



Fisheries and Oceans
Canada

Pêches et Océans
Canada



2021-22

Departmental Results Report



Canada

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From the Minister

As Minister of Fisheries, Oceans and the Canadian Coast Guard, I am pleased to present the 2021–22 Departmental Results Report on behalf of the Department. This year's report highlights our work to protect Canada's oceans, aquatic ecosystems, and habitats; ensure fisheries and aquaculture are ecologically sustainable; support innovation and opportunity in the fish and seafood sector; keep our waterways safe and navigable; advance reconciliation with Indigenous peoples; and, leverage science, technology, and partnerships.



The Department, in its second year of responding to the impacts of the COVID-19 pandemic, continued to deliver programs and services that benefit Canadians, especially those working in the fishing and seafood industries. These programs include the Fish Harvesters Benefit and Grant Program, which provides financial assistance to harvesters ineligible for other financial relief programs. We also launched new initiatives such as the Canadian Fish and Seafood Opportunities Fund, under which we work in partnership with provinces and territories to expand market access and branding for Canadian fish and seafood products.

Significant departmental activity and investment on all three coasts supported Indigenous communities and families in gaining access to licences, training and gear to pursue their rights and interests in earning livelihoods through fish harvesting.

Through Budget 2021, the Government of Canada made a historic investment in marine conservation. My department, working with partners and stakeholders, is making significant progress on the Government's commitment to conserve 25 per cent of Canada's three oceans by 2025, and 30 per cent by 2030. To date, we have conserved over 14 per cent of our marine and coastal areas; Canada is well positioned to meet these ambitious marine conservation targets.

The first phase of the Oceans Protection Plan (OPP) delivered world-leading marine safety systems, in partnership with Indigenous peoples, and increased protection for marine species and ecosystems, while also strengthening marine research and science. The next phase of the OPP, launched in July 2022, will further protect the environment and continue supporting economic growth.

We also began work under the Pacific Salmon Strategy Initiative, a generational investment to protect and rebuild threatened wild Pacific salmon stocks on Canada's west coast. This work is being done in collaboration with First Nations and Indigenous organizations, provincial and territorial governments, environmental and stewardship organizations, harvesters, and coastal and inland communities throughout British Columbia and the Yukon.

At the same time, work is progressing to develop a responsible plan to transition away from open-net pen salmon aquaculture in British Columbia's coastal waters. This includes engaging on the future of this industry with the Government of British Columbia, First Nations, industry, local governments, stakeholders, and British Columbians. The feedback received will be instrumental in developing a transition plan, for public release in spring 2023.

My department is also leading work to address ocean plastics and marine litter, here at home and abroad. Since 2020, almost 1,300 tonnes of abandoned or lost fishing gear has been removed from Canadian waters through the Department's Ghost Gear Fund. In the aftermath of Hurricane Fiona, we are redoubling our efforts in this regard. Internationally, Canada and other signatories to the Ocean Plastics Charter have committed to a more resource-efficient and lifecycle approach to plastics stewardship on land and at sea.

Finally, as we mark the 60th anniversary of the Canadian Coast Guard, the Government of Canada continues to make substantial investments in this important institution, one that is crucial to the safety and economic prospects of Canadians and the health of their environment. These include investments in fleet renewal, vessel repair, refit, and maintenance; the organization's shore-based assets, infrastructure, and technology; its people and partnerships; its work to keep iced-in seaways open; and, the 'greening' of its operations.

Throughout this busy and productive year, I have had the honour of working with dedicated public servants entrusted with protecting the health of the oceans, growing Canada's ocean economy, keeping mariners safe, and advancing reconciliation with Indigenous Peoples.

The Honourable Joyce Murray, P.C., M.P.
Minister of Fisheries, Oceans and the Canadian Coast Guard

Results at a glance

What funds were used?

The Department's total actual spending for 2021–22 was \$3,758,867,521.

Who was involved?

The Department's total workforce (full-time equivalents) for 2021–22 was 14,084.

Key results achieved

Advance reconciliation with Indigenous peoples: The Department continued important work with First Nations, Inuit, and Métis peoples to advance reconciliation and the implementation of Aboriginal and treaty rights. This included negotiating and implementing modern treaties and other constructive agreements and arrangements with Indigenous communities across the country to advance their rights and interests related to fisheries and marine matters. Fisheries and Oceans Canada (DFO) negotiated and signed a number of agreements with Indigenous partners, including a Rights Reconciliation Agreement on Fisheries with the Listuguj Mi'gmaq Government in April 2021, an Incremental Treaty Agreement on fish with the Labrador Innu in August 2021, an amended Fisheries Resources Reconciliation Agreement with eight Coastal First Nations in August 2021, and the Burrard Inlet Environmental Science and Stewardship Agreement with the Tsleil-Waututh Nation in August 2021. DFO also continued the co-delivery (with Indigenous partners) and enhancement of its capacity-building programs, which support Indigenous communities in: managing fisheries for food, social and ceremonial purposes; participating in advisory and decision-making processes related to aquatic resources and oceans management; and, building self-sustaining, Indigenous-owned commercial fishing enterprises with pathways for economic diversification. The Government of Canada also announced the expansion of the Nauttiguqtiit (Inuit Stewardship) Program in the community of Sanikiluaq, which supports Inuit leadership as environmental stewards to guide marine conservation and management in the Qikiqtani Region.

Grow Canada's ocean and freshwater economy: The Blue Economy Strategy (BES) will set out the Government's overarching vision for how Canada will transform our ocean sectors to a blue economy and help guide future actions and investments. This will help ensure Canada can derive the full benefits of a growing ocean economy while ensuring oceans and marine resources remain healthy. In March 2022, as part of its ongoing work on BES, the Department released a "What We Heard" report stemming from the BES engagements process that took place in early 2021. Together with provincial partners, DFO also invested in improving the efficiency, quality, and sustainability of the fish and seafood sector, through the Quebec Fisheries Fund (QFF), the Atlantic Fisheries Fund (AFF), the British Columbia Salmon Restoration and Innovation Fund (BCSRIF), and the Canadian Fish and Seafood Opportunities Fund (CFSOF). The Department also announced investments of \$11.8 million to support First Nations commercial fisheries enterprises for the benefit of Indigenous communities under the Pacific Integrated Commercial Fisheries Initiative (PICFI), as well as additional funding to support four new entrants to the program. Additionally, the Government committed \$300 million, to be invested over two years, for the renewal of Canada's network of small craft harbours, and in a number of projects throughout the country to make the harbours more climate-resilient, safer, and more efficient to better serve the needs of the fishing industry and local residents. For

example, a breakwater was built in Mary's Harbour, N.L., in order to better protect the harbour and its users against projected sea level rise and climate change impacts.

Protect and restore oceans, coastal areas, and marine life: By continuing to work in collaboration with Indigenous, provincial, and territorial governments, industry, other stakeholders, and local communities, the Government of Canada is committed to protecting and conserving 25 per cent of Canada's oceans by 2025, and 30 per cent by 2030. Marine conservation is an effective nature-based solution that will help stem the tide of global biodiversity loss and mitigate the impacts of climate change. As of February 2022, 13.9 per cent of Canada's marine and coastal areas were recognized as conserved. The Department continued working in partnership with Indigenous and coastal communities to complete the first phase of the Oceans Protection Plan to improve marine safety systems and protect marine ecosystems.

The Ghost Gear Fund has supported 49 projects and provided more than \$16.7 million in funding to support retrieval activities, the responsible recycling of ghost gear, new technologies to prevent ghost gear, and projects to help address ghost gear in other coastal nations. To date, the program has funded more than 703 dedicated gear retrieval trips that helped remove approximately 1,261 tonnes of abandoned, lost, or otherwise discarded fishing gear from Canada's Atlantic and Pacific coasts. In an effort to prevent whale and marine mammal entanglements in fishing gear, the Department also introduced the new \$20 million Whalesafe Gear Adoption Fund, which will help harvesters in Atlantic Canada and Quebec adopt whalesafe gear – such as weak breaking points and low breaking strength rope – into their commercial fishing operations by 2023. DFO also announced a Fishing Gear Reporting System, a new online system that makes it easier for commercial harvesters to report their lost fishing gear.

In June 2021, DFO launched the Pacific Salmon Strategy Initiative (PSSI) with the goal of stemming the decline and restoring Pacific salmon populations on Canada's west coast. Departmental officials met virtually with a broad spectrum of First Nations, as well as key partners, stakeholders, and others, to share the PSSI vision and to seek support and input on the way forward for implementing this important initiative. The Department announced conservation closures for the commercial sector during the 2021 season, and signaled the intent to engage on longer-term conservation closures. The Department also initiated foundational actions for Pacific salmon in response to the British Columbia floods.

Create a national Aquaculture Act and transition aquaculture in B.C. waters: DFO continued to work with the province of British Columbia and Indigenous communities on a responsible plan to transition from open net-pen salmon farming in coastal British Columbia waters by 2025. From December 14, 2020 to April 13, 2021, engagements were held to gather input and perspectives on the development of a responsible plan for transition. A report into the findings was published in July 2021. Although the net-pen transition plan remains the top priority for aquaculture, work to introduce Canada's first-ever Aquaculture Act continues. The Department released a "What We Heard" report summarizing input during the latest round of general engagement on the Act in March 2022.

Renew the Coast Guard fleet: Canadian Coast Guard (CCG) vessels continue to allow program delivery, such as research, icebreaking, search and rescue, aids to navigation, and environmental response, and to meet the evolving challenges driven by a changing climate. Two new search and rescue lifeboats were delivered, and a commercial light icebreaker and the sixteenth light-lift helicopter were acquired. In addition, construction of the Offshore Oceanographic Science

Vessel continued, engineering work advanced on CCG's Arctic and Offshore Patrol Ships, ancillary contract work occurred on the Polar Icebreaker and the Multi-Purpose Vessels at Vancouver Shipyards, the design for the Near-Shore Fishery Research Vessel was finalized, and both concept design for the Program Icebreakers and concept exploration for the Mid-Shore Multi-Mission vessels advanced.

For more information on Fisheries and Oceans Canada's plans, priorities and results achieved, see the "[Results: what we achieved](#)" section of this report.

Results: what we achieved

Fisheries

Description

Manage Canada’s fisheries, Indigenous fisheries programs, aquaculture activities and support commercial fishing harbours while applying relevant legislation.



Results

The fisheries core responsibility is focused on the advancement of the following Departmental Results:

- Canadian fisheries are sustainably managed;
- Canadian aquaculture is sustainably managed;
- the commercial fishing industry has access to safe harbours;
- fisheries, oceans and other aquatic ecosystems are protected from unlawful exploitation and interference;
- scientific information on fisheries resources is available to inform management decisions; and,
- enhanced relationships with, involvement of, and outcomes for Indigenous people.

The indicators used to measure progress towards these results appear in the [Results achieved](#) table beginning on page 20.

DFO works to support healthy and sustainable fishing and aquaculture sectors. In 2021–22, programs in the Fisheries core responsibility worked to ensure that fisheries and the seafood industry were well-managed, that the rights of Indigenous peoples were respected and Indigenous interests were supported, that safe commercial harbours supported the industry, and that fish were harvested and farmed in a safe, orderly, and sustainable manner. Key initiatives for 2021–22 included: work on the commitment to transition from open net-pen salmon aquaculture in British Columbia’s coastal waters; continued work on reconciliation economic support for the Canadian fish and seafood industry; work to regulate international fisheries and fishing activity; mitigation of illegal, unreported, and unregulated fishing; and continued work related to a federal aquaculture act. More information on these and other initiatives can be found below.

Blue Economy Strategy

In 2021–22, DFO made progress on developing a comprehensive BES that will seek to: grow Canada’s ocean and freshwater economy and support the long-term sustainable growth of Canada’s fish and seafood sector; ensure Canada is positioned to succeed in the fast-growing global ocean sectors of the blue economy; and, advance reconciliation, conservation, and climate objectives. Specifically, the Department asked Canadians to provide their views through a public engagement process that took place from February 8 to June 15, 2021. Over the span of over 150 days, DFO heard from provinces and territories, Indigenous partners, environmental and social justice groups, academia, and a wide range of Canadians involved in ocean industries. During that time, 40 roundtables were held in addition to targeted sector and regional

engagement which involved more than 1,614 participants; 223 of these participants identified as Indigenous peoples and 318 as women. The Department also received more than 125 written submissions and a total of 466 responses through an online survey. On March 11, 2022, a “What We Heard” report was released summarizing the finding from the engagement process. Work on the development of this important commitment continues.

Sustainable fisheries

DFO continued to generate **Integrated Fisheries Management Plans** (IFMPs), precautionary approach reference points, and harvest control rules for key fish stocks, all of which contribute to sustainable fisheries for today and for the future. Rebuilding plans are under development for most stocks that are at, or below, their limit reference point, including 11 stocks that are to be prescribed under the Fish Stocks Provisions, and the Department is working towards filling science information gaps to initiate the development of rebuilding plans for the remaining stocks, while continuing to apply the precautionary approach. In 2021–22, in its annual [Sustainable Fisheries Framework Work Plan](#)ⁱ, DFO added deliverables for the first time to conduct assessments of a selected number of fishery monitoring programs as a step to implement its Fishery Monitoring Policy. Going forward, additional commitments to implement the Fishery Monitoring Policy will be added to the work plan.

In January 2021, DFO proposed amendments to the **Fishery (General) Regulations** and published them in [Canada Gazette, Part 1](#)ⁱⁱ. On April 4, 2022, the Fish Stocks provisions in the *Fisheries Act* came into effect for 30 fish stocks. In addition, the Department prepared guidelines for developing rebuilding plans to ensure plans meet the new requirements regarding rebuilding plans in the *Fishery (General) Regulations* and in the Fish Stock’s provisions.

DFO is committed to the implementation of all of the mandatory and voluntary measures for fisheries mitigation of impacts on whales. The Government of Canada implemented management measures for the fourth year in a row, including fishing closures and Interim Sanctuary Zones in key **Southern Resident Killer Whale** (SRKW) foraging areas, as well as vessel approach distance and a number of voluntary measures in the presence of whales. For example, fishers are asked to voluntarily stop fishing within 1000 metres of killer whales. DFO also piloted a new fishing closure protocol for closures in the Southern Gulf Islands when SRKW presence was confirmed. The Government of Canada also continued to work with Indigenous groups, bilaterally and through the Multi-Nation process, as well as the Indigenous and Multi-Stakeholder Advisory Group and Technical Working Groups, on the suite of management measures and longer-term actions to address key threats to recovery, namely, reduced prey availability, contaminants, and physical and acoustic disturbance.

For the **North Atlantic Right Whale** (NARW), DFO implemented measures in 2021 to avoid the co-occurrence of NARW and fixed gear fisheries in Atlantic Canada. Once a detection was confirmed, all fixed gear fisheries were required to remove their gear and the area (approximately 2,000 km²) was closed for a 15-day period. Depending on the movement of the NARW, the area was re-opened or became a seasonal closure until November 15. DFO continued to work with the fishing industry in opening commercial fisheries earlier so the harvesters could land their catch before the arrival of the whales in late spring or early summer. From a governance perspective, the Department continues to facilitate discussions with all impacted parties through the NARW Advisory Committee and the new NARW Technical Working Group. The Technical Working Group is a forum for the industry to provide technical advice to

DFO which, if supported, is tabled at the broader NARW Advisory Committee. These consultations were used to advise the Minister on NARW measures for the 2022 fishing season.

Under the 2018–22 **Marine Mammal Response Program** (MMRP), DFO renewed contracts for a total of \$1,000,000. This operational funding includes \$50,000 for the National Necropsy Fund, which supports analysis of animal remains to support conservation measures. In addition, five new contribution agreements were finalized for 2021–22.

DFO launched the [Pacific Salmon Strategy Initiative](#)ⁱⁱⁱ (PSSI) and started to build a foundation for implementation. Through PSSI, the Department began to implement new programs and activities and enhance existing ones to stem declines in prioritized Pacific salmon stocks and rebuild them to a sustainable level. In this first year of implementation, departmental efforts included seeking the required authorities, initiating broad engagement on PSSI implementation, and launching the PSSI Secretariat. The Department also implemented significant conservation closures for the commercial Pacific salmon fisheries for the 2021 season. DFO engaged partners and stakeholders over 2021–22 on longer-term conservation closures and the Pacific Salmon Commercial Licence Retirement Program. The Licence Retirement Program is a voluntary program that allows commercial salmon licence eligibility holders to permanently retire their licence eligibilities. This program is one of the first steps towards supporting a transition to a smaller commercial harvesting sector that is better aligned with the scope of future fishing opportunity. Broad engagement was also conducted over 2021–22 on the PSSI as a whole. During 2021–22, over 80 engagement meetings took place with First Nations and Indigenous organizations, as well as the Governments of British Columbia and Yukon Territory, other federal departments, industry groups and associations, and international groups. In addition to the broad PSSI engagements, the Department also engaged in focused PSSI initiatives, such as mass marking and mark selective fisheries (fisheries with different retention rules for fish marked as originating from a hatchery than for wild fish). Finally, during 2021–22, the Department also launched the PSSI Secretariat and the new Pacific Salmon Executive Steering Committee to ensure Pacific salmon work is prioritized and integrated effectively internally and externally to deliver on concrete results. The Department also approved the management action plan in response to the 2021 [Evaluation of DFO's Activities in Support of Pacific Salmon](#)^{iv}.

DFO continued to prioritize fish migration at **Big Bar Creek** following the November 2018 landslide that subsequently impeded Upper Fraser salmon. 2021–22 marked the third season of **salmon recovery** efforts to offset the effects of the slide. During the 2021 migration season, an estimated 1.9 million salmon successfully navigated the Big Bar canyon due to lower water levels, slower river flows, and the use of a “nature-like” fishway. The “nature-like” fishway is a constructed channel comprised of over 400 large boulders that tempers water speeds and provides resting pools for improved passage. In 2021, no salmon were delayed at the slide for a significant period. Nevertheless, a comprehensive monitoring program and an emergency enhancement program for at-risk Upper Fraser stocks remain integral to the remediation effort. While the planned construction of a permanent fishway was halted due to significant safety concerns from rock fall, work is underway to confirm a viable solution to ensure fish passage at Big Bar. A structured analysis will review and confirm the remaining biological impact of the slide and investigate measures to mitigate any lasting effects. The federal, provincial, and First Nation partnership remains an integral component to the ongoing planning and decision-making process. This trilateral approach steers both the remediation efforts and the collaborative task groups that are responsible for the 2022 biological operations.

In 2021–22, DFO analyzed what would be needed to create a complete and official **Digital Fishing Areas Geographic Information System** (GIS) that could be used for a variety of purposes, such as resource management, oceans planning, navigation, public notifications, and reporting. This study was supported by the departmental Results Fund, which supports innovative and experimental proposals for new departmental activities.

Canada also continues to play an international leadership role in the advancement of policy, and in active negotiation of strong, sustainable, effective, and legally-binding measures to regulate transboundary, straddling, and highly migratory fisheries and fishing activity, based on the best available science. Most of this work is done through seven **regional fisheries management organizations** (RFMOs) and various other regional fisheries bodies to which Canada is a party, as well as bilateral agreements and treaties with France and the United States (U.S.). In 2021–22, Canada successfully negotiated regulatory measures for approximately 30 international fisheries. This includes agreeing on (at the North Atlantic Salmon Conservation Organization) a four-year measure that seeks to eliminate the recurring overharvest of wild Atlantic salmon of Canadian and U.S. origin in Greenlandic waters. Elsewhere, Canada successfully negotiated the adoption of a total allowable catch (TAC) to regulate Pacific hake, which is managed jointly with the U.S. under the Pacific Hake/Whiting Treaty. The adopted TAC is supported by the latest science advice and is expected to result in an increase in biomass over the course of 2022 given the strong 2020 cohort expected to enter the fishery.

