Fall 2013

Report of the Commissioner of the Environment and Sustainable Development

CHAPTER 2

Meeting the Goals of the International Convention on Biological Diversity

OAG

Office of the Auditor General of Canada

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Office of the Auditor General of Canada
Distribution Centre
240 Sparks Street
Ottawa, Ontario
K1A 0G6

Telephone: 613-952-0213, ext. 5000, or 1-888-761-5953
Fax: 613-943-5485
Hearing impaired only TTY: 613-954-8042
Email: distribution@oag-bvg.gc.ca

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CHAPTER 2

Meeting the Goals of the International Convention on Biological Diversity

Performance audit reports

This report presents the results of a performance audit conducted by the Office of the Auditor General of Canada under the authority of the *Auditor General Act*.

A performance audit is an independent, objective, and systematic assessment of how well government is managing its activities, responsibilities, and resources. Audit topics are selected based on their significance. While the Office may comment on policy implementation in a performance audit, it does not comment on the merits of a policy.

Performance audits are planned, performed, and reported in accordance with professional auditing standards and Office policies. They are conducted by qualified auditors who

- establish audit objectives and criteria for the assessment of performance,
- gather the evidence necessary to assess performance against the criteria,
- report both positive and negative findings,
- conclude against the established audit objectives, and
- make recommendations for improvement when there are significant differences between criteria and assessed performance.

Performance audits contribute to a public service that is ethical and effective and a government that is accountable to Parliament and Canadians.

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Meeting the Goals of the International Convention on Biological Diversity

Main Points

What we examined

The United Nations Convention on Biological Diversity is an international treaty that seeks to ensure that humanity conserves biodiversity, uses it sustainably, and shares the benefits equitably. Biological diversity—or biodiversity—refers to the variety of life in all its forms.

The Government of Canada, with support from provincial and territorial governments, signed and ratified the Convention in 1992; 193 countries are parties to the Convention. Each party establishes a National Focal Point to act as its liaison for the Convention, which includes providing overall leadership and coordinating the country's responses to the Convention. In Canada, this responsibility lies with Environment Canada.

Our audit examined whether Environment Canada has fulfilled selected responsibilities as the National Focal Point for the Convention on Biological Diversity, including those related to monitoring, promoting, and facilitating the Convention's implementation. This included whether Environment Canada had defined the actions and results it wants to achieve as National Focal Point. We also examined whether the Department has developed and applied models for the economic valuation of biodiversity and ecosystem goods and services.

Audit work for this chapter was completed on 30 July 2013. More details on the conduct of the audit are in **About the Audit** at the end of this chapter.

Why it's important

The Convention on Biological Diversity seeks to conserve biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources. In Canada and internationally, there is increasing recognition of the importance of determining the economic value of the goods and services provided by ecosystems and biodiversity, and the need to integrate this value into decision making.

As National Focal Point for the Convention on Biological Diversity, Environment Canada plays an important role in leading and coordinating Canada's responses to the Convention.

What we found

- Environment Canada has been leading the development of Canada's 2020 goals and targets under the Convention, resulting in four draft goals and 19 related draft targets covering a range of important topics, from creating protected areas to sustainably using biodiversity. However, most of the 19 draft targets are not sufficiently specific and key actions for achieving the targets have not been developed. Without details on key actions that need to be taken, it is not clear how Canada will meet its biodiversity targets by 2020.
- The first ecosystem status and trends report for Canada, released in 2010, was a positive step in addressing the lack of comprehensive biodiversity reporting in Canada, an issue we have raised in past audits. Environment Canada will no longer lead this initiative. As a result, the ability to comprehensively report on biodiversity status and trends may be in jeopardy.
- The Department has not set out what it plans to continue doing in connection with monitoring, promoting, and facilitating national implementation of the Convention on Biological Diversity. Without a specific plan setting out its future role as Canada's National Focal Point, it is difficult to determine what the Department plans to achieve as well as the resources it will require.
- Environment Canada has developed and applied models for the economic valuation of biodiversity and ecosystem services. Although gaps in methodology and data exist, the Department has applied these models to assist in decision making in selected areas. For example, Canadians' willingness to pay to ensure the continued existence of the polar bear in Canada was considered in analyzing the costs and benefits before listing the species as a species at risk.

The Department has responded. The Department agrees with all of the recommendations. Its detailed responses follow the recommendations throughout the chapter.

