to ensure data is accurate, reproducible, and relevant to the survey plan.
- Uses survey equipment and instrumentation to collect and gather samples and data to identify the site's natural characteristics.
- Analyzes data gathered and formulates site-specific conclusions to promote conservation or reduce project impacts.
- Identifies any potential contamination or pollution and develops plans to eliminate contamination and restore the site to its natural state.

Data Analysis

Uses established statistical methods to analyze and interpret data, identifying trends and patterns that guide strategic planning and decision-making.

- Uses geographic information systems (GIS) data to map large areas to detect widespread habitat trends and determine management plans.
- Uses GIS analysis to target and prioritize lands for conservation and restoration.
- Verifies that data collection meets current legal requirements, survey plans, and specifications for validity and sufficiency before proceeding with analysis.
- Uses appropriate methodologies and techniques to analyze field survey data to produce accurate, reliable, and unbiased results.
- Applies mathematical and scientific models to analyze and derive solutions to specific problems.
- Seeks feedback from other technical specialists to confirm interpretations and ensure all conclusions are appropriate.

- Prepares technical and research reports on observations, findings, and/or impacts to communicate results to stakeholders, industry, government, or the public.
 - Uses data to generate solutions aligned with organizational goals.
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Project Proposals

Synthesize and draft project proposals to establish project scope, budget, impact, risks, and objectives to receive project funding.

- Gathers relevant information from vested parties to draft a well-written and structured document that provides the deliverables and scope of a project.
- Ensures that possible risks are identified and that mitigation plans are sorted to deal with potential adverse outcomes.
- Completes regular and final reports to granting agencies to maintain accountability and transparency about the project's development.
- Identifies the resources required to support project proposals to ensure all project activities have requisite funding.



Collaboration

Engages in professional collaborative efforts with other team members, including sharing information and expertise, utilizing input from others, and recognizing others' contributions to work towards a common goal.

- Ensures tasks are completed most efficiently to optimize workplace output.
- Works in partnership with other internal and external practitioners to execute projects.
- Shares relevant and valuable knowledge, experience, or expertise to aid team members in accomplishing their objectives more efficiently or effectively.
- Incorporates and recognizes others' input to ensure a multifaceted and multidisciplinary approach.

Communication

Positively directs outcomes by delivering communication (both written and verbal) that results in a better understanding of goals and objectives captures interest, and gains support for immediate action.

- Interprets and presents data results to stakeholders and senior management to facilitate decision-making.
- Ask questions when assigned unfamiliar tasks to ensure understanding and accuracy.
- Prepares documentation for existing and upcoming products to describe functionality and composition and communicate technical specifications in plain language to a broad audience.
- Uses non-technical language to communicate effectively with team members of all experience levels.

Indigenous Relations

Utilizes knowledge about best practices, innovations, and trends in Canada's community-based participatory research, monitoring, and land governance. This understanding is applied to their land management recommendations to avoid perpetuating past harm.

- Ensures they are up to date on the international, federal, provincial, and territorial legislation and utilizes it in a way that respects and advances Indigenous Peoples Rights and Title.
- Works for/with/in partnership with First Nations, Métis, and Inuit Peoples to address environmental issues across Canada with Indigenous views at the forefront.
- Actively seeks and nurtures relationships with Indigenous peoples and communities to work towards reconciliation.
- Utilizes knowledge and awareness of the socio-political context and history of Indigenous Peoples in Canada to create projects that respect Indigenous rights, identity, and land claims.
- Applies an understanding of settler responsibility and settler-Indigenous relations (if not Indigenous themselves) to foster collaboration and a multifaceted approach to land usage and conservation.



Regulatory Compliance

Adheres to specific regulations, codes, and legislation within a defined jurisdiction to ensure the health and safety of others.

- Analyzes relevant regulations, legislations, and standards to ensure programs comply with laws, regulations, and standards on sustainability.
- Utilizes knowledge of regulatory requirements to ensure their organization's compliance along all project steps.
- Generates solutions aligned with organizational goals and government regulations to create lasting and effective fixes.



Site Assessment

Analyze and identify an area's ecosystem to understand the impacts of human activity and development and assist in determining appropriate use cases for its growth and management.

- Collaborates with other technical specialists to accurately confirm roles, responsibilities, and permissions to conduct site assessments.
- Collects samples using established protocols to provide a better understanding of the environmental condition of the area.
- Contributes to complex environmental studies to assess the effects of development activities on an area or habitat.
- Identifies relevant site limitations or necessary permissions to conduct habitat management plans.
- Provides evidence-based and rational arguments to support recommendations and data interpretations to present stakeholders with a defensible site assessment.
- Uses geographic information systems technologies to visualize an area's terrestrial characteristics as part of site assessments.
- Identifies and assesses risks to human health and the environment and ensures compliance with applicable standards

This profile is a living document. If you have any feedback or would like to help us improve the profile, please reach out to research@eco.ca.