Sustainable aquaculture

Following on the Government of Canada’s early 2021 engagement process to gather input and perspectives on the development of a responsible plan to transition from **open-net pen aquaculture** in B.C., DFO published the interim [report](#)^v in July 2021. The engagement focused on: advancing reconciliation, and the cultural and economic importance of wild Pacific salmon; encouraging investment in B.C. aquaculture, technology and innovation; and, governance. The input and analysis was used to guide further engagement and research efforts and to inform the development of a discussion framework for a B.C. aquaculture open-net pen transition plan.

DFO’s work on the development of a federal Aquaculture Act continued in 2021–22. In March 2022, the Department published a [“What We Heard”](#)^{vi} Report, summarizing input received during the latest round of engagement with stakeholders.

Reconciliation with Indigenous peoples

DFO continued to work with First Nations, Inuit, and Métis peoples to advance **reconciliation** and the implementation of Aboriginal and treaty rights. This included negotiating and implementing modern treaties and other constructive agreements and arrangements with Indigenous communities across the country to advance their rights and interests in relation to fisheries and marine matters. In 2021–22, DFO negotiated and signed a number of agreements with Indigenous partners, including a Rights Reconciliation Agreement on Fisheries with the Listuguj Mi’gmaq Government, an Incremental Treaty Agreement on fish with the Labrador Innu, an amended Fisheries Resources Reconciliation Agreement with eight Coastal First Nations, the Burrard Inlet Environmental Science and Stewardship Agreement with the Tsleil-Waututh Nation, and the [GayGahlda “Changing Tide” reconciliation framework agreement](#)^{vii} with the Haida Nation.

In its co-operative work to address **food insecurity** in Canada, DFO continued to co-deliver its capacity-building programs with Indigenous partners through their respective program

management committees. These programs are co-developed, co-designed, and co-delivered. They support Indigenous communities in managing fisheries for food, social, and ceremonial purposes; in participating in advisory and decision-making processes related to aquatic resources and oceans management; and in building self-sustaining, Indigenous-owned commercial fishing enterprises with pathways for economic diversification.

DFO is a signatory to the **Strategic Partnerships Initiative (SPI)**, a horizontal federal program shared by 21 departments and agencies that promotes Indigenous participation in economic development opportunities. SPI bridges gaps in existing federal funding, leverages other sources of funding, and supports economic reconciliation by working with Indigenous communities on shared priorities, all of which help Indigenous communities build their economic readiness to participate in large, complex opportunities. DFO successfully implemented four SPI initiatives and approved another in 2021–22.

An evaluation of **Indigenous Commercial Fisheries (ICF) Programs** was conducted from April 2020 to March 2021. The ICF Programs include three grants and contributions programs (the Atlantic Integrated Commercial Fisheries Initiative (AICFI), the Pacific Integrated Commercial Fisheries Initiative (PICFI) and the Northern Integrated Commercial Fisheries Initiative (NICFI)), which focus on building capacity in Indigenous communities so that they can be meaningfully involved in the commercial fishing industry. The evaluation found that at the highest level, the Indigenous commercial fisheries programs support the United Nations Declaration on the Rights of Indigenous Peoples, and the Truth and Reconciliation Commission's Calls to Action (92.ii). The evaluation also found that the objectives of AICFI, PICFI, and NICFI align with the expressed needs of Indigenous communities regarding commercial fisheries and also align directly with DFO's core responsibilities and commitments to reconciliation. Overall, the ICF programs support DFO's Reconciliation Agenda, and the transformation of Canada's relationship with Indigenous peoples.

Following the Department-led evaluation of the **Certification and Market Access Program for Seals (CMAPS)** in 2019, a co-developed environmental scan was conducted in 2021 by Ulnooweg Development Group, a designated Indigenous financial institution for Atlantic Canada. An environmental scan looks at internal and external factors to provide a big picture analysis of a program's efficacy. DFO received the final report, which considers the future direction of the program by focusing on industry potential, business development and support, and the possible scope and administration of a renewed CMAPS. The program also received an additional year of funding for 2021–22, and adjustments were made to focus activities that support Indigenous groups and communities.

DFO's regional **Indigenous Relations and Partnerships Hubs** continued to collectively build and enhance relationships with First Nations and Indigenous groups. For example, the Hub in the Maritimes region coordinated interactions with Indigenous communities from a whole-of-region perspective, with a focus on relationships with aggregate groups and individual nations not part of aggregate groups. Through the Hub, reconciliation with Indigenous peoples was advanced by providing internship opportunities for Indigenous youth, engaging Indigenous youth and Elders in training and collaboration with regional employees, providing educational opportunities and resources to regional employees, and continuing to maintain relationships despite the on-going challenges of the COVID-19 pandemic.

Another example of work done in [DFO's regions](#)^{viii} in 2021–22 was the Quebec region's implementation of a Regional Reconciliation Action Plan (RRAP). The RRAP highlights the key regional priorities and activities related to reconciliation, supports work planning, strengthens internal coordination, builds on lessons learned and fosters relationships (both internal and external). It is based on and consistent with the DFO-CCG National Reconciliation Strategy.

Ghost gear and plastic waste

DFO maintained its commitment to show leadership in the management of lost, abandoned, or otherwise discarded fishing gear, also known as **ghost gear**. Ghost gear is a form of marine pollution that can be fatal to fish, marine mammals, and other marine life, pose a navigation hazard, and also breaks down into other forms of pollution such as microplastics.

Through new investments in the Nature Legacy announced in Budget 2021, the Ghost Gear Program received an additional \$10 million in 2021–22. The **increased funding** has been used to continue and expand existing program efforts, including 36 ghost gear projects (22 new projects and 14 existing projects enhanced by the additional funding), as well as supporting small craft harbours in the establishment of storage and processing capacity with harbour authorities. Many of these funded projects focused on increasing Canada's recycling capacity for end-of-life fishing gear and identifying and removing ghost gear from the Gulf of St. Lawrence and the Fraser River in British Columbia.

Some of the project highlights for year 2 (2021–22) of the program include:

- In July, Petty Harbour Fishermen's Producers Co-operative Society retrieved over 12 tonnes of crab pots, rope, nets, and other gear over the span of nine days.
- Torngat Joint Fisheries Board surveyed 474 kilometres of Nunatsiavut waters to provide an inventory of potential lost gear locations and provide information on the Arctic marine environment and the limitations on addressing abandoned, lost or discarded fishing gear in deeper waters.
- Goodwood Plastics recycled 18 tonnes of rope from retrieval activities and bin collections.
- Regroupement des pêcheurs professionnels du sud de la Gaspésie implemented a wooden trap recovery in 2021, retrieving 1800 traps for recycling in the Gulf of St. Lawrence.
- Coastal Restoration Society (CRS) cleaned up derelict aquaculture sites using commercial divers and a barge with an excavator on the West Coast of Vancouver Island. CRS completed 16 days of field work at 9 sites, removing over 100 tonnes of marine debris (rope, wood, metal, plastic barrels, anthropogenic debris, hazardous waste).
- Also, on the west coast of Canada, over 200 kilometres were surveyed in the Fraser River by two proponents, Lower Fraser Fisheries Alliance (LFFA) and Fraser River Sturgeon Conservation Society (FRSCS). In total, LFFA and FRSCS completed 46 retrieval days, collecting 615 kilograms of ghost gear and over 1 kilometre of rope.

In July 2021, DFO launched the new **Fishing Gear Reporting System (FGRS)**, which allows commercial harvesters to input a description of their lost gear, the cause of loss, and its location from any online device. The information is used to guide retrieval efforts and inform analyses of the ghost gear issue in Canada. Training sessions were provided to numerous fish harvester associations to ensure that users fully understand the tool. FGRS provides a more user-friendly and accurate way for harvesters to provide timely data on lost or retrieved gear. It reduces the likelihood of error as it allows the user to directly see their coordinates on an interactive map

and to make any necessary changes to the location before submission. It has also made it simpler for harvesters to report if and when they were able to retrieve their previously-lost gear. The new system has already been adopted by many harvesters.

Small craft harbours

Operating and maintaining small craft harbours that are critical to the commercial fishing industry remains a key priority of DFO. Budget 2021 resulted in \$300 million in investments over two years for the renewal of Canada's network of small craft harbours, in order to make port facilities more resilient to the changing climate for the benefit of the coastal communities that depend on them. In addition, ports that are no longer essential to the department's mandate but important to the communities in which they are located will be divested to third parties for use in ways that respond to and support local economic development. For example, the Government is investing approximately \$12 million to enhance the marine infrastructure in small craft harbours on the Avalon Peninsula in Newfoundland and Labrador. Investments include the construction of new retaining cribs in Petty Harbour, the construction of floating docks in Bay Bulls, and the reconstruction of wharves that experienced storm damage in 2020 in St. Philip's.

As of March 31, 2022, 154 vessels have been removed under the **Abandoned and Wrecked Vessel Removal Program**, surpassing its Ocean Protection Plan target of 50 by 2022. This program is primarily geared towards funding the removal and disposal of vessels from commercial fishing harbours that are critical to the commercial fishing industry. Through the Oceans Protection Plan, DFO has since received approval to extend the program, with the goal of removing and disposing 15 vessels per year going forward.

In 2021–22, DFO also continued to analyze how broader ocean **economy** areas (beyond commercial fishing) such as aquaculture, climate change priority areas, ecotourism, recreational boating, and Indigenous interests, could benefit from strategic investments in community harbour infrastructure. The outcomes of these discussions re-affirmed the commercial fishing industry as the key client group for these harbours, but also recognized the importance of supporting a broader user base and responding to new and emerging pressures.

Fish and seafood sector industry support

The Fish Harvester Benefit and Grant (FHBG) program was part of the Government's overall COVID response strategy. The FHBG program provided support to self-employed harvesters and self-employed crew to help meet non-deferrable business costs and provide income support in 2020 and 2021. Over the program's two phases, it paid out nearly \$162 million to more than 18,000 individuals in Canada's fishing sector. In 2021, about 96 per cent of harvesters retained their fishing licences, a retention rate that aligns with that of the year before the pandemic. This means that harvesters chose to stay in the fishing sector rather than exit it as a result of the pandemic.

In support of the Department's commitment to keeping our fish and seafood sector sustainable and innovative while meeting the growing demands of a worldwide market, DFO manages several regional fisheries funds that provide financial support to eligible Indigenous groups, non-governmental organizations, industry and associations, and scientific and academic communities.

In 2021–22, the **Canadian Fish and Seafood Opportunities Fund** (CFSOF), which is the national pillar of the Atlantic Fisheries Fund (AFF) that focuses on market access and is cost-shared with nine provinces and territories to maximize the value of our fish and seafood sector, continued to strengthen its relationships with its provincial and territorial partners while identifying and implementing efficiencies. CFSOF also worked diligently to create new partnerships in Quebec and Nunavut. Quebec officially announced its partnership with the Fund in May 2022. The CFSOF team will now shift its focus to finalizing a framework agreement with Nunavut. In addition, the CFSOF approved a project aiming to develop a national marketing strategy to encourage millennial urban and suburbanites to eat more Canadian fish and seafood, representing an investment of almost \$1.2 million.

The **Atlantic Fisheries Fund** (AFF) approved 203 new projects representing new investments of \$44.5 million in 2021–22, despite experiencing some ongoing delays and limitations due to the COVID-19 pandemic. These projects support research, development, and the adoption of new innovative technologies and sustainable harvesting techniques that aim to improve productivity, quality, sustainability, and traceability, and add value to a limited resource sector. In 2021–22, the AFF also partnered with the National Research Council to conduct a third-party technical assessment of vision-based oyster graders in the oyster aquaculture industry of New Brunswick. These projects aimed to increase productivity and competitiveness, increase the ability to meet quality standards and market requirements, and reduce the average grading cost per oyster. The results of the assessment demonstrated that this investment stream was able to increase productivity by approximately 250 per cent. They were also able to demonstrate that the companies saw an increase in profit margin of 91 per cent between 2019 and 2020 and that they were able to ensure quality, with fewer human resources, requiring fewer hours of labour. Overall, the results of the assessment highlighted the impact that a program like AFF can have. Many of the AFF recipients surveyed during this assessment noted that if it had not been for AFF, they would not have been able to invest in such a productive and profitable piece of equipment.

The **Quebec Fisheries Fund** (QFF), launched in April 2019, is making significant progress. After a somewhat modest start, the industry now seems to have adopted this highly beneficial funding tool. In 2021–22, the QFF approved a record number of projects (44), for a total value of \$7 million. In addition, the program expanded its eligibility criteria under the innovation and infrastructure pillars, resulting in more project applications.

In 2021–22, the **British Columbia Salmon Restoration and Innovation Fund** (BCSRIF) continued to support approved projects while also working to identify additional projects to fund. Based on the high level of interest in BCSRIF and the success of early projects in realizing significant achievements, both the federal and provincial governments have announced their intention to extend and expand the funding program, with a doubling of federal funding in Budget 2021, as a key component of the PSSI. This commitment will contribute to the restoration of wild salmon populations and the improved sustainability of B.C.'s fisheries through funding to Indigenous organizations, First Nations, and regional stakeholders to participate in research and monitoring, habitat assessment and restoration activities, and innovative fishing practices and technologies. Directly benefiting priority stocks, addressing the impacts of climate change (including extreme weather events), and incorporating the use of Indigenous knowledge will be key components in any future BCSRIF projects.

The **COVID-19** pandemic continued to affect the timelines for some fisheries fund projects, from supply chain issues to travel limitations, but DFO and its partners continued to monitor and support these projects. Despite the limitations posed by public health restrictions, many recipients were able to overcome these challenges, which in some cases resulted in unanticipated positive benefits. For example, restrictions on entering certain communities to conduct project-related activities resulted in local community-members being provided with the tools and training to undertake the activities directly, providing a valuable source of employment during the pandemic.

DFO's Indigenous programs continued to look for ways to minimize the impacts of the ongoing COVID-19 pandemic on the commercial and collaborative programs. For example, the commercial programs transitioned fully to the use of electronic signatures for agreements and to speed up the processing of payments. A Safe Work Practices document was co-developed and communicated to recipients, and the programs developed new flexibilities in several areas to ensure that recipients could effectively continue their projects. The pandemic also added to the demand for increased use of virtual platforms, which caused challenges for meeting preparation and coordination, but also created opportunities for hosting new innovative events with Indigenous partners (e.g., Aboriginal Aquatic Resource and Oceans Management program Virtual Meeting Series and the Virtual Youth Gathering).

Finally, in 2021–22, DFO established the **Economic Development Task Group** to provide a forum for interjurisdictional, federal-provincial-territorial communication and collaboration to address economic development of the fish and seafood sector, with a focus on positioning the sector for medium-term and longer-term growth.

Illegal, unreported, and unregulated fishing

Implementation of the **Charlevoix Blueprint for Healthy Oceans, Seas and Resilient Coastal Communities**, an intergovernmental G7 initiative focused on healthy and safe marine fishing, continued through investments in tackling illegal, unreported, and unregulated fishing (IUU).

As part of Canada's championing the implementation and enforcement of negotiated fisheries management measures through RFMOs, Canada has made progress in 2021–22 regarding regulation of transshipment, labour standards, high seas boarding and inspection schemes. In 2021, amendments were made to the *Coastal Fisheries Protection Regulations* which now enable DFO fishery officers to actively participate in high seas boarding inspections in the Western and Central Pacific Fisheries Commission and North Pacific Fisheries Commission Convention areas, and enforce all measures adopted by the Commissions.

Canada has also been engaged in the development of guidance, best practices, and recommendations through the United Nations' Food and Agriculture Organization (FAO) to support efforts to curb IUU fishing and promote sustainable fisheries management, such as the FAO Voluntary Guidelines on Transshipment. Canada also acted in the Commonwealth Blue Charter champion role for ocean observation, which aims to share knowledge and information regarding ocean observation systems and processes; implemented the Ghost Gear fund (discussed above) to address lost and abandoned fishing gear that contributes to marine plastic waste; and worked on the promotion and expansion of membership to the Ocean Plastics Charter, which seeks to promote a life-cycle approach to plastics.

Canada worked with its partners to combat IUU by conducting monitoring, control, and surveillance efforts on the high seas. This included patrols of the North Atlantic and Pacific, as well as deployments of fishery officers as ‘Shipriders’ aboard U.S. Coast Guard platforms, and the deployment of the Department’s air surveillance platform to Japan to provide strengthened monitoring of the northwestern Pacific Ocean, which is a critical migratory route for Pacific salmon and other north Pacific species.

Canada committed nearly \$12 million to develop and deploy new **surveillance technologies** such as our cutting-edge Dark Vessel Detection platform to support developing states in their efforts to combat IUU fishing. The platform is currently being used in several regions in the South Pacific Islands as well as Ecuador, particularly to support monitoring of the critical ecosystem around the Galapagos Islands. The platform has also been used to support the Forum Fisheries Agency Operations Centre based in Honiara, Solomon Islands, in their operations across their region throughout 2021. In partnership with OceanMind, Canada supported the deployment and testing of Remotely Piloted Air Surveillance platforms to combat IUU fishing. The project supported Senegal and Costa Rica to test the application of these technologies in challenging environments, and integration with local authorities.

Since 2019, Canada has led the **Pacific Fisheries Intelligence Group (PACFIG)**, the only regional body dedicated to the sharing of intelligence as a means of combatting IUU fishing in the Pacific Ocean. In late 2021, Canada hosted a webinar that included speakers from OceanMind and Stop Illegal Fishing. Members of PACFIG shared best practices, lessons learned, and intelligence and engaged in capacity building activities designed to improve and strengthen their fisheries intelligence capabilities.

The ongoing **COVID-19** pandemic continued to affect some conservation and protection activities. To maintain the safe and effective delivery of services, a virtual flight strategy was developed to execute the mandate of the Fisheries Aerial Surveillance and Enforcement program in areas with higher risk of infection while maintaining the stability of the program. DFO used technology that allowed for fishery officers to follow the flights in real time, and this not only provided safer working conditions but also lessened officers’ travel time, resulting in more efficient work. These technology-enabled solutions were used to stabilize and ensure continuity of our Fisheries Aerial Surveillance and Enforcement activities during pandemic-related restrictions. The Department is analyzing lessons learned to identify longer-term best practices in using virtual flights as a complement or temporary substitute to crewed flights.

Gender-based analysis plus¹ ix



In 2021–22, the Atlantic Fisheries Fund (AFF) updated its application forms to allow women to self-identify. Although voluntary, in the first year of collecting this data AFF is able to report that of the 208 applications received in 2021–22, six applicants identified as either being a woman or a majority women-owned company.

In the second year of program implementation, the **British Columbia Salmon Restoration and Innovation Fund (BCSRIF)** began collecting new demographic information that highlights the Government of Canada’s efforts and commitment to provide opportunity and promote diversity

¹ GBA Plus is an analytical approach used to assess how diverse groups of women, men, and gender-diverse people may experience policies, programs and initiatives. The “plus” in GBA Plus acknowledges that the gender-based analysis goes beyond biological (sex) and socio-cultural (gender) differences. For more information, consult the [Women and Gender Equity Canada website](#)^{ix}.

and inclusivity. BCSRIF recipients were offered the opportunity to provide details on the demographic make-up of their project teams and other details on their organizations' efforts towards ensuring a diverse and inclusive work environment. Based on data from the current BCSRIF Annual Results Summary Report, almost 100 per cent of BCSRIF projects report employing women on their project team. Approximately 66 per cent of projects are led by, or implemented through partnerships with, First Nations or Indigenous organizations and 70 per cent of projects have Indigenous representation on their central project team. Half of all BCSRIF projects offer employment for students or youth, over 28 per cent of projects have hired seniors or veterans, and many projects employ people of ethnic, linguistic, cultural, or religious minorities as well as new Canadians and people with disabilities.

United Nations 2030 Agenda for Sustainable Development and the Sustainable Development Goals

For additional information on how the Department is advancing the United Nations Sustainable Development Goals, please refer to [Fisheries and Oceans Canada's 2021–22 Departmental Sustainable Development Strategy Report](#)^x.