Introduction

The Convention on Biological Diversity

2.1 Biodiversity, or biological diversity, refers to the variety of life in all its forms. Biodiversity and ecosystems directly benefit Canadians' health, well-being, and economic prosperity, and are part of our country's cultural heritage. From fishing activities on the coasts and lakes to forestry activities across the land, entire communities have established traditions, lifestyles, and economies based on the ecosystems we rely on.

Chapter 1, Backgrounder on Biodiversity, provides a more comprehensive consideration of the topic of conserving biodiversity.

2.2 The Convention on Biological Diversity is an international convention opened for signature at the United Nations Conference on Environment and Development (the Earth Summit) in Rio de Janeiro in 1992. The Convention seeks to conserve biological diversity, use it in a sustainable manner, and ensure that benefits arising from the use of genetic resources are shared equitably.

2.3 With support from provincial and territorial governments, the Government of Canada signed and ratified the Convention in 1992. There are 193 countries that are Parties to the Convention. Canada's response to the Convention was the 1995 Canadian Biodiversity Strategy, which, according to Environment Canada, has guided the development of other actions aimed at conserving biodiversity, such as the National Accord for the Protection of Species at Risk. In 2006, the Strategy was supplemented by the Biodiversity Outcomes Framework for Canada.

2.4 In 2002, Canada, along with other Parties to the Convention, committed to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional, and national levels to help alleviate poverty and benefit all life on Earth. In 2010, the Convention Secretariat reported that the Parties had missed the target. This included Canada, which stated in its Fourth National Report to the Convention that it had achieved "mixed" results in meeting the 2010 Convention target of "significantly reducing the rate of biodiversity loss."

2.5 In 2010, at the 10th meeting of the Conference of the Parties in Japan's Aichi Prefecture, the Convention Secretariat adopted a new Strategic Plan for Biodiversity 2011–2020, along with 20 targets (known as the Aichi Biodiversity Targets). Parties to the Convention (including Canada) agreed to translate the Strategic Plan and Aichi Targets into national targets.

2.6 Canada's Fifth National Report to the Convention is due in March 2014. The report is to provide an update on Canada's national biodiversity strategy and action plans, and also on progress regarding the 2020 Aichi Biodiversity Targets.

2.7 Aichi targets 1 and 2 include commitments to raising awareness of the values of biodiversity and integrating them into strategies for development and poverty reduction, as well as into countries' economic accounting. In Canada and internationally, there is increasing recognition of the importance of determining the economic value of the goods and services provided by ecosystems and biodiversity, and the need to integrate this value into decision making. Under the 2010 Federal Sustainable Development Strategy, Environment Canada has committed to developing and applying models for the economic valuation of ecosystem services, in support of decision making for sustainable development.

2.8 Each country that is a Party to the Convention has established a **National Focal Point** to act as liaison for the Convention.

National Focal Point—An entity designated by a national government to represent it at both meetings of the Conference of the Parties and in its routine dealings with the Secretariat and other Parties. For Canada, the National Focal Point coordinates the interests of provinces and territories, federal government departments, and stakeholders regarding Canada's participation and implementation of the Convention on Biological Diversity.

Environment Canada's role

2.9 Environment Canada is the National Focal Point for Canada for the Convention on Biological Diversity. The Department provides overall leadership and coordinates Canada's responses to the Convention. As National Focal Point, it is responsible for monitoring, promoting, and facilitating nationwide implementation of the Convention in Canada.

Previous audit work

2.10 In the 1998 and 2000 May reports of the Commissioner of the Environment and Sustainable Development, Chapter 4—Canada's Biodiversity Clock Is Ticking and Chapter 9—Follow-up of Previous Audits: More Action Needed, we noted the lack of a federal plan (including time frames, resources to be allocated, and expected results or performance indicators) to achieve the national goals of the 1995 Canadian Biodiversity Strategy.

2.11 In the 2005 September Report, Chapter 3—Canadian Biodiversity Strategy: A Follow-Up Audit, the Commissioner reiterated that there was still no plan for implementing the Strategy. The audit noted that commitments to improve Canada's capacity to understand its biodiversity and manage biodiversity information had not been acted upon thoroughly. The Commissioner concluded that

these problems, identified in previous audits, persisted. Similar to what the Commissioner also found in the 1998 and 2000 audits, there was still no consolidated, comprehensive report on the state of biodiversity in Canada.

Focus of the audit

2.12 The objectives of the audit were to determine whether Environment Canada has

- fulfilled selected responsibilities as National Focal Point for the Convention on Biological Diversity, and
- developed and applied models for the economic valuation of biodiversity and ecosystem goods and services.

2.13 More details on the audit objectives, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

Observations and Recommendations

Implementation of the Convention

2.14 This audit looked at whether Environment Canada has fulfilled selected responsibilities as National Focal Point for the Convention on Biological Diversity.

- We examined the Department's actions aimed at facilitating implementation of the Convention, primarily by leading the development of Canada's goals and targets in response to the Convention's Strategic Plan for Biodiversity 2011–2020.
- We examined actions the Department has taken to promote the Convention and biodiversity more generally, and to monitor the status and trends of biodiversity in Canada.
- We examined whether the Department has defined the actions and results it wants to achieve as National Focal Point, and whether it has been tracking implementation of these actions and achievement of results.

2.15 In conducting the audit, we interviewed Environment Canada officials and reviewed documentation.

How Canada will achieve its 2020 targets is not clear

2.16 **Facilitating implementation of the Convention.** At the October 2010 Conference of the Parties meeting, Parties adopted a revised and updated Strategic Plan for Biodiversity, including the new

2020 Aichi Biodiversity Targets. The stated mission of the Strategic Plan is to "take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services . . .." At this meeting, the Parties agreed to translate the Strategic Plan and Aichi Targets into national biodiversity strategies and action plans.

2.17 Canada has developed four draft goals and 19 related draft targets in response to the Convention's Strategic Plan for Biodiversity and the 2020 Aichi Biodiversity Targets (Exhibit 2.1). These goals and targets cover a range of important topics, from creating protected areas to sustainably using biodiversity and conserving wetlands.

2.18 In developing Canada's goals and targets, Environment Canada, in collaboration with federal, provincial, and territorial partners, led two rounds of consultations with stakeholders. Some of the comments received through the first round of consultations called for clearer goals and targets as well as stronger accountability for achieving them. Among other things, participants commented that

- the draft targets are broad general statements,
- there is no outline on how targets will be achieved or measured over time, and
- indicators for measuring progress are not defined.

2.19 In response, indicators were proposed for each target. The indicators, along with the goals, targets, and activities that could support their implementation, were the focus of a second round of consultations. The indicators have the potential to be a useful means to measure progress.

2.20 In order to meaningfully interpret the indicators and determine whether progress being made is reasonable, specific targets are also needed. We found that most of Canada's 19 draft targets are not specific enough. While some of the targets are clear (such as target 1, related to protected areas, and target 16, on creating a comprehensive inventory of protected spaces), others, such as those related to wetlands (target 3) and sustainable management of Canada's forests (target 6) are less specific.

Exhibit 2.1 **Canada has drafted four goals and 19 targets for biodiversity**

Goal A. By 2020, Canada's lands and waters are planned and managed using an ecosystem approach to support biodiversity conservation outcomes at local, regional and national scales.	1. By 2020, at least 17 percent of terrestrial areas and inland water, and 10 percent of coastal and marine areas, are conserved through networks of protected areas and other effective area-based conservation measures. 2. By 2020, species that are secure remain secure, and population of species at risk listed under federal law exhibit trends that are consistent with recovery strategies and management plans. 3. By 2020, Canada's wetlands are conserved or enhanced to sustain their ecosystem services through retention, restoration and management activities. 4. By 2020, biodiversity considerations are integrated into municipal planning and activities of major municipalities across Canada. 5. By 2020, the ability of Canadian ecological systems to adapt to climate change is better understood, and priority adaptation measures are underway.
Goal B. By 2020, direct and indirect pressures as well as cumulative effects on biodiversity are reduced, and production and consumption of Canada's biological resources are more sustainable.	6. By 2020, continued progress is made on the sustainable management of Canada's forests. 7. By 2020, agricultural working landscapes provide a stable or improved level of biodiversity and habitat capacity. 8. By 2020, all aquaculture in Canada is managed under a science-based regime that promotes the sustainable use of aquatic resources (including marine, freshwater and land based) in ways that conserve biodiversity. 9. By 2020, all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem-based approaches. 10. By 2020, pollution levels in Canadian waters, including pollution from excess nutrients, are reduced or maintained at levels that support healthy aquatic ecosystems. 11. By 2020, pathways of invasive alien species introductions are identified, and risk-based intervention or management plans are in place for priority pathways and species. 12. By 2020, customary use by Aboriginal peoples of biological resources is maintained, compatible with their conservation and sustainable use. 13. By 2020, innovative mechanisms for fostering the conservation and sustainable use of biodiversity are developed and applied.
Goal C. By 2020, Canadians have adequate and relevant information about biodiversity and ecosystem services to support conservation planning and decision-making.	14. By 2020, the science base for biodiversity is enhanced and knowledge of biodiversity is better integrated and more accessible. 15. By 2020, aboriginal traditional knowledge is respected, promoted and, where made available by Aboriginal peoples, regularly, meaningfully and effectively informing biodiversity conservation and management decision-making. 16. By 2020, Canada has a comprehensive inventory of protected spaces that includes private conservation areas. 17. By 2020, measures of natural capital related to biodiversity and ecosystem services are developed on a national scale, and progress is made in integrating them into Canada's national statistical system.
Goal D. By 2020, Canadians are informed about the value of nature and more actively engaged in its stewardship.	18. By 2020, biodiversity is integrated into the elementary and secondary school curricula. 19. By 2020, more Canadians get out into nature and participate in biodiversity conservation activities.