Experimentation



Under BCSRIF, DFO engaged in several multi-year experimental activities. The Canadian Groundfish Research and Conservation Society is developing an electronic application for fishing vessels that uses at-sea monitoring data from commercial groundfish trawl vessels in real time to create heat maps showing where marine species of concern are being encountered, with the goal of minimizing bycatch (unintended capture of unwanted fish while harvesting other species). Completed activities and tasks in 2021–22 included the design and implementation of time-based aggregate visual reporting and summary data, expanded use of the application across the groundfish trawl fleet, and delivery of training sessions on the use of the application.

A University of British Columbia study is exploring a B.C.-based solution for growing larger, more physiologically robust **Atlantic salmon** smolts in land-based aquaculture systems. This project will help to improve both the sustainability and productivity of B.C.'s aquaculture industry by increasing the amount of time farmed salmon are reared and reducing the amount of time farmed Atlantic salmon spend in marine net-pens. The 2021–22 work plan focused on experimental activities to determine if physiologically robust smolts could be generated. Results from the 16-month experiment will inform activities and tasks scheduled for 2022–23.

A University of Victoria project, **Enhancing Rockfish Recovery Through Citizen Science, Outreach and Field Experiments**, aims to expand DFO's MyCatch App, which provides rockfish identification information and real-time updates to fisheries regulations. Monitoring programs have been developed to assess data on compliance rates and the effectiveness of return of rockfish using descending devices, which will provide information essential to producing accurate stock assessments to inform commercial and recreational fisheries. The work undertaken and completed in 2021–22 included continued field work on the descending device and sound components, completing the second annual report for remote camera monitoring, data analysis and submission of a peer-reviewed manuscript to an academic journal that summarized pre and during COVID-19 pandemic changes in compliance with rockfish conservation areas.

In 2021–22, the Atlantic Fisheries Fund, in collaboration with Cooke Aquaculture, supported Memorial University in the enhancement of a new, innovative, **green pest management** strategy that demonstrated a potential solution to mitigate and control sea lice on cultured Atlantic salmon by including lumpfish, which feed on the lice, in sea cages. This success allowed the project leaders to become the largest fully-integrated (hatchery, nursery, transport, sea cage site) demonstration trial in North America using cultured cleaner fish to help mitigate the effects of sea lice on cultured Atlantic salmon and marks a step forward in the wider adaptation of cleaner fish for the Canadian aquaculture industry.

A key goal of the **British Columbia Salmon Restoration and Innovation Fund** (BCSRIF) is to encourage innovation in the fish and seafood sector through research and data collection to identify activities that could improve the sustainability of wild Pacific salmon and B.C. fisheries. In 2021–22, BCSRIF supported a University of British Columbia study on the sustainability of capture and release on marine recreational Pacific salmonid fisheries. The program launched a citizen-science data collection platform off the Sports Fishing Institute’s BC Fishing App. The input from users of the application will inform new best practices and operational guidance to reduce mortality of salmon after release. Project results will be available in 2023, and best practices guidance for commercial and recreational fisheries will be completed by March 2024.

In 2021–22, DFO’s Conservation and Protection program, with support from CCG, explored adding **remotely piloted surveillance capacity** to the suite of monitoring tools to enhance existing aerial activities, including improving officer safety. Pilot projects were run in 2021–22, which successfully tested micro systems, a Remotely Piloted Aircraft System that is usually restricted to the operator’s direct line of sight, and the operational viability of a fully-integrated mobile tethered sensor platform, which can be used by fishery officers to survey and monitor areas that might otherwise be too hazardous or difficult to access directly.

The Office of the Chief Data Steward, in collaboration with the Quebec Region, has been leading an experimental approach to using **machine learning** models to help automatically detect fishing activities. The model used information on vessel movement behaviour to make predictions on whether a given vessel was fishing. This proof of concept work has demonstrated the potential to leverage these types of machine learning models, in combination with other vessel data, to detect potential IUU fishing activities. In 2021–22, the project explored potential applications for further development including the integration of additional sources of data such as Marine Protected Areas and zone closures for whale sightings, in support of species and ecosystems protections. Principles of responsible machine learning were integrated into the model development process to ensure the creation of fair and interpretable models.


Key risks

Work under the Fisheries core responsibility continued over the past year despite the obstacles posed by COVID-19, the global economic climate and extreme weather events. The Department faced delays in negotiating and finalizing certain reconciliation agreements due to pandemic restrictions in First Nation communities, and in completing some projects and scientific studies. Additionally, the Department faced difficulties in implementing certain programs in their entirety and challenges in attracting and retaining talent. However, re-prioritizing work activities, implementing new HR strategies, and reallocating funding helped to effectively manage these risks. Some work activities were altered or cancelled in response to COVID-19 and extreme weather occurrences such as wildfires and flooding, for example, hiring community

members to perform local work in locked-down communities and expediting virtual monitoring platforms for IUU. Furthermore, additional flexibilities were employed to re-allocate funding to support crucial efforts in order to maintain project activities and achieve intended results. DFO will continue to monitor any potential risks and implement mitigation strategies where appropriate to ensure its ability to continue to meet its goal of managing Canada's fisheries and Indigenous fisheries programs, supporting commercial fishing harbours, and developing aquaculture in a sustainable manner that protects marine ecosystems and conserves wild fish populations.

Results achieved

The following table shows, for fisheries, the results achieved, the performance indicators, the targets and the target dates for 2021–22, and the actual results for the three most recent fiscal years for which actual results are available.

	Departmental result	Performance Indicators	Target	Actual results
	Canadian fisheries are sustainably managed	Percentage of major fisheries that have limit reference points and harvest control rules	At least 50% by March 31, 2022	2019–20: 46% ² 2020–21: 48% ³ 2021–22: 50%
		Percentage of decisions for major fisheries where harvest control rules were followed	At least 100% by March 31, 2022	2019–20: 100% 2020–21: 98% ⁴ 2021–22: 99%
		Percentage of major stocks in the cautious and healthy zone	At least 55% by March 31, 2022	2019–20: 48% ⁵ 2020–21: 46% ⁶ 2021–22: 44%
	Canadian aquaculture is sustainably managed	Percentage of aquaculture farms that are compliant with <i>Fisheries Act</i> regulations	At least 90% by March 31, 2022	2019–20: 99% 2020–21: 95% 2021–22: 99%
		Level of Canadian aquaculture production	At least 170,000 tonnes by December 31, 2021	2019–20: 191,259 tonnes 2020–21: 187,026 tonnes 2021–22: 170,805 tonnes
	The commercial fishing industry has access to safe harbours	Percentage of core harbours that are in fair or better condition	At least 85% by March 31, 2022	2019–20: 92% 2020–21: 91% 2021–22: 92%
	Fisheries, oceans and other aquatic ecosystems are protected from unlawful exploitation and interference	Percentage of inspection activities that have resulted in compliance actions	At most 60% by March 31, 2022	2019–20: N/A 2020–21: N/A 2021–22: 57%


² Despite a large number of stocks being added and having a default status of "uncertain", DFO's performance has improved, indicating an upward trend in the development of Limit Reference Points and Harvest Control Rules, and a stabilization in the number of major stocks.

³ The 2020–21 result is higher than previous years due to a combination of a stabilization of the number of stocks in the survey and progress in the development of harvest control rules and limit reference points.

⁴ For 2020–21, the Department used a two-year average to set the total allowable catches in two areas. This was to account for fluctuations in the total allowable catches for the fishery but was not in line with the harvest control rule. The harvest control rule will be followed for 2021–22.

⁵ Due to a large number of stocks being added and having a default status of "uncertain", the percentage of stocks in the cautious and healthy zone has declined. DFO continues the work needed to identify reference points for all the stocks in the survey.


⁶ Due to a large number of stocks being added and having a default status of "uncertain", the percentage of stocks in the cautious and healthy zone has declined. DFO continues the work needed to identify reference points for all the stocks in the survey.

	Departmental result	Performance Indicators	Target	Actual results
	Scientific information on fisheries resources is available to inform management decisions	Percentage of scheduled fisheries science advisory processes that were completed	At least 90% by March 31, 2022	2019–20: 75% ⁷ 2020–21: 79% ⁸ 2021–22: 69% ⁹
		Percentage of sustainable aquaculture research projects which provide information and/or advice to policy and decision-makers	Exactly 100% by March 31, 2022	2019–20: 96% 2020–21: 92% 2021–22: 84%
	Enhanced relationships with, involvement of, and outcomes for Indigenous people	Number of agreements / arrangements involving Indigenous groups	At least 437 by March 31, 2022	2019–20: N/A 2020–21: 388 2021–22: 457
		Number of Indigenous people trained through agreements / arrangements ¹⁰	At least 506 by March 31, 2022	2019–20: N/A 2020–21: 639 2021–22: 524
		Number of Indigenous people employed through agreements / arrangements ¹⁰	At least 4765 by March 31, 2022	2019–20: N/A 2020–21: 4,727 2021–22: 5,183

Note: N/A indicates that the performance indicator was not in effect at that time, and therefore, data is not available

Budgetary financial resources (dollars)

The following table shows, for fisheries, budgetary spending for 2021–22, as well as actual spending for that year.

	2021–22 main estimates	2021–22 planned spending	2021–22 total authorities available for use	2021–22 actual spending (authorities used)	2021–22 difference (actual spending minus planned spending)
	1,636,345,231	1,636,345,231	1,871,860,053	1,245,671,518	-390,673,713

Note: The variance between planned and actual spending is primarily due to funding that will be spent in future years in order to meet program requirements.

⁷ Some of the planned advisory processes were deferred due to COVID-19 restrictions and other challenges or were withdrawn.


⁸ Some of the planned advisory processes were deferred due to COVID-19 restrictions and other challenges or were withdrawn.

⁹ Additional advice was provided early in 2022–23 and some planned processes were deferred based on consultations with clients and operational challenges.

¹⁰ These targets also include people employed / trained under Indigenous-led activities funded by agreements if the program cannot validate individuals' Indigenous status.

Human resources (full-time equivalents)

The following table shows, in full-time equivalents, the human resources the Department needed to fulfill this core responsibility for 2021–22.

	2021–22 planned full-time equivalents	2021–22 actual full-time equivalents	2021–22 difference (actual full-time equivalents minus planned full-time equivalents)
	3,253	3,693	440

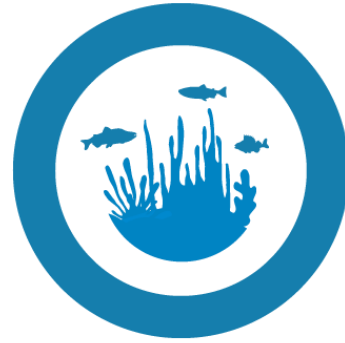
Note: The variance between planned and actual FTE is primarily due to new funding received in-year to support the Pacific Salmon Strategy Initiative and to implement Canada's new marine conservation targets.

Financial, human resources and performance information for Fisheries and Oceans Canada's Program Inventory is available in the [GC InfoBase](#)^{xi}.

Aquatic ecosystems

Description

Conserve and protect Canada's oceans and other aquatic ecosystems and species from human impact and invasive species.



Results

The aquatic ecosystems core responsibility is focused on the advancement of the following Departmental Results:

- Negative impacts on Canada's oceans and other aquatic ecosystems are minimized or avoided;
- Scientific information on Canada's oceans and other aquatic ecosystems is available to inform management decisions; and
- Enhanced relationships with, involvement of, and outcomes for Indigenous people.

The indicators used to measure progress towards these results appear in the [Results achieved](#) table on page 33.

DFO has a significant responsibility to protect the health of Canada's oceans and aquatic ecosystems. In 2021–22, programs in the Aquatic Ecosystems core responsibility worked to: conserve marine ecosystems, species, and habitats; protect fish habitats and species at risk; manage aquatic invasive species; and, perform scientific research to support decision-making. Key initiatives for 2021–22 included working to ensure Canada meets its goal to conserve 25 per cent of Canada's oceans by 2025 and 30 per cent by 2030 and champion this goal internationally; working to implement and further develop the Oceans Protection Plan; and ongoing implementation of the modernized *Fisheries Act*. More information on these and other initiatives can be found below.

Protect and restore ocean ecosystems

Canada continued to advocate actively on the international stage for a new marine conservation target of **30 per cent protection by 2030**, as part of the Global Ocean Alliance and as part of negotiations to develop a new Global Biodiversity Framework. Though the Conference of the Parties for the Convention on Biological Diversity was postponed and the framework has not yet been finalized, Canada continued this effort through advocacy at the second United Nations Ocean Conference, which was held June 27-July 1, 2022 in Lisbon, Portugal. Canada also continued to advance preparations for the Fifth International Marine Protected Areas Congress (IMPAC5), to be hosted in Vancouver from February 3-9, 2023. Jointly organized with Host First Nations - xʷməθkʷəy̓əm (Musqueam), Skwxwú7mesh (Squamish), and səliłwətał (Tsleil-Waututh) - the Government of British Columbia, the Canada Parks and Wilderness Society, and International Union for Conservation of Nature, IMPAC5 will bring together experts in marine conservation to exchange on best practices, lessons learned, and steps required to meet the 30 per cent protection targets that will culminate with a Leadership Forum.

In response to the need to enhance the effective management of existing **Marine Protected Areas** (MPAs), DFO published the 2021 National Report [The Current - Managing Oceans Act MPAs Now, for the Future](#)^{xii}. The report reviewed MPA management activities to date, explored challenges and lessons learned, and identified future actions to support the achievement of

Oceans Act MPA objectives. The report provided the first national-level review of aspects of effective MPA management and introduced a plan to regularly evaluate and report on MPA effectiveness for the future. The report provided an opportunity to demonstrate domestic and international leadership on working toward effective marine conservation.

In 2019, the Government of Canada responded to the final recommendations of the **National Advisory Panel on MPA Standards** by adopting two new protection standards for federal MPAs and for federal marine Other Effective Area-based Conservation Measures (OECMs) to better conserve sensitive and important parts of our oceans. The new protection standard prohibits four key industrial activities in future federal MPAs, namely oil and gas exploration and exploitation, mining, dumping, and bottom trawling. This new standard provides enhanced clarity and certainty for fish harvesters and other industry stakeholders. The new protection standard for OECMs takes a flexible approach and allows for human activities to be assessed on a case-by-case basis to ensure that the Minister of Fisheries, Oceans, and the Canadian Coast Guard is satisfied that the risks to the OECM's conservation objectives are avoided or mitigated effectively. Fisheries and Oceans Canada continues to work with partner departments and agencies across the Government of Canada to further elaborate and clarify the range of activities included under the MPA protection standard and to develop revised marine OECM guidance that reflects the federal OECM protection standard and voluntary 2018 OECM guidance from the Convention on Biological Diversity. The pace of advancing marine planning and conservation initiatives across the regions was significantly impacted by mitigation measures for the **COVID-19** pandemic due to the reduced ability to engage regularly with governance partners and stakeholders, and due to delays in planned field work for research and monitoring. For their safety, many Indigenous communities were closed to visitors. These restrictions resulted in delays during our regulatory review process, but DFO continued to work with communities through virtual meetings and outdoor field visits.

A strong economy and healthy environment go hand in hand. Ensuring marine development considers the surrounding communities, sustainability, and economic growth is important for local communities and Canadians as a whole. Through its Marine Spatial Planning (MSP) initiative, DFO continued to enhance coordination for how we collectively use and manage marine spaces to achieve ecological, economic, cultural and social objectives, while considering the interests of stakeholders. Following two years of planning, in 2021–22, DFO developed an interactive web-based mapping application, the **Canada Marine Planning Atlas**, to provide the evidence base for inclusive, sustainable, and transparent oceans planning and management. The Atlas supplies decision-makers, partners, and stakeholders with relevant information on activities, ecological components, and processes taking place in Canada's Pacific and Atlantic ocean space. It will undergo experience testing to ensure ease of use and is expected to be available to the public by mid-2023.

In support of the Charlevoix Blueprint for Healthy Oceans, Seas and Resilient Coastal Communities, the Department achieved the following milestones:

- Canada established its National [Ocean Decade](#)^{xiii} Committee, comprised of Government of Canada working groups and a Community of Champions led by seven leaders of the Canadian ocean science community, to engage and foster participation in the Ocean Decade.
- DFO provided funding for 13 new projects in support of the Decade with national and international partners.

- DFO continued to support other national and international projects including support to the Intergovernmental Oceanographic Commission for global coordination of the Ocean Decade and the World Maritime University project Empowering Women in the UN Decade of Ocean Science; and designing an [#OceanDecade Challenge Crest](#)^{xiv} in collaboration with Ocean Networks Canada and Girl Guides of Canada to engage and educate youth about the issues facing our ocean.
- DFO partnered with ArcticNet in a call for proposals to support Arctic research projects.
- With the Natural Sciences and Engineering Research Council, DFO supported awards for doctoral candidates from under-represented groups in ocean science.

In 2021–22, DFO learned valuable lessons to apply going forward regarding prioritizing advanced planning for **Coastal Restoration Fund** projects under the Oceans Protection Plan. This involved clearly identifying national and regional coastal restoration priorities during the design and early implementation phase of the program, which ensured that funded projects aligned with identified priorities. Funding studies and planning enhanced the effectiveness and efficiency of projects by allowing recipients to prioritize needs and determine appropriate measures to restore sites, which will help ensure their long-term sustainability. DFO also learned that the requirement for project monitoring will increase the understanding of the long-term benefits of the funded project results and allow recipients to maintain project benefits on a longer-term basis.

DFO partnered with Ingenium Canada and the Canadian Commission for UNESCO to develop a dedicated website as part of the **Ingenium STEM** initiative. It includes a suite of educational resources that provide information about the importance of gender equity and that celebrate women and non-binary leaders in ocean science.

In November 2021, DFO responded to significant, unexpected **flooding in British Columbia**, as a consequence of unprecedented atmospheric events. The Department, in collaboration with British Columbia, First Nations, and stakeholders, assessed short and long-term impacts on fish and fish habitats, identified priority areas for fish habitat restoration, and reviewed and authorized requests for emergency works to support critical infrastructure repairs. Through the PSSI, DFO enabled early emergency response action, undertook efforts to improve flooding infrastructure at salmon hatchery sites, and carried out emergency facility repairs.

The **Fisheries and Aquaculture Clean Technology Adoption Program** (FACTAP) was evaluated in 2020–21. The evaluation found it to be a relevant program that contributes to meeting federal and departmental priorities, such as reducing greenhouse gas emissions and supporting clean technology adoption by small to medium-sized fisheries and aquaculture operators, and that the Program is efficiently delivered across Canada. The program has exceeded its performance targets, with most recipients indicating that they would have not been able to make improvements to the environmental performance of their operations without federal support. The evaluation also identified that FACTAP could further improve its reach by enhancing its collaboration with the fisheries and aquaculture industries to adopt a more proactive approach to determining targets for the program and increasing awareness of potential support amongst their memberships. Budget 2021 announced an investment of \$10 million to extend FACTAP for two additional years, through 2022–23.

Departmental scientists led on the publication of a new book, **Ecosystem-based Management of Laurentian Great Lakes Areas of Concern: Three Decades of U.S.-Canadian Cleanup and**

Recovery. The book documents the progress made toward, and the science behind, restoring the most degraded areas in the Great Lakes. It provides an in-depth look at the remediation and restoration of the forty-three most polluted areas of the Great Lakes called areas of concern (AOCs). This binational restoration effort is unique in that it has fostered the use of locally-designed ecosystem approaches to restoring areas with chemical, physical, or biological problems, as called for in the Canada–U.S. Great Lakes Water Quality Agreement. In total 37 Canadian and U.S. scientists contributed to this comprehensive evaluation of what has been achieved and learned from over three decades of remediation and restoration efforts. This book will be an excellent resource to researchers, resource managers, university faculty, and students within the Great Lakes Basin Ecosystem, as well as others interested in restoring degraded aquatic ecosystems throughout the world.