Note: These draft goals and targets were not final at the time of the audit.

Source: Environment Canada

2.21 Canada's initial domestic timeline called for national goals and targets to be developed for the Convention's October 2012 meeting of the Conference of the Parties. According to Environment Canada, the timeline for completing the goals and targets was extended in order to identify indicators for the targets and allow for further engagement with stakeholders. At the meeting of the Convention in October 2012, Environment Canada stated that Canada's draft goals and targets were being finalized. The Department later informed us that they were expected to be completed by the summer of 2013. As of July 2013, they were not completed; the goals and targets may be finalized in the fall of 2013.

2.22 In 2006, the Canadian Biodiversity Strategy was supplemented by what was meant as a framework for implementation, called A Biodiversity Outcomes Framework for Canada. As the Department stated in response to the Commissioner's 2005 follow-up audit, the Framework was supposed to include measurable outcomes, timelines, indicators, and a mechanism for monitoring and reporting. We found in this audit that the Framework did not include these elements. Completing the goals, targets, and indicators will be an important contribution to the Framework.

2.23 **Key actions.** With 19 targets cutting across a number of important biodiversity issues, identifying and gaining consensus on key actions will likely be challenging. However, identifying these actions will help focus implementation and monitoring. Tracking their achievement will also help determine whether more needs to be done, or whether new and more innovative approaches to achieving the targets are required. Knowing where to focus efforts is even more important given the amount of time left to achieve the 2020 targets. Identifying key actions would be another major contribution to the Framework.

2.24 During consultations, implementation considerations, including initiatives that could contribute to achieving the targets, were identified. We found that concrete key actions have not been determined; the results of Environment Canada's consultations would, however, provide a good starting point for identifying these actions. As National Focal Point, with responsibilities for facilitating implementation of the Convention on Biological Diversity in Canada, Environment Canada is uniquely positioned to lead such efforts.

2.25 **Recommendation.** As National Focal Point, Environment Canada, in collaboration with all relevant partners, should add more specificity to the targets and define the key actions and initiatives

required to achieve Canada's 2020 biodiversity goals and targets and its milestones for assessing progress.

The Department's response. Agreed. Environment Canada notes that full implementation of this recommendation will require contributions from many different partners.

Environment Canada, in collaboration with all relevant partners, will continue the development of specific national biodiversity targets and define milestones for assessing progress.

Regarding the definition of the key actions and initiatives required to achieve Canada's 2020 goals and targets, it is important to note that the aspirational national targets are not just for governments. They are intended to guide and track the collective efforts of all Canadians. Approaches to supporting the national targets and to mainstreaming biodiversity will vary widely across jurisdictions, sectors, and for partners and individuals across the country. As such, Environment Canada will not define the specific actions required for all of Canada, but will work with relevant partners to identify and highlight leading examples of the kinds of key actions and initiatives that are under way or could be undertaken to achieve Canada's 2020 biodiversity goals and targets. The intention is that each contributor will identify the specific actions and initiatives, including the use of innovative mechanisms and approaches to biodiversity conservation, that are appropriate to their own responsibilities and interest. Environment Canada will also identify its own contributions to this effort.

Consolidated reporting on the health of our natural environment may be in jeopardy

2.26 Promoting implementation of the Convention. Environment Canada has been active in delivering biodiversity-related education and outreach activities, mainly within the context of the 2010 International Year of Biodiversity. It has also contributed to or produced a number of reports on biodiversity in Canada. These include, for example, Canada's Fourth National Report to the Convention, periodic reports on the status of species in Canada (entitled *Wild Species*), The State of Canada's Birds, 2012, and the Canadian Biodiversity: Ecosystem Status and Trends 2010 report.