In 2021–22, DFO performed a review of the Baffinland’s **Mary River Project** Phase 2 Development Proposal, one of the most complex environmental reviews ever undertaken in the Arctic. DFO provided key advice to the Nunavut Impact Review Board (NIRB) for the development of precedent-setting mitigation and monitoring measures to protect marine mammals and the marine environment from potential impacts arising from higher levels of Arctic marine shipping.

On June 25, 2021, the international ***Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean*** (CAOFA) entered into force, instituting a 16-year long moratorium on all commercial fishing activity in international waters of the high Arctic. The CAOFA applies a precautionary and science-based approach to protecting the fragile Arctic ecosystem. The Agreement brings together Canada and nine other Parties to prevent unregulated commercial fishing, protect existing biodiversity and ecosystems, improve the scientific knowledge of the area, and ensure the engagement and participation of Arctic Indigenous peoples.

Canada has actively participated in the United Nations (UN) discussions leading to the adoption of commitments for the identification and protection of **vulnerable marine ecosystems** (VMEs). In March 2022, Canada submitted a report on Canadian actions to address the impacts of deep sea fishing on VMEs to the UN Bottom Fishing Review (a review of the impacts of bottom fishing on vulnerable marine ecosystems and the long-term sustainability of deep-sea fish stocks). This report outlines domestic and international efforts to identify and protect VMEs, including at the Northwest Atlantic Fisheries Organization (NAFO), where Canada is a key contributor as primary coastal state. NAFO has identified 27 areas as being vulnerable to bottom contact gears and subsequently closed these areas to such fishing. In 2021, nine new closed areas were adopted for various lengths of time while the NAFO Scientific Council conducts additional analysis. Based on a joint Canada/US proposal, the Commission adopted additional and revised closed areas to protect all seamounts at fishable depths within the NAFO Regulatory Area.

Aquatic invasive species

The pilot project to develop and test the procedures and tools necessary for border agents and fishery officers using the *Aquatic Invasive Species Regulations* (AISR) and other legislative tools was put on hold due to the closure of the international borders because of the pandemic situation; it will resume in 2022–23. Nevertheless, in 2021–22, significant work was done on response training and planning for the management of several priority species, federal-provincial partnerships in control activities, and on scoping exercises for potential future amendments to the *Aquatic Invasive Species Regulations*.

Following the nation-wide, inter-departmental response efforts to manage Zebra Mussels (prohibited under the AISR) found on aquarium moss ball products in 2021, DFO developed a sustained action plan, supported by an enforcement plan, to maintain priorities set during the response. DFO is also currently developing a National Response Plan for the Aquatic Organisms in Trade Pathway to be better prepared for future aquatic invasive species (AIS) detections. To improve future responses to AIS detections, Incident Command System (ICS) training was delivered and completed in 2021–22 to AIS national core program staff, and future ICS training opportunities are in development.

The Great Lakes Laboratory for Fisheries and Aquatic Sciences led testing work on ballast water, one of the main sources for the introduction of invasive species to Canadian waters. This research and related science advice helped Transport Canada form the basis of the new **Ballast Water Regulations**, published in June 2021. These regulations are the product of a successful partnership between DFO and Transport Canada.

Restrictions imposed by the COVID-19 pandemic required adaptive planning to deploy DFO's **Sea Lamprey Control Program (SLCP)** during 2021–22. Traps and barriers to sea lamprey migration remained operational, sea lamprey indices were calculated for each lake, all assessment (detection and monitoring) activities were completed in Canadian waters, and 50 per cent of DFO lampricide applications were completed. This represents a doubling of the work done in 2020–21. Cross-border travel restrictions due to the COVID-19 pandemic and environmental conditions, such as lower river discharge, were responsible for the majority of deferred lampricide applications. In addition, as part of Budget 2022, DFO secured \$44.9 million over five years, and close to \$9 million ongoing, to ensure the continued success of the Great Lakes Fishery Commission (GLFC). This funding will help to augment the delivery of Canadian sea lamprey control activities and support the GLFC's scientific research and the coordination of binational fisheries management across the Great Lakes.

Asian Carp Program outreach initiatives continue to focus on reaching target audiences with key messaging primarily focused on Grass Carp, the most immediate threat to the Great Lakes. In 2021–22, the program launched a new Grass Carp exhibit at Ripley's Aquarium of Canada in Toronto and produced a new short documentary-style film in the series titled "Perspectives on Asian Carp Prevention in Canada" featuring recreational fishers. Targeted outreach and education activities were also completed by partners of Asian Carp Canada and supported by funding through the regional Aquatic Invasive Species Contribution Program.

The Asian Carp Program continued to work with the operational plans developed in 2020–21 to conduct early detection surveillance in 2021–22. Sampling continued to be restricted to southern Ontario due to concerns related to the COVID-19 pandemic. DFO's surveillance sampling efforts increased in areas of closer proximity to known Grass Carp populations in western Lake Erie waters of the United States. In 2021, 76 per cent of early detection sites were visited. One of the three crews from the Asian Carp program worked on the collection of hydrological data from the Thames River to help guide future modeling work being completed by DFO science to help focus future Grass Carp targeted sampling efforts. No Grass Carp were detected in Canadian waters in 2021.

DFO continued to foster and further develop relationships with federal, provincial, and territorial partners through the **National Aquatic Invasive Species Committee (NAISC)** in 2021–22. To address recommendations of the Commissioner of the Environment and

Sustainable Development (CESD), DFO and members of NAISC tested a new process to identify and nominate species to add to the *Aquatic Invasive Species Regulations* for national endorsement. A presentation of the testing process was given to the Canadian Council of Fisheries and Aquaculture Ministers in November 2021 and testing was completed in December 2021. Data collection to develop species risk assessments is currently underway.

Species conservation and recovery

DFO met the Oceans Protection Plan (OPP) target to develop and implement mitigation measures for the impact of stressors on **marine mammals** and their habitat by 2021–22 ahead of schedule in 2019 with the annual [Notice to Mariners](#)^{xv}. This notice concerns voluntary avoidance and slowdown areas in the Western Arctic to reduce the risk of ship strikes and to minimize the impact of noise on beluga and bowhead whales. The Department continued to advance measures to further mitigate the impact of stressors in the marine environment. For example, DFO supported collaborative research on options to reduce impacts of excess nutrients through habitat restoration and other innovative techniques and is developing a Marine Environmental Quality guideline to support provincial nutrient management in the Northumberland Strait. Excess nutrients in natural waters are a problem as this can result in large amounts of algae that lower oxygen levels required by animals, and block light that can impact the health of sensitive plant species such as eel grass.

The scheduled publication of the OPP **Ocean Noise Strategy** was delayed as a result of the COVID-19 pandemic, which also resulted in a postponement of the release of a Strategy-related discussion document and subsequent public engagement. The draft Ocean Noise Strategy is now anticipated to be released in winter 2022–23, and the final Strategy will be published later in 2023.

In 2021–22, DFO continued to work collaboratively with the Canadian Space Agency and Transport Canada in the first year of a three-year **SmartWhales** initiative in support of space-based remote sensing of North Atlantic right whales. Five consortia made up of industry experts received funding to advance space-based research for the detection, monitoring, and ability to predict the presence of North Atlantic right whales. To date, all five groups are on track to meet their research deadlines and a workshop is planned to take place in Moncton, New Brunswick, in the fall of 2022 (the midway point of the initiative).

Through the **Canada Nature Fund** for Aquatic Species at Risk (CNFASAR) and the Habitat Stewardship Program, DFO partnered with provinces and territories, Indigenous communities and organizations, resource users, local groups, communities, industries, and academia to support recovery actions for aquatic species and their habitats. CNFASAR's specific focus is on priority places for aquatic species at risk, mitigating priority threats, and supporting stewardship and capacity building for Canada's aquatic ecosystems, while the Habitat Stewardship Program's (HSP) targeted focus is on supporting and promoting the conservation and recovery of aquatic species at risk and their habitats through engagement of Canadians. In 2021–22, over \$19 million in funding supported 56 active, multi-year CNFASAR projects across Canada. In 2021–22, DFO provided approximately \$1.9 million in funding for 34 HSP projects across Canada.

During this reporting period, DFO scientists made the first ever Canadian capture of larvae of the endangered Spotted gar, which is found in only three wetlands in Lake Erie. Although it has long been suspected that young Spotted gar require native vegetation for cover and feeding, no

scientific samples of larval Spotted Gar had ever been collected in Canada to help confirm assumptions about their conservation. Recognizing this limitation, DFO conducted a targeted larval sampling that captured a total of 37 samples. This achievement will help us better understand the conditions required for the larvae and will inform future conservation efforts for this species.

DFO concluded the three-year Canadian Freshwater Species at Risk Research Network (SARNET) with a seminal Special Issue of the Canadian Journal of Fisheries and Aquatic Sciences titled [“Science to support Canada’s SARA-listed freshwater species”^{xvi}](#). The Special Issue addresses critical threat and reintroduction research gaps for a multitude of SARA-listed freshwater fishes and mussels in Canada. The Special Issue culminates this collaborative effort that, in its short three-year history, produced over 100 theses, scientific presentations, primary publications, and network symposia that involved over 60 professors, graduate students, and DFO personnel. Collectively, the network and the 2021 Special Issue represent the largest ever concentrated volume of academic and government research for SARA-listed freshwater species in Canada.

In 2021–22, the Department conducted an [Evaluation of Fisheries and Oceans Canada’s activities in support of Aquatic Species at Risk^{xvii}](#). The main focus of the evaluation was the Species at Risk Program (SARP), which works extensively with internal and external partners to contribute to the protection and recovery of aquatic species at risk and conducts a range of activities (e.g. listing, recovery planning, monitoring) to implement the *Species at Risk Act* within a complex and challenging operating environment. The evaluation recommended that: governance structures and accountability for species at risk activities and funding within the Department be reviewed; SARP provide more specific guidance on recovery documents and associated reporting; and, the Department explore options for leveraging alternative legislative tools (such as the *Fisheries Act* and *Oceans Act*) to help protect species at risk while continuing to implement the *Species at Risk Act*. In response to the evaluation, SARP developed a [management action plan^{xviii}](#). The implementation of the management action plan will allow the Department to review, strengthen, and refine program elements and processes in support of *Species at Risk Act* delivery, which will contribute to the enhanced protection and recovery of Canada’s aquatic species at risk, halting and reversing biodiversity loss.

In 2021, Canada, led by DFO, proposed and successfully reached agreement with other Parties on a binding measure to ban all retention of **North Atlantic Shortfin Mako sharks** at the International Commission for the Conservation of Atlantic Tunas (ICCAT). The measures adopted ensure harvesters are not permitted to keep any sharks caught in association with ICCAT fisheries in 2022, and starting in 2023, harvesters will only be allowed to keep these sharks under strict conditions should key conservation metrics be met. North Atlantic Shortfin Mako sharks have been [considered endangered by the Committee on the Status of Endangered Wildlife in Canada since 2019^{xix}](#) and Canada [banned their retention in its domestic fisheries in 2020^{xx}](#). This agreement at ICCAT is a significant step in securing international cooperation in the protection and regeneration of the species.

Reconciliation with Indigenous peoples

To mark the inaugural **National Day of Truth and Reconciliation**, DFO hosted a speaker series on reconciliation. Speakers included Dr. Niigaanwewidam James Sinclair on reconciliation in Canada, Elder Harry Bone on reconciliation, Marlene Gallagher on The History of Residential Schools in Canada, Kaila Johnston on The Menu Exercise, Nadia La Rosa on Trauma Informed

Care, and DFO staff on what reconciliation looks like in their work. Over 500 participants took part in regional reconciliation learning events this year.

Integration of Indigenous knowledge is important throughout every stage of the *Species at Risk Act* cycle. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) encourages Indigenous people to provide Indigenous knowledge during the species assessment stage, which enables information to be taken into account at the onset of the listing process. Once a species is listed, DFO solicits and considers input from Indigenous people and other stakeholders on proposed recovery documents. For example, in Pacific region, DFO has requested cultural significance statements during the listing consultation process. These statements are developed by Indigenous groups and may include information on traditional ecological knowledge, archaeological and traditional use, and implications of listing decisions on cultural practices.

For many species at risk, Indigenous groups are involved in on-the-ground stewardship activities, such as habitat improvement and threat mitigation activities. The Habitat Stewardship Program for Aquatic Species at Risk and the Canada Nature Fund for Aquatic Species at Risk support Indigenous knowledge through investments in organizational capacity development, activities that contribute to the conservation and recovery of aquatic species at risk, local employment through project activities, and community outreach.

DFO and CCG, in collaboration with other federal departments (Transport Canada, Environment and Climate Change Canada, Natural Resources Canada) and the Canada Energy Regulator, partnered with Indigenous communities in B.C. and Alberta to foster a collaborative, inclusive, and meaningful relationship in support of Indigenous participation in the review and monitoring of issues related to the construction of the Trans Mountain Expansion (TMX) Project and the existing Trans Mountain pipeline. Federal and Indigenous communities continue to jointly advance a number of accommodation measures and work together through the TMX Indigenous Advisory and Monitoring Committee to share information and seek Indigenous advice to inform the TMX project.

Gender-based analysis plus



The Government's policy agenda and the analysis of gender and other identity factors influenced the design and are influencing the delivery and implementation of the Nature Legacy for Canada, including, but not limited to, the: new Canada Nature Fund for Aquatic Species at Risk; engagement of Indigenous peoples; communications; and recruitment, retention, and development.

DFO continued work to ensure that initiatives were inclusive, regardless of gender, age, or other characteristics. These initiatives include engagement on the Framework for Aquatic Species at Risk Conservation, the Canada Nature Fund for Aquatic Species at Risk, and other contribution funding programs in DFO. These programs benefit aquatic species at risk and support work with Indigenous groups, government, and non-governmental organizations to implement recovery actions for aquatic species at risk, promote stewardship, and support capacity building.

In addition, in 2021–22, DFO, in collaboration with Environment and Climate Change Canada and the Parks Canada Agency, supported a gender and diversity-sensitive approach to the selection of new membership for the National Aboriginal Council on Species at Risk (NACOSAR). Section 8.1 of the *Species at Risk Act* calls for the creation of NACOSAR to provide advice and

recommendations on the implementation of the Act. This most recent appointment process aimed to ensure diversity and improve equity of Indigenous Nations' representation, including the consideration of members of the 2SLGBTQI+ community.

In 2021–22, a GBA Plus examination was conducted for the proposed **Offshore Pacific Marine Protected Area (MPA)**. The information compiled provided an analysis that contributed to the understanding of how groups could be affected by the establishment of the proposed MPA.

United Nations 2030 Agenda for Sustainable Development and the Sustainable Development Goals

For additional information on how the Department is advancing the United Nations Sustainable Development Goals, please refer to [Fisheries and Oceans Canada's 2021–22 Departmental Sustainable Development Strategy Report](#)^{xxi}.

Experimentation



In 2021–22, DFO funded three innovative internal science projects under the Science Micro-innovation Funding Initiative, which was designed to support DFO science staff to take advantage of time-sensitive opportunities to innovate, experiment, and/or “test-drive” a new idea, solution, or process within their work.

All three funded projects were successfully completed and all final project reports have been received. The results of these projects include: an improved database for managing the delivery of science advice within the Department; a more economical and eco-friendly system for mooring oceanographic instruments; and, a new technique for using remote sensing tools to predict landslides along major rivers. This initiative promotes innovative ideas in our work and fosters openness to consider all ideas from science staff regardless of source.

DFO also initiated work to help with the development of more targeted sampling approaches to **Asian carp**, an invasive species, in the Great Lakes. Modelling of the Thames River was started to determine the likely area where Asian carp would attempt spawning, as well as to determine where in the river they would have to spawn to ensure the successful development of eggs. Once this project is complete, this information will help DFO and American partners to refine targeted sampling efforts during high-flow events and will be especially important if Grass carp (a type of Asian carp) spawning is detected in the Thames River, which is a high-risk site.


The Office of the Chief Data Steward, in partnership with the Pacific Region, began work during 2021–22 on the application of **machine learning** to assist in the quality control process for oceanographic data collected in the form of conductivity, temperature, depth (CTD) data. The quality control process, which is applied to data on the order of millions of CTD scans per year, can be highly intensive in human time and effort required. A use case, scoped to the Pacific Region, identified how integration of machine learning into the quality control process can be achieved to reduce the burden of manual effort and time through an automated flagging of CTD scans showing signs of sensor errors or corrupted data. Proof of concept work done in collaboration with Carleton University demonstrated the potential for models to learn from historical records of quality control to flag poor-quality scan data for human inspection. Continued development and deployment of these models will help to streamline the quality control process by allowing oceanographic experts to focus their attention on data flagged by the model, reducing the overall time and effort required.

Key risks

Work on the Aquatic Ecosystems core responsibility was carried out despite the setbacks faced, including COVID-19, external and internal capacity constraints, program and policy implementation challenges, and constrained participation from provincial, territorial, and Indigenous governments to achieve the marine conservation targets. In order to mitigate the risks, the Department, for example, collaborated with other departments to lessen overlap in effort and promoted conservation through discussions on marine protection to capture the economic interests of various stakeholders. It also joined the global ocean alliance, which aims to safeguard at least 30 per cent of the world's oceans by 2030. DFO will continue to monitor any potential risks and implement mitigation strategies where appropriate to ensure its ability to continue to deliver results under this core responsibility.

Results achieved

The following table shows, for aquatic ecosystems, the results achieved, the performance indicators, the targets and the target dates for 2021–22, and the actual results for the three most recent fiscal years for which actual results are available.

	Departmental results	Performance indicators	Target	Actual results
Negative impacts on Canada's oceans and other aquatic ecosystems are minimized or avoided		Percentage of marine and coastal areas that are protected	At least 25% by 2025	2019–20: 13.81% 2020–21: 13.81% 2021–22: 13.90%
		Percentage of development projects occurring in or near water that effectively avoid, mitigate or offset impacts to fish and fish habitat	At least 100% by March 31, 2022	2019–20: 93% 2020–21: 95% ¹¹ 2021–22: 96%
		Percentage of aquatic species / populations at risk listed under the <i>Species at Risk Act</i> for which a recovery strategy / management plan is completed	At least 80% by March 31, 2023	2019–20: 81% 2020–21: 86% 2021–22: 87%
		Percentage of approved requests for science advice on aquatic invasive species that are completed	At least 90% by March 31, 2022	2019–20: 67% ¹² 2020–21: 67% ¹³ 2021–22: 50% ¹⁴
Scientific information on Canada's oceans and other aquatic ecosystems is available to inform management decisions		Number of science products related to aquatic ecosystems that are available	At least 60 by March 31, 2022	2019–20: 60 2020–21: 60 2021–22: 60
		Percentage of scheduled science advisory processes on aquatic ecosystems that were completed	At least 90% by March 31, 2022	2019–20: 77% ¹⁵ 2020–21: 77% ¹⁶ 2021–22: 69% ¹⁷
Enhanced relationships with, involvement of, and outcomes for Indigenous people		Number of agreements / arrangements involving Indigenous groups	At least 186 by March 31, 2022	2019–20: N/A 2020–21: 52 2021–22: 297
		Number of Indigenous people trained through agreements / arrangements	At least 8 by March 31, 2022	2019–20: N/A 2020–21: Data not available 2021–22: Data not available
		Number of Indigenous people employed through agreements / arrangements	At least 12 by March 31, 2022	2019–20: N/A 2020–21: Data not available 2021–22: Data not available

Note: N/A indicates that the performance indicator was not in effect at that time, and therefore, data is not available

¹¹ Of the 613 projects monitored, 31 projects were assessed as having compliance and effectiveness measures that were not adequate.

¹² Performance declined due to delays related to COVID-19 mitigation measures late in the fiscal year, and the work was completed shortly after the target date.

¹³ Some of the planned advisory processes were deferred due to COVID-19 restrictions and other challenges or were withdrawn.

¹⁴ A number of requests were deferred to 2022–23 and an additional advisory process was undertaken early in 2022–23.


¹⁵ Some of the planned advisory processes were deferred due to COVID-19 restrictions and other challenges or were withdrawn.