2.27 Monitoring and reporting on biodiversity. Consistent long-term monitoring provides information for establishing the state of biodiversity, determining the rate of its change, and discerning trends. Long-term monitoring, combined with comprehensive reporting, is important in evaluating whether biodiversity initiatives are effective,

supporting ecosystem-based and adaptive management, and raising awareness of biodiversity issues. As noted earlier, the 2005 September Report of the Commissioner of the Environment and Sustainable Development, Chapter 3—Canadian Biodiversity Strategy: A Follow-up Audit, reported that there was no consolidated, comprehensive report on the state of biodiversity in Canada.

2.28 In 2009, Canada prepared its Fourth National Report to the Convention, stating that Canada lacked the long-term biodiversity trend data needed to make accurate assessments of the rate of biodiversity change. It also reported that Canada's first *Ecosystems Status and Trends* report would provide a baseline on which to build long-term monitoring, assessment, and reporting capacity.

2.29 We found the Canadian Biodiversity: Ecosystem Status and Trends 2010 report, the first assessment of Canada's biodiversity from an ecosystem perspective, along with supporting technical reports, to be a positive step in addressing the lack of consolidated, comprehensive biodiversity reporting in Canada that we raised in previous audits. The report provided baseline information, highlighted threats to biodiversity, identified trends, and helped measure progress in achieving healthy and diverse ecosystems.

2.30 A 2012 evaluation indicated that expenditures of Environment Canada's Biodiversity Policy and Priorities program declined by about 12 percent from the 2008–09 to 2011–12 fiscal years. It also noted stakeholder concerns that declining resources would affect the Department's ability to continue delivering on all of the program area's outcomes.

2.31 Since the completion of the evaluation, the Department's Biodiversity Policy and Priorities program has been significantly reorganized. As a result of this reorganization and resource reductions, the Department has decided that it will no longer lead the development of a business case for the next Ecosystem Status and Trends report.

2.32 As stated earlier, the Canadian Biodiversity: Ecosystem Status and Trends 2010 report was a positive step in addressing the lack of consolidated, comprehensive biodiversity status and trend reporting in Canada. Many benefits have been achieved in providing nationally consistent reporting. Without Environment Canada's leadership to facilitate the effort, these gains might now be lost. In our opinion, without a consistent means of rolling up information and reporting on

biodiversity and ecosystems across Canada, Canada's ability to identify priorities for future actions and to report comprehensively on the health of our natural environment may be in jeopardy.

Environment Canada is unclear about what it wants to achieve as National Focal Point for the Convention

2.33 Environment Canada's recent evaluation of its Biodiversity Policy and Priorities program concluded that the Department's work in this area is relevant and has achieved a great deal within a modest budget. However, as mentioned earlier, the evaluation noted concerns that declining resources would affect the Department's ability to continue delivering on all of the program's outcomes.

2.34 Since Environment Canada is National Focal Point for the Convention, we expected that the Department would have defined its role for the coming years in terms of facilitating, promoting, and monitoring implementation of the Convention and would have identified the activities it intends to lead, especially because available resources are declining. We found that Environment Canada has not identified clearly what it wants to achieve as Canada's National Focal Point for the Convention. The Department has decided not to lead the development of the Ecosystem Status and Trends report, but has not set out what it plans to continue doing in connection with monitoring, promoting, and facilitating national implementation of the Convention.

2.35 Without a clear and specific definition of how Environment Canada sees its role and what it wants to achieve as Canada's National Focal Point, it will be difficult to determine what the Department plans to achieve or what resources it will require. In a time of limited or reduced financial resources, we are concerned that this lack of clear planning means that it is not possible for Canadians to know how the Department intends to lead Canada's response to the Convention.

2.36 **Recommendation.** Environment Canada should identify its priorities as Canada's National Focal Point for the Convention on Biological Diversity. It should develop a concrete plan setting out what it wants to achieve, and should indicate the resources it requires for that purpose.

The Department's response. Agreed. Environment Canada will identify its priorities as National Focal Point for the Convention on Biological Diversity and will develop a plan to achieve them.

Valuation of ecosystem goods and services

2.37 The Convention on Biological Diversity highlights the essential role that biodiversity plays in the functioning of ecosystems that supply a wide range of goods and services that benefit the health and well-being of people (Exhibit 2.2). As examples, ecosystems and the plants, animals, and micro-organisms within them provide food, medicines, fuel, and building materials; healthy forests can help regulate climate, while wetlands can help regulate water quality. Healthy ecosystems naturally contribute to regulating other important processes in the environment and support underlying ecological functions such as soil formation, which are required for producing all other ecosystem goods and services. Beyond these important goods and services, biodiversity and ecosystems can also provide socio-cultural and spiritual benefits to Canadian communities through the many important relationships we all have with nature.

Exhibit 2.2 Ecosystems provide goods and services that benefit our society and economy

Provisioning Services	Regulating Services	Cultural Services
Ecosystems provide a variety of natural products (goods). For example:	Ecosystems contribute to regulating a number of services provided by nature. For example:	Ecosystems support a variety of non-material benefits. For example:
• Food • Fresh water • Fuel (wood) • Fibre • Biochemicals • Genetic resources	• Climate control • Disease control • Water quality • Pollination	• Spiritual and religious significance • Recreation and ecotourism • Aesthetic enjoyment • Inspirational value • Educational value • Cultural significance
Three key supporting services		
The following natural processes are necessary for the production of all other ecosystem goods and services (provisioning, regulating, and cultural): **Soil formation**—Soil is formed by various interactions between rock, climate, topography, and organisms. Many provisioning services depend on soil and soil fertility. **Nutrient cycling**—The cycling of nutrients (for example, minerals and biochemicals) that are essential for life and that promote biological growth or development. **Primary production**—The use of sunlight (through photosynthesis) to convert nutrients into organic matter (for example, plant growth).		

Source: Adapted from the Millennium Ecosystem Assessment report: Ecosystems and Human Well Being—A Framework for Assessment, 2003.

2.38 The economic valuation of ecosystem goods and services attempts to estimate the dollar value of the benefits that biodiversity and ecosystems provide: services that often are not captured by traditional economic markets. Considering the economic value of the goods and services provided by biodiversity and ecosystems can allow for more informed policy decisions. This can include, for example, making decisions on natural resource development and infrastructure projects and establishing protected areas. Valuation can also be used for estimating environmental damages.

2.39 In many ecosystems, a decline in biodiversity will tend to degrade ecosystem goods and services. Systems that are artificially re-created or constructed to replace them are often much less efficient and not as cost-effective in supplying equivalent goods and services.

2.40 Valuation of ecosystem goods and services is a complex field of study. Due to uncertainties that usually arise from the limitations of available data and methods, valuation results are generally treated as approximate estimates of the magnitude of the values.

2.41 Environment Canada is currently working with a range of partners on techniques for valuation of both economic and socio-cultural aspects of ecosystems. Although significant work on valuation is under way in other federal departments, our audit focused on Environment Canada's activities. This part of the audit focused on the Department's commitment in the 2010–2013 Federal Sustainable Development Strategy to develop and apply models for the economic valuation of ecosystem services. In conducting our audit work, we interviewed departmental officials and reviewed documentation.

Environment Canada has taken action to develop and apply models for economic valuation of ecosystem services

2.42 We found that Environment Canada's Regulatory Analysis and Valuation Division has developed and applied models and approaches for determining the economic value of ecosystem goods and services, with the aim of providing support for program and policy decisions. The area of decision making where we found the most progress in applying ecosystem goods and services valuation techniques is in regulatory decisions, including establishing protected areas and listing species at risk. Valuation information has begun to be included in regulatory impact analysis statements that inform the final regulatory decisions.

The following are examples of where the Department's economic valuation has been used:

- **Developing regulations.** For its cost-benefit analysis of the 2012 *Wastewater Systems Effluent Regulations*, Environment Canada assessed the economic value of surface water quality. Benefits of the Regulations (measured in terms of property value increases and Canadians' willingness to pay for improved water quality) were estimated to be over three times the implementation costs.

- **Listing species under the *Species at Risk Act*.** For its analysis to support the decision to list the polar bear as a species at risk, the Department commissioned a study that estimated Canadians' willingness to pay to ensure the species' continued existence in Canada. Examples of other values assessed by the study included the use of bears as a food source for Aboriginal communities (between about $250,000 and $375,000 a year) and in hunting and wildlife viewing ($8.5 million a year).

- **Establishing protected areas.** In 2010, the Department developed methods for estimating the economic values of selected ecosystem goods and services in proposed protected areas of the Northwest Territories, as part of the process to design and establish them. Among the elements included in this valuation are Canadians' willingness to pay for protecting an area in general; their willingness to pay for protecting affected caribou populations; the value of waterfowl for hunting and viewing; and the value of carbon capture and storage services provided by plants and soils in an area.