¹⁶ Some of the planned advisory processes were deferred due to COVID-19 restrictions and other challenges or were withdrawn.

¹⁷ Additional processes were deferred due to operational challenges.

Budgetary financial resources (dollars)


The following table shows, for aquatic ecosystems, budgetary spending for 2021–22, as well as actual spending for that year.

	2021–22 main estimates	2021–22 planned spending	2021–22 total authorities available for use	2021–22 actual spending (authorities used)	2021–22 difference (actual spending minus planned spending)
	340,861,687	340,861,687	455,989,127	359,215,413	18,353,726

Note: The variance between planned and actual spending is primarily due to new funding received in-year to implement Canada's new marine conservation targets, the Nature Legacy Initiative and internal reallocations between programs.

Human resources (full-time equivalents)

The following table shows, in full time equivalents, the human resources the Department needed to fulfill this core responsibility for 2021–22.

	2021–22 planned full-time equivalents	2021–22 actual full-time equivalents	2021–22 difference (actual full-time equivalents minus planned full-time equivalents)
	1,523	1,763	240

Note: The variance between planned and actual FTE is primarily due to new funding received in-year to implement Canada's new marine conservation targets and funding for the Nature Legacy Initiative.

Financial, human resources and performance information for Fisheries and Oceans Canada's Program Inventory is available in the [GC InfoBase](#)^{xxii}.

Marine navigation

Description

Provide information and services to facilitate navigation in Canadian waters.



Results

The marine navigation core responsibility is focused on the advancement of the following Departmental Results:

- mariners safely navigate Canada's waters;
- a Canadian maritime economy that is supported by navigable waters; and
- enhanced relationships with, involvement of, and outcomes for Indigenous people.

The indicators used to measure progress towards these results appear in the [Results Achieved](#) table on page 40.

The Department is responsible for ensuring that Canada's waters are safe and navigable for mariners. This includes the charting and managing of waterways, as well as the management of navigational and icebreaking services. Key initiatives for 2021–22 included: modernizing and digitizing navigational services; implementation of new lighted buoys for better awareness on the water; refurbishment of water level network station; and, reconciliation with Indigenous peoples. More information on these and other initiatives can be found below.

Modern marine navigation programs and safety services^{xxiii}

CCG's 60th anniversary

As it marked its 60th anniversary in 2022, CCG celebrated its past contributions and took steps to ensure the continued provision of its vital navigational, safety, and environmental protection services from coast to coast to coast. More information on CCG's history, renewal of its fleet, and work to ensure its dedicated and well-trained workforce represents the communities it serves is available on [CCG's website](#)^{xxiii}.

In line with international trends to **digitalize marine navigation and services**, CCG developed a modernization strategy that aims to provide mariners timely and standardized information on safety, environmental data, ice and weather conditions, vessel traffic, speed restrictions, and marine protected areas. As part of the strategy, CCG completed the requirements analysis and preliminary design for renewing its 30-year-old Aids to Navigation Program Information System. Benefits of the renewed system will include improved security and increased access to accurate and up-to-date data.

CCG also made progress on the procurement of **four-season lighted buoys**, which improve navigational efficiency and mariner's safety. CCG has been upgrading a seasonal two-buoy system in the St. Lawrence River to a more cost-effective single-buoy system that ensures year-round uninterrupted service. However, due to worldwide supply disruption of the buoy lanterns, the full deployment of the buoys was postponed to December 2022.

Procurement of **ice hazard detection radar units** for CCG vessels continued throughout the year. The procurement and installation of the units is expected to be completed by March 31, 2024. The new radar units will facilitate icebreaking operations by enabling early recognition of dangerous ice formations and detecting the proximity of multiple types of ice, some of which are hazardous to vessel hulls.

In 2020–21, the Department published an **Evaluation of the Shore-based Asset Readiness (SBAR) program**^{xxiv}. The program is responsible for the life-cycle management of non-fleet assets (such as buoys, buildings, and radar systems) and for ensuring that the assets are available, capable, and reliable. In 2021–22, in response to the evaluation’s recommendations, CCG established service-level agreements that will clarify the prioritization of maintenance, and completed its review of its asset condition assessment program. CCG has also positioned itself to update its asset management system in 2022–23. This work will help ensure that shore-based assets remain available and reliable to support CCG services and mariners in general.

DID YOU KNOW?



CCG has 123 ships, 23 helicopters, 17,000 aids to navigation (such as buoys and fog signals), and 183 marine communication towers. With this cutting-edge marine technology, CCG provides front-line services 24 hours a day, 7 days a week.

Hydrographic charts and data

In 2021–22, DFO acquired new hydrographic¹⁸ data to produce and release 34 electronic navigational charts (ENCs) of the proposed **Arctic Low Impact Shipping Corridors**, in areas including lower Ungava Bay, upper Hudson Bay, Frobisher Bay, Pond Inlet, Lancaster Sound, northeastern shore of Baffin Island, western Queen Maud Gulf, and Dease Strait. Well-charted corridors support safer marine navigation, enhanced emergency response, and the preservation of the environment and local ecology. The Department also completed and released navigational charts for 23 high-priority commercial ports. These ports play a key role in supporting Canada’s economic development by facilitating the movement of goods, and the new charts will help mariners navigate them more safely and efficiently.

The Department also continued to make significant progress on refurbishing the **national network of water-level monitoring stations**^{xxv}. DFO also developed an **Integrated Water Level System (IWLS) application**^{xxvi}, a digital service that uses data gathered from the stations to deliver real-time water-level observations, forecasts, and predictions. IWLS collects, processes, and publishes 57 million water-level observations from approximately 100 stations every year. The IWLS system allowed DFO to standardize and modernize the management and delivery of data. This better meets the needs of the modern navigational community by improving maritime awareness and safety.

Reconciliation with Indigenous peoples

To further foster an ongoing partnership, CCG created a **National Strategic Framework** to gather, organize, and prioritize its reconciliation activities and commitments. The Framework supports the commitment in the Minister’s mandate letter to work with First Nations, Inuit and

¹⁸ Hydrography is the science of charting bodies of water.

Métis partners to better integrate traditional knowledge into planning and policy decisions by incorporating a continuous input loop of Indigenous knowledges and feedback into CCG's processes, programs, and policies.

In 2021–22, CCG continued collaboration with Indigenous and coastal communities regarding the **Trans Mountain Expansion** (TMX)^{xxvii} project. As part of the project, the **Co-Developing Community Response** (CDCR)^{xxviii} accommodation measure was designed to address concerns about the risks posed by increased project-related shipping to marine safety, the environment, and culturally important and sacred sites in traditional territories. CDCR is designed to increase the capacity of 33 Indigenous communities along the TMX tanker route to participate in marine incidence management, including oil spill preparedness and response. As of March 31, 2022, 22 communities have validated work plans (established to address capacity needs related to marine environmental response) that are integrated into contribution agreements, and 17 communities had completed training and participated in marine response exercises. To continue this important work, in December 2021, the funding of CDCR was extended until the end of 2023–24.

As a result of extensive and meaningful engagement with Inuit, First Nations, and Métis organizations and governments, the **Canadian Coast Guard Arctic Strategy** was drafted in 2021–22. The Strategy, which will be finalized in 2022–23, aims for the Canadian Arctic to be supported by: a modern fleet; a representative, diverse, and inclusive workforce; and, a culture of learning and innovation that integrates Indigenous knowledge, all while providing a pathway towards climate resilience. The Strategy reflects CCG's vision of modernized programs and services co-developed and delivered with First Nations, Inuit, Métis, and Northern partners in the North, by the North, and for the North.

DID YOU KNOW?



CCG's Arctic Region completed full transfer of responsibility for all Arctic programs within the boundary of the new region on April 1, 2021 and completed its first operational season under this new model.

In addition, with the goal of promoting prosperity and supporting community and individual well-being throughout **Inuit Nunangat** (Nunavut, Nunavik, Nunatsiavut and the Inuvialuit Settlement Region), CCG collaborated with Inuit organizations and government to support the implementation of service delivery priorities. CCG's Arctic Region met with Inuit leadership at the inaugural Inuit Nunangat-DFO/CCG Arctic Region Committee meeting in November 2021, at which the collaboratively-developed terms of reference for the Committee were adopted. CCG's Arctic Region also contributed to the development of the Inuit Nunangat Policy, which was endorsed at the Inuit-Crown Partnership Committee Leaders meeting on April 21, 2022.

Gender-based analysis plus



In a follow up to a 2020 CCG gender-parity assessment, CCG worked with Women in Governance (WiG) to develop an action plan addressing the recommendations. WiG is a not-for-profit organization that supports leadership development, career advancement, and access to board seats for women.

In 2021–22, CCG also completed its second WiG gender-parity assessment with the goal of ensuring women in CCG:

- are increasingly represented in areas where they have historically been underrepresented;
- have equal opportunities;
- are in more leadership roles; and,
- are supported throughout their career development.

By means of an extensive online questionnaire, WiG collected and analyzed CCG’s responses and accompanying evidence to create a customized report that established benchmarks and outlined best practices and key drivers to enable CCG to build a roadmap to gender parity. WiG assigns four levels of certification: bronze, silver, gold, and platinum. In 2021–22, CCG achieved gold certification (a step up from its 2020–21 silver rating), largely due to improvements in governance and vision.

CCG will use the 2021–22 findings in future planning and reporting on gender parity, and will repeat the exercise in 2022–23.

For more information on CCG’s work on Gender-based analysis plus, please see the marine operations and response core responsibility on page 46.

United Nations 2030 Agenda for Sustainable Development and the Sustainable Development Goals

For additional information on how the Department is advancing the United Nations Sustainable Development Goals, please refer to [Fisheries and Oceans Canada’s 2021–22 Departmental Sustainable Development Strategy Report](#)^{xxix}.

Experimentation



In partnership with Environment and Climate Change Canada, DFO experimented with the development of high-resolution models to **provide near-real-time current and water-level forecasts** for navigation areas such as the St. Lawrence River, which is a complex and restricted waterway. This information is available to mariners leveraging the latest e-navigation international standards. Continued development of the models will support efficiencies in Canadian ports and waterways, while laying the data service foundation that will be required for the future.

As part of its work to reduce plastic waste from its operations, CCG continued to advance the **Modular Composite Buoy Design Project**. This project aims to improve the design of its plastic navigational buoys to extend their useful life by making parts easier to repair and replace, thereby lowering the disposal cost and producing less plastic waste. Lessons learned from this project will enable CCG to improve the technical specifications in its future procurement of plastic buoys. New buoy prototypes will be used by all [CCG regions](#)^{xxx} in one-year trials beginning in summer 2022.


Key risks

Over the last year, COVID-19 continued to challenge the Department’s ability to conduct staffing and recruitment activities, such as in-person events. CCG developed and implemented a National Recruitment Strategy, which shifted its recruitment efforts to the establishment of an online social media presence to inform and attract candidates. The Department also faced loss

of knowledge due to retirements and anticipated departures of specialists. To mitigate the impacts of these challenges, the Department established action plans to improve succession planning, and cross training with other teams. The Department also developed a number of initiatives focused on accessibility and specialized training, as well as wellness strategies, to assist employees' mental health to raise retention rates. Other difficulties faced by the Department in ensuring that Canada's waters remained safe and navigable for mariners were scheduling delays as a result of the aging fleet's ongoing maintenance needs. The purchase of interim vessels to supplement the existing fleet, work to rebuild and extend the life of existing vessels, the construction of new vessels, and the sharing of resources between CCG regions were leveraged in an effort to reduce the risks posed by these challenges. The Department will continue to monitor these and other potential risks to marine navigation and implement mitigation strategies where appropriate to ensure its ability to provide information and services to facilitate navigation in Canadian waters.

Results achieved

The following table shows, for marine navigation, the results achieved, the performance indicators, the targets and the target dates for 2021–22, and the actual results for the three most recent fiscal years for which actual results are available.

	Departmental results	Performance indicators	Target	Actual results
	Mariners safely navigate Canada's waters	Rate of marine incidents versus vessel movements	At most 1% by March 31, 2022	2019–20: 0.02% 2020–21: 0.03% 2021–22: 0.02%
		Number of official navigational products created and/or updated from incorporation of new and/or archived modern hydrography per year in key areas	At least 200 by March 31, 2022	2019–20: 669 2020–21: 673 2021–22: 895
	A Canadian maritime economy that is supported by navigable waters	Rate of marine incidents versus vessel movements	At most 1% by March 31, 2022	2019–20: 0.02% 2020–21: 0.03% 2021–22: 0.02%
		Percentage of ship ice escort requests south of the 60th parallel north that are delayed beyond level of service response time standards	Exactly 0% by March 31, 2022	2019–20: 1.4% ¹⁹ 2020–21: 4% ²⁰ 2021–22: 4.8% ²¹
		Average time (in hours) beyond level of service response time standards for ice escort requests south of the 60th parallel north	Exactly 0 by March 31, 2022	2019–20: 6.23 ²² 2020–21: 33.03 ²³ 2021–22: 13.29 ²⁴
	Enhanced relationships with, involvement of, and outcomes for Indigenous people	Number of agreements / arrangements involving Indigenous groups	At least 39 agreements by March 31, 2022	2019–20: N/A 2020–21: Data not available 2021–22: 8
		Number of Indigenous people employed through agreements / arrangements	To be established for 2022–23	2019–20: N/A 2020–21: Data not available 2021–22: N/A

Note: N/A indicates that the performance indicator was not in effect at that time, and therefore, data is not available.

¹⁹ Four escort missions were delayed due to operational requirements, icebreaker redeployed for search and rescue, and environmental factors including ice severity and movement of ice.

²⁰ Of the 161 escort requests received in 2020–21, 6 were delayed.

²¹ Of the 415 ice escort requests received, 20 were delayed beyond the level of service response time standards.


²² The icebreaking program experienced four delays out of 284 requests. Coast Guard achieved a high rate of success, given the challenging operational environment and in comparison to previous years.

²³ There were a total of six delays totaling 198.17 hours beyond levels of service (79.18 hours in Atlantic, 0.62 hours in St. Lawrence, 118.37 hours in Great Lakes), for an average time of 33.03 hours.

²⁴ Twenty requests were delayed, totaling 265.97 hours beyond levels of service response time standards (43.5 hours in Atlantic, 69.68 hours in St. Lawrence, 152.79 hours in Great Lakes), for an average time of 13.29 hours.

Budgetary financial resources (dollars)


The following table shows, for marine navigation, budgetary spending for 2021–22, as well as actual spending for that year.

	2021–22 main estimates	2021–22 planned spending	2021–22 total authorities available for use	2021–22 actual spending (authorities used)	2021–22 difference (actual spending minus planned spending)
	333,108,348	333,108,348	398,165,391	323,346,970	-9,761,378

Note: The variance between planned and actual spending is primarily due to internal reallocations between programs.

Human resources (full-time equivalents)

The following table shows, in full time equivalents, the human resources the Department needed to fulfill this core responsibility for 2021–22.

	2021–22 planned full-time equivalents	2021–22 actual full-time equivalents	2021–22 difference (actual full-time equivalents minus planned full-time equivalents)
	2,040	1,733	-307

Note: The variance between planned and actual FTE is primarily due to a reduction in funding towards the Oceans Protection Plan as well as internal reallocations between programs.

Financial, human resources and performance information for Fisheries and Oceans Canada's Program Inventory is available in the [GC InfoBase^{xxxi}](#).

Marine operations and response



Description

Provide marine response services and operate Canada's civilian maritime fleet.

Results

The marine operations and response core responsibility is focused on the advancement of the following Departmental Results:

- Canadian Coast Guard has the capability to respond to on-water incidents;
- Canada's Civilian fleet has the capability to meet established service standards for clients; and,
- enhanced relationships with, involvement of, and outcomes for Indigenous people.

The indicators used to measure progress towards these results appear in the [Results Achieved](#) table on page 48.

DFO and CCG are responsible for ensuring safety on Canadian waters by maintaining clear passages and responding to incidents that involve risks to mariners or substance spills on the water. To support this work, CCG continued to work towards having the equipment and fleet needed to perform its duties. CCG also ensured it had the specialized staff needed to perform these important duties, and continued its work to ensure that its people have the support and training needed for a strong fleet today and in the future. More information on these and other initiatives can be found below.

Fleet renewal

Despite challenges posed by COVID-19 to shipbuilding processes (e.g. supply-chain disruptions, shipyard shutdowns to adhere to health and safety regulations), CCG continued work to renew the CCG fleet. Renewal of its aging fleet will help CCG continue to keep mariners safe and provide other important services, such as responding to marine pollution and enabling scientific activities to support evidence-based decision-making.

In 2021–22, as part of the [National Shipbuilding Strategy](#) (NSS)^{xxxii}, a long-term project to renew Canada's federal fleet of combat and non-combat vessels, CCG procured two new search and rescue lifeboats. This brought the total number of these lifeboats delivered to 10 (out of 20 under contract). In addition, 2021–22 saw the advancement of multiple shipbuilding projects under the NSS. This included construction work on the Offshore Oceanographic Science Vessel (OOSV), engineering work on CCG's Arctic and Offshore Patrol Ships, ancillary contract work on the Polar Icebreaker and Multi-Purpose Vessels at Vancouver Shipyards, the finalization of design work on the Near-Shore Fishery Research Vessel, and ongoing work on the concept design for the Program Icebreakers and concept exploration for the Mid-Shore Multi-Mission vessels.

In 2021–22, CCG also acquired a [sixteenth light-lift helicopter](#)^{xxxiii}. CCG helicopters carry out a wide variety of tasks including monitoring oil spills and ice conditions, transferring personnel and cargo between ship and shore, and maintaining navigational aids.

CCG has put in place a comprehensive program to extend the life of current vessels until replacements are delivered. In 2021–22, CCG continued the **vessel life extension** (VLE) work on six vessels, and prepared to begin work on ten others. VLE can include rebuilding and improving a significant portion of both the exterior and interior of a vessel. This ensures that older vessels are safe, reliable, and able to continue providing essential services to Canadians until new ships are built and ready for operations.

CCG has purchased interim **icebreakers** to supplement the existing fleet during vessel life extension and repair periods. In 2021–22, CCG purchased a commercial light icebreaker (this follows the 2018 purchase of three commercial medium icebreakers). This icebreaker will be upgraded to meet CCG standards, and will then perform icebreaking duties, search and rescue, and delivery of CCG's aids to navigation in the Great Lakes and St. Lawrence Seaway. CCG also continued refit and conversion work on the last of the three medium interim icebreakers, CCGS *Vincent Massey*.

In addition, using **lessons learned** sessions and workshops both within the Department and with partner departments and industry has become a consistent part of project work. Various fleet renewal projects are working with project teams from more advanced projects to build from their past experiences and streamline and improve work processes, reducing the risk of repeated errors and preventing unnecessary cost and schedule challenges.

Reconciliation with Indigenous peoples

CCG is committed to supporting self-determination, improving service delivery, and advancing reconciliation with Indigenous peoples in matters related to CCG's mandate.

Under Canada's Oceans Protection Plan, CCG has been successful in supporting Indigenous communities throughout Canada by increasing **community-based marine emergency response capacity**. In coastal British Columbia, there was a focused effort to support Indigenous communities through various projects, ranging from introductory training in search and rescue, environmental response, and the incident command system, to full integration into the response system.

In 2021–22, CCG continued to collaborate with Pacheedaht First Nation (PFN) on plans to build a **multi-purpose marine response facility in Port Renfrew, British Columbia**. Port Renfrew is strategically located at the entrance to the Strait of Juan de Fuca, which serves as the Salish Sea's outlet to the Pacific Ocean, where marine traffic is expected to increase. The primary function of this facility will be to provide marine search and rescue and environmental response services. Collaborative discussions between CCG and PFN continued and the Government of Canada remains committed to enhancing response capacity in the Port Renfrew region to both keep mariners safe and protect the coast of British Columbia.