2.43 Although Environment Canada has developed and applied models for determining the economic value of ecosystem goods and services, it has recognized that there are still gaps in the valuation methods and basic information about ecosystem goods and services in Canada. These present barriers to broader application of valuation work. We found that the Department is working to address some of these gaps. For example, for many years, economists have been using the results of the 1996 Survey on the Importance of Nature to Canadians as primary data about how people benefit from biodiversity and ecosystems. In 2012, the Department and federal-provincial-territorial partners launched an update of the 1996 Survey, with some modifications to capture more ways that people interact with nature. The findings of the survey, called the Canadian Nature Survey, will be useful as primary data in future work that Environment Canada and external parties undertake on valuation of biodiversity and ecosystems.

2.44 Valuation work in Canada often needs to adapt the findings of studies done elsewhere. To facilitate this, Environment Canada has established the international Environmental Valuation Reference Inventory. The Inventory was initiated over 15 years ago, and now contains over 3,000 studies from around the world, searchable according to the specific needs of a new project. Residents of Canada and five other participating countries are given free access.

2.45 In addition, to address the need for improved data on ecosystem goods and services for use in economic valuations, the Department is working in partnership with Statistics Canada and other federal departments to develop and test accounts on a national scale. Lastly, the Department's National Biodiversity Policy Division has begun developing guidance for determining the ecological, socio-cultural, and economic values of ecosystem goods and services, and for considering these in decision making.

2.46 Regarding valuation activities, we found that short-term priorities have been identified; however, a longer-term strategic approach that outlines how the various activities the Department is undertaking will work together is not in place. Defining such a strategic approach is important for ensuring that the benefits of the Department's efforts are coordinated and maximized.

2.47 **Recommendation.** Environment Canada should develop an overall strategic approach for further advancing the valuation of ecosystem goods and services, and identify what priorities need to be addressed, with consideration given to economic and non-economic (for example, ecological and socio-cultural) values.

The Department's response. Agreed. Environment Canada notes that implementation will depend on contributions from many different partners.

Environment Canada will continue its strategic approach to the valuation of ecosystem goods and services, which builds upon strong existing relationships with internal and external partners, and will identify priorities related to ecological, socio-cultural, and economic values, taking into consideration work under way with provincial and territorial partners to develop guidance in this area.

Environment Canada will continue to build on and expand the Environmental Valuation Reference Inventory, a state-of-the-art valuation database that is widely used by academics, government officials, and other professionals.

Environment Canada will continue to integrate values of ecosystem goods and services into decision-making processes related to the regulatory agenda and key policy files by developing a valuation approach, including a framework for environmental assessments.

In addition, Environment Canada will develop its capacity to provide practical guidance on interdisciplinary data collection and application for robust ecosystem services assessments.

Conclusion

2.48 We concluded that Environment Canada, as National Focal Point, has been fulfilling its responsibilities to facilitate, promote, and monitor implementation of the Convention on Biological Diversity. However, the Department's future plans to continue monitoring, promoting, and facilitating national implementation of the Convention are not clear. Without clear plans, Canadians will not know how the Department intends to lead Canada's response to the Convention.

2.49 We also concluded that Environment Canada has developed models for valuing the economic benefits of ecosystem goods and services, and has applied them in selected areas. There are challenges regarding methodologies and available data, including gaps in information on ecosystem goods and services that present barriers to the broader application of the valuation of ecosystem goods and services.

About the Audit

All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

As part of our regular audit process, we obtained management's confirmation that the findings reported in this chapter are factually based.

Objectives

This audit sought to determine whether Environment Canada has

- fulfilled selected responsibilities as National Focal Point for the Convention on Biological Diversity (specifically with respect to monitoring, promoting, and facilitating implementation of the Convention), and
- developed and applied models for the economic valuation of biodiversity and ecosystem services.

Scope and approach

The audit is divided into two lines of inquiry, reflecting the two audit objectives:

- **Convention on Biological Diversity.** This line of inquiry examined how Environment Canada is planning for and managing its role as National Focal Point for the Convention on Biological Diversity.
- **Valuation of biodiversity and ecosystem services.** This line of inquiry examined Environment Canada's efforts to develop and apply models for estimating the economic value of biodiversity and ecosystems.