Environmental response

As part of its work to protect public safety, the environment, the economy and culturally important sites from the impacts of marine pollution, CCG outfitted its large-vessel fleet with dedicated **pollution-response equipment**. The installation of this equipment expanded environmental response capabilities in remote and environmentally important areas. CCG also received equipment for its mobile command posts and 70 per cent of the large offshore and ice skimmers and sweep systems is scheduled for delivery in 2021–22. The final 30 per cent of these skimmers and sweep systems, which are used to recover spilled oil, is expected to be delivered in 2022–23.

CCG also implemented its **Environmental Response Equipment Life Cycle Management Program**. The program includes both preventative and corrective maintenance measures to keep environmental response vessels, equipment, and other assets in proper working order and ready to be deployed, when required. All of this work under the [Oceans Protection Plan](#)^{xxxiv}

enhanced CCG's ability to limit the environmental, economic, and public safety impacts of marine pollution incidents on Indigenous and other coastal communities.

DID YOU KNOW?



CCG houses the operational arm of the Government of Canada responsible for ensuring an appropriate response to ship-source and mystery-source pollution incidents in Canadian waters. The objectives of CCG's Environmental Response program are to minimize the impacts of marine pollution spills on public safety, the environment, the economy, and culturally significant sites, and to provide humanitarian aid to natural and man-made disasters, where possible.

Search and rescue

The Search and Rescue (SAR) program is a vital service provided by CCG, with the support of partners and stakeholders. The CCG provides 24/7/365 SAR coordination and response services in partnership with National Defence and the Canadian Armed Forces, and with over 4,000 volunteer members of the Canadian Coast Guard Auxiliary (CCGA).

In 2021–22, CCG's SAR program continued to offer Indigenous communities opportunities to be trained and equipped to participate in marine emergency response activities safely within their surrounding waters. This was done through programs such as Indigenous Community Response Training (ICRT), the Indigenous Community Boat volunteer pilot program (ICBVP - which was extended for one year in Budget 2021), and the CCGA.

In 2021–22, the ICRT program provided seven training courses in SAR and marine advanced first aid, and facilitated and participated in advanced

DID YOU KNOW?



CCG responds to over 6,000 calls a year from people, vessels, and aircraft that are in imminent danger. On an average day, CCG coordinates the response to 19 search and rescue incidents, responds to 13 search and rescue incidents, assists 43 people, and saves 13 lives. In 2021–22, there were roughly 6,500 Maritime incidents requiring CCG action – an increase over the previous five-year average of 5,750 maritime incidents.

swift water training in which more than 10 First Nations in British Columbia participated. It also provided training on new navigation equipment, floods, and COVID-19 response. The ICBVP provided more than \$2 million in funding to 10 Indigenous communities to purchase vessels and equipment required to participate in the CCGA, and to augment marine safety in surrounding waters. Funding provided through the CCGA contribution program also supported Coastal Nations Coast Guard Auxiliary in welcoming a seventh First Nation community into its membership.

CCG also continued to increase its capacity to carry out successful operations through the ongoing development of SAR stations on Canada's west coast. The Victoria and Tahsis SAR stations operated from interim locations while work continued on the stations' marine infrastructure.

In 2021–22, the Department conducted an **Evaluation of the Search and Rescue Program: Canadian Coast Guard Auxiliary**^{xxxv}. The CCGA is a network of volunteer organizations dedicated to SAR and safe boating activities that works in close partnership with CCG. The evaluation, which did not result in any recommendations, found that the CCGA continues to play an important and appropriate role within the Canadian SAR system. The evaluation noted that the Indigenous Community Boat Volunteer pilot program increased the number of Indigenous communities participating in the CCGA, increased the capacity of some communities to participate in maritime SAR, and had a positive impact on the relationship between CCG and Indigenous communities.

Maritime security

CCG contributes to the Maritime Security Operations Centres across Canada, maintains the National Command Centre that connects the day-to-day command and control functions from coast to coast to coast, develops intelligence capability, provides departmental direction for maritime security policy including the development of the organizational cyber response and Arctic security strategies, and executes international capacity-building efforts.

Vessels of concern

In support of the new *Wrecked, Abandoned or Hazardous Vessels Act* (WAHVA)^{xxxvi}, CCG continued to develop **the national Vessels of Concern (VOC) program**. Under WAHVA, VOC are wrecked, abandoned, derelict, or hazardous vessels, which may pose a range of risks to the environment, public health and safety, Indigenous and other coastal communities, and local industries. WAHVA holds VOC owners responsible and liable and strengthens federal powers to intervene to address wrecked, abandoned, or hazardous vessels. Work in 2021–22 included the development of policies, procedures, standards, and training materials that will support the VOC program once it is implemented.

DID YOU KNOW?



Under WAHVA, for serious violations, the maximum penalty is \$50,000 for individuals and \$250,000 for vessels or any persons (including corporations). The first administrative monetary penalty under the Act was issued in fall 2020.

CCG, in partnership with Transport Canada, continued work to establish the **Vessel Remediation Fund** (VRF). The VRF will be an owner-financed fund that will help Transport Canada and CCG

assess and deal with high-priority problem vessels and expand options to help owners manage their vessels responsibly. In 2021–22, Transport Canada led [public consultations](#)^{xxxvii} on the proposed VRF. Both WAHVA and VRF are part of the Government of Canada’s work to take proactive action on hazardous vessels and on the preservation and restoration of marine ecosystems.

Personnel

The CCG College (the College) continued to update its **training** to ensure personnel are well prepared to provide CCG’s vital services in the face of evolving challenges. For example, the College recently commissioned its new Wartsila engine simulator, which will train personnel to operate and maintain this commonly used engine, auxiliary equipment, and control systems in a controlled environment closely resembling the engine room of a CCG vessel. The resulting improved training is expected to reduce maintenance costs and increase the reliability of the CCG fleet.

The College plays an integral role in **the promotion of diversity**. To increase awareness among CCG personnel of topics such as mental health, diversity, and inclusion, the College augmented its library of resources on anti-racism, diversity and inclusion methodology, 2SLGBTQI+ issues, wellness, and mental health. The College also amplifies commemorative dates such as Pride Month, Mental Health Week, and Day of Pink with relevant displays to increase staff and student awareness. This work supports the [2021 Speech from the Throne’s](#)^{xxxviii} priority of standing up for diversity and inclusion.

Gender-based analysis plus



As part of its efforts to make a more inclusive and diverse workplace, CCG continued consultations and pilot programs to redesign its **uniforms** to take into account various GBA Plus elements. Uniform trials were completed with personnel across the organization on fleet and shore. As a result of these trials, the uniform catalog was updated to remove gender identification to allow employees to select their clothing items by fit and preference. A full line of hijab, turban, and maternity clothing has also been introduced to promote inclusivity.

CCG worked to ensure GBA Plus considerations are incorporated into the **design and engineering of its new vessels**. Improvements include the following:

- single occupancy, gender-neutral washrooms that promote inclusivity, take up less space, and can be closer to more working areas for all crew members;
- increased number of single cabins for all ranks to allow for more flexibility and comfort for all crew members;
- sightlines and ergonomics made more inclusive in future vessels by moving away from designs based on “average” height;
- inclusion of quiet rooms, which are meant to provide a space where crew members can exercise their spiritual or religious practices; and,
- reliable internet access that ensures crew members have consistent communication with their families to help support healthier family dynamics and mental health.

United Nations 2030 Agenda for Sustainable Development and the Sustainable Development Goals

For additional information on how the Department is advancing the United Nations Sustainable Development Goals, please refer to [Fisheries and Oceans Canada's 2021–22 Departmental Sustainable Development Strategy Report](#)^{xxxix}.

Experimentation



As part of its work to protect the marine environment, CCG, in collaboration with scientists from DFO's Multi-Partner Oil Spill Research Initiative, conducted experiments to test the capability and capacity of existing **decanting (oil-water separation) technologies** for potential use in marine spill response. The experiments evaluated the effectiveness and operational feasibility of several existing and emerging technologies using two types of oil and varying concentrations of oil and water, and also allowed CCG to investigate environmental concerns related to at-sea disposal of water separated out through decanting. Field trials were completed in 2021–22 and CCG expects to complete a feasibility report in 2022–23. CCG will use the results of this experiment to inform regulatory development and the environmental response services it provides.


In partnership with the Canadian Forces Morale and Welfare Services (CFMWS) organization, CCG advanced a four-pillar health promotion program (fitness, injury prevention/management, nutrition, and fatigue management) for operational personnel in 2021–22. The program sought to ensure that personnel living on ships, SAR stations, and light stations, had the necessary tools, resources, and guidance to lead an active and healthy lifestyle. Communications products were designed to encourage small, incremental social and behavioural changes toward better health and fitness. CCG introduced strategies and products such as: voluntary fitness training, health and fitness case studies, focus groups, four-pillar resource development, and research on injury prevention and injury management strategies as tested and implemented within the Canadian Armed Forces.

Key risks

The Department continued work within the marine operations and response core responsibility last year, despite encountering operational gaps brought on by the ongoing maintenance, renewal, and replacement of its fleet. Strategies such as NSS and the VLE program were implemented and investments were received to replace aging fleet and to acquire new ships. As such, the Department continued to support the delivery of critical services and its ability to help Canadians across the nation has also been enhanced. DFO and CCG continue to minimize any potential risks and mitigate them accordingly.

Results achieved

The following table shows, for marine operations and response, the results achieved, the performance indicators, the targets and the target dates for 2021–22, and the actual results for the three most recent fiscal years for which actual results are available.

	Departmental results	Performance indicators	Target	Actual results
	Canadian Coast Guard has the capability to respond to on-water incidents	Percentage of responses to environmental incidents that meet established standards	Exactly 100% by March 31, 2022	2019–20: 100% 2020–21: 100% 2021–22: 100%
		Percentage of search and rescue responses that meet established standards	At least 99% by March 31, 2022	2019–20: 98% ²⁵ 2020–21: 99% 2021–22: 99%
	Canada's civilian fleet has the capability to meet established service standards for clients	Operational days delivered versus operational days planned	At least 90% by March 31, 2022	2019–20: 97% 2020–21: 96% 2021–22: Data not available ²⁶
		Percentage of operational days lost due to crewing and logistical issues	At most 3% by March 31, 2022	2019–20: 0.6% 2020–21: 1% 2021–22: Data not available ²⁶
		Percentage of operational days lost due to unplanned maintenance	At most 3% by March 31, 2022	2019–20: 4.35% ²⁷ 2020–21: 3% 2021–22: Data not available ²⁶
	Enhanced relationships with, involvement of, and outcomes for Indigenous people	Number of agreements / arrangements involving Indigenous groups	At least 35 agreements by March 31, 2022	2019–20: N/A 2020–21: Data not available 2021–22: 51
		Number of Indigenous people trained through agreements / arrangements	To be established for 2022–23	2019–20: N/A 2020–21: Data not available 2021–22: N/A

Note: N/A indicates that the performance indicator was not in effect at that time, and therefore, data is not available, unless otherwise specified.


²⁵ Search and rescue responses were impacted by various factors, such as environmental conditions (including ice conditions, etc.).

²⁶ Results for 2021–22 are not available due to ongoing issues with CCG-specific software.

²⁷ Until newer vessels come into service and older vessels can be retired, exceeding this target is expected to continue for the immediate future.

Budgetary financial resources (dollars)


The following table shows, for marine operations and response, budgetary spending for 2021–22, as well as actual spending for that year.

	2021–22 main estimates	2021–22 planned spending	2021–22 total authorities available for use	2021–22 actual spending (authorities used)	2021–22 difference (actual spending minus planned spending)
	1,542,760,148	1,542,760,148	1,673,329,197	1,276,897,457	-265,862,691

Note: The variance between planned and actual spending is primarily due to internal reallocations between programs and planned redistribution of funding between fiscal years in order to meet program requirements.

Human resources (full-time equivalents)

The following table shows, in full time equivalents, the human resources the Department needed to fulfill this core responsibility for 2021–22.

	2021–22 planned full-time equivalents	2021–22 actual full-time equivalents	2021–22 difference (actual full-time equivalents minus planned full-time equivalents)
	4,124	4,462	338

Financial, human resources and performance information for Fisheries and Oceans Canada's Program Inventory is available in the [GC InfoBase^{xl}](#).

Internal services

Description

Internal services are those groups of related activities and resources that the federal government considers to be services in support of programs and/or required to meet corporate obligations of an organization. Internal services refers to the activities and resources of the 10 distinct service categories that support program delivery in the organization, regardless of the internal services delivery model in a department. The 10 service categories are: Acquisition Management Services, Communications Services, Financial Management Services, Human Resources Management Services, Information Management Services, Information Technology Services, Legal Services, Materiel Management Services, Management and Oversight Services; and Real Property Management Services.



Results

The Internal Services core responsibility aims to provide the resources needed to provide effective services to all Canadians. This includes a complement of staff that is well-trained, whose mental and physical wellbeing are supported, and whose diversity is celebrated. The thousands of staff members require strong technical tools to support their work, and Internal Services continued to support this through improvements like the Digital Transformation Agenda. Internal Services also ensure that the work done by the Department is done in a fiscally responsible manner that effectively manages Canadian taxpayers' dollars, and in a sustainable manner that supports Canada's environment. As in 2020–21, the Department continued to support employees and, as needed, facilitated remote work, prioritizing health and safety during the COVID-19 pandemic, while continuing to deliver important programs and services to Canadians and other stakeholders.

Reconciliation with Indigenous peoples

The Department created national and regional **networks** to better support Indigenous employees at all levels (e.g. by increasing awareness of opportunities) and continued to promote the Indigenous Executive Network. The Indigenous Executive Network is a cross-governmental network supported by the Knowledge Circle for Indigenous Inclusion of the Treasury Board of Canada Secretariat. In addition, the Department's 2021–22 **National Indigenous Student Recruitment Initiative** hired 42 Indigenous students across the country, a significant increase from the total of 18 students hired the previous year. Due to the success of the Initiative, it will be continued, and increased hiring of Indigenous students is expected. In addition, other recruitment efforts included the Inshore Rescue Boat Student Program in Nunavut, aimed at Indigenous youth and the Interdepartmental Indigenous Science, Technology, Engineering and Mathematics (STEM) Cluster, which is open to Indigenous students across Canada studying in STEM. DFO has been actively increasing its recruitment efforts to support the Government's objective and, through conscious efforts, has succeeded in exceeding its workforce availability rate for Indigenous people by 0.7 percentage points.

DFO hosted a two-day Government of Canada workshop called Truth and Reconciliation in the Public Service. The goal of this workshop was to create an inclusive environment for Government of Canada employees across departments to come together to share learnings,

spark action, and ultimately advance reconciliation with Inuit, Métis, and First Nation peoples. It was also an opportunity to pinpoint barriers to employment, discuss how we can overcome and dismantle obstacles, and identify the supports that will help set Indigenous employees up for success. Representatives from 47 departments participated.

People

In support of the Government of Canada’s commitment **to increase diversity and foster inclusion within the public service**, the Department reviewed its recruitment, development, and promotion policies through the lens of diversity, inclusion, and reconciliation, and implemented focused measures to recruit and retain members of Employment Equity (EE) groups (i.e. employees and candidates who identify as Indigenous peoples, persons with disabilities, members of a visible minority group, and/or women in non-traditional occupations). To guide and inform this work, DFO launched an Employment Systems Review to identify barriers to recruitment and retention for EE group members and began development of a new multi-year Employment Equity, Diversity and Inclusion Action Plan. The Department also tracked recruitment processes, participated in outreach initiatives, and ran EE-focused hiring processes. Work to retain and promote members of EE groups included the promotion of leadership courses and the launch of a Sponsorship Program whereby senior leaders within the Department sponsor protégés who are interested in becoming executives.

The Department supported **employee networks** from entry level to senior leadership through several initiatives including the Positive Space Initiative, Your Professional Network, the National Network for Diversity and Inclusion, the Workplace Wellbeing Network, and the Accessibility Network. These networks were consulted during the development of various policies, directives and initiatives. For example, after extensive consultations with stakeholders, the Department launched the development of its first-ever **accessibility action plan** based on the principle of “nothing about us, without us” (which emphasizes the importance of involving those who will be most affected by plans and policies in their development). The action plan is expected to be finalized in 2022–23.

The Department amended its **Workplace Harassment and Violence Policy Directive** to align with new legislative requirements designed to strengthen the existing framework for the prevention of harassment and violence, including sexual harassment and sexual violence, in the workplace. To supplement government-wide training on the changes, the Department began development of training tailored to DFO/CCG, which is expected to be released in 2022–23.

Data and digital innovation

DFO’s **Digital Transformation Agenda** is a multi-year initiative that aims to leverage digital technology and data to improve the delivery of the Department’s programs and services to Canadians and mariners. An important part of this agenda is the Department’s data strategy, which modernizes how the Department manages its data so that valuable environmental, ocean, aquatic ecosystem, climate change, fishery, and other data sources are both better safeguarded and more readily available

DID YOU KNOW?



The Department achieved an overall on-time response rate of 95 per cent during the 2021–22 reporting period for *Access to Information Act* and *Privacy Act* requests, while reducing its carbon footprint through a shift to a paperless environment.

to the Canadian public, government, and other interested stakeholders. In 2021–22, DFO improved its cloud computing capabilities, which allowed for more flexible and user-friendly provision of important information (such as depth levels in navigable waters) to the public. DFO also improved data literacy and stewardship within the Department by more clearly identifying and assigning employees' roles with respect to data, and by identifying gaps to be addressed through targeted development and training. All of the work done in 2021–22 positions DFO to more effectively manage and use its data in support of better decisions, better evaluation of performance, and better delivery of services to Canadians.

Financial and asset management

To ensure the most effective use of real property funds, DFO prepared a **national modernization strategy** to support the evolution to hybrid workplaces (workplaces adapted to employees completing some of their work from home), and worked on strategies adapted to the needs of the Department's regional offices across the country. For example, the Department's Gulf Region piloted the transition to the use of unassigned seating and collaborative spaces (as opposed to every employee having their own cubicle). The planned modernization of CCG's national headquarters in Ottawa was delayed and is expected to be completed in the fall of 2022. Targeted modernization of the Department's workplaces will allow for more efficient use of space and will provide employees with a more modern, inclusive, and flexible workplace.

As planned, the Department transformed its financial and material management business processes by implementing the next generation of financial systems, **SAP S/4HANA**, in 2021–22. In addition, most financial processes have been digitized, which accelerates processing times and reduces the Department's carbon footprint by eliminating the need to print hundreds of thousands of pages every year. These changes will ensure that decision-makers have relevant, accurate, and timely financial and materiel management information to inform program decisions for the coming decades. DFO also continued work to prepare for a transition to accrual budgeting. The transition to accrual budgeting would allow DFO to apply a more strategic lens to investment planning by shifting from a project-based approach to longer-term investment planning based on the useful life of each capital asset using an asset life-cycle methodology.

Security

In 2021–22, DFO implemented departmental guidelines for security screening interviews and decisions in accordance with the **Policy on Government Security**, which aims to ensure that people and government information and assets are safeguarded. The new guidelines will help to ensure that security screening within the Department continues to be effective, rigorous, consistent, and fair, while respecting the rights of individuals.

Greening government and climate resiliency

The Department continued work to support the Government of Canada's plans to transition to **net-zero carbon and climate-resilient operations**, while also reducing environmental impacts beyond carbon, including on waste, water and biodiversity. For example, DFO installed telematics modules on 70 per cent of its on-road vehicles. These modules, which will also be installed on the remaining vehicles, track vehicles' usage pattern in real-time. Analysis of this telematics data has already identified opportunities for reductions in greenhouse gas emissions and fuel usage, such as reducing idling and replacing certain vehicles with hybrid or zero-emissions models.

In addition, based on an initial climate change vulnerability assessment of 51 of its sites, the Department continued work to develop a climate change resiliency framework that will reflect the complexities of the Department's diverse portfolio of assets across the country, and will help to mitigate the risks posed by climate change on the continued provision of the Department's services.