In carrying out the audit, we interviewed Environment Canada officials and relevant stakeholders, and reviewed the Department's files, reports, and other supporting documentation.

Criteria

Criteria	Sources
To determine whether Environment Canada has fulfilled selected responsibilities as the National Focal Point for the Convention on Biological Diversity in Canada, we used the following criteria.	
• Environment Canada has defined what results it wants to achieve as the National Focal Point. • Environment Canada has identified the actions and resources necessary to achieve these results. • Environment Canada has tracked the implementation of these actions and achievement of results.	• *Department of the Environment Act* • A Biodiversity Outcomes Framework for Canada • Convention on Biological Diversity Terms of Reference for National Focal Points, Conference of the Parties, Decision VIII/10
To determine whether Environment Canada has developed and applied models for the economic valuation of biodiversity and ecosystem services, we used the following criteria.	
• Environment Canada has developed models for economic valuation of biodiversity and ecosystem services in support of sustainable development decision making. • Environment Canada has applied models for economic valuation of biodiversity and ecosystem services in support of sustainable development decision making.	• Federal Sustainable Development Strategy, 2010 • Canadian Biodiversity Strategy • 2012–13 Report on Plans and Priorities, Environment Canada

Management reviewed and accepted the suitability of the criteria used in the audit.

Period covered by the audit

The audit covered the period from April 2008 to April 2013. Audit work for this chapter was completed on 30 July 2013.

Audit team

Principal: Jim McKenzie
Director: Francine Richard

Nicole Hutchinson
Mark Kepkay

For information, please contact Communications at 613-995-3708 or 1-888-761-5953 (toll-free).

Appendix List of recommendations

The following is a list of recommendations found in Chapter 2. The number in front of the recommendation indicates the paragraph number where it appears in the chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

Recommendation	Response
Implementation of the Convention	
2.25 As National Focal Point, Environment Canada, in collaboration with all relevant partners, should add more specificity to the targets and define the key actions and initiatives required to achieve Canada's 2020 biodiversity goals and targets and its milestones for assessing progress. **(2.14–2.24)**	Agreed. Environment Canada notes that full implementation of this recommendation will require contributions from many different partners. Environment Canada, in collaboration with all relevant partners, will continue the development of specific national biodiversity targets and define milestones for assessing progress. Regarding the definition of the key actions and initiatives required to achieve Canada's 2020 goals and targets, it is important to note that the aspirational national targets are not just for governments. They are intended to guide and track the collective efforts of all Canadians. Approaches to supporting the national targets and to mainstreaming biodiversity will vary widely across jurisdictions, sectors, and for partners and individuals across the country. As such, Environment Canada will not define the specific actions required for all of Canada, but will work with relevant partners to identify and highlight leading examples of the kinds of key actions and initiatives that are under way or could be undertaken to achieve Canada's 2020 biodiversity goals and targets. The intention is that each contributor will identify the specific actions and initiatives, including the use of innovative mechanisms and approaches to biodiversity conservation, that are appropriate to their own responsibilities and interest. Environment Canada will also identify its own contributions to this effort.
2.36 Environment Canada should identify its priorities as Canada's National Focal Point for the Convention on Biological Diversity. It should develop a concrete plan setting out what it wants to achieve, and should indicate the resources it requires for that purpose. **(2.26–2.35)**	Agreed. Environment Canada will identify its priorities as National Focal Point for the Convention on Biological Diversity and will develop a plan to achieve them.

Recommendation	Response
Valuation of ecosystem goods and services	
2.47 Environment Canada should develop an overall strategic approach for further advancing the valuation of ecosystem goods and services, and identify what priorities need to be addressed, with consideration given to economic and non-economic (for example, ecological and socio-cultural) values. **(2.37–2.46)**	Agreed. Environment Canada notes that implementation will depend on contributions from many different partners. Environment Canada will continue its strategic approach to the valuation of ecosystem goods and services, which builds upon strong existing relationships with internal and external partners, and will identify priorities related to ecological, socio-cultural, and economic values, taking into consideration work under way with provincial and territorial partners to develop guidance in this area. Environment Canada will continue to build on and expand the Environmental Valuation Reference Inventory, a state-of-the-art valuation database that is widely used by academics, government officials, and other professionals. Environment Canada will continue to integrate values of ecosystem goods and services into decision-making processes related to the regulatory agenda and key policy files by developing a valuation approach, including a framework for environmental assessments. In addition, Environment Canada will develop its capacity to provide practical guidance on interdisciplinary data collection and application for robust ecosystem services assessments.