Gender-based analysis plus



The Department provided its staff with additional GBA Plus **training and resources**, such as data disaggregated by a variety of identity factors, and established a departmental GBA Plus network to better assess training and capacity building requirements. Also, to further support program teams, the Department developed and disseminated guidance for GBA Plus in Performance Information Profiles²⁸. This work will expand GBA Plus expertise within the Department, which will in turn help in assessing the benefits of its work for various intersecting groups of people.

DFO continued to integrate GBA Plus by considering different identity groups and their intersections when reviewing and improving the metrics used to measure the Department's performance and when proposing new initiatives. For example, the Indigenous Community Boat Volunteer pilot program was examined in the recent [Evaluation of the Search and Rescue Program: Canadian Coast Guard Auxiliary \(CCGA\)](#)^{xli} to assess its impact on Indigenous communities' capacity to respond to maritime search and rescue incidents in their waters. The evaluation found that the pilot program, and the support provided by the CCGA, increased the capacity of some communities, particularly in the Arctic, to participate in maritime search and rescue and has had a positive impact on the relationship between the CCG and Indigenous communities.

The Department supported its staff by ensuring the consideration and implementation of **all-access washrooms** (formerly known as gender-neutral washrooms) in construction and reconstruction work on DFO and CCG properties. For example, some washrooms at the Gulf Fisheries Center were permanently adapted to be all-access, and an all-access washroom will be located in the CCG headquarters being modernized in Ottawa.

United Nations 2030 Agenda for Sustainable Development and the Sustainable Development Goals

For additional information on how the Department is advancing the United Nations Sustainable Development Goals, please refer to [Fisheries and Oceans Canada's 2021–22 Departmental Sustainable Development Strategy Report](#)^{xlii}.

Experimentation



The Department initiated changes to its staffing process to identify and recruit the best talent. This included developing and piloting new, proactive approaches such as **All Hands on Science (AHOS)**, a national talent identification initiative for scientific and technical jobs. Hiring through AHOS is expected to begin in 2022–23.

²⁸ A Performance Information Profile is a document that identifies performance information, such as performance indicators, for each program in a department's Program Inventory.


and will include mechanisms to close employment equity representation gaps, remove systemic barriers, and allow equal employment opportunities.

Key risks

The Department carried on delivering its Internal Services over the last fiscal year despite the challenges that were encountered due to the COVID-19 pandemic. Some of the risks included an inability to recruit and maintain adequate staff due to a high turnover rate, a risk of not meeting the representation goals outlined in the *Employment Equity Act*, and the risk the Department will not have sufficient reliable data for effective decision-making. In response, the Department adopted targeted recruitment to ensure the workplace is representative of the Canadian workforce and launched the Data Stewardship Initiative, which outlines employee roles and responsibilities for the lifecycle management of data, as well as the Data Literacy Initiative, which strives to improve data literacy within the Department. Furthermore, to fill the capacity gaps, the Department leveraged existing pools and social media platforms to attract talent. DFO will continue to monitor any potential risks, and implement sound mitigation strategies where appropriate, to ensure the Department's ability to continue to meet its goals.

Budgetary financial resources (dollars)


The following table shows, for internal services, budgetary spending for 2021–22, as well as spending for that year.

	2021–22 main estimates	2021–22 planned spending	2021–22 total authorities available for use	2021–22 actual spending (authorities used)	2021–22 difference (actual spending minus planned spending)
	529,991,453	529,991,453	699,359,568	553,736,163	23,744,710

Note: The variance between planned and actual spending is primarily due to internal reallocations between programs.

Human resources (full-time equivalents)

The following table shows, in full time equivalents, the human resources the Department needed to carry out its internal services for 2021–22.

	2021–22 planned full-time equivalents	2021–22 actual full-time equivalents	2021–22 difference (actual full-time equivalents minus planned full-time equivalents)
	2,060	2,433	373

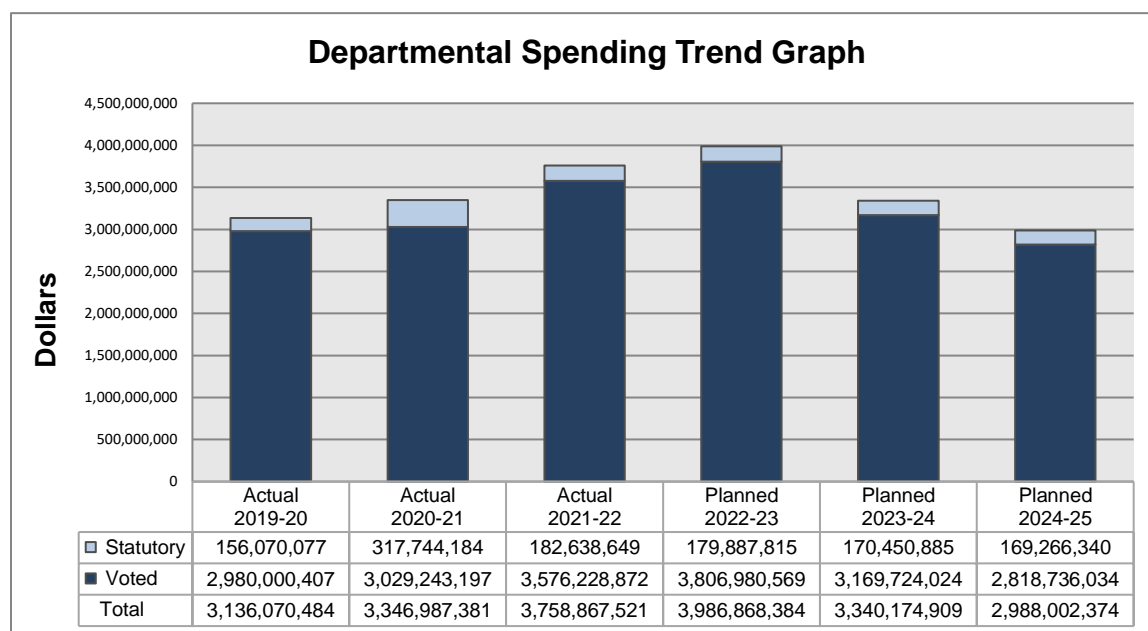
Note: The variance between planned and actual FTE is primarily due to internal reallocations between programs as well as additional enabler funding received in-year to implement Canada's new marine conservation targets and for the Small Craft Harbours Program.

Spending and human resources

Actual expenditures

Departmental spending trend

The following graph presents planned spending (voted and statutory) over time.



The Department's total actual spending for 2021–22 was \$3,758.9 million. This represents an increase of 12.3 per cent compared to the total actual spending for 2020–21 (\$3,347.0 million).

This increase is mainly attributed to spending on Indigenous programs and the Canadian Coast Guard fleet renewal programs.

Budgetary performance summary for core responsibilities and internal services (dollars)

The “Budgetary performance summary for core responsibilities and internal services” table presents the budgetary financial resources allocated for the Fisheries and Oceans Canada’s core responsibilities and for internal services.

Core responsibilities and internal services	2021–22 main estimates	2021–22 planned spending	2022–23 planned spending	2023–24 planned spending	2021–22 total authorities available for use	2019–20 actual spending (authorities used)	2020–21 actual spending (authorities used)	2021–22 actual spending (authorities used)
Fisheries	1,636,345,231	1,636,345,231	1,276,607,880	1,013,209,416	1,871,860,053	870,305,003	988,392,191	1,245,671,518
Aquatic ecosystems	340,861,687	340,861,687	391,884,341	282,991,537	455,989,127	311,606,616	354,805,497	359,215,413
Marine navigation	333,108,348	333,108,348	347,356,957	281,484,708	398,165,391	332,887,078	285,902,876	323,346,970
Marine operations and response	1,542,760,148	1,542,760,148	1,402,567,112	1,220,996,992	1,673,329,197	1,074,073,985	1,160,540,295	1,276,897,457
Budget Implementation vote – unallocated authorities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Subtotal	3,853,075,414	3,853,075,414	3,418,416,290	2,798,682,653	4,399,343,768	2,588,872,682	2,789,640,859	3,205,131,358
Internal services	529,991,453	529,991,453	568,452,094	541,492,256	699,359,568	547,197,802	557,346,522	553,736,163
Total	4,383,066,867	4,383,066,867	3,986,868,384	3,340,174,909	5,098,703,336	3,136,070,484	3,346,987,381	3,758,867,521

At the outset of 2021–22, Fisheries and Oceans Canada's planned spending was \$4,383.1 million. Incremental funding from Supplementary Estimates, Carry Forwards, and other sources brought the total authorities to \$5,098.7 million, which is \$1,339.8 million higher than the \$3,758.9 million in expenditures.

The \$715.6 million increase from planned spending to total authorities is mainly attributed to Supplementary Estimates funding for: the Small Craft Harbours Program, Canada's new marine conservation targets, the Nature Legacy Initiative, and the Pacific Salmon Strategy Initiative.

The difference of \$1,339.8 million between total authorities and actual spending is mainly the result of timeline changes in the completion of projects, which caused funding to be carried forward to future years.

2021–22 budgetary actual gross spending summary (dollars)

The following table reconciles gross planned spending with net spending for 2021–22.

Core responsibilities and internal services	2021–22 actual gross spending	2021–22 actual revenues netted against expenditures	2021–22 actual net spending (authorities used)
Fisheries	1,245,671,518	0	1,245,671,518
Aquatic ecosystems	359,215,413	0	359,215,413
Marine navigation	364,287,349	-40,940,379	323,346,970
Marine operations and response	1,276,897,457	0	1,276,897,457
Subtotal	3,246,071,737	-40,940,379	3,205,131,358
Internal services	553,736,163	0	553,736,163
Total	3,799,807,900	-40,940,379	3,758,867,521

For certain services, the Canadian Coast Guard collects service fees to ensure that, where appropriate, the entire cost of delivering the service is not borne by taxpayers. Fees for icebreaking, marine navigation, and dredging support the safe navigation of Canadian waters.

Actual human resources

Human resources summary for core responsibilities and internal services (full-time equivalents)

The “Human resources summary for core responsibilities and internal services” table presents the full-time equivalents (FTEs) allocated to each of Fisheries and Oceans Canada’s core responsibilities and to internal services.

Core responsibilities and internal services	2019–20 actual FTE	2020–21 actual FTE	2021–22 planned FTE	2021–22 actual FTE	2022–23 planned FTE	2023–24 planned FTE
Fisheries	3,072	3,245	3,253	3,693	3,644	3,612
Aquatic ecosystems	1,490	1,607	1,523	1,763	1,761	1,280
Marine navigation	1,940	1,826	2,040	1,733	1,966	1,958
Marine operations and response	4,118	4,348	4,124	4,462	4,177	4,002
Subtotal	10,620	11,026	10,940	11,651	11,548	10,852
Internal services	2,080	2,231	2,060	2,433	2,264	2,235
Total	12,700	13,257	13,000	14,084	13,812	13,087

Note: Because of rounding, figures may not add to the totals shown.

Expenditures by vote

For information on Fisheries and Oceans Canada's organizational voted and statutory expenditures, consult the [Public Accounts of Canada 2021](#)^{xliii}.

Government of Canada spending and activities

Information on the alignment of Fisheries and Oceans Canada's spending with the Government of Canada's spending and activities is available in the [GC InfoBase](#)^{xliv}.

Financial statements and financial statements highlights

Financial statements

DFO's financial statements (unaudited) for the year ended March 31, 2022, are available on [Fisheries and Oceans Canada's](#)^{xlv} website.

Financial statements highlights

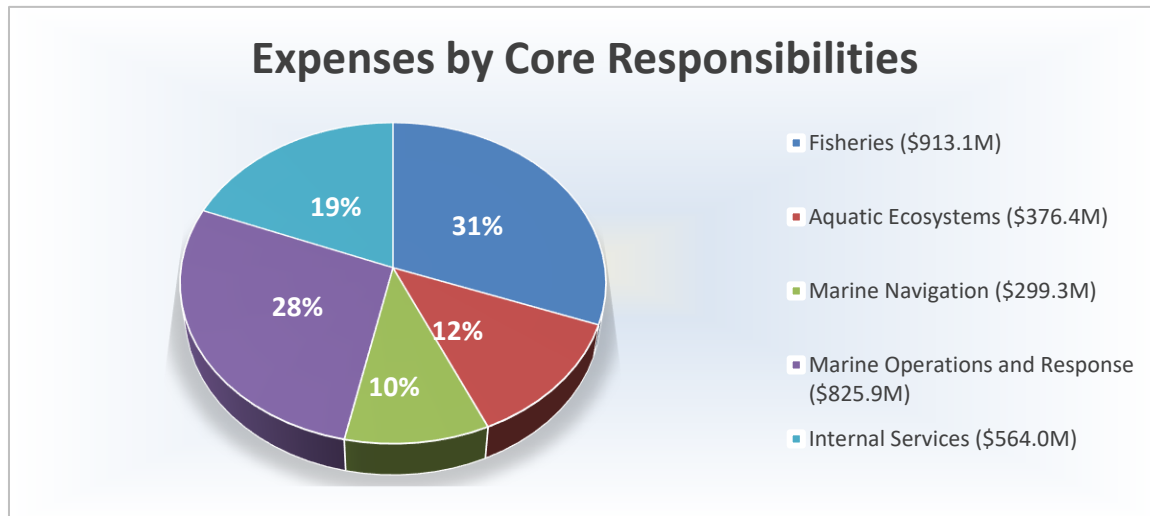
The financial highlights presented within this Departmental Results Report are intended to serve as a general overview of DFO's Condensed Statement of Operations and Condensed Statement of Financial Position as presented in the Department's unaudited financial statements. These financial statements are prepared in accordance with accrual accounting principles and, therefore, are different from the figures provided in other sections of this Departmental Results Report and information published in the Public Accounts of Canada, which are prepared on appropriation-based reporting. The complete unaudited financial statements can be found on the [Fisheries and Oceans Canada](#)^{xlvi} website.

Condensed Statement of Operations (unaudited) for the year ended March 31, 2022 (dollars)

Financial information	2021–22 planned results	2021–22 actual results	2020–21 actual results	Difference (2021–22 actual results minus 2021–22 planned results)	Difference (2021–22 actual results minus 2020–21 actual results)
Total expenses	3,710,441,237	2,978,686,603	3,068,657,062	(731,754,634)	(89,970,459)
Total revenues	40,011,000	41,577,949	41,007,275	1,566,949	570,674
Net cost of operations before government funding and transfers	3,670,430,237	2,937,108,654	3,027,649,787	(733,321,583)	(90,541,133)

The 2021–22 planned results information is provided in Fisheries and Oceans Canada's [Future-Oriented Statement of Operations and Notes 2021–22](#)^{xlvii}.

Expenses



Total expenses were \$731.8 million lower than planned results mainly the result of timeline changes in the completion of projects, which caused funding to be carried forward to future years.

Total expenses in support of DFO's programs and services were \$2,978.7 million in 2021–22, a decrease of \$90.0 million or 2.9 per cent when compared to the previous year's total expenses of \$3,068.7 million.

The reduction is mainly attributed to a decrease in expenses for claims and litigation for \$301.3 million, a decrease in remediation expense related to contaminated sites for \$28.5 million, and a decrease in repair and maintenance for \$25.8 million. This is mostly offset by an increase in transfer payments for \$210.9 million, an increase in salary and benefits for \$32.7 million and an increase in professional and special services for \$22.3 million.

Revenues

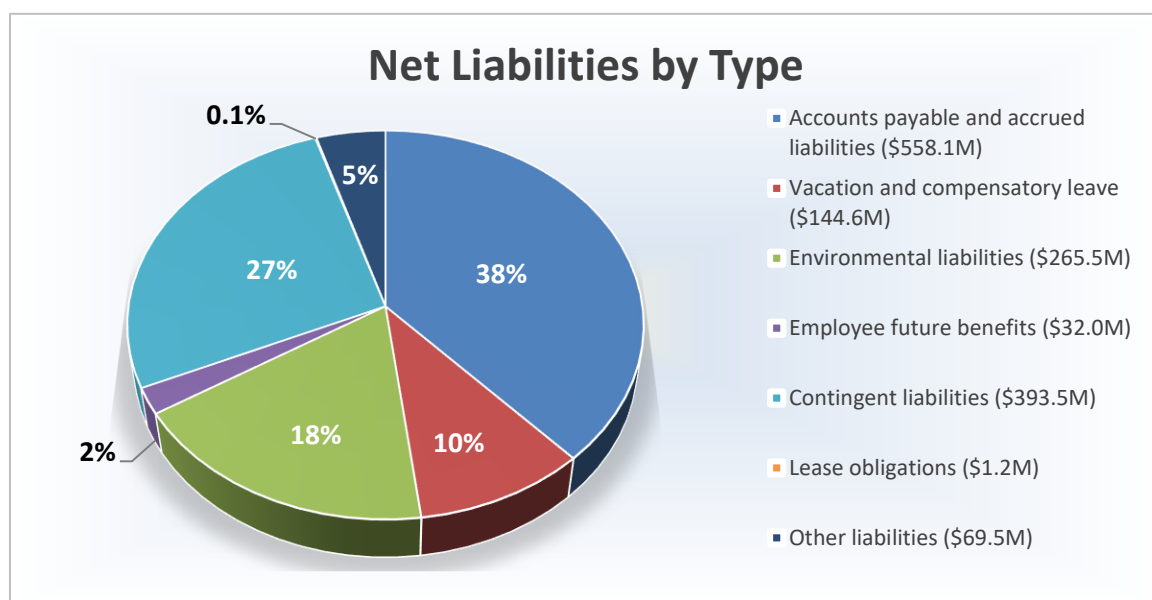
The total actual revenues for 2021–22 were higher than the planned results by \$1.6 million due to an increase in revenues for marine navigation services fees, icebreaking services fees, and maintenance dredging services fees.

Total actual revenues were \$41.6 million in 2021–22, an increase of \$0.6 million or 1.5 per cent when compared to the previous year's total actual revenues of \$41.0 million. The increase is mainly attributed to the return to the regular operational activities following the global pandemic.

Condensed Statement of Financial Position (unaudited) as of March 31, 2022 (dollars)

Financial information	2021–22	2020–21	Difference (2021–22 minus 2020–21)
Total net liabilities	1,464,339,618	1,742,039,338	(277,699,720)
Total net financial assets	577,226,742	571,036,565	6,190,177
Departmental net debt	887,112,876	1,171,002,772	(283,889,896)
Total non-financial assets	7,003,480,654	6,406,686,552	596,794,102
Departmental net financial position	6,116,367,778	5,235,683,779	880,683,999

Net liabilities



Total net liabilities were \$1,464.3 million as of March 31, 2022, a decrease of \$277.7 million or - 15.9 per cent when compared to the previous year's balance of \$1,742.0 million. The decrease is mainly attributed to a decrease in allowance for contingent liabilities of \$288.7 million and a decrease in allowance for environmental liabilities of \$15.5 million offset by an increase in accounts payable and accrued liabilities of \$27.9 million.

NET FINANCIAL ASSETS

Total net financial assets were \$577.2 million as of March 31, 2022, an increase of \$6.2 million or 1.1 per cent when compared to the previous year's balance of \$571.0 million. This is mainly attributed to an increase in due from the Consolidated Revenue Fund of \$2.9 million to pay for accounts payable and accrued salaries and wages and an increase in the accounts receivable and advances of \$3.3 million.

NON-FINANCIAL ASSETS

Total non-financial assets were \$7,003.5 million as of March 31, 2022, an increase of \$596.8 million or 9.3 per cent when compared to the previous year's balance of

\$6,406.7 million. The increase is mainly due to a net increase in tangible capital assets of \$577.5 million.

Corporate information

Organizational profile

Appropriate minister:

The Honourable Bernadette Jordan (until October 2021) and The Honourable Joyce Murray (October 2021 to present)

Institutional head:

Timothy Sargent, Deputy Minister

Ministerial portfolio:

Fisheries and Oceans Canada (DFO) and the Canadian Coast Guard (Coast Guard)

Enabling instruments:

- [Oceans Act](#)^{xlviii};
- [Fisheries Act](#)^{xliv};
- [Species at Risk Act](#)ⁱ;
- [Coastal Fisheries Protection Act](#)^{li};
- [Canada Shipping Act, 2001](#)^{lii} (Transport Canada-led); and
- [Fishing and Recreational Harbours Act](#)^{liii}
- [Department of Fisheries and Oceans Act](#)^{liv}

Year of incorporation / commencement: 1979

Raison d'être, mandate and role: who we are and what we do

"Raison d'être, Mandate and Role: Who We Are and What We Do" is available on [Fisheries and Oceans Canada's](#)^{lv} website.

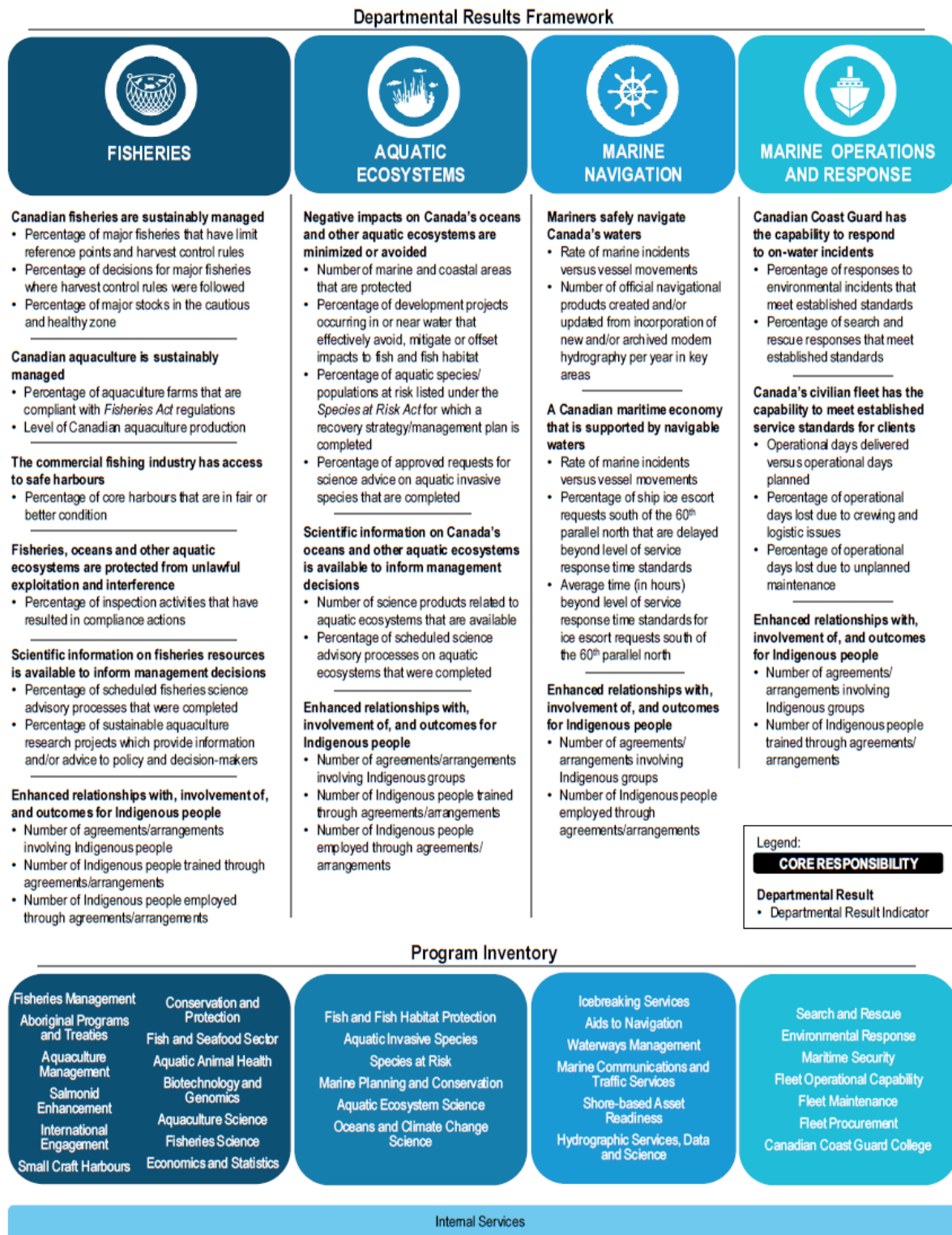
For more information on the Department's organizational mandate letter commitments, see the [Minister's mandate letter](#)^{lvi}.

Operating context

Information on the operating context is available on Fisheries and Oceans Canada's website.

Reporting framework

The Fisheries and Oceans Canada's Departmental Results Framework and Program Inventory of record for 2021–22 are shown below.



Supporting information on the program inventory

Financial, human resources and performance information for Fisheries and Oceans Canada's Program Inventory is available in the [GC InfoBase](#)^{lvii}.

Supplementary information tables

The following supplementary information tables are available on Fisheries and Oceans Canada's website:

- Details on Transfer Payment Programs
- Gender-based Analysis Plus
- Horizontal Initiatives
- Response to Parliamentary Committees and External Audits
- Up-front Multi-year Funding
- United Nations 2030 Agenda for Sustainable Development and the Sustainable Development Goals

Federal tax expenditures

The tax system can be used to achieve public policy objectives through the application of special measures such as low tax rates, exemptions, deductions, deferrals and credits. The Department of Finance Canada publishes cost estimates and projections for these measures each year in the [Report on Federal Tax Expenditures](#)^{lviii}. This report also provides detailed background information on tax expenditures, including descriptions, objectives, historical information and references to related federal spending programs as well as evaluations and GBA Plus of tax expenditures.

Organizational contact information

Fisheries and Oceans Canada
Communications Branch
200 Kent Street
13th Floor, Station 13E228
Ottawa, Ontario K1A 0E6

Telephone: 613-993-0999

Facsimile: 613-990-1866

TTY: 1-800-465-7735

Email: info@dfo-mpo.gc.ca

Web Address: <http://dfo-mpo.gc.ca>^{lix}

Appendix: definitions

appropriation (*crédit*)

Any authority of Parliament to pay money out of the Consolidated Revenue Fund.

budgetary expenditures (*dépenses budgétaires*)

Operating and capital expenditures; transfer payments to other levels of government, organizations or individuals; and payments to Crown corporations.

core responsibility (*responsabilité essentielle*)

An enduring function or role performed by a department. The intentions of the department with respect to a core responsibility are reflected in one or more related departmental results that the department seeks to contribute to or influence.

Departmental Plan (*plan ministériel*)

A report on the plans and expected performance of an appropriated department over a 3-year period. Departmental Plans are usually tabled in Parliament each spring.

departmental priority (*priorité*)

A plan or project that a department has chosen to focus and report on during the planning period. Priorities represent the things that are most important or what must be done first to support the achievement of the desired departmental results.

departmental result (*résultat ministériel*)

A consequence or outcome that a department seeks to achieve. A departmental result is often outside departments' immediate control, but it should be influenced by program-level outcomes.

departmental result indicator (*indicateur de résultat ministériel*)

A quantitative measure of progress on a departmental result.

departmental results framework (*cadre ministériel des résultats*)

A framework that connects the department's core responsibilities to its departmental results and departmental result indicators.

Departmental Results Report (*rapport sur les résultats ministériels*)

A report on a department's actual accomplishments against the plans, priorities and expected results set out in the corresponding Departmental Plan.

experimentation (*expérimentation*)

The conducting of activities that seek to first explore, then test and compare the effects and impacts of policies and interventions in order to inform evidence-based decision-making, and improve outcomes for Canadians, by learning what works, for whom and in what circumstances. Experimentation is related to, but distinct from innovation (the trying of new things), because it involves a rigorous comparison of results. For example, using a new website to communicate with Canadians can be an innovation; systematically testing the new website against existing outreach tools or an old website to see which one leads to more engagement, is experimentation.

full-time equivalent (*équivalent temps plein*)

A measure of the extent to which an employee represents a full person-year charge against a departmental budget. For a particular position, the full-time equivalent figure is the ratio of number of hours the person actually works divided by the standard number of hours set out in the person's collective agreement.

gender-based analysis plus (GBA Plus) (*analyse comparative entre les sexes plus [ACS Plus]*)

An analytical process used to assess how diverse groups of women, men and gender-diverse people experience policies, programs and services based on multiple factors including race ethnicity, religion, age, and mental or physical disability.

government-wide priorities (*priorités pangouvernementales*)

For the purpose of the 2020–21 Departmental Results Report, those high-level themes outlining the government's agenda in the 2019 Speech from the Throne, namely: Fighting climate change; Strengthening the Middle Class; Walking the road of reconciliation; Keeping Canadians safe and healthy; and Positioning Canada for success in an uncertain world.

horizontal initiative (*initiative horizontale*)

An initiative where two or more federal organizations are given funding to pursue a shared outcome, often linked to a government priority.

non-budgetary expenditures (*dépenses non budgétaires*)

Net outlays and receipts related to loans, investments and advances, which change the composition of the financial assets of the Government of Canada.

performance (*rendement*)

What an organization did with its resources to achieve its results, how well those results compare to what the organization intended to achieve, and how well lessons learned have been identified.

performance indicator (*indicateur de rendement*)

A qualitative or quantitative means of measuring an output or outcome, with the intention of gauging the performance of an organization, program, policy or initiative respecting expected results.

performance reporting (*production de rapports sur le rendement*)

The process of communicating evidence-based performance information. Performance reporting supports decision-making, accountability and transparency.

plan (*plan*)

The articulation of strategic choices, which provides information on how an organization intends to achieve its priorities and associated results. Generally, a plan will explain the logic behind the strategies chosen and tend to focus on actions that lead to the expected result.

planned spending (*dépenses prévues*)

For Departmental Plans and Departmental Results Reports, planned spending refers to those amounts presented in Main Estimates.

A department is expected to be aware of the authorities that it has sought and received. The determination of planned spending is a departmental responsibility, and departments must be able to defend the expenditure and accrual numbers presented in their Departmental Plans and Departmental Results Reports.

program (*programme*)

Individual or groups of services, activities or combinations thereof that are managed together within the department and focus on a specific set of outputs, outcomes or service levels.

program inventory (*répertoire des programmes*)

Identifies all the department's programs and describes how resources are organized to contribute to the department's core responsibilities and results.

result (*résultat*)

A consequence attributed, in part, to an organization, policy, program or initiative. Results are not within the control of a single organization, policy, program or initiative; instead they are within the area of the organization's influence.

statutory expenditures (*dépenses législatives*)

Expenditures that Parliament has approved through legislation other than appropriation acts. The legislation sets out the purpose of the expenditures and the terms and conditions under which they may be made.

target (*cible*)

A measurable performance or success level that an organization, program or initiative plans to achieve within a specified time period. Targets can be either quantitative or qualitative.

voted expenditures (*dépenses votées*)

Expenditures that Parliament approves annually through an appropriation act. The vote wording becomes the governing conditions under which these expenditures may be made.

Endnotes

- ⁱ Sustainable Fisheries Framework Work Plan, <https://www.dfo-mpo.gc.ca/about-notre-sujet/publications/work-plan-travail/index-eng.html>
- ⁱⁱ Canada Gazette, Part I, Volume 155, Number 1: Regulations Amending the Fishery (General) Regulations, <https://www.gazette.gc.ca/rp-pr/p1/2021/2021-01-02/html/reg1-eng.html>
- ⁱⁱⁱ Pacific Salmon Strategy Initiative, <https://www.dfo-mpo.gc.ca/campaign-campagne/pss-ssp/index-eng.html>
- ^{iv} Evaluation of DFO's Activities in Support of Pacific Salmon, <https://www.dfo-mpo.gc.ca/ae-ve/evaluations/22-23/96524-eng.html>
- ^v Open-net pen transition plan: initial engagement process, <https://www.dfo-mpo.gc.ca/aquaculture/publications/open-nets-filets-ouverts-eng.htm>
- ^{vi} What we heard report: Proposed federal Aquaculture Act - 2020 general engagement, <https://www.dfo-mpo.gc.ca/aquaculture/publications/report-potential-act-rapport-eventuelle-loi-eng.htm>
- ^{vii} New agreement lays foundation for reconciliation of Haida Nation Title and Rights, <https://www.canada.ca/en/crown-indigenous-relations-northern-affairs/news/2021/08/new-agreement-lays-foundation-for-reconciliation-of-haida-nation-title-and-rights.html>
- ^{viii} DFO regions map, <https://www.dfo-mpo.gc.ca/about-notre-sujet/organisation-eng.htm#dfo>
- ^{ix} Women and Gender Equity Canada website, <http://www.swc-cfc.gc.ca/gba-ac/index-en.html>
- ^x Fisheries and Oceans Canada's 2021-22 Departmental Sustainable Development Strategy Report, <https://www.dfo-mpo.gc.ca/about-notre-sujet/publications/reports-rapports-eng.htm#strategy>
- ^{xi} GC InfoBase, <https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html>
- ^{xii} The Current – managing Oceans Act MPAs now, for the future, <https://www.dfo-mpo.gc.ca/oceans/publications/current-courant/index-eng.html>
- ^{xiii} United Nations Decade of Ocean Science for Sustainable Development (2021-2030), <https://www.dfo-mpo.gc.ca/campaign-campagne/un-decade-decennie-nu/index-eng.html>
- ^{xiv} OceanDecade Challenge Crest, <https://www.dfo-mpo.gc.ca/campaign-campagne/un-decade-decennie-nu/index-eng.html>
- ^{xv} Reference to Marineers, https://publications.gc.ca/collections/collection_2022/mpo-dfo/Fs152-9-2022-5-eng.pdf
- ^{xvi} Science to support Canada's SARA-listed freshwater species, <https://cdnscepub.com/doi/10.1139/cjfas-2021-0234>
- ^{xvii} Evaluation of Fisheries and Oceans activities in support of Aquatic Species at Risk, <https://www.dfo-mpo.gc.ca/ae-ve/evaluations/21-22/activities-sar-activites-eap-eng.html>
- ^{xviii} Evaluation of Fisheries and Oceans activities in support of Aquatic Species at Risk, Management Action Plan, <https://www.dfo-mpo.gc.ca/ae-ve/evaluations/21-22/activities-sar-activites-eap-eng.html#ann-e>
- ^{xix} Shortfin Mako (*Isurus oxyrinchus*): COSEWIC assessment and status report 2019, <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/cosewic-assessments-status-reports/shortfin-mako-2019.html>
- ^{xx} Canada Protects Endangered Mako Sharks with Groundbreaking Atlantic Ban, <https://ecologyaction.ca/resources-media/press-releases/canada-protects-endangered-mako-sharks-groundbreaking-atlantic-ban>
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- ^{xxii} GC InfoBase, <https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html>
- ^{xxiii} The Canadian Coast Guard at 60, <https://www.ccg-gcc.gc.ca/ccg60gcc-eng.html>
- ^{xxiv} Evaluation of the Shore-based Asset Readiness (SBAR) program, <https://www.dfo-mpo.gc.ca/ae-ve/evaluations/20-21/sbar-epat-eng.html>
- ^{xxv} Stations, <https://www.tides.gc.ca/tides/en/stations>
- ^{xxvi} New water level application optimized for mobile devices, <https://www.tides.gc.ca/tides/node/252>

- xxvii What is the Trans Mountain Expansion Project? <https://www.canada.ca/en/campaign/trans-mountain/what-is-tmx.html>
- xxviii Co-Developing Community Response, <https://www.canada.ca/en/campaign/trans-mountain/what-is-tmx/the-decision/backgrounder11/co-developing-community-response.html>
- xxix Fisheries and Oceans Canada's 2021-22 Departmental Sustainable Development Strategy Report, <https://www.dfo-mpo.gc.ca/about-notre-sujet/publications/reports-rapports-eng.htm#strategy>
- xxx CCG regions map, <https://www.dfo-mpo.gc.ca/about-notre-sujet/organisation-eng.htm#ccg>
- xxxi GC InfoBase, <https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html>
- xxxii About the National Shipbuilding Strategy, <https://www.tpsgc-pwgsc.gc.ca/app-acq/amd-dp/mer-sea/sncn-nss/apropos-about-eng.html>
- xxxiii Bell Textron Canada and the Canadian Coast Guard announce delivery of final Bell helicopter under Coast Guard's Helicopter renewal plan, <https://www.canada.ca/en/canadian-coast-guard/news/2021/11/bell-textron-canada-and-the-canadian-coast-guard-announce-delivery-of-final-bell-helicopter-under-coast-guards-helicopter-renewal-plan.html>
- xxxiv Report to Canadians: Investing in our coasts through the Oceans Protection Plan, <https://tc.canada.ca/en/initiatives/oceans-protection-plan/report-canadians-investing-our-coasts-through-oceans-protection-plan#preventing>
- xxxv Evaluation of the Search and Rescue Program: Canadian Coast Guard Auxiliary, <https://www.dfo-mpo.gc.ca/ae-ve/evaluations/21-22/96743-eng.html>
- xxxvi Wrecked, Abandoned or Hazardous Vessels Act, https://laws-lois.justice.gc.ca/eng/annualstatutes/2019_1/page-1.html#docCont
- xxxvii What we heard: Public consultation on a regulatory charge for the Vessel Remediation Fund, <https://tc.canada.ca/en/corporate-services/consultations/what-we-heard-public-consultation-regulatory-charge-vessel-remediation-fund>
- xxxviii Building a resilient economy: a cleaner & healthier future for our kids, <https://www.canada.ca/en/privy-council/campaigns/speech-throne/2021/building-resilient-economy.html#diversity-inclusion>
- xxxix Fisheries and Oceans Canada's 2021-22 Departmental Sustainable Development Strategy Report, <https://www.dfo-mpo.gc.ca/about-notre-sujet/publications/reports-rapports-eng.htm#strategy>
- xl GC InfoBase, <https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html>
- xli Evaluation of the Search and Rescue Program: Canadian Coast Guard Auxiliary, <https://www.dfo-mpo.gc.ca/ae-ve/evaluations/21-22/96743-eng.html>
- xlii Fisheries and Oceans Canada's 2021-22 Departmental Sustainable Development Strategy Report, <https://www.dfo-mpo.gc.ca/about-notre-sujet/publications/reports-rapports-eng.htm#strategy>
- xliii Public Accounts of Canada, <http://www.tpsgc-pwgsc.gc.ca/recgen/cpc-pac/index-eng.html>
- xliv GC InfoBase, <https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html>
- xlv Corporate management and reporting, <https://www.dfo-mpo.gc.ca/about-notre-sujet/publications/reports-rapports-eng.htm>
- xlvi Corporate management and reporting, <https://www.dfo-mpo.gc.ca/about-notre-sujet/publications/reports-rapports-eng.htm#qfr>
- xlvii Departmental Plan 2021-2022, Future-Oriented Statement of Operations, <https://www.dfo-mpo.gc.ca/rpp/2021-22/fin-eng.html>
- xlviii Oceans Act, <http://www.laws-lois.justice.gc.ca/eng/acts/O-2.4>
- xliv Fisheries Act, <http://laws-lois.justice.gc.ca/eng/acts/f-14/>
- ⁱ Species at Risk Act, <http://laws-lois.justice.gc.ca/eng/acts/S-15.3/>
- ⁱⁱ Coastal Fisheries Protection Act, <http://laws-lois.justice.gc.ca/eng/acts/C-33/>
- ⁱⁱⁱ Canada Shipping Act, 2001, <http://laws-lois.justice.gc.ca/eng/acts/c-10.15/>
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- ^{lv} Department of Fisheries and Oceans Act, <https://laws-lois.justice.gc.ca/eng/acts/F-15/>
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- ^{lvi} Minister's mandate letter, <https://pm.gc.ca/en/mandate-letters/2021/12/16/minister-fisheries-oceans-and-canadian-coast-guard-mandate-letter>

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lviii Report of Federal Tax Expenditures, <https://www.canada.ca/en/departement-finance/services/publications/federal-tax-expenditures.html>

lix Fisheries and Oceans Canada, <https://www.dfo-mpo.gc.ca/>